



Global Environment Facility

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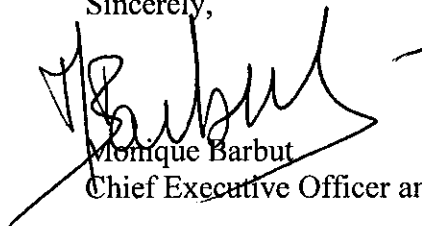
Dear Council Member:

UNDP as the Implementing Agency for the project entitled: ***Morocco: Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by Council in August 2006 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,



Monique Barbut
Chief Executive Officer and Chairperson

Attachment: Project Document

Copy to: Country Operational Focal Point
GEF Agencies
STAP
Trustee



REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project

THE GEF TRUST FUND

Submission Date: 7 March, 2006

Re-submission Date: 26 April 2006

Re-submission Date: 9 December 2008

Re-submission date: 9 April 2009

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID:2554

GEF AGENCY PROJECT ID: PIMS 3230

COUNTRY(IES): Morocco

PROJECT TITLE: Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco

GEF AGENCY(IES): UNDP

OTHER EXECUTING PARTNER(S): National Center for Renewable Energy and Energy Efficiency; Ministry of Housing and Urban Development

GEF FOCAL AREA(S): Climate Change

GEF-4 STRATEGIC PROGRAM(S): OP-5 Removal of Barriers to Energy Efficiency and Energy Conservation

NAME OF PARENT PROGRAM/UMBRELLA PROJECT:

Expected Calendar	
Milestones	Dates
Work Program (for FSP)	June 2006
GEF Agency Approval	January 2007
Implementation Start	July 2009
Mid-term Review (if planned)	June 2011
Implementation Completion	June 2013

A. PROJECT FRAMEWORK

Project Objective: To introduce mandatory minimum energy efficiency (EE) performance requirements in the residential sector through the introduction of an EE building code; and to institutionalize the adoption of EE standards and practices in the commercial and hospital sectors in Morocco.								
Project Components	Indicate whether Invest., TA, or STA**	Expected Outcomes	Expected Outputs	GEF Financing*		Co-financing*		Total (\$)
				(\$)	%	(\$)	%	
1. National Building Code Unit setup, and municipal compliance reinforcement	TA	Setting up an EE Building Code Unit at the national level, and reinforcing compliance at the municipal level	1.1 EE Building Code Unit set up and operating 1.2 Institutional and operational capabilities of municipal code enforcement agencies strengthened	875,000	68.6%	400,000	31.4%	1,275,000
2. EE market sizing	TA	Sizing the energy efficiency potential in new construction: outreach, demonstration and knowledge sharing activities	2.1 Mobilization, outreach and training activities 2.2 Project development services 2.3 Demonstration projects	640,000	32.0%	1,360,000	68.0%	2,000,000

3. Building Code implementation	TA	Drafting and implementing an EE Building Code for residential buildings	3.1 EE Building Code regulations drafted 3.2 Enabling regulatory framework for EE Building Code drafted	235,000	57.3%	175,000	42.7%	410,000
4. EE standards and guidelines dissemination	TA	Developing and disseminating standards and guidelines for professionals	4.1 EE standards developed for buildings 4.2 Technical guides drafted for professionals 4.3 Testing program to evaluate the impact of proposed EE standards 4.4 Achieving monitoring, learning and evaluation	925,000	61.3%	585,000	38.7%	1,510,000
5. Public and private sector EE investments	Investment	Engaging public and private sector investments	5.1 EE investments in the housing sector 5.2 EE investments in the health sector 5.3 EE investments in the hotel sector 5.4 EE investment in the education sector	325,000	2.5%	12,813,910	97.5%	13,138,910
6. Project management					0%	400,000	100%	400,000
Total Project Costs				3,000,000		15,733,910		18,733,910

* List the \$ by project components. The percentage is the share of GEF and Co-financing respectively to the total amount for the component.

** TA = Technical Assistance; STA = Scientific & technical analysis.

B. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	<i>Project Preparation*</i>	<i>Project</i>	<i>Agency Fee</i>	<i>Total at CEO Endorsement</i>	<i>For the record: Total at PIF</i>
GEF	275,000	3,000,000	294,750	3,569,750	
Co-financing	76,000	15 733 910		15,809,910	
Total	351,000	18 733 910	294,750	19,379,660	

* \$275,000 is already approved. GEF funding is from GEF-3.

C. SOURCES OF CONFIRMED CO-FINANCING, INCLUDING co-financing for project preparation for both the PDFs and PPG.

<i>Name of co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Amount (\$)</i>	<i>%*</i>
UNDP	Impl. Agency	Grant	200 000	1%
Ministère délégué chargé de l'Habitat et de l'Urbanisme	Nat'l Gov't	In-kind	7 250 346	46%
Ministère du Tourisme	Nat'l Gov't	Grant	2 416 782	15%
Ministère de l'Education	Nat'l Gov't	Grant	2 416 782	15%
Ministère de la Santé	Nat'l Gov't	In-kind	2 000 000	13%
Centre de Développement des Energies Renouvelables	Nat'l Gov't	Grant	250 000	2%
Italian Government	Bilat. Agency	Grant	1,200,000	8%
Total Co-financing (ONLY CONFIRMED GRANT SUPPORT)			15 733 910	

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

D. GEF RESOURCES REQUESTED BY FOCAL AREA(S), AGENCY(IES) OR COUNTRY(IES)

Information not provided as it is a single focal area, single country and single GEF Agency project

E. PROJECT MANAGEMENT BUDGET/COST

<i>Cost Items</i>	<i>Total Estimated person weeks</i>	<i>GEF (\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
<i>Local consultants*</i>	416		292,800	124,800
<i>Office facilities, equipment, vehicles and communications**</i>			43,200	43,200
<i>Travel**</i>			64,000	64,000
Total			400,000	400,000

* Provide detailed information regarding the consultants in Annex C.

** Provide detailed information and justification for these line items (monthly/quarterly expenses calculated over 4 years): Office facilities estimated at \$700/month, communications at \$70/month, and computer equipment at \$6,240 (one-time) Travel includes 4 trips per year for international consultant at \$4,000/trip for air and per diem.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

<i>Component</i>	<i>Estimated person weeks</i>	<i>GEF(\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
<i>Local consultants*</i>	1483	\$1,129,200	\$418,000	\$1,547,200
<i>International consultants*</i>	217	\$526,000	\$124,000	\$650,000
Total	1700	\$1,655,200	\$542,000	\$2,197,200

* Provide detailed information regarding the consultants in Annex C.

G. DESCRIBE THE BUDGETED M&E PLAN:

The Project M&E will be carried out according to standard UNDP and GEF rules for nationally executed projects and will be provided by the project team and the UNDP Country office with support of the UNDP- GEF Regional Coordination Unit. The Project Results Framework in Annex A provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built. The project will be subjected to independent external Mid-term and Final Evaluation and independent auditing as per the Country Office audit plan. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

For further details about the Budgeted M&E Plan, please see the corresponding sections of the UNDP project document. The M&E costs of the project are estimated at USD 210,000 for the duration of the project.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE THE PROJECT RATIONALE AND THE EXPECTED MEASURABLE GLOBAL ENVIRONMENTAL BENEFITS:

Project Rationale

Morocco's energy consumption continues to grow rapidly each year. Morocco must import over 97% of its energy, and fuel price subsidies in 2006 were costing the Government of Morocco close to US\$1 billion, representing 5.4% of the government budget. The challenge is particularly acute in the housing and service sectors which represent 25% of the country's energy requirements.

In the electricity sector, the growth in demand exceeds the most aggressive forecasts of the Ministry of Energy, Mines, Water and Environment (MEMWE). The national consumption of electricity has been growing at 7%-8% per annum over last few years, compared to GDP growth in the 3.0-3.5% range.

To address this problem, the Government of Morocco is taking steps, with help from the World Bank and other donors, to create the necessary legal, regulatory and institutional framework to put in place a comprehensive national EE strategy. Specifically, the government has prepared an RE/EE law that was approved by the Council of Government and has been submitted to Parliament for approval. It is also in the process of reshaping the Center for the Development of Renewable Energy to include energy efficiency responsibilities. These initiatives are being implemented in close coordination with line ministries such as the Ministry of Housing and Urban Development.

As part of its national EE strategy, the government is intending to moderate the growth in energy consumption by government agencies, private enterprises and households. While a number of energy efficiency (EE) programs have been put in place with donor assistance for Morocco's industrial sector, the service and housing sectors have not received much attention until recently. Thermal building regulations are a basic and robust component of any energy efficiency policy, as they can generate substantial energy savings in countries where the regulations have been implemented with care.

Expected Measurable Global Environmental Benefits

Housing Sector

400,000 housing units are expected to be EE-compliant during the project's four-year timeframe. The energy savings for these units are estimated at 4,300 GWh (equivalent to 1.12 million TOE) over the next 15 years. According to the figures of the ONE (national electric utility), each GWh produces 752 tons of CO₂ as the country depends on coal for 70% of its electricity production. This corresponds to a direct emissions reduction of 3.2 million tons of CO₂.

One million additional housing units are expected to be EE-compliant in the ten years following the project's conclusion, since the EE Building Code will continue to remain in force. The energy savings for these units are estimated at 4,400 GWh (equivalent to 1.14 million TOE) over the next 15 years. This corresponds to a direct post-project emissions reduction of 3.3 million tons of CO₂.

Health Sector

Based on a technical study of hospitals conducted during the preparatory assistance phase of this project, it is estimated that the average public hospital could save 20% of its energy expenditure in fuel and electricity. This is equivalent to 120,000 kWh annual savings per hospital. For simplicity's sake, all EE savings have been measured in kWh.

Out of the nation's 127 public hospitals, we estimate conservatively that 95 hospitals (principally in urban and semi-urban areas) will be upgraded to EE Building Code standards. Assuming that 40 of the 95 hospitals receive EE upgrades during the project's four-year timeframe, the energy savings for these units are estimated at 65 GWh (equivalent to 17,000 TOE) over the next 15 years. This corresponds to a direct emissions reduction of 49,000 tons of CO₂.

The 55 remaining hospitals will be upgraded to EE Building Code standards in the ten years following the project's conclusion. The energy savings for these units are estimated at 50 GWh (equivalent to 13,000 TOE) over the next 15 years. This corresponds to a direct post-project emissions reduction of 38,000 tons of CO₂.

Hotel Sector

With an estimated 40 large hotels interested in improving their energy efficiency during the four-year project timeframe, the energy savings from the hotel sector could reach as high as 378 GWh (equivalent to 98,000 TOE) over the next 15 years. This represents 284,000 tons of avoided CO₂ emissions. Any subsequent EE investments by other hotels are factored in the indirect impacts below.

Summary

The direct emissions reductions impact for all three sectors is 3.5 million tCO₂, representing 4,743 GWh over a 15-year period. The direct post-project emissions reductions impact is 3.3 million tCO₂, representing 4,450 GWh over a 15-year period. For Morocco, the combined energy savings are equivalent to 2.4 million TOE (1.24 million TOE

for direct reductions and 1.15 million TOE for direct post-project reductions). Given GEF funding of US\$ 3 million for this project, the avoided cost based on direct emissions reduction is 86 US cents per ton of CO₂.

	Number of Units	Energy Savings	GHG Reduction
Housing			
Direct	400,000 housing units	4,300 GWh	3.2 million tCO ₂
Direct Post-Project	1,000,000 housing units	4,400 GWh	3.3 million tCO ₂
Health			
Direct	40 hospitals	65 GWh	49 000 tCO ₂
Direct Post-Project	55 hospitals	50 GWh	38 000 tCO ₂
Hotels			
Direct	40 hotels	378 GWh	284 000 tCO ₂
Direct Post-Project	0	0	0
Total			
Direct		4,743 GWh	3.5 million tCO ₂
Direct Post-Project		4,450 GWh	3.3 million tCO ₂

Table 1: Total Estimated Savings for All Three Sectors
(Electricity Savings Only)

Indirect impacts are conservatively estimated to be one-for-one, with an additional 6-7 million tCO₂ that will further be avoided through the adoption and enforcement of the EE Building Code for private housing construction, private hospitals, government administrative offices, schools and universities.

Key Indicators

The most direct impact of the project as it relates to GEF objectives is the reduction in CO₂ emissions. Associated impacts, such as increased EE activities in the building sector, contribute to the overall sustainability of the project and thus are critical to the continued reduction in CO₂ emissions.

A strong baseline, along with measurable indicators, will need to be established in order to properly monitor the impact of the project. This will need to be done before EE standards are established and implemented in the building sector. The impact monitoring should be done on an annual basis by the project implementation team, and the results will be used by the project team to improve and/or revise the proposed EE standards for buildings.

The following indicators could be used to measure the impact of the proposed initiatives:

Impact to Be Monitored	Indicators	Verification Means
CO ₂ emissions reduction	- Reduction in energy consumption in housing sector, as well as hospitals and hotel sector	- Survey of architects, builders and government agencies - Analysis of energy bills
Increased number of housing projects that integrate EE standards	- Number of housing units that integrate EE standards and design parameters	- Survey of architects, developers and government agencies - Survey of municipal enforcement agencies

Impact to Be Monitored	Indicators	Verification Means
Increased use of EE standards by building professionals	- Number of professionals trained in EE Building Code and standards and applying such skills/knowledge	- Survey of architects, developers, and government agencies - Project files

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS:

Morocco ratified the UNFCCC on 28 December 1995.

With assistance from the World Bank and other donors (e.g., GTZ), the Government is moving ahead with a national energy plan designed to provide a greater degree of energy security for the country while slowing down the growth in oil imports. Energy efficiency in the housing and service sectors figures prominently in the government's energy program, as the government perceives that it will have great difficulty in keeping up with the country's energy demand unless basic conservation measures are put in place in key sectors.

As part of this initiative, the Ministry of Energy is launching a structural reform program for the energy sector with technical assistance from the World Bank. This reform process has reaffirmed the government's commitment to the establishment of viable and effective energy efficiency policies, while launching two key laws for this project: the Law on Energy Efficiency and Renewable Energy (which provides the legal basis for defining and imposing EE building standards), and the Law reorganizing the Center for the Development of Renewable Energy (CDER) to include energy efficiency programs among its responsibilities.

The government is pushing for the EE Building Code project because it will be one of the first direct manifestations of the government's determination to manage energy consumption in key sectors. To ensure broad support among public and private sector stakeholders, the project was designed with extensive inputs from the major line ministries (Finance, Energy, Housing, Health, Tourism, Environment, etc.) in the course of Steering Committee meetings that were held at regular intervals to review the objectives of the project and discuss overall results. It fits within the government's overall plan to reduce energy costs in its housing, tourism and health care sector by integrating EE standards and practices in building design and management.

Extensive consultations with public and private stakeholders confirm the timeliness of an EE program for Morocco's building sector that can strengthen national capabilities in the area of energy efficiency at a time of rising energy costs. The Ministry of Housing and Urban Development has become a prime mover behind the adoption of thermal standards as part of the government's social housing program which the Ministry oversees. The Ministry of Finance has expressed considerable concern over the ability of government ministries and agencies to absorb energy costs through existing budgetary mechanisms and believes that an EE program will not only help reduce energy bills but also create an EE culture at the level of decision makers and functionaries.

At the local level, a strong emphasis on developing the technical capabilities of professionals (architects, engineers, etc.) and creating EE awareness among decisions makers (developers, hotel operators, etc.) will help invigorate a nascent EE industry. It will also allow Morocco to meet its MDG goals by reducing the cost of energy services for Moroccan households, especially poorer households that are seeing a greater share of their household income dedicated to energy expenditures, including home energy bills.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH [GEF STRATEGIES](#) AND STRATEGIC PROGRAMS:

The project seeks to improve the energy efficiency of buildings in Morocco by: (i) introducing an EE building code as part of the government's comprehensive plan to reform the energy sector; (ii) mainstreaming EE standards and practices within the housing sector, as well as the health and hotel sectors; (iii) removing the technical and informational barriers to the greater adoption of EE standards by the private sector; (iv) reinforcing the technical,

operational and enforcement capabilities of government agencies;; and (v) harmonizing government policies on EE buildings through an interagency taskforce;

The requirements for a comprehensive capacity building and outreach program, along with strengthening the necessary legal, regulatory and institutional frameworks, are in line with **GEF Operational Program #5: Removal of Barriers to Energy Efficiency and Energy Conservation**. Without GEF intervention, it is not clear that the government would be able to put in place a comprehensive multi-sectoral policy initiative to integrate EE standards within non-industrial sectors such as housing, tourism and healthcare.

The project also fits in the following GEF strategic priorities: **(CC-1) Transformation of markets for high volume products and processes**. The project proposes to work closely with the private sector to ensure that regulatory proposals and technical standards are widely disseminated and adopted throughout the construction industry. The proposed market transformation activities are designed to effect sustainable changes in two areas: (i) decision-makers such as real estate developers, hotel operators and government ministries who establish the requirements for their building projects; and (ii) professionals such as architects and engineers who advise decision-makers and are key influencers in the decision to incorporate EE standards in a project design.

This project is aligned with other regional and national GEF projects that have sought to introduce EE regulations in the construction industry, especially in the housing sector. It seeks to build upon past successes by ensuring a tight integration between government agencies responsible for establishing the proper regulatory framework and the private sector operators who will be responsible for implementing EE regulations within their construction projects. Extensive consultations with public and private sector stakeholders through regular Steering Committee meetings, workshops and interviews have reaffirmed the willingness of the private sector to support this initiative.

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The Project Team has been coordinating closely with the World Bank staff regarding technical assistance provided by the World Bank to the Ministry of Energy for establishing a government strategy for a national energy efficiency programme and a national RE/EE law. This law, which has been approved by the Council of Government and presented to Parliament, will lay the legal foundation for the introduction of energy efficiency standards for buildings in Morocco.

The Project Team has also consulted extensively with the MED-ENEC programme, under EU funding, which is designed to promote a regional initiative to create a favorable regulatory and commercial climate for EE investments in the building sector. Project consultants participated in the two regional MED-ENEC conferences hosted by the GTZ in Cairo in June 2007. Representatives from Morocco's Ministry of Energy, CDER and Association of Building Engineers were also in attendance, as well as a private Moroccan developer.

E. DESCRIBE THE INCREMENTAL REASONING OF THE PROJECT:

1. Baseline Scenario

In order to reduce the growth in the country's energy consumption, Morocco has implemented the following energy efficiency activities: (i) the PROMASOL project to promote the installation of 100,000 m² of solar panels over 4 years and the growth of the solar water heater market to around US\$ 50 million annually; (ii) a program to reduce household wood consumption by promoting more efficient cooking appliances; (iii) the "Wood-Energy" project to promote fuel efficient water heaters for 5,000 community hammans (communal baths) in order to cut wood consumption in half; and (v) the APC project to improve credit availability for EE investments by promoting tighter commercial bonds between local manufacturers, equipment distributors and financial institutions.

The CDER has initiated a number of capacity building activities designed to improve the capabilities and performance of the energy efficiency service providers and to reduce greenhouse gas emissions tied to the consumption of fossil fuel. Existing programs have tended to focus on the following areas: (i) improving the

network of small retail dealers and installers of solar water heaters; (ii) developing a certification and labeling program for energy efficiency equipment using the CDER's testing facilities; (iii) encouraging a program of rural electrification using renewable energies; (iv) promoting the use of more efficient cooking and heating appliances; and (v) sponsoring several technical feasibility studies designed to improve the overall energy efficiency of large public hospitals.

Many of the CDER's activities are focused on households, rural areas and small community facilities such as hammans. At this point, there has been only limited focus on energy efficiency initiatives for the service and housing sectors, even though these two sectors account for 25% of the energy consumed in Morocco. Furthermore, the lack of proper legislative, regulatory and institutional framework to drive energy efficiency programs on a large scale hinders efforts to mainstream EE activities among key stakeholders such as government agencies, professionals, builders and developers.

The Ministry of Housing does not integrate any EE considerations in the planning, design and budgeting of its social housing program, not does the Ministry of Health integrate any energy efficiency considerations in planning the retrofitting of its public hospitals.

2. GEF Alternative

This project is designed to limit CO₂ emissions in Morocco by reducing the demand for energy required to light, heat, cool and provide hot water to buildings in the service and housing sectors. This project proposes to look at three specific aspects of energy efficient buildings: (i) building concept and design, (ii) selection of building materials and construction techniques, and (iii) guidelines for HVAC. Without this project, it can be expected that most public hospitals and apartment dwellings will fail to incorporate the most basic building design and thermal/insulation techniques, while hotel operators will fail to capture all of the possible energy savings in their establishments.

Under the GEF Alternative Scenario, Morocco will implement a comprehensive, multi-sector program of legislative, regulatory, institutional, technical and demonstration activities needed to overcome the barriers identified earlier in this document. The proposed activities are the following:

- **Outcome 1:** Setting up an EE Building Code Unit at the national level, and reinforcing compliance at the municipal level;
- **Outcome 2:** Sizing the energy efficiency potential in new construction: outreach, demonstration and knowledge sharing activities;
- **Outcome 3:** Drafting and implementing an EE Building code for residential buildings;
- **Outcome 4:** Developing and disseminating standards and guidelines for professionals;
- **Outcome 5:** Engaging public and private sector investments;
- **Outcome 6:** Project management.

3. Incremental Cost Calculation

Within the context of the government's overall development programs—construction of 100,000 new units of social housing per year; renovation of 127 public hospitals; and expansion of tourism sector to attract 10 million visitors by 2010—the current EE Building Code project will provide significant financial leverage and CO₂ abatement. The energy savings used in this analysis were calculated from several sources, including: (i) previous EE studies commissioned by the CDER and other agencies, and (ii) technical analysis of a number of proposed demonstration sites. It should be noted that kWh is the official unit used to calculate energy consumption and savings in this analysis.

During the preparatory phase, a large consultation was organized with building, construction stakeholders and energy specialists. Potential energy savings have been assessed for each of the main building groups following the findings and lessons learned from several projects:

- Project GEM : Energy Management in Moroccan Buildings;
- Programme on Residential Demand Side Management in Rabat;
- Project AZIT : demonstration project in industrial zone
- Experience of CDER in renewable energy and energy efficient buildings ;
- Programme on Energy Efficiency in Moroccan Airport ;
- National programme on rational use of electricity in local communities with DGCL;
- Programme AUDILEC from Office national de l'électricité ;
- Programme Energy/environment : Association IZDIHAR ;
- Programme ATTAKA : technical training on energy management in industries;
- Programme EPI: Demand Response Management.

Housing Sector

The government has established an aggressive plan to build a minimum of 100,000 new apartment units each year to help Moroccan households transition out of substandard slum dwellings. Under the leadership of the Ministry of Housing, this program is based on a partnership with private developers who are funded by the State to build large apartment blocks. The Ministry of Housing, which establishes the specifications for this housing, is under budgetary pressure to build the largest number of units at the least cost in order to speed up the availability of housing for the poor and the working class.

The lack of any reasonable insulation makes the apartments very cold in winter, especially in the northern half of the country, and very hot in the summer, especially in the southern half of the country. The availability of inexpensive and inefficient space heating and portable air conditioning appliances, especially models from south Asia, has encouraged many families to purchase heating and cooling appliances. These purchases are often made without a full understanding of the life cycle cost of ownership, forcing families on limited budgets to incur higher utility bills.

The energy savings used for estimating the potential GHG reduction have been intensively discussed during the preparatory phase. For the residential sector, a specific study as performed and clearly demonstrated that a conservative and cost effective energy savings figures is 35% (roof and wall insulating, double glazing windows, sun protection, improved ventilation techniques, energy efficient equipment...). The absolute reductions of GHG are in the order of 0.9 Ton CO₂ equivalent/year/house at an average cost of \$400/unit. This represents a construction premium of 1.8%-3.0% if one takes into account the average cost of housing (\$13,000 to \$22,000) for low to mid-income families. This cost premium was judged politically acceptable by the Ministry of Housing in light of the current budget constraints on housing costs. The proposed addition of minimal EE standards to the government's housing program is estimated to save 800 kWh annually per apartment or 12 MWh over 15 years.

400,000 housing units are expected to be EE-compliant during the project's four-year timeframe. The energy savings for these units are estimated at 4,300 GWh (equivalent to 1.12 million TOE) over the next 15 years. According to the figures of the ONE (national electric utility), each GWh produces 752 tons of CO₂ as the country depends on coal for 70% of its electricity production. This corresponds to a direct emissions reduction of 3.2 million tons of CO₂.

One million additional housing units are expected to be EE-compliant in the ten years following the project's conclusion, since the EE Building Code will continue to remain in force. The energy savings for these units are estimated at 4,400 GWh (equivalent to 1.14 million TOE) over the next 15 years. This corresponds to a direct post-project emissions reduction of 3.3 million tons of CO₂.

Health Sector

The Ministry of Health has undertaken an ambitious program to renovate the nation's 127 public hospitals for several reasons: (i) to address deficiencies in the quality of health care (for example, 80% of public hospitals do not have access to hot water due to broken boilers); and (ii) to improve the overall competitiveness of public hospitals in line with the introduction of universal health service in late 2005.

As part of the Morocco-Health III project, the government is planning in a first phase to rehabilitate and/or rebuild 21 hospital centers at a cost of \$210 million, of which \$104 million will be financed by a loan from the European Investment Bank (EIB). As part of this investment program, the Ministry of Health will incorporate EE standards in the building design and construction specifications.

Eventually, the Ministry of Health plans to ensure that the majority of urban and rural hospitals meet minimum health care standards. For example, regional maintenance centers have been proposed to ensure the proper maintenance of boilers, hot water heaters, air conditioners, and other building equipment.

Based on a technical study of hospitals conducted during the preparatory assistance phase of this project, it is estimated that the average public hospital could save 20% of its energy expenditure in fuel and electricity. This is equivalent to 120,000 kWh annual savings per hospital. For simplicity's sake, all EE savings have been measured in kWh. Out of the nation's 127 public hospitals, we estimate conservatively that 95 hospitals (principally in urban and semi-urban areas) will be upgraded to EE Building Code standards. Assuming that 40 of the 95 hospitals receive EE upgrades during the project's four-year timeframe, the energy savings for these units are estimated at 65 GWh (equivalent to 17,000 TOE) over the next 15 years. This corresponds to a direct emissions reduction of 49,000 tons of CO₂.

The 55 remaining hospitals will be upgraded to EE Building Code standards in the ten years following the project's conclusion. The energy savings for these units are estimated at 50 GWh (equivalent to 13,000 TOE) over the next 15 years. This corresponds to a direct post-project emissions reduction of 38,000 tons of CO₂.

Hotel Sector

Many hotel operators, especially among the larger, international chains, have already implemented a number of EE measures. However, based on on-site surveys of a representative number of hotels, it appears that further investments can be made to reduce energy consumption. The hotel operators who were interviewed for this project indicated that they would welcome technical support from an independent energy expert to advise them on possible EE investments and to guide them in selecting the right vendor and product. They also expressed the desire to have some performance guarantees to back up the investment proposals that would be submitted to them.

A technical assessment of 10 representative hotels suggests that a hotel could economize an average of 700,000 kWh of electricity annually for an investment of US\$130,000. This represents an average energy savings of 22% (with proposed savings ranging from 15% to 32% depending on the hotel). Hotels, which must meet high operating standards for their international clientele, offer a high energy savings potential since they are heavy energy consumers to begin with.

With an estimated 40 large hotels interested in improving their energy efficiency during the four-year project timeframe, the energy savings from the hotel sector could reach as high as 378 GWh (equivalent to 98,000 TOE) over the next 15 years. This represents 284,000 tons of avoided CO₂ emissions. Any subsequent EE investments by other hotels are factored in the indirect impacts below.

Summary

The direct emissions reductions impact for all three sectors is 3.5 million tCO₂, representing 4,743 GWh over a 15-year period. The direct post-project emissions reductions impact is 3.3 million tCO₂, representing 4,450 GWh over a 15-year period.

For Morocco, the combined energy savings are equivalent to 2.4 million TOE (1.24 million TOE for direct reductions and 1.15 million TOE for direct post-project reductions). Given GEF funding of US\$ 3 million for this project, the avoided cost based on direct emissions reduction is 86 US cents per ton of CO₂.

	Number of Units	Energy Savings	GHG Reduction
Housing			
Direct	400,000 housing units	4,300 GWh	3.2 million tCO ₂
Direct Post-Project	1,000,000 housing units	4,400 GWh	3.3 million tCO ₂
Health			
Direct	40 hospitals	65 GWh	49 000 tCO ₂
Direct Post-Project	55 hospitals	50 GWh	38 000 tCO ₂
Hotels			
Direct	40 hotels	378 GWh	284 000 tCO ₂
Direct Post-Project	0	0	0
Total			
Direct		4,743 GWh	3.5 million tCO ₂
Direct Post-Project		4,450 GWh	3.3 million tCO ₂

Table 4: Total Estimated Savings for All Three Sectors
(Electricity Savings Only)

Indirect impacts are conservatively estimated to be one-for-one, with an additional 6-7 million tCO₂ that will further be avoided through the adoption and enforcement of the EE Building Code for private housing construction, private hospitals, government administrative offices, schools and universities.

F. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:

Legislative Risks

While the new Law on Energy Efficiency and Renewable Energy has been drafted and is being adopted in record time by the Government of Morocco (the law was recently approved by the Government Council and is being submitted to Parliament for approval), there is always the (minor) risk of some legislative delay in its final adoption.

- Risk mitigation: since a significant World Bank structural loan is tied to the government's energy sector reform efforts, we do not expect significant delays on the legislative side. The Office National de l'Electricité (ONE), the state-owned utility, is supportive of energy sector liberalization efforts. Although this support is directed principally at the government's renewable energy program more so than its energy efficiency program, it does remove one potential obstacle to the new combined RE/EE law.

Regarding the Law to expand the CDER's responsibilities to include energy efficiency, a final version of the law is being finalized by the Ministry of Energy and the CDER. This Law will then have to be submitted to Government Council for approval, a process which often requires the Director General of the CDER to meet with all key ministers involved to explain the purpose of the Law and to seek their support. There is also a risk that adoption of this Law will be delayed.

- Risk mitigation: extensive consultations with key ministries (Energy, Finance, Housing, Health, Tourism, etc.) during the Preparatory Phase of this project have confirmed broad administrative support for creating an expanded agency (the CDER) to handle both energy efficiency and renewable energy programs. The Ministry of Housing and Urbanization, which is a key participant in this project, has been working closely with the CDER on its strategy to introduce EE standards and regulations in the building sector, adding a powerful administrative ally to this project.

Institutional Risks

In order to have a measurable impact, this project requires a multi-sectoral approach to ensure that the EE Code and standards are incorporated in the sectoral programs of each participating ministry. There is always the risk in any administration that institutional rivalries will slow down cooperation among ministries.

- Risk mitigation: this risk is mitigated with the creation of an interagency taskforce, called a National EE Commission, which will institutionalize ongoing policy dialogue between public and private sector stakeholders and provide a forum to harmonize the programs of participating ministries. Standardization efforts will be led by the Moroccan Industrial Normalization Service (SNIMA) with technical help from industry groups such as the National Order of Architects, the Building Federation, and other trade groups. As indicated in the letters of commitment, the Ministries of Housing, Health and Tourism are committed to integrated EE standards and regulations in their own sectoral programs.

At the municipal level, the enforcement capabilities of local institutions that are responsible for regulating construction projects will be a determinant factor in the long-term implementation of the EE Code. In the past, these agencies have not been very proactive in enforcing seismic standards in earthquake prone areas, resulting in collapsed buildings and a number of deaths during recent earthquakes.

- Risk mitigation: the project addresses this risk by providing capacity building assistance to municipal enforcement agencies to help them understand the EE Code and ensure that its provisions are properly integrated in on-going construction projects. Lack of enforcement of existing seismic standards in the construction sector contributed to the death of 500 people in a 2004 earthquake at Al Hoceima, awakening civil authorities and the central government to the need for more effective municipal code enforcement.
- On the demand side, the project is also proposing to create an EE labeling system for apartments, allowing builders to market the advantages of energy efficient housing to home buyers. The adoption of EE standards by the Ministry of Housing in the government's social housing program will also help create a de-facto standard for energy efficiency in housing.

Technical Risks

Successful implementation of this project will require an increase in the technical capacity of the CDER staff and adequate capacity in the private sector.

- Risk mitigation: this risk is being addressed by creating a dedicated Building Code Unit within the CDER whose staff will receive training on EE standards, as well as by providing training courses and "how to" manuals to building professions such as architects and building supply manufacturers in partnership with their respective trade associations.

Another technical risk is linked to the preparation of the EE standards and the drafting of the EE Code. In the past, some international standards were adopted by the government without sufficient analysis about their relevancy or applicability to the Moroccan context. The professionals surveyed for this project were adamant of the importance of developing an EE Code that took into account the regulatory, economic and cultural particularities of the construction sector in Morocco.

- Risk mitigation: the project will seek to mitigate this risk by creating a Technical Standards Committee (TSC) chaired by the Moroccan Industrial Normalization Service (SNIMA) and including trade association representatives, government ministries and the CDER. The TSC will advise the CDER on which EE standards to develop at first, taking into account the prospective cost/benefit aspects of different standards (ease/cost of adoption v. expected EE savings).

G. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:

During the PDF-B phase, barriers to energy efficiency in the building sector have been clearly identified. The magnitude of energy savings and the associated greenhouse gas reductions have been assessed (see Annex A). Energy efficient practices and techniques have been identified, including the importance to build national institution to promote energy efficiency.

The range of direct CO₂ emissions reduction is large, especially in the housing section considering the low level of current practice in the design and insulation of new construction. The intervention of the GEF will allow for the first time the introduction of new techniques in Morocco. The future building codes will impose and generate massive investment in energy efficient techniques.

The direct emissions reductions impact for all three sectors is 3.5 million tCO₂, representing 4,743 GWh over a 15-year period. The direct post-project emissions reductions impact is 3.3 million tCO₂, representing 4,450 GWh over a 15-year period. Given GEF funding of US\$ 3 million for this project, the avoided cost based on direct emissions reduction is 86 US cents per ton of CO₂.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

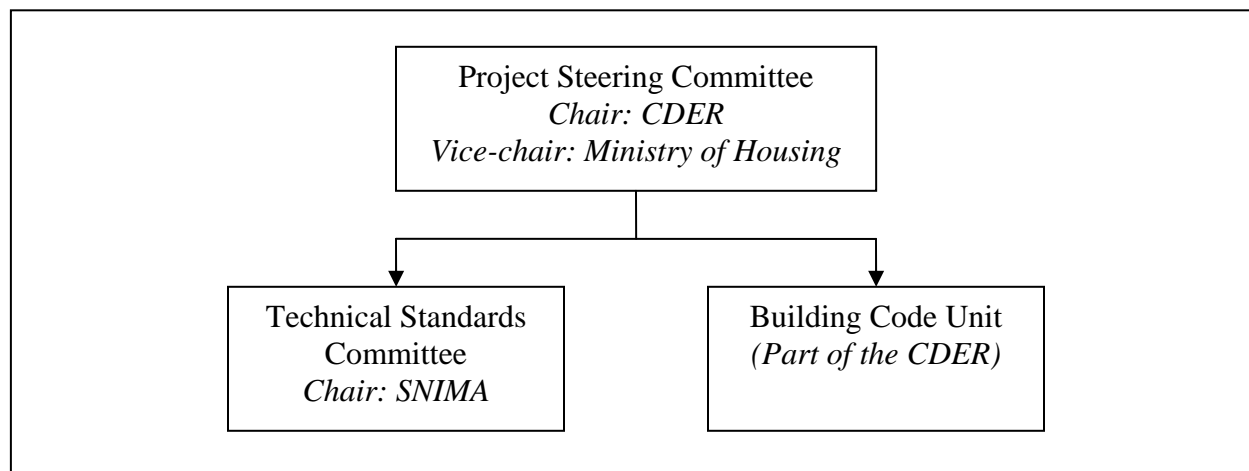
A. PROJECT IMPLEMENTATION ARRANGEMENT:

This project will be executed in accordance with UNDP-Morocco's national execution modalities (NEX), and applicable direct execution modalities (DEX) for selected activities tied to Outcome 5: Project Management. Within this proposed arrangement, the GEF grant will be disbursed through the UNDP Country Office, and the local Execution Agency will be the CDER. UNDP-Morocco will work with the UNDP-GEF Regional Coordinator (Climate Change) for North Africa, together with the CDER, to carry out all required acquisitions and ensure the timely delivery of project outputs and outcomes. UNDP-Morocco will provide administrative and financial oversight of the execution.

A Steering Committee will be formed to provide oversight of the UNDP-GEF project and to promote operational coordination among different government agencies and donors working in the sector. Membership in the Steering Committee will include the following: Ministry of Energy, CDER, Ministry of Finance, Ministry of Housing, Ministry of Health, Ministry of Tourism, SNIMA (Moroccan Industrial Standards Agency), selected professional trade associations (National Order of Architects, Association of Building Supplies Manufacturers, etc.), the Italian Ministry of the Environment (IMET), UNDP-Morocco, and UNDP-GEF.

As part of the Building Code Unit being established under the CDER, three technical consultative committees will be established with the participation of technical staff from technical bureaus, professionals and academic institutions. The consultative committees will be responsible for advising the CDER on the development of the EE Building Code, as well as providing technical input to the Technical Standards Committee under the SNIMA that will be responsible for developing the appropriate EE standards.

Figure 1: Proposed Project Management Structure



With respect to the proposed demonstration projects (at least 10) and project development services, the CDER will work closely with technical bureaus and private companies to undertake these outcomes. The demonstration projects are designed to test the validity of various technical standards within the targeted sectors (hotels, apartment buildings and hotels), while showcasing the benefits of energy efficient design and supplies. This public-private partnership is important for two reasons: (i) it enlists the support of private sector companies to design, procure and execute technical projects that are best left to the private sector; and (ii) it ensures that the technical and operational knowledge remains with Moroccan consultants, professionals and suppliers.

In both cases, the general approach will be as follows:

- In consultation with the Project Steering Committee, CDER defines the scope and requirements for the demonstration projects and the project development services;
- CDER screens private sector operators (hotel operators, private housing developers, etc.) requesting to qualify under either program; line ministries (Tourism, Habitat, etc.) participate in the screening and selection of program participants.
- CDER issues tenders for professionals (architects and/or technical bureaus) to provide the required services to hotel operators and housing developers in the private sector;
- Professionals complete the technical studies and submit them to the private sector clients and the CDER for review and approval;
- With help from representatives of professional trade groups, CDER validates the study results and ensures that the technical data is shared with the appropriate parties, including the Technical Standards Committee.

PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIIF:

Since the submission and approval of by the GEF Council of the project “Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco”, the context in Morocco’s national climate change and energy policy has greatly involved, requiring a series of slight adjustments to the current project proposal. The stakeholder consultations during the preparation of this project have stimulated a number of initiatives and changes in the EE sector that have a direct impact on several proposed outcomes of the project.

Morocco is highly dependant on imports of fossil fuels to satisfy its energy needs. Up to 95% of energy is imported. International energy prices are soaring and likely to remain high. This situation imposes major concerns on the

national budget, as well as on Moroccan economical competitiveness. During the past year, the World Bank has therefore decided to provide a single tranche Energy Development Policy Loan (EDPL). The envisaged loan for the first operation is USD 100 million. This Development Policy Loan is conditioned by a series of reforms to engage the government of Morocco on two complementary policies: promoting renewable energy and promoting energy efficiency.

On October 30, 2006 the Government of Morocco organized the National Energy Day, a one-day event under the chairmanship of the Prime Minister. The Government of Morocco was largely represented by several Ministers having direct or indirect links with the proposed energy policy reform. The Ministers of Housing, Tourism, Health, Infrastructure... were all present. Several agreements were signed to finalize new collaboration between Ministries and with the private sector. The Prime Minister used the forthcoming energy efficiency building code – to be developed through the present UNDP-GEF proposal – to illustrate the engagement of his government for a renewed energy policy action plan.

Over the past months, World Bank's ESMAP has provided both technical and policy assistance to the Government of Morocco to prepare a legislative framework for energy efficiency and renewable energy. ESMAP's technical assistance proposal was prepared in part with the input of the current project team to ensure consistency with the GEF project.

The lack of legal and institutional framework to support an energy efficiency programme such as future building codes was identified as a major barrier during the preparation of the GEF project. The project team therefore suggested that the first activity of the project, under the title of "Component 1", be dedicated to setting up the legal and institutional policy framework necessary to introduce an EE Building Code. In the meantime, with World Bank support, a Law was drafted and approved by the Government Council to clearly define the government's policy objectives and regulatory framework for energy efficiency and renewable energy, including the establishment and enforcement of EE objectives in the construction sector. Separate but complementary draft legislation is currently being finalised expanding the responsibilities of the CDER (renamed the Centre for the Development of Renewable Energy and Energy Efficiency) to cover the government's EE programme, including energy efficient buildings.

Both reforms were initially proposed as outcome of present GEF project. It is therefore proposed to take into account such development and to reformulate Component 1 of the present project.

Since the submission of the project to the GEF Council, several other initiatives took place, presenting a link with the objective of the project. The European Commission launched the MED-ENEC project "Energy Efficiency in the Construction Sector in Mediterranean Countries" www.med-enec.com. The project team has established a dialogue with the MED-ENEC team. A demonstration of a highly energy efficient building sponsored by this European project will be closely followed and lessons learnt will be integrated in present project.

Early 2007, some stakeholders from the building sector and based in Morocco joined UNEP's "Sustainable Building & Construction Initiative -SBCI". This initiative provides a new platform for collaborative activities with. The project team established a dialogue with this initiative.

More than ever, energy efficiency building codes appears as a major element of the new Moroccan national energy efficiency strategy and will contribute to accelerate Government of Morocco's effort to strengthen and reinforce energy efficiency. Similarly the proposed energy efficiency building code authority will become of significant component of the newly established National Center for Renewable Energy and Energy Efficiency.

The project now presents a robust legal and institutional foundation. The suggested reformulation emphasizes more concrete activities, technical demonstration and partnership with construction stakeholders. The project team is confident that the suggested reformulation nicely addressed the criticisms and comments received by both the GEF Secretariat and Members of GEF council.

Ministry of Health


The commitment of the Ministry of Health to this project has been strengthened by the announcement of a project, Morocco-Health III, to rehabilitate and/or rebuild 21 hospital centers at a cost of \$210 million. The European Investment Bank (EIB) is providing \$104 million of this budget. In our discussions with their country representative in Rabat, the EIB is fully supportive of the EE building code project and has communicated to the Ministry of Health their expectation that the hospital designs will integrate the appropriate levels of energy efficiency standards.

Ministry of Education

The continued rise in oil prices has encouraged other public institutions to join this initiative. After the initial consultation was completed during the Preparatory Phase, the Ministry of Education asked to participate in the project and agreed to integrate energy efficiency standards in its program of construction and renovation of university buildings. The Ministry of Education intends to adopt the EE standards that will be proposed by the project for residential and teaching facilities under its purview.

The participation of the Ministry of Education has resulted in an increase in cofinancing of \$2.6 million, representing the amount the Ministry plans to spend for the length of the project to integrate energy efficiency standards in the construction and renovation program for university buildings and housing.

PART V: AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.	
 Marcel Alers UNDP/GEF Officer-in-Charge	Benoit Lebot Project Contact Person
Date: 9 April 2009	Tel: +33 1 44 37 46 97 Email: benoit.lebot@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

	Objectively Verifiable Indicators				
Goal	To reduce Morocco's energy related CO ₂ emissions by introducing an EE Code and standards for buildings in the housing, health and hotel sectors				
Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
<u>Project Objective:</u> To improve the energy efficiency of buildings in Morocco, especially in the housing sector, through the introduction of an EE Building Code and standards	<ul style="list-style-type: none"> • Reduction in CO₂ emissions • Increased number of housing projects that EE standards • Govt. investment programs require minimum EE performance standards • Private operators adopt EE practices 	<ul style="list-style-type: none"> • Very few buildings have incorporated EE design standards • Govt. programs in housing and health do not specify minimum EE performance standards • Professionals and developers do not understand basic EE principles 	<ul style="list-style-type: none"> • CO₂ emissions reduced by 3.5 million tons from direct impacts • Govt. has adopted EE Code in 75% of its housing projects • Govt. has introduced EE standards in 75% of public hospitals • 40 hotels have adopted EE standards 	<ul style="list-style-type: none"> • Survey of architects, builders, and government agencies • Survey of municipal enforcement agencies 	<ul style="list-style-type: none"> • Govt. adopts necessary regulatory framework • Govt. is willing to “lead by example” in adopting EE standards in its own programs • Strong support from professionals and operators for EE standards • Code non-compliance is a significant risk
<u>Outcome 1:</u> EE Building Code Unit is set up at the national level, and compliance is reinforced at the municipal level	<ul style="list-style-type: none"> • EE Bldg code Unit fully functional • Municipal agencies trained 	<ul style="list-style-type: none"> • No EE regulatory or institutional framework 	<ul style="list-style-type: none"> • EE Building Code Unit set up by Yr 1 • At least 3 municipal agencies enforcing EE Bldg Code 	<ul style="list-style-type: none"> • Project files • Surveys of municipal code enforcement process 	<ul style="list-style-type: none"> • Political support to establish legal, regulatory and institutional framework

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Output 1.1: EE Building Code Unit is set up and operating	<ul style="list-style-type: none"> • EE Building Code Unit operational within CDER 	<ul style="list-style-type: none"> • Limited EE activities conducted by CDER 	<ul style="list-style-type: none"> • EE Building Code Unit set up within CDER by Yr 1 • 6 staff members hired and trained by Yr 2 	<ul style="list-style-type: none"> • Project files • CDER reports 	<ul style="list-style-type: none"> • CDER bylaws are amended without delay
Output 1.2: Institutional and operational capabilities of municipal code enforcement agencies are strengthened	<ul style="list-style-type: none"> • Number of municipal agencies trained and able to enforce EE Bldg Code • Application decrees in place to empower municipal agencies 	<ul style="list-style-type: none"> • Municipal code enforcement agencies do not enforce any EE building standards 	<ul style="list-style-type: none"> • Capacity building at least 3 municipal agencies by Yr 3 • Application decrees mandating municipal agencies to enforce EE Bldg Code 	<ul style="list-style-type: none"> • Project files • Official govt. publications 	<ul style="list-style-type: none"> • Technical and managerial capability of municipal agencies
Outcome 2: Energy efficiency potential in new construction is sized: outreach, demonstration and knowledge sharing activities	<ul style="list-style-type: none"> • Number of demonstration projects • Number of professionals trained 	<ul style="list-style-type: none"> • Limited availability of EE technical information and training 	<ul style="list-style-type: none"> • At least 10 EE demonstration projects • 4,500 “man-days” of EE training provided to professionals 	<ul style="list-style-type: none"> • Demonstration project audit reports • Training class sign-in sheets 	<ul style="list-style-type: none"> • Willingness and interest from substantial number of professionals, developers and operators in EE

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Output 2.1: Mobilization, outreach and training activities	<ul style="list-style-type: none"> • Mobilization and outreach plan • Workshops and national EE events • EE housing certification program • Number of professionals receiving technical EE training 	<ul style="list-style-type: none"> • Professionals with foreign degrees have typically received EE training, but basic information is lacking in Morocco despite the increased awareness tied to high oil prices. 	<ul style="list-style-type: none"> • Workshops hosted on bi-annual basis • National EE event hosted annually • Quarterly electronic newsletter by Yr 1 • EE housing certif.. program by Yr 2 • 4500 “man-days” of technical training 	<ul style="list-style-type: none"> • Project files • Copies of publications • Invitations to events 	<ul style="list-style-type: none"> • Mobilization and outreach plan fails to mobilize critical mass of professionals • Professional trade associations slow to cooperate
Output 2.2: Project development services	<ul style="list-style-type: none"> • Number of companies provided with technical assistance to develop EE projects 	<ul style="list-style-type: none"> • Private sector has limited access to independent technical expertise to develop EE projects 	<ul style="list-style-type: none"> • 27 detailed EE audits • Technical support provided for 9 EE projects 	<ul style="list-style-type: none"> • Audit reports • Project RFPs and assessment reports 	<ul style="list-style-type: none"> • Willingness of private operators/ developers to submit projects with good EE improvement potential
Output 2.3: Demonstration projects	<ul style="list-style-type: none"> • Number of demonstration projects executed 	<ul style="list-style-type: none"> • There are very few examples of EE buildings in Morocco, especially in the housing sector 	<ul style="list-style-type: none"> • At least 10 demo projects executed by Yr 4 	<ul style="list-style-type: none"> • Project proposals • Technical audit reports 	<ul style="list-style-type: none"> • Quality of demonstration projects
Outcome 3: EE Building Code for residential buildings is drafted and implemented	<ul style="list-style-type: none"> • Drafting and submission of EE Bldg Code 	<ul style="list-style-type: none"> • No EE regulations currently exist in the housing/ construction sector 	<ul style="list-style-type: none"> • EE Bldg Code drafted and submitted to Parliament by Yr 3 	<ul style="list-style-type: none"> • Official govt. publications 	<ul style="list-style-type: none"> • Govt. and private sector willingness to incur additional cost of EE measures

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Output 3.1: EE Building Code is designed and drafted	<ul style="list-style-type: none"> Drafting of EE Bldg Code 	<ul style="list-style-type: none"> No EE regulations currently exist in the housing/ construction sector 	<ul style="list-style-type: none"> EE Bldg Code drafted by Yr 3 	<ul style="list-style-type: none"> Official govt. publications 	<ul style="list-style-type: none"> EE Building Code responds to Moroccan economic, social and cultural specificities
Output 3.2: Enabling regulatory framework for EE Building Code is drafted	<ul style="list-style-type: none"> Application decrees necessary to make the EE Building Code mandatory 	<ul style="list-style-type: none"> No regulatory framework exists to mandate EE Building Code 	<ul style="list-style-type: none"> Application decrees drafted and submitted by Yr 3 	<ul style="list-style-type: none"> Official govt. publications 	<ul style="list-style-type: none"> Enabling EE law adopted by parliament
Outcome 4: EE standards and guidelines for professionals are developed and disseminated	<ul style="list-style-type: none"> Drafting of EE building standards 	<ul style="list-style-type: none"> Few EE standards and guidelines available in Morocco 	<ul style="list-style-type: none"> Comprehensive set of standards developed by Yr 4 	<ul style="list-style-type: none"> Publication of standards 	<ul style="list-style-type: none"> Standards meet Moroccan economic, social and cultural specificities
Output 4.1: EE standards are developed for buildings	<ul style="list-style-type: none"> Standards for building design, building envelope and HVAC 	<ul style="list-style-type: none"> No EE standards exist for housing or hospitals. International hotel operators have generally adopted the most common international EE standards. 	<ul style="list-style-type: none"> Drafting of new standards for each category in Years 2-4 in response to requests from ministries, professionals, CDER and others 	<ul style="list-style-type: none"> Publication of standards 	<ul style="list-style-type: none"> Professionals cooperate with SNIMA to develop standards Data from testing program (see Output 3.5) confirms efficiency gains from standards
Output 4.2: Technical guides are drafted for professionals	<ul style="list-style-type: none"> Publication of practical guides 	<ul style="list-style-type: none"> Some professionals use existing French EE guidelines, but they are not well adapted to the Moroccan context. 	<ul style="list-style-type: none"> Practical guides published for all 3 sets of standards by Yr 3 	<ul style="list-style-type: none"> Publication of practical guides 	<ul style="list-style-type: none"> Standards developed by Yr 2

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Output 4.3: Testing program is implemented to evaluate the impact of proposed EE standards	<ul style="list-style-type: none"> • Testing and measurement of energy consumption in sample buildings 	<ul style="list-style-type: none"> • Very limited data on the applicability of international EE standards given Morocco's climate and construction standards 	<ul style="list-style-type: none"> • All proposed standards are field tested to validate efficiency gains (testing can take place in foreign country if test results are universal). 	<ul style="list-style-type: none"> • Field testing and measurement reports 	<ul style="list-style-type: none"> • Availability of good testing sites in Morocco or good test data from foreign EE agencies
Output 4.4: Monitoring, learning and evaluation are achieved	<ul style="list-style-type: none"> • Timely reporting and monitoring of the project 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Project workshops held on timely basis • Timely submission of all M&E reports 	<ul style="list-style-type: none"> • Reports and workshop minutes from M&E team 	<ul style="list-style-type: none"> •
Outcome 5: EE investments realized by the public and private sectors	<ul style="list-style-type: none"> • Value of EE investments 	<ul style="list-style-type: none"> • Limited EE investments currently taking place in housing and other sectors 	<ul style="list-style-type: none"> • At least US\$10 million invested by public and private sector by Yr 4 as a result of EE Building Code initiative 	<ul style="list-style-type: none"> • Government budget • Surveys of private operators 	Willingness of public agencies to incorporate EE standards in their investment programs
Output 5.1: EE investments realized in housing sector	<ul style="list-style-type: none"> • Value of public EE investments in the government's housing program 	<ul style="list-style-type: none"> • No EE considerations exist in the government's housing program 	<ul style="list-style-type: none"> • Incremental investment of US\$7.8 million by Ministry of Housing by Yr 4 to incorporate basic EE standards in housing program 	<ul style="list-style-type: none"> • Government budget • Sample government contractual documents for housing projects • Site visits 	Willingness of government to accept slightly higher housing construction prices in order to reduce energy consumption by households

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Output 5.2: EE investments realized in health sector	<ul style="list-style-type: none"> Value of public EE investments in the government's hospital renovation program 	<ul style="list-style-type: none"> Minimal EE considerations exist in the government's hospital sector 	<ul style="list-style-type: none"> Incremental investment of US\$2.6 million by Ministry of Health by Yr 4 to incorporate basic EE standards in hospitals 	<ul style="list-style-type: none"> Government budget Sample government contractual documents for hospital projects Site visits 	<ul style="list-style-type: none"> Willingness of government to link EE standards with the overall objective of improving basic health services
Output 5.3: EE investments realized in hotel sector	<ul style="list-style-type: none"> Value of EE investments in new and existing hotel projects by the private sector 	<ul style="list-style-type: none"> Most hotels built by international chains have adopted some EE standards, but there are no general standards to ensure that all hotels follow the same guidelines. 	<ul style="list-style-type: none"> Incremental investment of US\$2 million by private hotel operators by Yr 4 to incorporate basic EE standards in hospitals 	<ul style="list-style-type: none"> Interviews with hotel managers and contractors Review of proposal documents under Output 4.2 Site visits 	<ul style="list-style-type: none"> Identification of EE projects offering attractive rates of return on investment Understanding and appreciation by hotel operators of the value of implementing EE measures
Output 5.4: EE investment realized in the higher education sector	<ul style="list-style-type: none"> Value of public EE investments in the government's university building construction and renovation program 	<ul style="list-style-type: none"> Minimal EE considerations exist the government's university building program 	<ul style="list-style-type: none"> Incremental investment of US\$2.6 million by Ministry of Education by Yr 4 to incorporate basic EE standards in university program 	<ul style="list-style-type: none"> Government budget Sample government contractual documents for hospital projects Site visits 	<ul style="list-style-type: none"> Willingness of government to accept slightly higher construction and renovation prices in order to reduce energy consumption by university building

Strategy	Indicators	Baseline	Target	Sources of Verification	Risk and Assumptions
Outcome 6: Project management	<ul style="list-style-type: none"> Overall project management and coordination 	<ul style="list-style-type: none"> Government agencies have experience in managing donor projects, but they lack with EE projects 	<ul style="list-style-type: none"> Timely submission of all project reports Project objectives substantially met 	<ul style="list-style-type: none"> Surveys of key stakeholders and donors 	
Output 6.1: Project management and implementation support	<ul style="list-style-type: none"> Project objectives and deliverables Alignment of sectoral policies with objectives of EE project 	<ul style="list-style-type: none"> Minimal integration of EE issues in govt. building programs 	<ul style="list-style-type: none"> Timely submission of all project reports Ministries of Housing, Health and Tourism have incorporated EE objectives in their annual building programs 	<ul style="list-style-type: none"> Surveys of key stakeholders and donors Ministerial policy statements and annual programs 	Willingness of key ministries to become lead adopters of EE standards

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)

GEF Secretariat

GEF Secretariat and Other Agencies' Comments and IA/ExA Response

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
Project Design	
The scope or focus of this project is not very clear or coherent. At first, the project appears to focus on the establishment and enforcement of building codes to improve energy efficiency. But there is a subcomponent (under Component 4) to demonstrate the efficacy of EE building standards and guidelines. It is expected that the demonstration projects will be funded by hotels and hospitals. Exactly what will be demonstrated: renovation of the HVAC systems? Improving building insulation? Using EE materials for construction?	<p>The <u>primary</u> objective of the demonstration projects will be to test the EE standards that will be proposed under the EE Building Code. These will include: (i) improved <u>building design</u> techniques (for example, to limit sun exposure in the summer); (ii) improved <u>building envelop</u> through the use of native insulating materials, improved construction materials such as bricks, etc.; and (iii) improved <u>HVAC design</u> specifications and installation.</p> <p>A <u>secondary</u> objective will be to demonstrate and validate the use of EE technologies in vertical segments. These will include: (i) communal solar water heaters (housing and hospitals); (ii) small cogeneration (hotels and hospitals); (iii) infrared detectors for lighting and air conditioners (all three); (iv) natural lighting; etc.</p> <p>Detailed examples of proposed EE activities are now provided in Annex C of the Project Document previously submitted to the GEF.</p>
The range of buildings is broad, including residential, commercial, and hospitals. There are common but different issues and challenges between the residential and commercial building sectors. But the project makes no distinction and treats them with a seemingly one-size-fits-all solution.	These three sectors were selected because they are strategic sectors for the Moroccan economy, and they represent a substantial share of construction activity. Since the government is a major investor in two of these sectors (housing and health) and a major partner in the third one (tourism), the private sector has indicated that it is prepared to follow the government's lead in adopting EE standards if the government first demonstrated its commitment to EE measures.
It is not clear whether the project (building codes) will aim at new building construction or renovation of existing building stock. The challenges and approaches would be different.	The EE Building Code initially targeted new construction. However the STAP Reviewer correctly noted that, in his experience, building codes can also benefit and hence must also apply to major renovation to speed up the process of upgrading the building stock. The project team, after a new consultation with stakeholders, clearly proposes to tackle in priority energy efficiency in new buildings.

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
<p>Component 1 will set up an EE Building Code Authority at the national level and "reinforce" compliance at the municipal level. Are there building codes agencies at the municipal level? If not, a set of new institutions will need to be set up both at the national and the municipal level to develop the building codes and enforce them. Given the current state of affairs, it is highly doubtful that effective enforcement will take place in the foreseeable future.</p>	<p>Municipal agencies in Morocco are responsible for issuing construction permits and occupancy permits (as they are in Europe and the U.S.). Today, Moroccan municipal agencies review construction plans and inspect worksites to ensure that existing safety and seismic requirements are complied with.</p> <p>The project is proposing to add enforcement of EE Building Code provisions to this review and approval process. Municipal agencies typically rely on architects, engineers and other third party experts to certify their plans. No new municipal code agencies will be required at the local level.</p>
<p>On the institutional side, the project document gives an extensive account on why the Center for RE Development (CDER) is charged with this initiative (BCA will be created under CDER). Who would be CDER/BCA's "counterparts" at the municipal level? What kind of mandate does CDER have at the municipal level?</p>	<p>The EE Building Code will define the enforcement powers and responsibilities of municipal agencies. However, enforcement will need to go hand-in-hand with mobilization and training for building professionals.</p> <p>It should also be remembered that the Ministry of Housing will play a key role in this process by requiring the adoption of EE measures as part of the technical specifications for social housing.</p>
<p>The first activity of Component 1 is to prepare an Energy Efficiency Law that will give the government (CDER?) the authority to enforce EE building codes. But the EE Law would be much broader building EE and is really beyond the scope of this project. Another activity is to update the CDER bylaws to include an EE mandate, which indicates that CDER currently does not even have a mandate to work in the EE field. Given the nature of this project, we remain concerned whether CDER would be the most appropriate or effective agency to deliver this project. (Which agency oversees construction in Morocco?) At the minimum, we think CDER should obtain the mandate first before they take on this project. It does not seem appropriate to use this GEF project to secure that mandate for CDER.</p>	<p>The first activity under Component 1 has been removed, as the World Bank has financed a TA to prepare an RE/EE law that will cover the EE Building Code. The RE/EE law has been approved by the Government Council and has been submitted to Parliament for ratification. The project will fund the drafting of the necessary implementation decrees.</p> <p>Same goes with the CDER mandate. The World Bank has funded a TA to recast the CDER as a joint RE/EE agency. Extensive consultations with key ministries such as Energy, Finance, Housing, Health and Tourism have validated the CDER as the standard-bearer for this project.</p> <p>As a result, several components initially proposed under this project, including preparation of the necessary regulatory and institutional framework, are being completed in advance of the Execution Phase, allowing a reformulation of the Project Document.</p> <p>It should be further noted that the CDER is working closely with the Housing Ministry which will be responsible for implementation of EE standards in the Housing sector, including the government's social</p>

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
	housing programme.
<p>Component 4 is a bit fuzzy, especially with respect to "executing barrier removal activities". Aren't all activities proposed in this project related to barrier removal? In fact, this component also includes a demonstration program of preparing 10 projects. This subcomponent does not appear to be integrated with other activities of this component. Also, how will the GEF grant be used in terms of "financing and executing demonstration projects integrating EE standards and guidelines"?</p>	<p>While a total of 50 demonstration projects are proposed, at least 10 will be funded by the project. The rest will be funded through the government's budget (housing and hospitals) and private sector investment activity (housing and hotels). As noted above, the demonstration projects will serve to test and validate the proposed EE building standards.</p> <p>The demonstration projects will be funded by the Italian government, and no GEF money is proposed.</p>
<p>There is also a Component 6 in the budget plan (with no GEF fund) but not elsewhere in the project document on EE building code investment (total: 10m). What do these projects do? What's the link between this and the demonstration projects under Component 4?</p>	<p>Under this Outcome (now #5), the government will integrate EE standards as part of its substantial investment program in the housing and hospital sector already programmed. The value of the government's EE investment is estimated at \$8 million. Under this program, the government defines the construction specifications and finances the construction program which is then executed by private builders. This approach will therefore help familiarize residential builders with EE standards, techniques and equipment.</p> <p>Similarly, the hotel sector is expected to invest at least \$2 million in EE measures.</p> <p>The Housing and Health Ministries will want to see the technical data from the demonstration projects to validate the intended savings before they will be prepared to sign off on EE investments on a large scale.</p>
<p>In fact, the project has a very weak logframe (and IC analysis). There is no discussion of baseline under any of the outcomes (it simply says "None"), and there is no mention of CO2 emissions reduction. A clear, meaningful, realistic baseline needs to be established for each of the indicators to measure against. The indicators and targets in the logframe are also underdeveloped and do not cover the range of project outputs and activities.</p>	<p>A full analysis of CO2 emissions reductions is provided in Section II-G and a revised LogFrame is provided in Annex A of the CEO Endorsement Request.</p>

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
<p>Project title: Why adding the word "Towards" in the current project title? It sounds a bit half-hearted.</p>	<p>Developing and implementing building codes is a lengthy and incremental process, as witnessed by the 30+ years spent on this topic in EU countries. For instance rare are the existing building codes in developed countries showing 100% compliance. As a new national policy in Morocco, it was a cautious choice to claim and work "towards" energy efficiency building codes. The project team agrees to clarify the project title.</p>
<p>The estimate of CO2 emissions reduction by the project is extremely questionable. The figures given in the IC Analysis is 7.6 million tons of CO2 (7.5 million tons on the cover page) over 15 years. This, however, is not what this project will achieve. Instead, this is the total potential for CO2 emissions reduction from the housing, health, and hotel sectors in Morocco over 15 years. (Out of the 7.6 million tons, 7.2 million tons comes from the housing sector.) The project needs to provide a meaningful estimate of the direct impact of project intervention in terms of energy savings and CO2 emissions reduction.</p>	<p>The project team has calculated the direct and direct post-project GHG impacts of the project according to the draft GEF manual for calculating GHG benefits of GEF projects. This information is presented in the Incremental Cost Analysis in Section E of the CEO Endorsement Request.</p> <p>Because they are permanent regulations, EE Building Codes have a long lasting effect on a country's ability to reduce energy consumption and related CO2 emissions. The Moroccan EE Building Code will be updated every five years, as is standard practice, thus allowing the government to tighten the regulations and impose more stringent EE measures over time.</p>
<p>Project implementation arrangements: CDER will act as the local Executing Agency. Other government agencies and their responsibilities have been identified. However, the budget plan lists CDER as the responsible party for all project components.</p>	<p>CDER is so far the designated Moroccan implementation agency for Climate Change projects in Morocco for the UNDP.</p>
<p>There is no mention of the role of UNDP or other major stakeholders</p> <p>such as the building and building material industry, equipment manufacturers, trade associations, NGOs, or municipalities. Given the nature of this project, some of these stakeholders should play a key role in project implementation.</p>	<p>The role of major stakeholders is mentioned throughout the two documents, but it is not summarized in a single place. Industry stakeholders will participate in several ways, primarily through their respective trade associations, by: (i) defining and reviewing EE standards requirements within the standards setting body; (ii) reviewing and commenting on the Building Code proposal; (iii) participating in the National EE Commission to influence government policy; (iv) participating as technical experts in the Building Code Unit within the CDER, (v) attending professional training classes so that they can provide expert EE advice to decision-makers and investors; etc.</p>

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
Sustainability	
<p>A key issue of concern is the sustainability of the proposed Building Code Authority. How is it going to survive and continue to carry out its mandate after GEF project? This is even more questionable at the local level. The project needs to address this issue explicitly.</p>	<p>The Building Code Unit is designed as a small technical group with 6 FT staff members, not a large standalone agency. The rest of the technical expertise will be provided by industry volunteers and, during the project phase, outside consultants (mostly Moroccan).</p> <p>With the reorganization of the CDER to include energy efficiency responsibilities (as defined by a new Law on the CDER), the Government has committed itself to providing the necessary budgetary and human resources to allow the CDER to assume its EE responsibilities.</p> <p>As a side-note, the Minister of Energy has already issued directives mandating the CDER to take the lead on EE issues for the government.</p>
Stakeholder Involvement	
<p>The project document provides a list of stakeholders that have been consulted but has no discussion about the content or outcome of the consultation.</p>	<p>Annex A of the Project Document previously submitted to GEF provides a list of stakeholders that were consulted, while Annex B of the same document provides a summary of the outcome of the consultations.</p>
Monitoring and Evaluation	
<p>Part IV of the Project Document contains a standard "UNDP M&E Plan and Budget". However, there is no mention of budget or this project whatsoever. Furthermore, there is no M&E component in the project design, and there is no mention of M&E in the Total Budget and Workplan. This project must comply with the GEF M&E policy at WP inclusion.</p>	<p>The budget for the UNDP M&E Plan is integrated in Output 4.4 . A detailed overview of the M&E Plan is described in Section I-G of the CEO Endorsement Request.</p>
Financing Plan	
<p>It is not clear from the project budget table (or the project components/outcomes) what activities GEF will finance and what co-financing will pay for. This needs to be clearly explained and linked with IC analysis.</p>	<p>Section III page 39 of the Project Document already submitted to GEF shows the budget allocation per activities. A more detailed budget can be made available.</p>

COMMENTS FROM GEF SECRETARIAT	RESPONSE FROM UNDP-GEF
Review by Export from STAP Roster	
Response to STAP expert review has been provided (by a project consultant?). On a number of points, the response states that the project team is not in a position to address the issues but will look into them during project implementation. We suggest that the project team seek further guidance and suggestions from the reviewer on those points.	<p>Energy usage for a number of existing hospitals and hotels is well understood based on previous technical audits and surveys conducted during the preparation phase. Energy consumption data for households is also well understood at the aggregate level, but the evolution of energy demand based on <u>future</u> heating and air conditioning usage is more difficult to forecast.</p> <p>On some points raised by the STAP reviewer (such as the need to address laboratory fume hoods in Hospital), the project welcomes the suggestion, but admits that such issues have never been mentioned by any party during the preparatory phase. Hence the project team does not believe it is in a position to assess such data.</p>
On the issue of using kWh to report energy savings: it would be helpful to add another unit such as tons of oil equivalent for clarity and reporting purpose.	This has been clarified in Section II-G of the CEO Endorsement Request, where TOE equivalents are provided.

GEF Council

GEF Council's Comments and IA/ExA Response.

Comments from GEF Council	Response from UNDP-GEF
<p>The project appears relevant at a time where the Moroccan government is:</p> <ul style="list-style-type: none"> • Supporting the construction of 100,000 housings each year to alleviate slums development. Recent technical studies have shown that with an extra investment cost of 2 to 3% on new low-cost housings it is possible to reduce the yearly energy consumption for heating and cooling by about 35%; • Renovating 127 public hospitals facing major energy problems for hot water supply, heating and air conditioning • Launching the "Plan Azur" for the hotel sector aimed at receiving 10 million tourists per year. The challenge being to provide highly competitive hotel services while reducing unit operating energy costs. 	<p>At the National Energy Day hosted by the Ministry of Energy in Rabat on October 20, 2006, the Prime Minister announced that the government's energy policy would rest on three pillars, one of which is "Renewable Energy and Energy Efficiency".</p> <p>Since then, the Government has moved quickly to put in place the necessary regulatory and institution framework. A Law on Energy Efficiency and Renewable Energy was approved by the Government Council, and it will soon be submitted to Parliament for approval. Another law has been drafted to modify the statutes of the CDER so that it covers both renewable energy (its current mandate) and energy efficiency (a new mandate). Both laws will remove major hurdles by providing the necessary legislative authority for the government to develop and apply an EE Building Code.</p>
The project document is consistent with a good	In accordance with the GEF templates, a more detailed

Comments from GEF Council	Response from UNDP-GEF
<p>analysis of existing barriers for energy efficiency in the Moroccan construction sector (housing, health and tourism). The six project components are complementary and useful. The description of the activities is rather short with limited data and information but demonstrates a good understanding of the issues to be solved and pragmatism in the proposals, taking into account the specific Moroccan context.</p>	<p>explanation of the different project components and sub-components is provided in the Project Document (as opposed to the Executive Summary which was provided to the Board).</p>
<p>Regarding project organization, a steering panel has been foreseen including most stakeholders, while the actual project implementation unit is given to the Centre de Développement des Energies Renouvelables (CDER) in Marrakech which, so far, has no significant experience in the topic and will build from scratch an Energy Efficiency team for the building sector. This public organization, placed under the Ministry of Energy and Mines, may lack of initial recognition by the key ministries directly involved in the building activity and the professional public and private actors and organizations. It would be worth to consider various options for project organization ensuring a more direct participation of key actors in the project team at management and technical levels.</p>	<p>From the start of the project, extensive consultations were conducted with relevant line ministries (Housing, Health, Tourism, Finance, etc.) and professional associations to ensure the EE Code proposal had strong buy-in. The Moroccan Industrial Standard Bureau (SNIMA) in charge of standards development in Morocco is a well established institution that will lead key components of the project.</p> <p>During the Preparatory Phase, the project team was careful to discuss project implementation with the representatives from the line ministries, who all agreed that the CDER should be designated to manage the project as the technical agency in the Moroccan government with the most experience in Energy Efficiency (e.g., solar water heaters, energy efficient cooking stoves, energy efficient boilers for hammams).</p> <p>Under a series of policy reforms stimulated by the World Bank during the last months of 2006, the CDER is being given new responsibility of energy efficiency. The CDER will become the Center for the Development of Renewable Energy and Energy Efficiency. Under its new status and mission, the CDER has now full legitimacy to lead and manage the present energy efficiency building codes project.</p> <p>Project stakeholders agreed that a national Steering Committee would be set up during the Execution Phase to provide overall direction to the CDER on the strategic direction and priorities of the EE Building Code project. This Steering Committee, chaired by the Ministry of Energy, will regroup participating line ministries, as well as professional associations (e.g., Order of Architects, National Building Federation) and other interested parties (e.g., National Architecture School).</p>
<p>Project risks are well identified at institutional and technical levels. There is significant uncertainty regarding the capability of municipalities to enforce new building</p>	<p>The objective is to have both <u>compulsory</u> and <u>voluntary</u> building regulations. Given past failures to adopt building regulations (e.g., seismic code), private developers and architects have made it clear that they</p>

Comments from GEF Council	Response from UNDP-GEF
standards, taking into account existing constraints. The project aims at promoting voluntary EE initiatives from stakeholders as a starting point, which seems pragmatic but insufficient to achieve proposed EE project objectives. Compulsory building regulations will have to be promulgated and effectively implemented, which will need political will and resources for its enforcement. The project aims to address these constraints through a large package of information, training activities and demonstration projects.	want a gradual approach to EE regulations. This approach, which entails introducing modest regulations at first, will also help ensure that municipal authorities are able to develop the necessary administrative and technical skills to properly enforce the new regulations. More importantly, the private sector expects the government to lead by example. In this respect, the Ministry of Housing has agreed to adopt several voluntary EE standards in its housing construction program. Given its substantial housing program (100K units p.a.), the government will be a major driver in the adoption of both compulsory and voluntary EE standards.
The project is, on the whole, good, addressing a key topic for Morocco development and environment protection. Limited foreign cooperation was received in the past; France and Italy have pledged financial support for its implementation. GEF project support is justified as this project is entering clearly in its priority area.	Agreed. The CDER has existing partnership arrangements with foreign EE agencies such as the French ADEME. However the pledged financial support once expected from the Fonds Français pour l'Environnement Mondial will not materialized.
Favourable opinion: a complementary preparation is suggested to compare options on project organization, describe in more details project activities, and provide clarification on financing modalities of each partner.	As indicated above, more detailed information on project components and subcomponents is provided in the Project Document (as opposed to the Executive Summary provided to the Board).

STEP Review

STAP Expert Review (Mr. Evan Mills) and IA/ExA Response.

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
Technical Comments	
It is good to see the technical sophistication of the proposed project. For example, the importance of thermal distribution (often overlooked in simplistic building codes) is recognized. Building commissioning—a highly recommended quality assurance process with well-documented energy savings in new construction and renovation—should also be included. This is a way to both maximize energy savings and minimize project risks.	The project team recognizes the value and benefits of building commissioning. However in a country like Morocco, the team considers that the ingredients are not yet in place to introduce such scheme. The team believes that the context will be more favorable for the introduction of a building commissioning process at the completion of the project. An assessment of the suitability and impact of building commissioning has been

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
	reflected in Output 2.1, under which the EE Building Code regulations will be drafted.
It is also good to see that building envelopes and equipment performance are considered jointly. I suspect that air conditioning demand is growing faster than the building stock itself, as comfort expectations are raised and more and more sources of cooling loads (e.g. computers) are introduced into premises not originally designed with air conditioning. This might merit mentioning. The proposed codes and standards will aid in curbing this phantom growth in cooling energy.	The project team recognizes the thermal loads generated inside the buildings. References to thermal loads have now been incorporated in the Executive Summary and the Project Document.
For uninitiated readers, it may be helpful to add a brief note establishing that building codes and standards have achieved substantial and well-documented energy savings in other countries. There is a long tradition of effort that can be drawn upon.	This comment has been incorporated into the Executive Summary and the Project Document.
With that in mind, it is no doubt true that the target building types in Morocco are more energy intensive than need be. If data are available, it might help reinforce this point if weather-normalized comparisons of energy intensities can be made between Moroccan buildings and those in countries where energy efficiency codes already exist.	The project team regrets to not have been in position to access data in order to perform some benchmarking with other countries. As the project develops, the proposed set of project indicators should progressively allow for such international benchmarking.
Laboratory-type spaces are typically an important source of energy use in hospitals, and are integral to the overall HVAC systems that this proposal intends to address. Thus, I would recommend giving brief mention to these spaces and an expression of the intent to address the associated loads. Laboratory fume hoods are the key end use to address in this regard, each hood using as much energy as three or four energy-intensive (American) households, and probably 10-times as much as the typical Moroccan home. Many well-proven strategies exist for reducing energy use by 25-50% while maintaining or even improving worker safety.	The project team has not been in position to access data at the level of energy consumption from fume hoods in hospitals. However it is a good suggestion to address them, especially if there are some good international practices to improve the energy efficiency of such system. This important point is included in the Project Document.
To successfully approach this end use, it would be wise to include the appropriate national health and safety bodies in your stakeholder group.	The project team relied on consultations with the Director of Hospitals at the Health Ministry and the Technical Director at the Housing Ministry to assess the health and safety impact of the proposed program on hospitals and social housing. However, the project team notes the excellent suggestion and has added the national health and safety bodies to the stakeholder group to be included during the execution phase.
Reference is made in a few places to solar water heating.	The GEF project PROMASOL aiming at the

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
<p>Clarification would be welcome as to whether or not this falls within the codes and standards to be developed.</p>	<p>promotion of Solar Water Heaters (SWH) in Morocco is mentioned in both document (Executive Summary, page 15 and Project Document page 8 and 10). The SNIMA (the Moroccan standards body) has already developed and introduced SWH standards. In future revisions, solar water heater requirement could indeed be integrated in building codes.</p>
<p>Computer tools are widely used for both training and real-world application of the kinds of analysis needed to develop as well as implement standards. This is not mentioned in the proposal, but I would encourage adding an activity to adopt or modify existing computer tools and/or create ones specifically for the target market, and to foster their use among stakeholders.</p> <p>Of relevance to the preceding point, the proposed strategy appropriately recognizes the need to establish baselines prior to introducing EE standards. This is important not only for evaluating energy savings but also to the process of standard development itself. These models can be systematically used to perform parametric analyses of energy efficiency options as a means of identifying appropriate and cost-effective energy efficiency improvements to call for in the code (if the code is prescriptive) or to validate the real-world feasibility of mandating specific energy use intensities (if the code is performance based). I recommend that the project strategy include this prototype development and parametric analysis process, with calibration and validation using the real-world case studies.</p>	<p>Annex C of the CEO Endorsement Request notes that two computer simulation experts will be hired to develop a model for evaluating a building's energy consumption under a variety of scenarios, using existing software tools that will be adapted to the Moroccan environment.</p>
<p>The terms “energy” and “electricity” often appear to be used interchangeably and, sometimes ambiguously in the documents.</p> <p>The price of oil is mentioned frequently, but the degree of oil use in the target sectors is not discussed.</p> <p>The choice of “kWh” as the units for total energy is confusing. At a minimum, clearer note of this convention should accompany the tables.</p>	<p>This has been clarified in Section II-G of the CEO Endorsement Request, with potential energy savings measured in both kWh (since it is electricity which is being economized) and TOE.</p>
Program Design	
<p>While it is clearly stated in the details of the proposal, I would recommend more strongly emphasizing the timeliness of this project in the Executive Summary. There is clearly an important window of opportunity (and potential lost opportunity) for acting now, as major plans are already underway out for expanding the</p>	<p>The project documents have been reinforced in that direction.</p>

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
housing stock, and renovating hotels and hospitals.	
It is good to see that you have built in a regular process of review and revision/update of the codes. This is an important lesson learned from past experiences. For the uninitiated, it may be wise to explain briefly why this is so important (i.e. to keep pace with changing technologies, practices, energy prices, etc.).	See remarks above.
Some clarification of the distinction between Outcomes 3 and 4 would be helpful.	Outcome 3 focuses on drafting the building code and preparing the necessary regulations. Outcome 4 aims to set the technical requirements for EE standards, not all of which may necessarily be included in the first version of the building code. The heading for Outcome 4 has been clarified.
Brief mention is made to other GEF projects in the region that address EE regulations. More could be said about this, and the linkages with the proposed project made more explicit.	There are indeed two regional GEF projects being developed for the Arab States, one on thermal building codes, one on appliance standards and labels. If both projects are approved, then Morocco will benefit from a faster access to foreign experience in building codes implementation.
I appreciate the value of launching this as a voluntary standard, and, indeed, this has been done elsewhere. Other countries have had success with launching new standards as mandatory for the government sector (“leadership by example”) and voluntary for the private sector. Some allusion is made to this in the proposal, but the strategy could be clearer.	During stakeholder meetings, private sector representatives made that very point. They expect the government to lead by example by incorporating voluntary standards as requirements in government social housing and hospital renovation projects. This point has been clarified in both documents.
The terms “demonstration projects”, “case studies”, and “pilot projects” seem to be used interchangeably. If this is the case, I would recommend standardizing on one term. If these are in fact different activities, the distinction should be made more clearly.	The preferred term is “demonstration projects”. However, the reference to “case studies” has been maintained when the energy savings from demonstration projects have been documented in specific project profiles.
It is good to see that the proposed standards will apply to major renovation as well as new construction. It might be noted that other countries have established ordinances specific to renovation. As the costs and savings associated with energy efficiency measures can differ when compared to new construction, it would be prudent to evaluate these two situations separately and, possibly, establish different standards.	Building codes for new construction are indeed likely to be different than building codes for major renovations. The project documents have been modified to reflect this.
It is good to see a strong training component in this	Excellent suggestion from the reviewer. This

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
<p>proposal. I would recommend a modest expansion of the target audience to include vocational schools, where the next generation of architects, mechanical contractors, and building operators are being trained.</p> <p>Code enforcement officials are mentioned in a few places, but I would encourage giving more emphasis to this group as a target of the training and other barrier-removal activities.</p>	<p>request was indeed made by representatives of the architectural and engineering schools during the preparatory phase, and this reference has been reinforced in Output 4.1.</p>
<p>A significant amount of preparatory work has clearly gone into the development of this proposal, including many meetings. It would strengthen the presentation to include a list of individuals and institutions that were consulted or otherwise provided input. This would include the 55 private sector representatives mentioned on page 47.</p>	<p>The list of 55 individuals interviewed as part of the market assessment was not communicated by the consultant and cannot be included in time for this document. However, the list of stakeholders consulted for this project has been provided in Annex A, p. 36, of the Project Document previously submitted to GEF, along with a summary of major findings.</p>
Barriers	
<p>To the well-formulated discussion of barriers, it may be helpful to add some brief discussion on barriers unique to each of the three target building types.</p>	<p>Excellent suggestions from the reviewer. The section on barriers has been updated.</p>
<p>The Executive Summary (page 6) mentions the limited availability of building components and construction supplies as a known barrier. More attention should be given to this in the program design. Are import duties a barrier to the importation and affordability of high-efficiency components?</p>	<p>The market for imported high-efficiency components in Morocco remains limited for cost reasons, especially in the housing sector. Project stakeholders have clearly stated the need to draft an EE Building Code with targeted requirements to ensure that it is consistently applied throughout the country. Further iterations of the code can raise the bar.</p> <p>The Ministry of Finance indicated that it would most likely not consider any request for lifting/reducing import duties at a time of budget restrictions.</p>
<p>Several “Cost Barriers” are mentioned on page 8 of the main proposal. Is there a role for innovative financing in addressing these barriers?</p>	<p>The role of innovative financing has been extensively discussed during the preparatory phase. As no clear scheme has emerged, the project team proposes not to tackle innovative financing during this project. This will maintain the project focus on regulatory/ institutional reforms and capacity building. However the CDER has requested that innovative financing be addressed through a specific future GEF project.</p>

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
Project Risks	
More emphasis should be made (e.g. on page 21) on the intrinsically low risk of this project, i.e. energy savings achieved through codes are more certain and sustained than those achieved through voluntary programs. This point could be included in the Executive Summary as well.	Point well taken. Text has been clarified in Project Document and Executive Summary
The adequate operation and maintenance of building systems is a key technical risk that is not mentioned. Building commissioning, retro commissioning and training are one way to manage this risk. That is to say, energy savings cannot be taken for granted and maintaining the savings over the long time horizon covered by your Incremental Cost Analysis requires effort beyond establishing the standards.	Elements for building commissioning is now included in the project document (section Output 3.3). In addition, the project proposes monitor energy usage at demonstration buildings to understand how energy consumption patterns evolve over time.
Incremental Cost Analysis	
As the Incremental Cost Analysis a highly important component of any GEF proposal, I would recommend that more detail be provided on the assumptions and methods used to obtain the energy savings estimates. For example, a range of 15% to 35% savings is mentioned in passing, but the source of this information is not given.	The sources are now included in project document. These estimated savings were calculated by project consultants from a variety of sources, including: (i) previous EE studies commissioned by the CDER and other agencies, and (ii) technical analysis of a number of proposed demonstration projects.
Assumptions about the baseline (non-program case) and ramp-up of program penetration should be noted (i.e. how many years of savings are assumed per building over the entire program timeframe). Is any discounting of future economic savings assumed?	CO ₂ emissions reductions are calculated over a 15 year timeframe. Total EE investments are calculated in current dollars and have not been discounted.
The targets for hospitals and hotels (particularly given the Azur Program) seem conservative in that they only refer to part of the existing stock of buildings. Aside from the noted renovation plans, is there no new construction of these facility types planned over the timeframe of this project?	<p>There are only 127 public hospitals in Morocco. We have conservatively assumed that 75% of hospitals will meet EE standards. Private hospitals are significantly more energy efficient than public hospitals, but they can be expected to adopt some of the more EE innovative measures.</p> <p>Under the Azur program, the government expects 6 new hotel resorts to be built representing a total of 120,000 new hotel beds. These resorts will be built by large international hotel groups that can be expected to incorporate EE measures as part of their normal construction standards. The emphasis will therefore be on improving energy efficiency at older hotels.</p>
The program timeframe is not clear. In several places,	There is no more reference to 25 years.

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
15 years is given but in Annex B reference is made to 25 years.	
PAGE-SPECIFIC COMMENTS – Executive Summary	
Page 2, the first paragraph says that energy use in Morocco remains low by regional standards, but then cites even lower numbers for Tunisia and Algeria. This is confusing. The same statement is made in the main proposal.	The average electricity consumption per capita is 552 kWh/year (and not 5522 kWh/year) for Morocco. The reference has been removed from the two documents for the sake of clarity.
Page 8, second full paragraph. Mentions “administrative offices”, which is confusing since this type of facility does not appear to be among those targeted by the program.	We expect the government to implement EE standards in most of its buildings, including administrative offices, schools, etc. However, the reference has been removed to avoid any confusion.
Page 8 third full paragraph. It seems that the same point probably applies to government provided housing. If so, this might be mentioned.	This has been clarified.
Page 9, fourth bullet. This very brief mention of a “certification program” should be better explained/elaborated.	This has been clarified.
Page 11, last paragraph. Mention of “retrofitting of existing buildings” is confusing, as this does not appear to be the goal of the proposed project. Perhaps it is simply the waste associated with “renovation” that is being described, in which case the choice of words could be adjusted for clarity.	This has been clarified.
Page 20 (table). Under item 2, in the “Baseline” column it could be stated more explicitly that there are no existing EE regulations in Morocco.	This has been clarified.
Page 22-23 – Annex B. Quantitative targets could be given (e.g. xx% reduction in energy use intensities). Also (and I may have missed it), but noncompliance with codes is certainly an important risk/assumption.	<p>We considered, and rejected, quantitative targets for energy intensity. The percentage of Moroccan housing and hospital units that are heated and/or air conditioned is sufficiently low to render average measurements inadequate.</p> <p>Code non-compliance has been highlighted as a key risk.</p>
PAGE-SPECIFIC COMMENTS – Main Document	
Page 4, second paragraph. The \$1 billion in energy costs might be put in some perspective, e.g. as a fraction of total government budgets or GDP.	This has been clarified. The subsidy represents 5.4% of the 2006 government budget.
Page 10, bullet (iii). Logic not clear. Won’t private and	Public hospitals are far behind private clinics in

COMMENTS FROM STAP REVIEW	RESPONSE FROM UNDP-GEF
public clinics <i>also</i> be achieving higher efficiency as a result of this program? If so, where is the competitive advantage?	terms of service quality. For example, less than 20% of public hospitals have hot water and heating for patients and medical staff because of malfunctioning boilers. The expected gain from adopting EE standards will therefore be greater in public hospitals, especially since Morocco has received sizeable contributions from European donors to renovate a number of hospitals
Page 10, bullet (v). Lighting is hardly mentioned in the proposal and it is not clear whether this is in or out of the proposed codes. If lighting is included, then one important component of your strategy could be to evaluate and perhaps revise the illuminance standards currently in use in Morocco (if any) and compare those to international standards. Overlighting is an easy source of energy waste to address with codes/standards.	For lighting, two main activities are considered: (i) standards for fluorescent lights, and (ii) installation of motion/infrared detectors to turn light on/off after hours. Illuminance standards are probably too ambitious for Morocco at this time.
Page 20, section 4.2. The budget for this task seems very small, especially if foreign consultancy services are to be employed.	In consultation with the CDER, the budget was increased by \$50,000 during final discussions. Moroccan consultants will be utilized for this outcome as there are several energy audit bureaus capable of doing this work.
Page 20, second bullet under 4.3. The correct name is “International Performance Measurement and Verification Protocol (IPMVP)”.	This has been corrected.
Page 22, Table 1. Many surveys are mentioned. How are these funded? Is adequate budget provided?	The surveys will be funded under Output 4.3. This has been clarified, and the budget readjusted to reflect this activity.
Page 27, last bullet. Is the “Green Rating System” part of the proposed project? If so it should be described in more detail.	This has been clarified.

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT

<i>Position Titles</i>	<i>Outcome</i>	<i>\$/ person week</i>	<i>Estimated person weeks</i>	<i>total</i>	<i>Tasks to be performed</i>
For Project Management					
Local					
Project Coordinator	6	957.69	208	199200	Provide project coordination on daily basis, maintain project records, and provide progress reports to Impl and Exec Agencies
Project assistant	6	\$450	208	93600	Assist the project coordinator on day to day tasks
For Technical Assistance					
Local					
Thermal Engineers (2)	4	\$1,000	100.2	100200	Provide technical advise on energy efficiency of building envelope
Climate Zone Experts (2)	2	\$1000	120	120000	Analyze Moroccan climate zones and create climate map
Architects (3)	1	\$1,200	150	180000	Provide technical expertise on EE standards/ measures related to building concept, design and placement
Building Engineers (3)	1	\$1,000	150	150000	Provide technical expertise on EE standards/ measures related to building construction
HVAC Engineer	1	\$1,000	50	50000	Provide technical expertise on EE standards/ measures related to HVAC (heating, ventilation and air conditioning)
Lighting Engineer	1	\$1,000	50	50000	Provide technical expertise on EE standards/ measures related to lighting systems
Electrical Engineer	1	\$1,000	50	50000	Provide technical expertise on EE standards/ measures related to building electrical networks
Building Material Engineers (4)	1	\$1,000	300	300000	Provide technical expertise on EE standards/ measures related to building materials
Market Research Specialists (2)	2	\$1000	118	118000	Inventory building materials and equipment currently available in Morocco, along

<i>Position Titles</i>	<i>Outcome</i>	<i>\$/ person week</i>	<i>Estimated person weeks</i>	<i>total</i>	<i>Tasks to be performed</i>
					with price and technical characteristics
Computer Modelers (2)	4	\$900	60	54000	Develop computer model for in-building energy consumption simulation for LPEE (Moroccan national testing lab)
Technical Advisor to Project Steering Committee	4	\$1,000	75	75000	Advise Project Steering Committee on general technical issues related to EE building code
Lawyer (2)	3	\$2,000	40	80000	Review all regulatory work and codes for conformity with Moroccan law
Economist	4	\$1,000	40	40000	Calculate rate of return on proposed EE standards/measures
Trainers (3)	2	\$1000	180	180000	Responsible for communicating and disseminating key learnings from research and testing programme to representatives from trade associations, etc.
International					
EE Building Code Specialist	3	\$3,000	51.66	155000	Advise CDER on EE building code structure and draft EE building code
Institutional Advisor	4	\$3,000	40	120000	Advise CDER on setting up and managing Building Code Unit according to international standards
Regulatory Expert	4	\$3,000	25	75000	Draft implementation decrees under RE/EE Law to enable application of building code to Morocco's building industry
Quality Control Auditor	4	\$3,000	60	180000	Validate research methodology, test results and EE standards according to international best practices
Standardization Expert	4	\$3,000	40	120000	Adviser to SNIMA (Moroccan standards body) on creating EE standards that are aligned on international best practices

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.

The objectives of the PPG have been achieved through the following activities:

Component 1

- (1) Draft legal statute for Energy Efficiency Code Authority
- (2) Proposal on organizational structure and responsibilities for Energy Efficiency Code Authority
- (3) Proposal for operational modalities for inter-agency regulatory taskforce
- (4) Analysis of existing building code regulatory efforts in the Maghreb
- (5) Workshop with key government stakeholders
- (6) Development of risk mitigation strategy for energy efficiency building codes
- (7) Performance and monitoring indicators for project

Component 2

- (8) Briefing book on energy conservation proficiency/interest among building professionals
- (9) Mobilization and outreach strategy
- (10) Marketing plan and project development services
- (11) Interim and final workshops with key private sector stakeholders
- (12) Organized media introduction of building code proposal.

Component 3

- (13) Outline of pilot Compensation Window proposal
- (14) Draft legal statute for pilot Compensation Window
- (15) Financing mechanism for pilot Compensation Window

Component 4

- (16) Detailed integrated Implementation Plan for proposed full-scale GEF project.
- (17) Briefing book on potential EE building code project portfolio
- (18) Development of risk mitigation strategy for meeting GEF objectives
- (19) Analysis of incremental costs and emissions from the proposed project portfolio

As noted below (in section B), it was decided not to pursue a pilot Compensation Window (Component 3) as the barriers to the adoption of EE standards were determined to be institutional, regulatory and technical rather than financial. Much of the EE investment will be done in conjunction with new construction, and the EE incremental cost will simply be integrated in the overall building construction budget. This conclusion was finalized after the Consultant has done a thorough study of Morocco's financial market and proposed several different models based on the experience of other countries with Compensation Windows.

B. DESCRIBE IF ANY FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION.

The original PDF-B proposal had considered the idea of putting in place a pilot Compensation Window designed to support the financing of EE measures in the building sector. After careful review of the Consultant's detailed findings and recommendations, the proposal was put aside for several reasons: (i) the Moroccan banking sector is in good health and has the financial resources to provide project financing to qualified borrowers in the building sector such as real estate developers and hotel operators; and (ii) most of the EE standards will be applied to new construction projects; as a result, the incremental cost of EE measures will be included in the overall construction cost that is being financed through traditional channels.

A second key learning concerned the pace of introduction of new EE standards. Rather than introduce EE building standards that seek to quickly match current European or U.S. regulations, the private sector representatives who participated in project workshops emphasized the importance of gradually introducing new EE standards. Just as it took the EU and the US over 30 years to achieve the level of energy efficiency that they currently enjoy in the building sector, it will take several decades for Morocco's building sector to fully integrate all the new standards, measures, materials and technologies that exist.

Lastly, the private sector emphasized the importance of the government, as the biggest landlord and real estate investor in the nation, leading by example with the integration of EE measures in its various construction programs. An inter-ministerial committee was therefore proposed to coordinate the integration of EE considerations in the sectoral programs of key line ministries such as Housing, Health and Tourism.

C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:

<i>Project Preparation Activities Approved</i>	<i>Implementation Status</i>	<i>GEF Amount (\$)</i>				<i>Co-financing (\$)</i>
		<i>Amount Approved</i>	<i>Amount Spent To-date</i>	<i>Amount Committed</i>	<i>Uncommitted Amount*</i>	
Designing a technical legislation unit for energy codes in residential buildings	Completed	70,000	72,000	0	0	
Developing a mobilization and awareness plan and integrated approach for the global project management	Completed	95,000	113,000	0	0	
Designing a compensation mechanism (Guichet de compensation).	Completed	45,000	45,000	0	0	
Defining a strategy for the viability for the thermal legislation code and drafting the project brief.	Completed	65,000	45,000	0	0	
Monitoring of the project by UNDP	Completed	0	0	0	0	
Total		275,000	275,000	0	0	

* Uncommitted amount should be returned to the GEF Trust Fund. Please indicate expected date of refund transaction to Trustee.



UNDP Project Document

Government of the Kingdom of Morocco

United Nations Development Programme

Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco

Brief description

The primary objective of this project is to introduce mandatory minimum energy efficiency (EE) performance requirements in the residential sector through the introduction of an EE building code. A secondary objective is to institutionalize the adoption of EE standards and practices in the commercial and hospital sectors in Morocco. The activities proposed in the project are designed to: (i) remove legal, regulatory and institutional barriers to the adoption of an EE building code; (ii) promote a policy dialog among government agencies, industry professionals and developers/landlords on a national EE building initiative; (iii) develop a clear set of EE standards for new residential constructions; (iv) increase the acceptance of EE standards and practices by industry professionals, developers and landlords; and (v) encourage demonstration projects to demonstrate the efficacy of proposed standards. The project will assist the government of Morocco in launching its national EE initiative and will stimulate public/private partnerships for integrating EE considerations in public and private building construction/renovation programs.

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ACRONYMS

AMISOLE	Moroccan Association of Solar and Wind Industries
APC	Commercial Partnership Insurance
BCU	Building Code Unit
CDER	Center for the Development of Renewable Energy
DEER	Directorate of Electricity and Renewable Energy
DH	Moroccan Dirham
DSM	Demand Side Management
EE	Energy Efficiency
ESCO	Energy Service Company
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HVAC	Heating, Ventilation and Air Conditioning
IMET	Italian Ministry of the Environment and Territory
IPMVP	International Performance Measurement and Verification Protocol
IW	Inception Workshop
MEM	Ministry of Energy and Mines
MEPS	Minimum Energy Performance Standards
MW	Megawatt
ONE	National Electricity Company
PERG	Global Rural Electrification Program
PIR	Project Implementation Review
PROMASOL	Moroccan Program for Promoting Solar Energy
RCU	Regional Coordinating Unit
RE	Renewable Energy
REDAL	Power Distribution Company in Rabat
SC	Steering Committee
SNIMA	Moroccan Industrial Standards Bureau
TOR	Terms of Reference
TPES	Ton of Primary Energy Supply
TSC	Technical Standards Committee
TSO	Transmission System Operator
UNDAF	United Nations Development Assistance Framework
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNDAF	United Nations Development Assistance Framework

SECTION I: ELABORATION OF THE NARRATIVE

PART I: Situation Analysis

Context and Global Significance

Morocco's energy consumption continues to grow rapidly each year. Morocco must import over 97% of its energy, and existing subsidies for fuel prices are expected to cost the Government of Morocco close to US\$1 billion in 2006, representing 5.4% of the government budget. It is going to be difficult for the country to sustain current growth trends given on-going energy price levels.

Morocco has yet to develop a national EE policy and lacks the proper regulatory and institutional framework to launch a comprehensive national EE program. This problem is particularly acute in the housing and service sectors which represent 25% of the country's energy requirements. In the electricity sector, the growth in demand exceeds the most aggressive forecasts of the Ministry of Energy and Mines (MEM). The national consumption of electricity has been growing at 7%-8% per annum over last few years, compared to GDP growth in the 3.0-3.5% range.

The government is therefore concerned about on-going energy expenditures by government agencies, private enterprises and households. While a number of energy efficiency (EE) programs have been put in place with donor assistance for Morocco's industrial sector, the housing and service sectors have not received much attention until recently. Building codes represent a well-known and robust component of any energy efficiency policy. They generate substantial energy savings in countries where they have been implemented with care.

The lack of EE standards for the construction sector means that new residential constructions and renovations of existing buildings in the service sector are undertaken with minimal concern for the energy efficiency of building materials, construction techniques, HVAC equipment, etc. This is particular true for three key strategic areas that account for much of the construction activity in Morocco: housing, healthcare and tourism. There clearly exists a window of opportunity for an EE Building Code in Morocco as major plans are already under way for expanding the nation's housing stock, renovating public hospitals, and developing new hotel complexes.

It is estimated that 15% or higher of the energy consumption of these sectors could be saved by the introduction of the proper set of EE measures in existing buildings, including building codes and minimum energy performance standards (MEPS). Morocco's Climatic conditions as well as the growing use of Information and Communication Technologies inside buildings, contribute to an ever growing demand for air conditioning in buildings. The future building codes and standards will help curbing these cooling loads.

Despite these challenges, there is a strong sense among government officials, construction professionals and investors/operators that minimum EE performance standards must be developed and introduced. The private sector has clearly indicated that it is looking to the public sector to take the leading role in several areas: (i) develop clear EE standards that are

universally applied in the residential building sector; (ii) integrate EE standards in the government's various construction and investment programs (housing, healthcare, etc.); and (iii) communicate the national importance of EE initiatives for buildings.

In the housing sector, poor building design and the lack of proper insulation is forcing apartment dwellers in all income categories to rely on space heaters in winter and portable air conditioners in summer to regulate indoor temperature, putting pressure on household budgets. The Ministry of Housing, which has targeted the construction of 100,000 public housing units each year, has asked for the support of this project to develop and integrate basic EE standards in the Ministry's construction standards. On the other end of the socio-economic scale, leading developers have asked for assistance in creating a uniform set of standards and a certification process for energy efficient apartments.

The Ministry of Housing is increasingly putting the emphasis on EE building codes and construction standards, for the simple reason that it is much easier to implement energy efficiency practices during the design and construction phase rather than retro-actively retrofitting the buildings after apartment residents have moved in. Adding 100,000 housing units each year in Morocco – per the current government intention -- represents and investment challenge but also an overall social welfare management issue given the efforts to reduce inequities and build a sustainable Moroccan middle class.

In the healthcare sector, the country's public hospitals are undergoing major renovation projects to upgrade the healthcare infrastructure and improve the quality of health services. The Health Ministry is seeking to improve the competitiveness of public hospitals to prepare them for the introduction of universal health care under which they will be forced to compete with private hospitals. Since many hospitals operate on limited budgets, improving the quality of healthcare can only happen if energy costs are brought under control in such areas as hot water service, lighting, heating, air conditioning, etc.

As an illustration, fume hoods in hospital can be designed and operated in a much more energy efficient manner. It is estimated that a single fume hood in Marrakech uses approximately \$4300/year in energy (32,000 kWh of electricity—and 6.7 kW of peak power—and 56 MWh of thermal energy).

Only 20 of Morocco's 120 major hospitals are estimated to have hot water for basic services, in effect increasing the likelihood of sanitary hazard. As the government's announced universal health care program is launched, public hospitals seek to upgrade the quality of their services and the government now understands that patient comfort and ready availability of hot water will, in many ways, improve the overall quality of medical services. Also, given that public hospitals are being given greater management autonomy by the Ministry of Health, it is sensible to assume that the process of getting approval from the hospital's board of directors to support energy conservation will be simplified.

In the tourism sector, increased price competition with other international tourist destinations around the Mediterranean is forcing hotel operators to closely manage operating expenses. The push by the government to attract foreign investments in this sector (tied to the government's Azur plan for hosting 10 million tourists by 2010) is creating an opportunity to ensure that EE standards are integrated within the minimum requirements for such projects.

Past initiatives have concentrated primarily on the industrial sector, looking at ways to improve industrial production processes and equipment efficiency. The Center for the Development of Renewable Energy (CDER) has been involved in such projects, working closely with industry representatives, foreign donors and equipment manufacturers. On the residential side, the CDER has launched an ambitious project to standardize solar water heaters and stimulate bank financing in partnership with suppliers. This initiative, although small in scale, has demonstrated how public-private partnerships can be built to support public EE initiatives in the private sector.

Given its role as the nation's largest landlord and its main real estate investor (through investment programs in the health and housing sectors), the government has a key role to play in "leading by example". While EE standards may remain voluntary during a transitional phase, the government intends to transform the market by incorporating EE standards as core requirements for its building construction and renovation projects.

The government also understands the importance of developing a multi-sectoral approach for promoting EE standards. By integrating EE considerations within each of the sectoral programs of participating ministries (Housing, Health, Tourism, etc.), the government can ensure that EE initiatives are scaled up as part of the government's on-going sectoral programs. This approach avoids the piece-meal approach of previous programs by making EE standards and processes an integral part of sector initiatives.

Barrier Analysis

The market for energy efficiency investments in Morocco remains fragmented, despite some relative successes in introducing energy conservation technologies in such sectors as heavy industry. Key players such as professionals (architects, builders), local manufacturers, importers, technical bureaus and real estate developers find it difficult to invest time, money and resources in a sector where demand seems to remain low and uneven.

The service sector market remains largely untapped due to a number of barriers that impede the development of an explicit national program on energy efficiency in the service and housing sector. These barriers include:

Legal and regulatory barriers

A significant legal barrier is currently being removed by Morocco with the passage of a new Law on Energy Efficiency and Renewable Energy that provides the legal basis for a mandatory EE building code (as well as other EE initiatives such as minimum energy performance standards for appliances). As a result, the Ministry of Energy will have the legal authority to impose EE regulations in the building sector.

It should be noted that this Law on Energy Efficiency and Renewable Energy, developed as a result of initial consultations between the project team and the government, is just the first step toward implementation of an EE building program.

Regulatory barriers remain, as the Ministry of Energy is now required to develop, with the CDER's help, the necessary implementation decrees to mandate EE standards for new construction and for building renovations. Neither the Ministry nor the CDER have the necessary regulatory experience and technical expertise to draft these decrees.

Institutional barriers

During the Preparatory Phase, the project team discussed with participating ministries (Energy, Finance, Housing, Health, Tourism, etc) and the CDER the lack of clear institutional mandate regarding the government's EE program. In the course of these discussions, a clear consensus emerged among participants that the CDER should assume the lead role in driving the EE Building Code program. This orientation was confirmed by the Minister of Energy and Mines.

In preparation for the Execution Phase of this project (and as part of an energy sector reform program launched with World Bank assistance), the Ministry of Energy is finalizing a law that would extend the CDER's responsibilities to cover energy efficiency programs in addition to its current renewable energy mandate. To fulfill these responsibilities, the CDER will need to develop its technical capabilities in order to develop EE building standards and prepare the EE Building Code.

Policy barriers

The Ministry of Energy and Mines is now developing a clear policy on energy efficiency. The government's EE program has evolved organically from a number of donor-funded programs, but the MEM is now committed, with World Bank assistance, to developing a clear EE policy statement to present a coherent government strategy to deal with the high cost of energy.

On a multi-sectoral level, there is no single forum for government ministries to come together to harmonize their respective programs in support of a common EE strategy. This could present a challenge as the MEM seeks to develop a consensus around a clear set of objectives. The support of key ministries such as Housing, Health and Finance will have a major impact on the success of any EE legislation for buildings.

Another barrier is the weak linkage between the public and private sectors. There is no platform to engage public and private stakeholders in a policy dialog on a national energy efficiency program. Without extensive consultation with professional associations representing architects, builders, real estate developers, hotel operators, suppliers, etc., the government's efforts to introduce EE legislation for new and existing buildings will have a limited impact.

Technical barriers

Government agencies that will be tasked to lead the effort to develop standards and practices that can be incorporated within an EE Building Code have limited technical experience in this field. This is particularly true of the CDER, which will be responsible for developing the EE Building Code and for advising the Technical Standards Committee on the appropriate specifications for EE standards.

The private sector is also handicapped by a lack of understanding of EE issues for buildings. Real estate developers, landlords and even government agencies rely on technical experts such as architects, engineers and builders to advise them on improve the energy efficiency of buildings. Without a strong and informed endorsement of EE standards/code by professionals, developers/landlords will most likely ignore the proposed regulations.

Another technical barrier is the limited availability of building components and construction supplies that meet standard energy efficiency requirements. This is partly due to the lack of internal demand among Moroccan builders, and partly due to the lack of standards which allows cheaper and less efficient products to prevail in the marketplace.

Cost barriers

The additional upfront cost that is incurred in implementing EE measures can represent a financial and/or psychological barrier for cost-conscious investors who may not understand the return on investment provided by EE outlays. This is particularly true in the social housing sector which is very sensitive to price. A two-fold response is therefore necessary: (i) initiating an information and education campaign with builders, real estate developers and government officials to demonstrate through real examples the financial benefits of energy efficiency in buildings; and (ii) mandating EE standards through a building code to ensure that all builders follow a minimum set of standards (thus avoiding the “free loader” problem).

Informational barriers

Since so few apartments are insulated in Morocco, most home buyers do not think to ask about the thermal efficiency of the units they are purchasing. This creates a Catch-22 situation, as real estate developers are in turn reluctant to spend extra money for EE improvements that will not necessarily be valued by apartment buyers.

The lack of information also inhibits industry professionals (such as architects, and engineers) and decision makers (such as real estate developers) from understanding the benefits of energy efficiency. As a result, most operators/investors will look at the cost of building a unit, rather than the total cost of ownership, including on-going energy costs.

Implementation barriers

Enforcement mechanisms at the municipal level represent another weak link that must be addressed. Local authorities often lack the technical and human resources to properly enforce building regulations, with disastrous consequences such as the earthquake of 2004 when many buildings collapsed because builders had failed to follow the seismic regulations for constructions.

Barriers specific to each building type

In addition to the global barriers identified above, some of the barriers are specific to each type of targeted building:

- **Housing:** tenant associations are practically non-existent in Morocco. Consequently, common areas such as stairwells, lobbies and gardens are not well maintained. This presents a challenge for EE measures that involve a common interest, such as building-level solar water heaters and low energy lighting in common areas.
- **Tourism:** since hotel guests do not pay the energy bill, they are not always sensitive to the environmental cost of their behavior. In order to achieve meaningful reductions in energy consumption, the environmental awareness of hotel guests and tourists will need to be raised through a communications campaign managed through the National Hotel Industry Federation and hotel owners.

- **Hospitals:** as the Ministry of Health moves towards a decentralized budgeting process that places greater financial responsibility on hospital directors, there may be a tendency to favor the purchase of much needed medical equipment over EE investments. The capacity of individual hospitals to plan and execute EE renovation projects may also be limited. The project will therefore work closely with the Hospital Directorate of the Health Ministry to ensure that an EE program is rolled out in a consistent fashion at public hospitals and significant economies of scale in purchasing and installation costs can be achieved.

Institutional, Sectoral and Policy Context

As the standard of living in Morocco improves, energy expenditures have been rapidly increasing as more people demand hot water, heating and/or cooling for their basic comfort and household energy needs. The timing of this project is important because it accompanies three key government initiatives: (i) a social housing program to add 100,000 housing units each year; (ii) a program to upgrade the nation's hospital infrastructure (more than 120 hospitals) in order to prepare for the introduction of Universal Health Insurance; and (iii) the "Azur" Program to increase the number of hotel rooms to accommodate up to 10 million visitors by 2010.

Ministry of Energy and Mines: The ministry is responsible for defining government policy on energy efficiency, as well as proposing a legislative framework for implementing EE regulations. Within the MEM, the **Directorate of Electricity and Renewable Energy** is working closely with the World Bank to develop an overall policy statement on energy efficiency defining the government's strategic orientations in this sector. In the past, energy efficiency has been the poor stepchild compared to renewable energy. This orientation has been evolving in large part in response to the sustained increase in energy prices. As mentioned previously, the MEM is developing an energy efficiency policy with World Bank assistance that is designed to promote greater energy efficiency in the country's industrial, service and housing sectors.

CDER: The government's ownership and preparedness for the current project is best illustrated by the proposed law that broadens the CDER's mission to include energy efficiency. With this law, the government is unequivocally assigning responsibility to the CDER for developing and implementing the government's EE program, including EE building standards and code. As a financially autonomous public agency, the CDER has considerable flexibility in implementing innovative public-private partnerships. The CDER is the executing agency for a number of donor-funded EE projects.

This shift in the CDER's mission has come about in response to two factors: (i) the close linkage between some RE and EE technologies (for example, solar water heaters), and (ii) the need by public authorities to assign responsibilities for EE public programs to a single entity. This evolutionary process closely parallels the situation in Tunisia, where the National Renewable Energy Agency (ANER) morphed into the National Energy Management Agency (ANME) by including both RE and EE in its mission statement.

Technical Standards Committee (TSC): The normative framework to develop and approve EE building standards is already in place. The existing Technical Standards Committee on renewable energy will be expanded to handle energy efficiency standards. This extension

was deemed a natural choice since it already deals with solar water heating standards, a technology that involves both the RE and EE sector.

The Housing Ministry is closely linked to the EE Building Code proposal as the Ministry is itself pushing to improve overall standards for Morocco's construction sector. The Housing Ministry recognizes that Morocco's construction sector is woefully deficient in basic construction standards, and it is closely associated with the CDER's efforts to promote the concept of an EE building code as part of a broader effort to streamline the country's building regulations.

On the policy front, the government is proposing to create a National EE Commission that could bring together public and private stakeholders to engage in a national policy dialog and advise the government on its EE policy orientation. Such a commission would also play an important role in aligning sectoral policies in the tourism, housing, health and education sectors with the government's energy efficient building initiative. It would also ensure that provisions for EE standards are fully integrated in the government's construction and renovation program for public housing, administrative offices, public hospitals, as well as adapting regulations affecting private operators in the housing, health and tourism sector to include an EE component.

Stakeholder Analysis

The main stakeholders of this project include:

- (i) **Ministry of Housing and Urban Affairs** which will deliver on its social housing program with minimal incremental cost for EE standards;
- (ii) **Moroccan families** who will reduce temperature extremes in their homes through better insulation, thus reducing the cost of space heating in winter months and air conditioning in summer months;
- (iii) **Ministry of Health** which will ensure that public hospitals are effectively equipped to catch up to the standards of private clinics by improving the overall quality of healthcare services; currently, energy expenditures at public hospitals drain resources from core health services.
- (iv) **Public hospitals** that will get a better handle on energy costs and be able to redistribute any savings on critical health care investments;
- (v) **Hospital patients** who will receive better quality of health care through the availability of hot water, heating and more efficient lighting;
- (vi) **Construction sector professionals** such as architects, builders and real estate developers who will benefit from technical training and a better understanding of EE requirements in their profession;
- (vii) **Hotel operators** who will be able to compete for foreign tourists by being able to better control their operating expenditures on energy;

- (viii) **Local equipment and construction supply manufacturers/distributors** that will benefit from the expansion of the energy conservation market in a sustainable fashion;
- (ix) **Energy audit bureaus** that will be associated with the initial screening and identification demonstration project buildings together with all subsequent capacity building activities;
- (x) **Administrative and municipal entities** that will also be encouraged to adopt energy conservation measures, thus improving their budgetary situation;
- (xi) Agents and officials from the **CDER and Ministry of Energy** who will strengthen their capacities through the training opportunities and professional interactions with the renewable energy service providers;
- (xii) **Energy suppliers** will benefit from progressive EE improvements in the building sector. As the growth in energy demand slows down, they will likely be able to postpone investments in new generation, transport and distribution facilities, while experiencing an improved power load profile;
- (xiii) **National health and safety bodies** that will contribute expert advice in the development EE standards.

Baseline Analysis

To achieve the above development objectives, Morocco has implemented the following activities designed to promote the increased adoption of renewable energy: (i) PROMASOL project with a goal of 100,000 m² of solar panels installed over 4 years and a solar water heater market equivalent to 450 million DH (US\$ 50 million) annually; (ii) a program to reduce household wood consumption by promoting more efficient cooking appliances; (iii) a program for global rural electrification (PERG) designed to bring solar-power energy to 150,000 isolated rural households; (iv) a 50 MW wind power plant near Tangiers in the North of the country; and (v) the commercial insurance program (APC) program to encourage commercial relationships between equipment distributors, local manufacturers and banks.

The above programs are having a remarkable impact in shaping the renewable energy market in Morocco. However, the barriers being removed in the on-going and/or prior GEF and other donor supported activities in Morocco address the rural access question rather than the specific regulatory and energy efficiency barriers, the lack of technical, financial and solid intermediation services which are critical if the country is to reduce the impact of its energy bill on the balance of payments. Without the proposed project, it is unlikely the various players will focus on energy efficiency in the building sector because of the current regulatory barriers, the overall non-conducive business environment and the usual difficulties in enforcing contractual arrangements that must be understood by all stakeholders in addition to the initial technical assistance cost required.

The CDER has initiated a number of capacity building activities designed to improve the capabilities and performance of the energy efficiency service providers and to reduce

greenhouse gas emissions tied to the consumption of fossil fuel. Existing programs have tended to focus on the following areas:

- (i) Improving the network of small retail dealers and installers of solar water heaters;
- (ii) Developing a certification and labeling program for energy efficiency equipment using the CDER's testing facilities;
- (iii) Encouraging a program of rural electrification using renewable energies;
- (iv) Promoting the use of more efficient cooking and heating appliances; and
- (v) Sponsoring several demonstration projects to improve the overall energy efficiency of large facilities such as hospitals and universities.

Many of the CDER's activities are focused on access to electricity in rural areas, energy services for households and small community facilities such as hammans (communal baths). Energy efficiency demonstration projects in larger buildings have not yet been the focus of a large-scale and comprehensive intervention with a view to mainstreaming the approach and creating a locally viable expertise to take over after the initial trial phase.

This proposal is intended to build upon the current experience with scattered demonstration EE projects to promote energy efficiency in the building sector, by consolidating past scattered trials from a much larger and sustainable scale in both the institutional and service sectors (e.g., hotels and hospitals) and the housing sector (e.g., social housing).

PART II: STRATEGY

Project Rationale and Policy Conformity

As the standard of living in Morocco improves, energy expenditures are expected to grow rapidly as more people demand hot water, heating and cooling for their basic comfort and household energy needs. The timing of this project is important because it accompanies three key government initiatives: (i) a social housing program to add 100,000 housing units each year; (ii) a program to upgrade the nation's hospital infrastructure (more than 120 hospitals) in order to prepare for the introduction of Universal Health Insurance; and (iii) the "Azur" Program to increase the number of hotel rooms to accommodate up to 10 million visitors by 2010.

The project seeks to improve the energy efficiency of buildings in Morocco through the introduction of an EE building code for Morocco, the development of technical standards, and the reinforcement of private sector capabilities to incorporate EE measures in building construction/renovation projects. By removing the barriers that currently inhibit the adoption of these standards, the project will allow Moroccan households, hospitals and hotels to reduce their energy expenditures while improving quality of life issues. Estimated annual energy savings range from 15% to 35% depending on the type of building and the sector.

The project's **global objective** is to reduce Morocco's energy-related CO₂ emissions by mitigating the demand for energy in the country's housing and service sectors. This will be accomplished through the introduction of EE measures and standards in priority for new construction and also through the renovation of existing building stock. In setting out to do so, the project activities will ensure that future constructions follow acceptable efficiency requirements in order to limit energy consumption while making the Moroccan hospitals, commercial services (hotels) and homes more energy efficient.

A comprehensive survey of past EE initiatives in Morocco, as well as interviews with private sector stakeholders (architects, builders, real estate developers, etc.) have made it clear that EE standards developed for the Moroccan market must be adapted to the local climatic, economic and cultural environment. As a result, the technical capabilities of government institutions such as the CDER and local municipal agencies must be reinforced in order to support the government's efforts to define and mandate EE buildings standards, while the necessary legal and regulatory framework is established in parallel.

The private sector, especially professionals such as architects and engineers, has a key role to play in ensuring the development, dissemination and adoption of EE building standards. Without a program of technical training, outreach and mobilization, it is doubtful that the private sector will be sufficiently sensitive to the importance of EE standards to incorporate such practices in their building designs and construction budgets.

The requirements for a comprehensive capacity building and outreach program, along with strengthening the necessary legal, regulatory and institutional frameworks, are in line with **GEF Operational Program #5: Removal of Barriers to Energy Efficiency and Energy Conservation**. Without GEF intervention, it is not clear that the government would be able

to put in place a comprehensive multi-sectoral policy initiative to integrate EE standards within non-industrial sectors such as housing, tourism and healthcare.

The project also fits in the following GEF strategic priorities: **(CC-1) Transformation of markets for high volume products and processes**. The project proposes to work closely with the private sector to ensure that regulatory proposals and technical standards are widely disseminated and adopted throughout the construction industry. The proposed market transformation activities are designed to effect sustainable changes in two areas: (i) decision-makers such as real estate developers, hotel operators and government ministries who establish the requirements for their building projects; and (ii) professionals such as architects and engineers who advise decision-makers and are key influencers in the decision to incorporate EE standards in a project design.

This project is aligned with a number of regional and national GEF projects that have sought to introduce EE regulations in the construction industry, especially in the housing sector. It seeks to build upon past successes by ensuring a tight integration between government agencies responsible for establishing the proper regulatory framework and the private sector operators who will be responsible for implementing EE regulations within their construction projects. Extensive consultations with public and private sector stakeholders through regular Steering Committee meetings, workshops and interviews have reaffirmed the willingness of the private sector to support this initiative as long as they are involved in it from the conception and design phase.

Project Goal, Objective, Outcomes and Outputs/Activities

The project's global objective is to reduce Morocco's energy-related CO₂ emissions by mitigating the demand for energy in the country's housing and service sectors through the introduction of an EE building code for new construction and renovation of existing building stock. The project's specific objective is to improve the energy efficiency of buildings in Morocco through the introduction of an EE building code for Morocco, the development of technical standards, and the reinforcement of private sector capabilities to incorporate EE measures in building construction/renovation projects

The project consists of six outcomes which are designed to contribute toward achieving the project's objectives. Each of these outcomes includes a number of specific outputs and a series of activities planned to achieve them. These outcomes are the following:

- **Setting up an EE Building Code Unit at the national level, and reinforcing compliance at the municipal level.** This outcome will focus on: (i) providing technical assistance to set up an EE Building Code Unit within the CDER; and (ii) strengthening the institutional and operational capabilities of municipal code enforcement agencies.
- **Sizing the Energy Efficiency Potential in New Construction: Outreach, demonstration and knowledge sharing activities.** This outcome will focus on: (i) mobilization, outreach and training activities; (ii) demonstration projects; and (iii) project development services for the private sector.
- **Drafting and implementing an EE building code for residential buildings.** This outcome will focus on: (i) designing and drafting the EE Building code legislation and

regulations; and (ii) preparing the necessary regulatory framework for implementation and enforcement mechanisms.

- **Developing and disseminating standards and guidelines for professionals.** This outcome will focus on: (i) preparing EE standards for building design, building envelope, and HVAC; (ii) preparing technical guides for professionals; and (iii) implementing a testing and monitoring program to evaluate the impact of proposed EE standards.
- **Project management and M&E support.** Operational support will be provided to the MEM and the CDER to assist with key project management functions. This technical assistance will focus on strengthening the CDER's ability to set up an EE Building Code Unit and to manage the demonstration projects and the project development services. This outcome will also help coordinate sectoral policies among government agencies to facilitate the adoption of the EE Building Code and will conduct monitoring and evaluation of the project.

Note: a separate component for a Pilot Compensation Window was originally included in the PDF-B. However, during the course of the preparatory assistance phase, it became clear that such a funding mechanism for EE investments did not directly meet the needs of public and private stakeholders. With the new Finance Law that defines the government's budgetary process, each ministry is responsible for managing its own budget and reallocating funds as necessary between categories. As a result, any savings from EE investments remain with the Ministry which can then reallocate the money to other spending priorities. Creating a central compensation window at the central government level is therefore not practical, since each ministry is responsible for its own spending and reallocation of any savings.

Similarly, the ONE (national utility) and the municipal distribution companies expressed limited interest in participating in a compensation window. Unlike large industrial users that can be encouraged to shift production to off-peak hours, the EE Building Code project will involve a great many small EE investments. Collectively, they represent a substantial energy savings at the state level, but this program does not guarantee that a utility will be able to reduce peak demand (and thus mitigate the need for further investments). Absent a monopolistic public utility that can be directed by the government to fund a compensation window, it appears that there is very little that the government can do to force the utilities to participate in such a scheme.

OUTCOME 1: SETTING UP AN EE BUILDING CODE UNIT AT THE NATIONAL LEVEL, AND REINFORCING COMPLIANCE AT THE MUNICIPAL LEVEL (US\$ 1,275,000)

The purpose of this outcome is to support the establishment of an EE Building Code Unit within the CDER that will be responsible for drafting the EE Building Code and to strengthen the institutional and operational capabilities of the municipal code enforcement agencies.

Output 1.1 – EE Building Code Authority set up and operating (US\$1,025,000)

Public sector participants in the Steering Committee, including the MEM and participating line ministries, recommended that a unit be set up within the CDER to handle drafting of the

EE Building Code. This solution was deemed preferable for two reasons: (i) it avoids creating a new authority at a time of budget restrictions, and (ii) it allows the CDER to build upon its existing managerial and technical competencies. This approach is also consistent with the government's energy sector reform program that has designated the CDER as the lead agency responsible for implementing the government's energy efficiency policies.

The project is therefore proposing to set up a Building Code Unit (BCU) within the CDER and to fund its operations for the duration of this project (4 years). Total BCU staffing will represent six technical staff. The BCU will have two main responsibilities: (i) drafting the EE Building Code; and (ii) providing expert technical advice to the government's Technical Standards Committee that will be responsible for drafting specific standards.

The BCU will work collaboratively with public and private sector representatives through technical subcommittees that will be established for specific functional areas (e.g., building design, lighting, HVAC, etc.). This approach is important, since it will ensure that the EE Building Code is sensitive to the nature of the residential construction business in Morocco and takes into account the requirements and concerns of the private sector players who will be responsible for its implementation.

Finally, the CDER will set up a working group that will be responsible for making all recommendations related to residential EE measures to include in the Code. This working group will also develop the Code Compliance Strategy and the Code Implementation Program. In fact, this working group will be the real technical authority designing each outcome of the entire code as well as the development process, planning and scheduling as the code contents. To ensure the Code's acceptability, the working group will hold a stakeholders meeting twice a year in order to obtain comments on the EE measures to include within the code.

Activities:

- Developing a staffing plan for the BCU
- Recruiting and training BCU staff
- Providing funding for the operational needs of the BCU and for basic technical studies required to support the technical underpinning of the code

Output 1.2 – Institutional and operational capabilities of municipal code enforcement agencies strengthened (US\$250,000)

Once the EE Building Code becomes mandatory, the capabilities of municipal agencies that are responsible for issuing local permits will need to be strengthened so that they can properly administer and enforce the provisions of the EE Building Code. Enforcement mechanisms are generally weak in Morocco, especially in the residential construction sector where the only building standards involve safety and seismic considerations.

To ensure the success of the EE Building Code in the field, it will need to be developed and applied gradually so as not to create too high a burden for developers/builders and enforcement agencies and risk a backlash. Private sector stakeholders who were consulted during the preparatory phase of this project agreed on the following principles: (i) the initial version of the code should be limited to a few key technical requirements, as the primary emphasis should be more on changing industry habits by getting developers/builders and professionals to incorporate energy considerations in their designs; and (ii) code enforcement

mechanisms must be effective to ensure that all developers/builders follow the technical provisions of the code.

Activities:

- Developing an overall plan to strengthen the organizational, technical and operational capabilities of municipal code enforcement agencies
- Providing technical assistance to the municipal code enforcement agencies
- Drafting the necessary decrees and ordinances to empower municipal agencies to apply and enforce the provisions of the EE Building Code

Outcome 2: SIZING THE ENERGY EFFICIENCY POTENTIAL IN NEW BUILDINGS (OUTREACH, DEMONSTRATION AND KNOWLEDGE SHARING ACTIVITIES) (US\$ 2,000,000)

This outcome is designed to execute barrier removal activities and promote knowledge sharing, such as improved coordination among government agencies, increased awareness of energy cost savings among industry professionals, and strengthened technical know-how among architects, builders and other construction industry participants.

Output 2.1 – Mobilization, outreach and training activities (US\$ 680,000)

A comprehensive program is proposed to mobilize and reach out to government agencies (at both the national and municipal level), developers and landlords, industry professionals and the general public. The goal is to educate these target audiences about the benefits of energy efficiency measures in the building sector in order to create an environment where energy efficiency is understood and demanded by all stakeholders.

Based on field surveys with industry professionals and university officials, it is clear that seminars and training sessions will be an excellent tool to disseminate information about EE standards and guidelines. Many professionals have not received any specific EE training in their professional career, but they are aware of the need for greater EE integration in their work and they are very interested in a program that would offer focused and short (1 day) technical training sessions.

The training outcome will also ensure that training (as well as training curricula and course material) is made available to vocational schools, architecture schools, engineering schools, building managers and operators, and enforcement officials, as their support of the EE initiative will be essential to its success and proper implementation.

Activities:

- Developing and implementing a mobilization and outreach plan for government agencies, developers, industry professionals, code enforcement officials, building managers, architecture/engineering school officials, and the general public
- Hosting workshops and national EE events
- Launching communications tools such as a website, newsletter, etc.
- Creating a “green housing” certification program for apartments that meet minimum EE criteria to stimulate a demand for EE housing among households
- Providing technical seminars for industry professionals, code enforcement officials, building managers, architecture and engineering school professors, landlords, etc.

Output 2.2 – Project development services (\$240,000)

This sub-outcome is designed to provide technical advisory services to private sector companies willing to integrate EE design standards in their projects, whether in the housing, healthcare or hotel business. By helping leading private sector companies adopt EE measures, the project hopes to create a “me-too” phenomenon that will provide incentives for others to emulate. The CDER will recruit private energy audit bureaus to conduct detailed audits, propose specific EE measures, and then assist recipients in implementing their plans.

Activities:

- Develop a program to provide project development services through the audit, design and execution phases
- Conduct audits for pre-selected sites
- Assist private sector companies in executing their EE plans

Output 2.3 – Demonstration projects (US\$ 1,080,000)

During the preparatory assistance phase, a total of 50 potential demonstration projects were identified. Under this sub-outcome, the project proposes to directly fund a minimum of 10 demonstration projects selected from the housing, healthcare and tourism sector to demonstrate the efficacy of EE standards and guidelines. These demonstration projects will need to have high visibility in order to be able to influence other decision makers and investors. It is expected that other demonstration projects will be funded directly by the private sector (e.g., hotels) and by the public sector (e.g., hospitals and housing) as part of the regular investment budget of the respective organizations.

Activities:

- Finance and execute demonstration projects integrating EE standards and guidelines
- Monitor the energy savings using the International Performance Measurement and Verification Protocol (IPMVP)

OUTCOME 3: DRAFTING AND IMPLEMENTING AN EE BUILDING CODE FOR RESIDENTIAL BUILDINGS (US\$ 410,000)

Under this outcome, the EE Building Code will be drafted by the CDER with the active participation and input of other line ministries and private sector representatives, especially trade associations representing architects, engineers, equipment suppliers, developers, etc. The appropriate enabling legislation and decrees will also be prepared under the authority of the energy efficiency law to be drafted under Outcome 1.

Output 3.1 – EE Building Code is designed and drafted (US\$ 360,000)

The BCU within the CDER will be responsible for drafting an EE Building Code that capitalizes on the partnership of public and private sector stakeholders to better integrate

efficiency standards in their construction programs at a time of high energy bills. The CDER will have overall responsibility for drafting the code, but as noted above, it will do so by working closely with advisers representing different interest groups in the construction, housing, healthcare and tourism sectors. The building code will establish energy efficiency standards at a level that is technically feasible and economically justified in the Moroccan context.

The CDER will provide regular reports on the progress of the EE Building Code to the Interagency Taskforce to ensure that all participating line ministries and trade associations representing private sector interests are consulted on a regular basis and are given opportunities to comment on the direction of the regulatory document.

The project will fund the development of the first version of the EE Building Code. Based on the experience of other countries, it can be expected that the code will be updating on a regular basis, possibly every five years or so. The EE Building Code will assess the suitability and impact of adding a building commissioning process to the code requirements.

Activities:

- Drafting the EE Building Code
- Extensive consultation with Interagency Taskforce, participating line ministries and private sector representatives

Output 3.2 – Enabling regulatory framework for EE Building Code is drafted (US\$ 50,000)

As the EE Building Code is drafted, the appropriate regulatory framework needs to be developed to mandate adoption of the code for new construction and major building renovations in targeted sectors. This will require the Ministry of Energy and the CDER to draft the necessary application decrees and local ordinances that specify the purpose and scope of the code, the penalties for violation of code provisions, etc., under the umbrella of the Law of Energy Efficiency and Renewable Energy that is being passed by the government. Separate ordinances may be required to ensure that the code is applied to both new construction and building renovations.

Activities:

- Drafting of application decrees necessary to make the EE Building Code mandatory
- Specifying the penalties for violation of the code provisions

OUTCOME 4: DEVELOPING AND DISSEMINATING EE STANDARDS AND GUIDELINES FOR PROFESSIONALS (US\$ 1,510,000)

The Moroccan Industrial Standard Bureau (SNIMA) is responsible for developing all standards in Morocco and submitting them to the national standards board for approval. The SNIMA indicated that the standards related to the EE Building Code should preferably be assigned to an existing standards committee rather than creating a new one. The project's Steering Committee agreed with the SNIMA's recommendation that the existing Technical Standards Committee (TSC) for Renewable Energy be enlarged to encompass all energy efficiency matters, since the two fields are closely related.

The TSC will be responsible for developing standards on a range of EE products and equipment for buildings. Suggestions for standards can come from the CDER, other ministries or the private sector. Under the umbrella of this project, three main categories of standards have been identified: (i) building design; (ii) building envelope; and (iii) electromechanical systems such as heating, ventilation and air conditioning (HVAC).

These standards will be an essential element of the EE Building Code, since the code will refer to the standards developed by the SNIMA in its regulations. It is important to note that not all EE standards will be incorporated in the EE Building Code. In some cases, the standards will remain voluntary, but developers and the line ministries can choose to adopt these standards in their construction plans on a voluntary basis until they become mandatory in a future code version.

Output 4.1 – EE standards are developed for buildings (US\$ 820,000)

These standards will focus on three areas: (i) building design (e.g., taking advantage of topography and sun exposure); (ii) building envelope (improving insulation characteristics and using the most appropriate building materials), and (iii) electromechanical systems such as heating, ventilation and air conditioning (HVAC). Moroccan buildings are notoriously poorly insulated, leading to excessive cold and damp in the winter and excessive heat during the summer months. Proper building design and use of insulating materials/supplies can minimize the impact of outdoor weather on indoor living conditions.

This sub-outcome will include an analysis of different building types in Morocco (covering housing, hospitals and hotels) and a computer simulation of the effects of the proposed thermal insulation measures on the overall energy consumption of these buildings. The standards will look at electromechanical systems found in large buildings to provide recommendations for the design, selection and installation of such systems, including HVAC systems, hot water systems and piping for the circulation of fluids (air, water).

As necessary, specific standards may be developed for new construction and for building renovations to account for differences in the types of EE measures that can be applied. By having standards specific to building renovations, this will contribute towards the goal of achieving substantially higher energy savings across the existing building stock.

Activities:

- Identifying different building types and modeling the impact of proposed measures on building design types
- Analyzing existing HVAC, hot water and other electromechanical systems on the Moroccan market
- Drafting standards for building design
- Drafting standards for building envelope
- Drafting standards for HVAC, hot water systems and other electromechanical systems

Output 4.2 – Technical guides are drafted for professionals (US\$ 305,000)

This sub-outcome will fund the development of technical guides for professionals to ensure that the technical recommendations and guidelines from the Technical Standards Committee, the CDER and other project sponsors are communicated to building professionals in a way

that is suited to their requirements. These practical guides may be targeted at a specific profession (e.g., masons, electricians, architects) or at a specific component of the building (e.g., lighting, air conditioning).

Activities:

- Drafting practical guides for professionals based on EE standards and practices
- Validating the guidelines with building sector professionals

Output 4.3 – Testing program is implemented to evaluate the impact of proposed EE standards (US\$ 175,000)

This sub-outcome is designed to establish a baseline to better understand current energy consumption patterns of different types of buildings (apartment housing, hospitals and hotels) in different climate areas. This sub-outcome will also track buildings where some of the proposed EE standards have been adopted to better understand the efficiency gains that can be expected from different technical proposals. Energy usage over time will also be monitored to understand how changing energy consumption patterns need to be factored in the proposed EE standards, especially as part of the energy management recommendations.

Through careful measurement of energy consumption before and after an EE measure is adopted (in the case of renovations), this testing program will make it possible to understand the return on investment that is possible from implementing different standards and guidelines. The demonstration projects that are proposed in Outcome 4 will also be covered by this testing and measurement program.

Representative buildings that illustrate local practices pertaining to building operations and cooling/heating habits will be modeled with computer simulation tools. These models will then be used to perform systematic parametric analyses of energy efficiency options as a means of identifying appropriate and cost-effective EE improvements. This information will then be used to validate the real-world feasibility of mandating specific energy use intensities and to guide the development of the EE Building Code if a performance-based approach is selected.

Activities:

- Establishing baseline for energy consumption patterns by building type and climate
- Testing and measuring energy consumption in sample buildings
- Ensuring quality control over the results
- Drafting of guidelines for building operation and maintenance. The relevance of building commissioning guidelines will be analyzed and tested.
- Monitoring of impacts mentioned in Table 1 (p. 23)

Output 4.4 – Monitoring and Evaluation activities (US\$ 210,000)

Monitoring and evaluation activities will be performed according to the M&E plan described in this document. In particular, two independent evaluations will be carried out. One mid-term evaluation after approximately 1.5 years of project implementation; one terminal evaluation will be carried out towards the end of the program. The mid-term evaluation will assist the executing and implementing agencies in receiving detailed feedback on project operations that can be used to redirect project activities as necessary. The terminal evaluation will assist the program stakeholders to draw lessons learned for us in improving the quality

of future development interventions with similar activities. The evaluation will be done in collaboration with other development partners as appropriate.

Activities:

- Conduct independent mid-term and terminal evaluations.

OUTCOME 5: PUBLIC AND PRIVATE SECTOR EE INVESTMENTS (US\$ 13,138,910)

Under this outcome, EE investments of US\$ 11,138,910 will be realized by Morocco's public and private sectors.

Output 5.1 – EE investments in the housing sector (US\$ 6,305,348) Ministry of Housing plans to integrate EE standards as part of the nation's social housing program. The government's housing program calls for 100,000 units a year. The government's EE investment in this sector is expected to be a minimum of US\$ 4 millions and up to US\$ 6 million incremental improvements in the thermal efficiency of housing projects during the four-year project timeframe.

Activities:

- Public sector EE investments as part of the governments' social housing program

Output 5.2 – EE investments in the health sector (US\$ 2,000,000)

The Ministry of Health plans to integrate EE standards as part of its national rehabilitation plan for public hospitals. The total EE investment in this sector is expected to be a minimum of US\$ 2 million for improvements in the energy efficiency of 40 hospitals during the four-year project timeframe.

Activities:

- Public sector EE investments as part of the governments' hospital rehabilitation program

Output 5.3 – EE investments in the hotel sector (US\$ 2,416,781)

EE investments by private hotel operators are expected to be a minimum of US\$ 2 million for new construction and for renovation of existing hotels. These investments will make it possible for hotels to be compliant with provisions of the EE Building Code and to improve the energy efficiency of their hotel operations.

Activities:

- Private sector EE investments in the hotel sector

Output 5.4 – EE investments in the higher education sector (US\$ 2,416,781)

The Ministry of Education will participate in the project with US \$ 2.6 Million to spend for the length of the project in integrating energy efficiency standards in the construction and renovation

program for university buildings and housing. The Ministry of Education intends to adopt the EE standards that will be proposed by the project for residential and teaching facilities under its purview.

Activities:

Ministry of Education EE investment in the higher education sector

OUTCOME 6: PROJECT MANAGEMENT (US\$ 400,000)

Operational support will be provided to the CDER to assist with key project management functions.

Output 6.1 – Project management and implementation support (US\$400,000)

This technical assistance will focus on strengthening the CDER's ability to set up an EE Building Code Unit and to manage the demonstration projects and the project development services, including selecting projects, preparing bid specifications, monitoring performance quality, enforcing contracts and providing adequate reporting to GEF and other donors.

This sub-outcome will also help the CDER coordinate EE building program with MEM and line ministries to facilitate the implementation of the EE Building Code and to ensure that EE standards are incorporated in the sectoral policies of each ministry (Housing, Health, Tourism, etc.).

Activities:

- Provide technical assistance to CDER to implement project outcomes, including demonstration projects and project development services
- Conduct regular monitoring, evaluation and reporting
- Provide assistance to the CDER in coordinating EE building program across line ministries

Project Indicators, Risks and Assumptions

The most direct impact of the project as it relates to GEF objectives is the reduction in CO₂ emissions. Associated impacts, such as increased EE activities in the building sector, contribute to the overall sustainability of the project and thus are critical to the continued reduction in CO₂ emissions.

A strong baseline, along with measurable indicators, will need to be established in order to properly monitor the impact of the project. This will need to be done before EE standards are established and implemented in the building sector. The impact monitoring should be done on an annual basis by the project implementation team, and the results will be used by the project team to improve and/or revise the proposed EE standards for buildings.

The following indicators could be used to measure the impact of the proposed initiatives:

Table 1: Key Indicators for Impact Monitoring

Impact to Be Monitored	Indicators	Verification Means
CO ₂ emissions reduction	<ul style="list-style-type: none"> - Reduction in energy consumption in housing sector, as well as hospitals and hotel sector 	<ul style="list-style-type: none"> - Survey of architects, builders and government agencies - Analysis of energy bills
Increased number of housing projects that integrate EE standards	<ul style="list-style-type: none"> - Number of housing units that integrate EE standards and design parameters 	<ul style="list-style-type: none"> - Survey of architects, developers and government agencies - Survey of municipal enforcement agencies
Increased use of EE standards by building professionals	<ul style="list-style-type: none"> - Number of professionals trained in EE Building Code and standards and applying such skills/knowledge 	<ul style="list-style-type: none"> - Survey of architects, developers, and government agencies - Project files

Legislative Risks

While the new Law on Energy Efficiency and Renewable Energy has been drafted and is being adopted in record time by the Government of Morocco (the law was recently approved by the Government Council and is being submitted to Parliament for approval), there is always the (minor) risk of some legislative delay in its final adoption.

Regarding the Law to expand the CDER's responsibilities to include energy efficiency, a final version of the law is being finalized by the Ministry of Energy and the CDER. This Law will then have to be submitted to Government Council for approval, a process which often requires the Director General of the CDER to meet with all key ministers involved to explain the purpose of the Law and to seek their support. There is also a risk that adoption of this Law will be delayed. However, extensive consultations with key ministries (Energy, Finance, Housing, etc.) during the Preparatory Phase of this project have confirmed broad administrative support for creating an expanded agency (the CDER) to handle both energy efficiency and renewable energy programs.

Institutional Risks

In order to have a measurable impact, this project requires a multi-sectoral approach to ensure that the EE Code and standards are incorporated in the sectoral programs of each participating ministry. There is always the risk in any administration that institutional rivalries will slow down cooperation among ministries. This risk is mitigated with the creation of an interagency taskforce, called a National EE Commission, which will institutionalize ongoing policy dialogue between public and private sector stakeholders and provide a forum to harmonize the programs of participating ministries.

At the municipal level, the enforcement capabilities of local institutions that are responsible for regulating construction projects will be a determinant factor in the long-term implementation of the EE Code. In the past, these agencies have not been very proactive in enforcing seismic standards in earthquake prone areas, resulting in collapsed buildings and a number of deaths during recent earthquakes. The project addresses this risk by providing capacity building assistance to municipal enforcement agencies to help them understand the EE Code and ensure that its provisions are properly integrated in on-going construction projects.

Technical Risks

Successful implementation of this project requires an increase in the technical capacity of the CDER staff and adequate capacity in the private sector. This risk is being addressed by having project outcomes that will assist the CDER in developing the necessary in-house technical skills and by providing training courses to professionals (architects, engineers, etc.) in partnership with their respective trade associations.

Another technical risk is linked to the preparation of the EE standards and the drafting of the EE Code. In the past, some international standards were adopted by the government without sufficient analysis about their relevancy or applicability to the Moroccan context. The professionals surveyed for this project were adamant of the importance of developing an EE Code that took into account the regulatory, economic and cultural particularities of the construction sector in Morocco. The project will seek to mitigate this risk by providing sufficient capacity building support to the CDER and the Technical Standards Committee to ensure that the necessary technical and field studies are conducted before defining the proposed EE standards.

Expected Global, National and Local Benefits

GEF resources are being sought for selected incremental costs based on private and public sector investment funding for the building sector in Morocco, in particular in health care, tourism and housing. The requested funding will provide the necessary legal, regulatory and institutional framework to develop and implement an EE Building Code. Demonstrating the success of the EE initiative in Morocco will set an example for replicability in other neighboring countries that lack formal EE programs, and will also support on-going efforts to create regional programs for pooling the national resources and capabilities of individual countries.

Extensive consultations with public and private stakeholders confirm the timeliness of an EE program for Morocco's building sector that can strengthen national capabilities in the area of energy efficiency at a time of rising energy costs. The Ministry of Finance has expressed considerable concern over the ability of government ministries and agencies to absorb energy costs through existing budgetary mechanisms and believes that an EE program will not only help reduce energy bills but also create an EE culture at the level of decision makers and functionaries.

At the local level, a strong emphasis on developing the technical capabilities of professionals (architects, engineers, etc.) and creating EE awareness among decisions makers (developers, hotel operators, etc.) will help invigorate a nascent EE industry. It will also allow Morocco to

meet its MDG goals by reducing the cost of energy services for Moroccan households, especially poorer households that are seeing a greater share of their household income dedicated to energy expenditures, including home energy bills.

Country Ownership: Country Eligibility and Country Drivenness

Morocco ratified the UNFCCC on 28 December 1995.

The project was designed with extensive inputs from the major line ministries (Finance, Energy, Housing, Health, Tourism, Environment, etc.) in the course of Steering Committee meetings that were held at regular intervals to review the objectives of the project and discuss overall results. It fits within the government's overall plan to reduce energy costs in its housing, tourism and health care sector by integrating EE standards and practices in building design and management.

Furthermore, in reaction to early discussions between the Project Team, the World Bank and government representatives, the Ministry of Energy launched a structural reform program for the energy sector with technical assistance from the World Bank. This reform process has reaffirmed the government's commitment to the establishment of viable and effective renewable energy policies, while launching two key laws for this project: the Law on Energy Efficiency and Renewable Energy (which provides the legal basis for defining and imposing EE building standards), and the Law reorganizing the CDER to include energy efficiency programs among its responsibilities.

The project is relevant to the UNDP mandate through its strong emphasis on capacity develop and technical training for the private sector in order to provide professionals with the necessary know-how and technical skills to advise builders and other decision makers about EE standards and to integrate them in the design specifications of construction projects. It also fits the UNDP's mandate by helping improve the capabilities of municipal enforcement agencies dealing with construction projects, leading to better governance through sustained technical and institutional support.

Sustainability

Sustainability of the proposed project will depend upon various factors including the quality of the buildings/sites, and the technical assistance and capacity building program to ensure that all sectors involved gain full ownership of the tools and methods to be used. There is a core group of companies in Morocco that have some familiarity with the technical, financial and commercial aspects of energy efficient projects. For example, a number of audit bureaus were established as a result of a USAID project that was funded in the early 1990s to provide energy audits to Small and Medium Enterprises (SME). One of the purposes of this project is to stimulate sufficient demand for energy conservation measures so that: (i) the use of energy efficient processes and technologies in the public sector together with the service industry will become an accepted practice; and (ii) local industry will continue to invest in time, material and people to build a strong, local knowledge base.

Sustainability will also come from the quality of the desk review, and the policy dialogue exchange phase which will determine the scope of country ownership of the regulations to be crafted, adopted, implemented and enforced as needed. The policy dialogue and sensitization phase is bundled with Outcome 2 (i.e., the comprehensive review of barriers and promotion

of knowledge sharing and development of cross-sectoral synergies). These initial reviews would focus on:

- Examination of barriers related to inadequate local technical capacities for Energy Efficiency Code development;
- Review of barriers related to the insufficient know-how about appropriate energy efficiency technologies in the country particularly with a view to making recommendations that relate to Energy Efficiency Code for appliances;
- Review of barriers related to relatively high transaction costs impeding the participation of private operators in Energy Efficiency Code using in demonstration projects; and,
- Review of barriers related to local capital constraints and the absence of adapted financing mechanisms.

By the end of this GEF technical assistance project, sustainability of project results will be ensured by:

- a) Establishing a Building Code Unit within the CDER that will be responsible for conducting technical feasibility studies to evaluate new building techniques and materials, as well as developing and updating the EE Building Code (major revisions to the Code can be expected every five years on average);
- b) Updating the legal and institutional framework governing energy efficiency;
- c) Providing training to architects, engineers, developers and municipal enforcement agencies;
- d) Creating a National EE Commission that will ensure harmonization of EE policies and activities among key line ministries such as Housing, Health and Tourism and will promote an ongoing policy dialog between public and private stakeholders.

Regarding the project's financial sustainability, it is important to note that there will not be a need for a similar project in the future in Morocco once the identified barriers are removed. A change in regulation and adoption of a new set of rules of the game for the building code of Morocco – if done right – should be an irreversible process unless there is a major policy reversal that could not have been anticipated. The issue of additional costs for thermal efficiency in social housing will be the object of attention throughout the project.

Replicability

The proposed model is highly replicable as long as energy efficiency is better understood by investors, professionals and the general public, and efficient designs become a standard practice in the service industry. The key is to change building codes to make energy conservation a requirement during the design and construction phase of new buildings, and to provide strong case studies of the savings involved for both new and existing buildings; and, making all parties to the above partners in a mutually consensual and profitable manner.

The proposed demonstration projects and the commitment of the Housing and Health Ministries to incorporate EE standards in their investment programs should provide a solid

foundation for transforming the construction sector's perception of energy efficiency. The demonstration projects in the targeted sectors will be documented to highlight the benefits of energy efficient building designs. These "case studies" will be shared with industry professionals through their trade associations, trade conferences and the media. Once the government—as the country's principal real estate developer (as a direct or indirect investor)—starts incorporating EE standards in its design requirements, the developers and architects interviewed for this project have indicated that they expect the private sector to follow the government's lead as market expectations regarding efficient building designs will evolve.

A number of specific activities are proposed under this project that can ensure its replicability:

- Strong partnership with trade associations (e.g., Order of Architects, Engineering Society, Association of Developers, Hotel Owners Association, etc.) will ensure that project information is disseminated via newsletters and workshops to the professional memberships of these associations;
- National EE events (sponsored by the Minister of Energy and Mines) will help send a strong message to the private sector, and through the media, to the general public, about the benefits of energy efficient buildings;
- Regular training programs will be offered to industry professionals;
- Creation of a voluntary certification program for housing projects meeting minimum EE standards. This industry program will allow real estate developers who exceed minimum EE Building Code standards to market the improved efficiency of their housing units to householders. Developers have consistently mentioned the importance of creating a demand for EE housing.

PART III: Management Arrangements

The EE Building Code project provides the government with a good opportunity to strengthen the institutional, technical and organization capabilities of its agencies in the area of energy efficiency, especially as it applies to the building sector. A prime beneficiary will be the CDER, which will act as Execution Agency, under the tutelage of the Ministry of Energy. The CDER has been clearly identified by the MEM and the other ministries as the best entity for driving this project forward and for establishing a technical competency center in the area of energy efficiency in buildings.

The CDER will be responsible for setting the Building Code Unit within its own organization, thus keeping the new structure lean. The CDER will also be responsible for drafting the EE Building Code, providing technical expertise to other government departments, and engaging most of the different activities identified for the execution phase. The CDER will rely on contractors and consultants where private sector expertise is more suited to the tasks at hand. For example, the CDER will turn to private energy audit bureaus to advise businesses on developing EE project proposals under the "project development services" component of the project.

The CDER has had working relationships with the relevant line Ministries for many years and has recently built a working relationship with the Ministry of Finance to ensure that : (i) EE Building codes are adopted and applied in each participating line Ministry; (ii) savings on energy expenditures resulting from the project are channeled towards more energy efficiency measures; and (iii) that the Ministry of Finance is prepared to insert line items in the operating budgets of hospitals, schools and similar public buildings to further mainstream EE practices.

The following items will be handled by entities other than the CDER:

- **MEM:** the Ministry of Energy will be responsible for working with line ministries to ensure that EE regulations, standards and practices are integrated within the national programs for each sector.
- **Directorate of Electricity and Renewable Energy** at the MEM will be responsible for chairing a National Steering Committee that will bring together key government ministries and private sector representatives (e.g., National Order of Architects, National Building Federation) in order to provide strategic guidance to the CDER and define the priorities of the EE Building Code initiative. The MEM will also be responsible for drafting, with the Cider's help, the implementation decrees that will determine how the new Law on Energy Efficiency and Renewable Energy is applied and provide strategic guidrafting and submitting the text of the proposed energy efficiency law to parliament. This law, as mentioned earlier, will be an essential component of the project since it will grant to the government the legal authority to legislate the EE Building Code;
- **National Industrial Standards Agency:** the SNIMA will be responsible for chairing the technical standards committee that will prepare the EE standards to be included in the EE Building Code. In this regards, drafting and acceptance of the standards will follow the normal process for standardization that has been adopted by Morocco;
- **Ministry of Housing:** this ministry will play a key role, as it will assist the CDER in incorporating the EE Building Code requirements within the investment program of the government, especially where it pertains to housing developments sponsored by the government;
- **Ministry of Health:** the Ministry will be responsible for approving plans to renovate the nation's hospitals, and thus to ensure the EE requirements are incorporated in the construction specifications;
- **Ministry of Tourism:** this Ministry will be responsible for establishing a collaborative effort with the country's hotel operators to seek ways to improve the energy efficiency of the nation's tourism infrastructure. More specifically, the Ministry will work on a proposal to develop a "green" rating system for hotels to promote environmental tourism among Morocco's tourism clientele. Based on standards to be developed with the Moroccan hotel industry and the Ministry of Tourism, a rating of 1 to 5 "Palm Trees" will be granted to hotels meeting minimum standards.
- **Ministry of Education:** this Ministry will be responsible for integrating energy efficiency standards in its program of construction and renovation of university buildings. The Ministry of Education will also adopt the EE standards that will be proposed by the project for residential and teaching facilities under its purview.

During the preparatory assistance phase, the consultants met with the World Bank team that is responsible for the energy portfolio in Morocco. The two organizations have coordinated their approach to the technical assistance and capacity building that is proposed to the MEM and the government of Morocco. The World Bank has proposed technical assistance to the MEM to develop an overall policy on energy efficiency (in all its aspects, and not just in the building sector). This technical assistance will help the MEM clarify its own objectives and will lay the groundwork for the preparation of an enabling EE law. The TA proposed by the Bank is complementary to this proposal and reinforces the objective of developing a strong public focus on energy efficiency throughout Morocco's economy and society.

In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent -- and separated from the GEF logo if possible, as UN visibility is important for security purposes.

PART IV: Monitoring and Evaluation Plan and Budget

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The Logical Framework Matrix in Annex 1 provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built.

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

1. Monitoring and Reporting

1.1. Project Inception Phase

A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize

the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis-à-vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings.

The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again as needed in order to clarify for all, each party's responsibilities during the project's implementation phase.

1.2. Monitoring responsibilities and events

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the Project Coordinator, Director or Chief Technical Advisor (depending on the established project structure) based on the project's Annual Work Plan and its indicators. The Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Project Coordinator and the Project GEF Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and tentatively outlined in the indicative Impact Measurement Template at the end of this Annex. The measurement, of these will be undertaken through subcontracts or retainers with relevant institutions (e.g. vegetation cover via analysis of satellite imagery, or populations of key species through inventories) or

through specific studies that are to form part of the projects activities (e.g. measurement carbon benefits from improved efficiency of ovens or through surveys for capacity building efforts) or periodic sampling such as with sedimentation.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP Country Offices and UNDP-GEF RCUs as appropriate, will conduct yearly visits to projects that have field sites, or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the SC. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and UNDP-GEF.

Annual Monitoring will occur through the **Tripartite Review (TPR)**. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project outcome may also be conducted if necessary.

Terminal Tripartite Review (TTR)

The terminal tripartite review is held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO and LAC-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

1.3. Project Monitoring Reporting

The Project Coordinator in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature is project specific to be defined throughout implementation.

(a) Inception Report (IR)

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

(b) Annual Project Report (APR)

The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring and project management. It is a self -assessment report by project management to the CO and provides input to the country office reporting process and the ROAR, as well as forming a key input to the Tripartite Project Review. An APR will be prepared on an annual basis prior to the Tripartite Project Review, to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- The constraints experienced in the progress towards results and the reasons for these
- The three (at most) major constraints to achievement of results
- AWP, CAE and other expenditure reports (ERP generated)
- Lessons learned

- Clear recommendations for future orientation in addressing key problems in lack of progress

(c) *Project Implementation Review (PIR)*

The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, UNDP CO and the concerned RC.

The individual PIRs are collected, reviewed and analyzed by the RCs prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyze the PIRs by focal area, theme and region for common issues/results and lessons. The TAs and PTAs play a key role in this consolidating analysis.

The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference.

(d) *Quarterly Progress Reports*

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team. See format attached.

(e) *Periodic Thematic Reports*

As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

(f) *Project Terminal Report*

During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

2. *Independent Evaluation*

The project will be subjected to at least two independent external evaluations as follows:-

(i) *Mid-term Evaluation*

An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

(ii) *Final Evaluation*

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

(iii) *Audit Clause*

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

3. *Learning and Knowledge Sharing*

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.
- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.

The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

PART V: Legal Context

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Morocco and the United Nations Development Programme, signed by the parties on 13 May 1982. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

The UNDP Resident Representative in Rabat is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

ANNEX A: LIST OF ORGANIZATIONS CONSULTED DURING THE PREPARATORY PHASE

The following organizations were consulted during the project preparatory phase:

Public Sector:

- Center for the Development of Renewable Energy
- Ministry of Energy and Mines
- Ministry of Education
- Ministry of Environment
- Ministry of Equipment
- Ministry of Finance
- Ministry of Health
- Ministry of Housing
- Ministry of Tourism
- Ministry of Industry
- Real Estate Management Commission (CGI)
- Regional Urban Planning and Construction Establishment (ERAC)
- Public Testing and Studies Laboratory (LPEE)
- Urban Agency of Casablanca
- Urban Agency of Rabat

Professional Associations:

- Association of Real Estate Developers of Casablanca (ALPIC)
- Federation of Electric and Mechanical Industries (FIMME)
- International Association for Construction, Urban Planning and the Environment (COBATY)
- Moroccan Association of Building Material Importers (APIM)
- Moroccan Association for Energy Management and Efficiency (AMGEE)
- Moroccan Solar and Wind Energy Association (AMISOLE)
- National Building Federation (FNB)
- National Consulting and Engineering Federation (FNCI)
- National Electricity Federation (FNE)
- National Federation of Engineers
- National Construction and Public Works Federation (FNBTP)
- National Hotel Industry Federation (FNIH)
- National Order of Architects
- National Real Estate Federation (FNI)
- Union of Moroccan Real Estate Developers (ULPIM)

Professional Schools:

- National Architecture School (Rabat)
- National Engineering School (Mohammedia)

Private Sector:

- Beach Club Hotel (Agadir)
- Chellah Hotel (Rabat)
- Dunes d’Or Hotel (Agadir)
- FRAM (French hotel operator)
- Karam Hotel (Ouarzazate)
- Kenzi Sémiramis Hotel (Marrakech)
- Les Idrissides Hotel (Marrakech)
- Les Jardins d’Agdal Hotel (Marrakech)
- Le Tikida Garden Hotel (Marrakech)
- Oumlil Hotel (Rabat)
- Sahara Hotel (Agadir)
- Société MAWLID (real estate developer)
- TUI Group (German hotel operator)
- Volubilis Hotel (Fès)
- Representatives from 55 private sector firms—including architects, equipment suppliers, building engineers and real estate developers—as part of an extensive survey of private sector capabilities and interest in EE sector

Power Sector:

- LYDEC (power distribution company in Casablanca – private concession)
- Office National d’Electricité (transmission system operator)
- REDAL (power distribution company in Rabat – private concession)

Financial Sector:

- Caisse Centrale de Garantie (CCG)
- Caisse de Dépôt et de Gestion (CDG)

Bilateral/Multilateral Agencies:

- African Development Bank
- Fonds Français pour l’Environnement Mondial (French GEF)
- French Development Agency (French bilateral agency)
- GtZ (German bilateral agency)
- Italian Ministry of the Environment and Territory
- World Bank

ANNEX B: SURVEY RESULTS OF PRIVATE CONSTRUCTION SECTOR IN MOROCCO

Overview

The project team conducted a survey of Morocco's construction sector professionals to understand the level of understanding and experience with energy efficiency programs among private sector stakeholders. 55 interviews were conducted in Casablanca, Rabat and Marrakech, and 22 respondents participated in discussion forums. Interviewees were conducted with the following professional groups:

- Architects
- Building engineers
- Real estate developers
- Suppliers/installers of building materials and equipment

Major Findings – Level of Interest and Knowledge

Here are the major findings regarding the level of interest and degree of knowledge in energy efficiency by construction professionals:

- Most respondents were quick to identify solar water heaters as an example of energy efficient techniques in the construction sector, but they had difficulty providing other examples. This suggests both a qualified success in the government's efforts to promote solar technology and some limitations in the promotion of other EE options.
- Most of the EE knowledge is acquired through various media and informational sources (49% of respondents) as opposed to formal training courses or direct experience with various technologies and practices.
- Despite the lack of knowledge, private sector interest in energy efficiency is "strong" (*preferred response for 87% of architects and engineers, 68% of real estate developers, and 70% of suppliers and installers*).
- A significant portion of respondents feel that the government must take the lead by developing appropriate EE regulations (*preferred response for 33% of architects and engineers, 19% of real estate developers, and 50% of suppliers and installers*).
- The primary benefit of an EE Building code varies by professional group:
 - The majority of real estate developers (60%) believe that the primary benefit of an EE building code is environmental.
 - The majority of architects (53%) and suppliers (60%) believe that the primary benefit is economic.
- Each professional group has a different opinion about the principal disadvantages of EE products and techniques:
 - Lack of familiarity is cited by 33% of architects and engineers.

- Cost is cited by 34% of real estate developers.
- Maintenance requirements are cited by 30% of suppliers and installers.
- Solar water heaters remain the dominant type of EE equipment in the construction sector, representing 83% of EE products sold by suppliers.

Major Findings – Gap Analysis

Here is a summary of the gap analysis regarding EE tools, standards and practices conducted with building sector professionals:

Current Level of Knowledge	Respondent Needs
Lack of awareness of EE tools, standards and practices in the construction sector	Better information regarding appropriate EE equipment and practices in a building
Lack of understanding about the specific EE needs of a given sector (Healthcare, Hotels, Apartment Buildings, etc.)	Identify and communicate the EE requirements for different types of buildings
RE deployment is currently limited to solar water heaters in the housing sector	Identify opportunities for deploying other RE technologies in other types of buildings
Poor understanding of EE investment costs and rate of return	Measure and publicize financial benefits of EE equipments and practices
Building construction professionals lack proper arguments to convince investors/decision makers due to their lack of knowledge	Develop EE specialists for the construction sector

Major Findings – EE Training Needs

Here are the major findings regarding training needs of building sector professionals:

- Respondents believe that they need to take EE training courses (*preferred response for 90% of architects and engineers, 100% of real estate developers and 69% of suppliers and installers*).
- Respondents prefer short training courses (no more than one day, costing under \$120 per session) to be offered by professional associations and public agencies.
- Respondents would like EE training courses in:
 - Energy efficient housing construction (*preferred response for 44% of architects and engineers, 33% of real estate developers, and 25% of suppliers and installers*).
 - Solar energy (*preferred response for 47% of architects and engineers, 100% of real estate developers, and 45% of suppliers and installers*).

Major Findings – Fiscal and Regulatory Framework

Here are the major findings regarding the preferred fiscal and regulatory framework for energy efficiency in the building sector:

- Architects, engineers and real estate generally believe that fiscal measures represent the most important incentive for the adoption of EE standards.
- Equipment suppliers and installers generally believe that regulatory measures represent the most important incentive for the adoption of EE standards.
- Respondents believe that the EE Building Code should be introduced in a phase approach (*preferred response for 58% of architects and engineers, 100% of real estate developers, and 70% of equipment suppliers and installers*).
- Respondents believe that EE standards should first be developed for construction materials and supplies (*preferred response for 90% of architects and engineers, 100% of real estate developers, and 70% of equipment suppliers and installers*).

Recommendations from Private Sector Workshops

Here are the recommendations from several workshops held with private sector representatives: architects, engineers, real estate developers, and equipment/building material suppliers and installers:

EE Building Code (EEBC) Activities:

- EEBC should be practical rather than academic or scientific.
- EEBC should take into account geographic and climatic considerations (i.e., should be adapted to Moroccan environment).
- Private sector professionals (e.g., architects, building engineers, etc.) should be invited to participate in the preparation of the EEBC.
- EEBC provisions should be made mandatory and should be developed in a phased approach (i.e., start with minimal requirements first, then progressively expand code requirements in future iterations).
- Technical guidelines and documentation should be developed for specific sectors such as apartment houses, hospitals, hotels, etc.
- Avoid burdening the current building inspection and approval process with a separate EE certification requirement; instead, develop a program to train and certify existing building inspection services so that they can also certify EEBC compliance.
- Technical specifications for apartment housing should take into account the limited capabilities of tenants' associations in Morocco (i.e., difficulty in putting in place communal solutions).

Communication Activities:

- Ensure broad support across Moroccan society for energy efficiency programs, not just among construction sector professionals.

- Launch outreach programs for construction sector professionals (e.g., seminars, conferences, training programs, etc.).
- Provide technical assistance to government agencies and professional associations for pilot projects that can demonstrate and quantify the benefits of EE standards.
- Communicate examples of successful EE applications through mass media and websites to broaden the appeal of EE activities.
- Provide tools and training for calculating the total life cycle cost of EE measures in a building (both upfront investment and lifetime savings) so that architects and engineers can “sell” the EE benefits to investors and project developers.

Outreach Activities:

- Provide short training sessions to educate professionals and project developers.
- Provide technical advisory services for construction professionals through a non-profit agency.
- Provide appropriate training for technical specialists, for generalists (e.g., architects) and for investors and decision makers (e.g., real estate developers, housing agencies, etc.).
- Introduce fiscal incentives and reduce import duties for EE supplies and equipment.
- Introduce EE courses as part of the curriculum for architectural and engineering schools.

ANNEX C: EXAMPLES OF PROPOSED EE INVESTMENTS IN HOUSING, HEALTH AND HOTEL SECTORS

The project team identified 50 demonstration projects in the housing, health, hotel and education sectors in Morocco that provide opportunities for demonstrating EE equipment and practices, while testing the efficacy of various EE building standards. The list of demonstration projects includes:

- Hospitals (renovations): 20
- Hotels (renovations): 10
- Social housing buildings (new construction): 5
- Apartment buildings (new construction): 5
- Apartment buildings (renovations): 5
- Educational facilities (renovations): 5

Even though social housing represents an important element of this project, a small number of demonstration projects were selected because most social housing units are built according to the same specifications. Due to cost concerns, only a limited investment in insulation materials can be made for each social housing unit. There is therefore not a lot of variability from one social housing unit to the next. The savings in this sector are important due to the large number of units (1.5 million units over 15 years).

Greater focus is placed on regular apartment buildings (both new construction and renovations) since a broader variety of EE building design, construction techniques and building materials can be tested and validated during the course of the demonstration projects. As the quality of housing improves in Morocco over the next two decades, it can be hoped that some of these initiatives will “trickle down” from standard housing to social housing.

Example of Demonstration Project in the Social Housing Sector

The Government of Morocco’s housing program calls for the construction of 100,000 social housing units per year. While the savings may be modest on a “per unit” basis, they are significant for the sector as a whole given the quantities of apartments involved. The savings come from a lower adoption rate of inexpensive air conditioners and space heaters in poorly designed and insulated apartments.

Here is an example of a proposed EE demonstration project for a social housing apartment:

- Proposed EE measures for social housing:
 - Insulation (cork or other) for exterior surfaces and roof
 - Sun screens over windows
 - Low-flow shower heads & CFL light bulbs
 - Preinstalled ducts for future solar water heater installation
- Estimated savings in a single social housing unit:
 - Price of average apartment: \$19,000

- EE investment per apartment: \$380 (or 2% of price)
- Savings from postponed purchase of air conditioners/space heaters

Example of Demonstration Project in the Hotel Sector

The Government of Morocco has an ambitious plan to develop its tourism sector, aiming to attract 10 million visitors by 2010. A number of large hotel complexes are now being developed along Morocco's Atlantic and Mediterranean coastlines. Since new hotel construction is being overseen by large international groups that are expected to apply existing EE practices and norms in their design and construction standards, the focus of this project is on EE renovations for Morocco's existing hotel infrastructure.

Here is an example of a proposed EE demonstration project for a 5-star hotel in Marrakech that is interested in reducing its energy consumption:

- Proposed EE measures for a Marrakech hotel:
 - Low-flow shower heads & CFL light bulbs
 - Central cut-off switch in each room
 - Solar water heating for pool in winter
 - Computerized power management system
 - Co-generation technologies
- Estimated savings in Marrakech hotel:
 - Annual energy costs before EE investment: \$330,000
 - EE investment: \$130,000
 - Annual energy savings: 32% or \$106,000 (15 month break-even)

Example of Demonstration Project in the Hospital Sector

With the introduction of universal health insurance, the Government of Morocco is pushing for the renovation of the country's more than 120 public hospitals. At present, three quarters of Moroccan hospitals do not have hot water available for patient care because of maintenance issues with standard boilers.

Here is an example of a proposed EE demonstration project for a hospital renovation in Agadir:

- Proposed EE measures for Agadir hospital:
 - Computerized power management system
 - Low-flow shower heads & CFL light bulbs
 - Motion detectors (for lighting & air conditioning)
 - Solar water heaters
- Estimated savings for Agadir hospital:
 - Annual energy costs before EE investment: \$67,000
 - EE investment: \$72,000
 - Annual energy savings: 20% or \$13,500 (64 month break-even)

SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

PART I: Incremental Cost Analysis

Refer to Annex A of the Executive Summary.

PART II: Logical Framework Analysis

Refer to Annex B of the Executive Summary.

SECTION III: TOTAL BUDGET AND WORKPLAN

Award ID		00045612								
Award Title		PIMS 3230: Energy Efficiency Building Codes in Morocco								
Business Unit		MAR10								
Project Title:		PIMS 3230: Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco								
Outcome	Responsible Party	Source of Funds	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Total (USD)
OUTCOME 1: Setting up an EE Building Code Unit at the National level, and reinforcing compliance at the municipal level	CDER	62000	GEF	71300	Local consultants	163000	219 000	224 000	174 000	780 000
	CDER	62000	GEF	71600	Travel	15000	15 000	6 000	5 000	41 000
	CDER	62000	GEF	72200	Equipment & Furniture	15000	5 000	5 000	5 000	30 000
	CDER	62000	GEF	74500	Miscellaneous	6000	6 000	6 000	6 000	24 000
	Sub-total GEF					199 000	245 000	241 000	190 000	875 000
	CDER	30071	MOR	71400	Contractual Services Individuals	100000	100 000	100 000	100 000	400 000
	Sub-total MOR					100 000	100 000	100 000	100000	400000
	Total Outcome 1					299 000	345 000	341 000	290000	1 275 000
OUTCOME 2: Sizing the energy efficiency potential in new buildings (outreach, demonstration and knowledge sharing activities)	CDER	62000	GEF	72100	Contractual Services-Companies	126000	138 000	144 000	64 000	472 000
	CDER	62000	GEF	71600	Travel	24000	24 000	24 000	24 000	96 000
	CDER	62000	GEF	72200	Equipment & Furniture	24000	12 000	6 000	6 000	48 000
	CDER	62000	GEF	74500	Miscellaneous	6000	6 000	6 000	6 000	24 000
	Sub-total GEF					180 000	180 000	180 000	100 000	640 000
	CDER	30000	ITA	72300	Local consultants	100000	200 000	118 000	-	418 000
	CDER	30000	ITA	72100	Contractual Services-Companies	-	250 000	332 000	-	582 000
	Sub-total ITA					100 000	450 000	450 000	-	1 000 000
	CDER	30071	MOR	72100	Contractual Services-Companies	97500	87 500	87 500	87 500	360 000
	Sub-total MOR					97 500	87 500	87 500	87500	360 000
	Total Outcome 2					377 500	717 500	717 500	187500	2 000 000
OUTCOME 3: Drafting and implementing an EE Building Code for residential buildings	CDER	62000	GEF	71300	Local consultants	20000	40 000	20 000	-	80 000
	CDER	62000	GEF	71200	International Consultants	50000	50 000	55 000	-	155 000
	Subtotal GEF					70 000	90 000	75 000	-	235 000
	CDER	30071	MOR	72100	Contractual Services-Companies	-	75 000	75 000	25 000	175 000
	Sub-total MOR					-	75 000	75 000	25000	175 000

Project Document – EE Building Code in Morocco

	Total Outcome 3					70 000	165 000	150 000	25000	410 000
Outcome 4: Developing and disseminating standards and guidelines for professionals	CDER	62000	GEF	71300	Local consultants	100200	100 000	69 000	-	269 200
	CDER	62000	GEF		International Consultants	100000	100 000	100 000	71 000	371 000
	CDER	62000	GEF	71600	Travel	49800	50 000	10 000	25 000	134 800
	CDER	62000	GEF	72100	Contractual Services Companies	50000	100 000	-	-	150 000
	CDER	62000	GEF	71400	Contractual Services Individuals	-	-	-	-	
	Sub-total GEF					300 000	350 000	179 000	96000	925 000
	CDER	30071	MOR	71200	International Consultants	49000	25 000	25 000	25 000	124 000
	CDER	30071	MOR	71400	Contractual Services Individuals	161000	150 000	150 000	-	461 000
	Sub-total MOR					210 000	175 000	175 000	25000	585 000
	Total Outcome 4					510 000	525 000	354 000	121000	1 510 000
	CDER	30071	MOR	72100	Contractual Services Companies	606000	4 007 910	4 100 000	4 100 000	12 813 910
	Sub-total MOR					606 000	4 007 910	4 100 000	4100000	12 813 910
	CDER	62000	GEF	72100	Contractual Services Companies	81250	81 250	81 250	81 250	325 000
	Sub-total GEF					81 250	81 250	81 250	81250	325 000
	Total Outcome 5					687 250	4 089 160	4 181 250	4181250	13 138 910
OUTCOME 6: Project management	CDER	30000	Italian Govt	71400	Contractual Services Companies	18000	50 000	50 000	50 000	168 000
	CDER	30000	Italian Govt	72200	Equipment & Furniture	32000	-	-	-	32 000
	Sub-total Italian Government					50 000	50 000	50 000	50000	200 000
	CDER		UNDP	71400	Contractual Services Companies	31200	31 200	31 200	31 200	124 800
	CDER		UNDP	71200	International Consultants	-	-	-	-	-
	CDER		UNDP	72200	Equipment & Furniture	2800	2 800	2 800	2 800	11 200
	CDER		UNDP	71600	Travel	16000	16 000	16 000	16 000	64 000
	Sub-total UNDP					50 000	50 000	50 000	50000	200 000
	Total Outcome 6					100 000	100 000	100 000	100000	400 000
Total GEF					830 250	946 250	756 250	467 250	3 000 000	
Total MOR					1 013 500	4 445 410	4 537 500	4 337 500	14 333 910	
Total UNDP					50 000	50 000	50 000	50 000	200 000	
Total Italian Government					150 000	500 000	500 000	50 000	1 200 000	
TOTAL Project					2 043 750	5 941 660	5 843 750	4 904 750	18 733 910	

Outcome	Output	GEF (US\$)	Italian Govt. (US\$)	UNDP-Rabat (US\$)	Moroccan Gov't (US\$)	Total (US\$)
1. EE Building Code Unit is set up at the national level, and compliance is reinforced at the municipal level	1.1 – EE Building Code Unit operational within CDER	725,000			300,000	1,025,000
	1.2 – Institutional and operational capabilities of municipal code enforcement agencies are strengthened	150,000			100,000	250,000
	Sub-Total	875,000			400,000	1,275,000
2. Sizing the energy efficiency potential in new buildings (outreach, demonstration and knowledge sharing activities)	2.1 – Mobilization, outreach and training activities	450,000			360,000	680,000
	2.2 – Project development services	190,000				240,000
	2.3 – Demonstration projects	0	1,000,000			1,080,000
	Sub-Total	640,000	1,000,000		360,000	2,000,000
3. EE Building Code for residential buildings is drafted and implemented	3.1 – EE Building Code is designed and drafted	185,000			175,000	360,000
	3.2 – Enabling regulatory framework for EE Building Code is drafted	50,000				50,000
	Sub-Total	235,000			175,000	410,000
4. EE Standards and guidelines for professionals are developed and disseminated	4.1 – EE standards are developed for buildings	390,000			430,000	820,000
	4.2 – Technical guides are drafted for professionals	150,000			155,000	305,000
	4.3 – Testing program is implemented to evaluate the impact of proposed EE standards	175,000				175,000
	4.4- Monitoring, learning and evaluation achieved	210,000				210,000
	Sub-Total	925,000			585,000	1,510,000
5. EE Investment realized by the public and private sectors	5.1 – EE investments realized in housing sector	325,000			5,980,348	6,305,348
	5.2 – EE investments realized in the health sector				2,000,000	2,000,000
	5.3 – EE investments realized in the hotel sector				2,416,781	2,416,781
	5.4- EE investment realized in the higher education sector				2,416,781	2,416,781
	Sub-Total	325,000			12, 813,910	13,138,910
6. Project management	6.1 – Overall project management and coordination		200,000	200,000		400,000
	Sub-Total		200,000	200,000		400,000
Project Total		3,000,000	1,200,000	200,000	14,333,910	18,733,910

SECTION IV: ADDITIONAL INFORMATION

PART I: Other Agreements

The following commitment letters are included in the Commitment Letters PDF file:

1. Moroccan Government - GEF Focal Point
2. Center for the Development of Renewable Energy (CDER)
3. Ministry of Housing
4. Ministry of Health
5. Ministry of Tourism
6. Italian Government
7. French Government
8. UNDP-Rabat

PART II: Stakeholder Involvement Plan

During the preparatory assistance phase, a number of activities took place to ensure broad consultation of the stakeholders and maximize opportunities to disseminate the project information. Here were some of the main activities:

- Regular meetings of the project Steering Committee, whose membership included key ministries (e.g., Finance, MEM, Health, Housing, Tourism, Environment), government agencies (e.g., National Industrial Standards Agency), private sector trade associations (e.g., National Order of Architects) and power sector representatives (e.g., ONE);
- Several all-day workshops with private sector representatives and with public sector stakeholders;
- In-depth survey of 55 private sector representatives, including real estate developers, architects, engineers, and suppliers, to gauge their understanding and their interest in EE measures.

The project will schedule a number of workshops at the start of the project, as well as at critical points during its implementation to ensure: (i) close coordination with private sector companies representing developers, architects, suppliers and energy audit bureaus; and (ii) continued collaboration between the CDER and participating ministries to ensure the broadest possible level of political and administrative support.

Participation and involvement of these stakeholders will continue during the project through: (i) national EE forums which will be proposed annually; (ii) project Steering Committee meetings that will meet bi-annually or quarterly; (iii) electronic newsletters that will be distributed through professional trade associations to their membership; and (iv) training sessions and other outreach/capacity building activities designed to provide the necessary technical tools to industry professionals.

The proposed Interagency Taskforce (National EE Commission) will in particular ensure that there is a forum for a policy dialog regarding EE with both public and private sector representatives. This forum will act in an advisory capacity to the CDER, which will be responsible for drafting the EE Building Code, and the National Industrial Standards Agency, which will be responsible for developing the EE standards. This forum will also serve as a platform to ensure that each participating line ministry (Housing, Tourism, Health, etc.) is actively pursuing sectoral policies that are aligned with the objectives of this project, thus ensuring that EE concerns become imbedded inside the sectoral programs of each ministry.

SIGNATURE PAGE

Country: Morocco

UNDAF Outcome(s)/Indicator(s):

(Link to UNDAF outcome. If no UNDAF, leave blank)

Expected Outcome(s)/Indicator (s):

(CP outcomes linked t the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s):

(CP outcomes linked t the SRF/MYFF goal and service line)

Implementing partner:

(Designated institution/Executing agency)

Other Partners:

Programme Period: 2009-2012
 Programme Component: _____
 Project Title: **Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco**
 Project ID: PIMS 3230: ATLAS Award ID 00045612;
 ATLAS Project ID: 00053906
 Project Duration: 4 years
 Management Arrangement: NEX

Total budget: USD 18,733,910
 Total budget (UNDP managed): USD 200,000
 Allocated resources:
 • Government USD 14,333,910
 • GEF: USD 3,000,000
 • Other:
 ○ Donor USD 1,200,000
 ○ Donor _____
 ○ Donor _____
 • In kind contributions _____

Agreed by (Government): _____

Agreed by (Implementing partner/Executing agency): _____

Agreed by (UNDP): _____