Global Environment Facility

GEF

MOHAMED T. EL-ASHRY
CHIEF EXECUTIVE OFFICER
AND CHAIRMAN

April 24, 2000

Dear Council Member:

UNDP, the Implementing Agency for the project entitled, *Morocco: Market Development for Solar Water Heaters*, has attached the 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 the Council in May 1999 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP details how Council's comments and those of the STAP reviewer have been addressed. I am, therefore, endorsing the project document.

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

Sincerely,

Mohamed T. El-Ashry
Chief Executive Officer
and Chairman

cc: Alternates, Implementing Agencies, STAP

United Nations Development Programme
GLOBAL ENVIRONMENT FACILITY (GEF)

24 March, 2000

Dear Mr. El-Ashry, Mohamed :

Subject: **MOR/99/G31/A/1G/99 – Morocco Market Development For Solar Water Heaters**

I am pleased to enclose the project entitled **"Morocco Market Development For Solar Water Heaters"** approved through the May 1999 the GEF Executive Council Meeting.

As per paragraph 29 and 30 of the GEF Project Cycle, we are submitting this project to you for circulation to the Executive Council Members for comments and, subsequently, for your final endorsement.

Thank you in advance for expediting the review and approval of this project.

Yours sincerely,

Rafael Asenjo
Executive Coordinator

Mr. Mohamed El-Ashry
Chief Executive Officer
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PM

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MOR/99/G31/A/1G/99 – Morocco Market Development for Solar Water Heaters

Table, presenting the comments of Council members on the project brief that were received and providing details on how the comments have been addressed.

Comments received from Council Members (May 99)	**Answers to comments (addressed in present project document)**
Development plan looks optimistic; should include assessment of potential real market at project end; Financial and market analysis should be conducted to estimate the potential of SWH market penetration	An in-depth market assessment has been conducted in the context of the UNDP funded renewable energy programme, on which the current project is built. Comparison with the market situation in other Mediterranean countries shows that proposed end of project market situation is realistic, provided the identified barriers are addressed as proposed by the project. In addition, further studies into this are planned as part of project implementation (see output 2.1 and its activities)
Study Guarantee scheme carefully	More details on the Quality Guarantee Fund are provided in Annex 7; in addition, a special design phase for the Fund is included as an activity during project implementation (activity 3.3.1) with the help of international specialists
Project should build on lessons from other countries (e.g. Tunisia, and its experience with ESCO's to facilitate dissemination)	This has been planned specifically into project design, as shown by output 1.1 (and activities 1.1.1 thru 1.1.3) which is planned as the first activity of project implementation and the results of which will have an impact on the rest of the project; see also activity 3.2.1
Financial barriers have been underestimated; is proposed price reduction realistic over project life time?	The combined impact of the QGF and increased production of SWH locally make the price reduction credible, especially when one compares the market situation in other Mediterranean countries.
Capacity building is crucial to success and has not been taken into account in project design	Capacity building is indeed crucial and this has been recognized and is reflected in the project design, as demonstrated by training and capacity building at various levels and targeting different stakeholders (see activities 1.1.1 thru 1.1.3; 1.2.2; 1.3.2 all focusing on policy makers; 2.1.1; 2.2.2, 2.3.5,2.3.6, 2.4.4 focusing on consumer, installers and suppliers; 3.5.1 suppliers and dealers; 4.1.4, installers, constructors; 4.2.2 enforcers of legislation; 4.3.3 consumers

UNITED NATIONS DEVELOPMENT PROGRAMME

Global Environment Facility

Project of the Kingdom of Morocco

PROJECT DOCUMENT

Project Number:	MOR/99/G31/A/1G/99
Project Title:	Morocco Market Development for Solar Water Heaters
Estimated Start Date:	February 2000
Estimated End Date:	January 2004
Executing Agency:	Ministry of Energy and Mines
Implementing Agency:	Center for the Development of Renewable Energy (CDER)

GEF	$2,965,000
UNDP/TRAC	250,000
MOR/97/004	500,000
ONE	350,000
CDER	250,000
Parallel financing	
Andalusian Govt. (Spain)	400,000
AMISOL	50,000
Local investment 38,155,000	
In-kind	
Government	250,000
Electricity distributor	100,000
Total:	***$ 43,270,000***

Classification Information

CC sector and sub-sector: Environment
Primary type of intervention: Capacity Building
DCAS sector & sub-sector: Renewable Energy
Secondary type of intervention: Direct Training
Primary areas of focus/sub-focus: Promoting Environment and Natural .Resources Sustainability

Brief Description

At the beginning of 1998, total solar collectors installed in Morocco came to about 35,000 square meter installations. Comprehensive market surveys indicated a potential medium-term market for solar water heaters in the range of 400,000 square meters. It is apparent that the principal barriers to be addressed in achieving this medium-term potential are typical for an underdeveloped market and relate to four principal marketing elements: product, price, promotion and policy. In particular, the proposed project activities will remove barriers related to i) improving the solar water heating quality, ii) reducing the price and improve affordability, iii) increasing awareness and iv) improving a policy context favorable for solar water heater market development.

This project is in line with GEF Operational Programme # 6 "*Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs*". It could directly reduce carbon emissions by about 350,000 tons during the 4-year project period, and a medium term GHG mitigation impact of 1.4 million tons

On behalf of	**Signature**	**Date**	**Name/Title**
The Government	----------	----------	----------
UNDP	----------	----------	----------

UN official exchange rate at date of signature: $1 = Dirhams 9

List of Acronyms

CDER	Centre de Développement des Energies Renouvelables
GEF	Global Environmental Facility
GRS	Garantie des Résultats Solaires
MEM	Ministère de l'Energie et des Mines
MOR/97/004	Programme de Protection de l'Environnement de préservation des ressources naturelles et de promotion des Energies Renouvelables
OFPPT	Office de Formation Professionnelle
ONE	Office National de l'Electricité
PERG	Programme d'Electrification Rurale Globale
PMO	Project Management Office
PROMASOL	Programme national de promotion du chauffe eau solaire
PSC	Project Steering Committee
QGF	Quality Guarantee Fund
UNDP	United Nations Development Programme
AMISOL	Association Marocaine de l'Industrie Solaire
SNIMA	Service de Normalisation
TOR	Terms of References
VAT	Value-added tax

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A. Context

A.1 Description of Sub-sector

Morocco has a population of approximately 27 million inhabitants that is rapidly growing and becoming increasingly urban (representing more than 50% of the total population). Energy needs are growing even faster owing to the changes in life style. Morocco imports more than 90% of its primary energy oil and coal (7 Mtoe and 1.45 Mtoe respectively for 1997). Included in the official statistics is the national production of coal (0.35 Mtoe), hydroelectricity (0.17 Mtoe), domestic oil (2.2 Mtoe), and bottled gas (LPG) (0.8 Mtoe), which is mainly used for domestic purposes. Wood energy is mainly used in rural households (about 3 Mtoe), and is, besides solar, the only important locally available energy resource. However, woody biomass is over-exploited (contributing to de-forestation) and used inefficiently.

Electricity sector

The installed electric power capacity is around 4,000 MW. More than 90% of the electricity is produced from oil or coal, with the rest from hydroelectricity and imports. Natural gas that is levied from the Maghreb-Europe pipeline will be used mainly for electricity production, where gas turbine generators should soon supply a significant part of that production. In 1997, primary energy consumption (in thousands of tons of oil equivalent) were as follows: petroleum products 6000, coal 2100, hydroelectricity 543.8, and natural gas 22.8.

Electricity generation is being privatized. Currently 1,320 MW is under concession (BOT) with Individual Power Producers. In addition, contracts for the investments for a 50 MW wind farm have been signed. Prices for petroleum and electricity are still controlled, but the tendency is that these prices should reflect real costs in the future.

The distribution networks are underdeveloped (electricity) or non-existent (gas). The situation is even more severe in rural areas. The electricity grid only reaches 60% of the population: about 85% in urban areas and 35% in rural areas. The high needs during peak hours lead to inefficient use of power plants (40% of the production equipment is only used five hours a day). The supply of wood and charcoal (used in rural areas) as well as LPG is difficult.

A rural electrification programme (PERG) is ongoing with an annual budget of US$ 150 million for the next 10 years. Local authorities participate in the financial aspects with the end users, who can take advantage of soft loans. The importance of renewable energy (wind, solar, small hydro and biomass) has been acknowledged, and these sources are targeted to cover 200,000 families needs.

Thermal solar energy sector

There is a high level of solar radiation in Morocco, with an average 3,000 hours of sunshine per year. The dangers of freezing are virtually non-existent in the most highly populated areas. Thus, simple thermal solar siphon systems without anti-freeze fluids can be used. Solar energy has been used for heating water in Morocco over the past twenty years. The solar market has always been unstable and never managed to take off as it has in other Mediterranean countries. Solar collectors

installed at the beginning of 1998 came to about 17,000 square meters for collective installations and about 18,000 square meters for residential installations. The type, size, quality and price of these installations vary considerably.

Domestic hot water usage is low, especially in rural areas, as a result of a combination of factors, including: i) high cost of water heaters (both investment and running costs), ii) wide use of public baths (hammams), iii) limited distribution network for drinking water, reaching only 45% of the population (nearly 80% in the towns and 5% in rural areas), and iv) limited access to the electricity grid (50% of the population). However, domestic hot water consumption is increasing rapidly as a result of population growth, change in life style, town planning, and improvement in the water distribution networks.

A.2 Host Country Strategy

The national energy policy aims at improving supply, particularly in rural areas, and improving adaptation to demand. In order to reach these objectives, the Ministry for Energy and Mines has defined several priorities, three of which are particularly pertinent:

- First, create the conditions for efficient sustainable development by restructuring the energy sector and ensuring its transparency by means of fiscal neutrality with respect to energy sources, real cost tariff setting, setting up distribution concessions, and developing links with international operators.
- Second, quickly improve the energy supply by encouraging private investments and by opening the market to the rural population, mainly by means of rural electrification.
- Third, rationalizing demand for conventional and wood energy by encouraging energy saving, by developing alternative renewable energy sources, and by adjusting the tariffs in relation to the costs (especially as it relates to peak hours).

The Moroccan government has elaborated a National Action Plan for the Environment (PANE) with support from UNDP, among others. This plan has led to a programme that aims at ensuring the sustainable management of natural resources and the environment. Part of this Plan deals with energy in rural areas. Besides an important programme for rural electrification, the Plan makes provisions for the development of solar thermal energy as a substitute for fossil-fuel based water heating and wood-energy, and also, for setting-up a series of structural measures (energy centers, micro-funding schemes, training, etc.).

The Ministry of Environment has been created in 1997. As well, the creation of an Environmental Investment Fund is considered possible, but concrete steps have not been undertaken yet.

A.3 Prior or Ongoing Assistance

Within the framework of PANE and the National Energy Policy a number of activities are planned and/or ongoing, aimed at developing the market for solar water heaters:

Government of Morocco

a) The Ministry of Public Health has recently equipped 3 hospitals with solar water heating systems. Additional projects are under discussion.
b) It is proposed that at minimum 10% of new dwellings built in the coming 5 years by the regional planning and construction establishments (Ministry of Habitat) should be equipped with solar water heaters. This amounts to 3,000 domestic solar water heating units per year equal to 6,000 square meters of collectors per year.
c) The national electricity utility, ONE, has undertaken an assessment in the town of Agadir on the potential introduction of residential solar water heating systems to reduce the peak demand caused by electric water heaters. No follow-up activities have been prepared yet, but a genuine interest exists with ONE to disseminate solar water heating systems at a large scale. The said commitment is reflected by a cash contribution of US$ 350,000 and an estimated in-kind contribution of US$ 50,000 to the proposed GEF intervention.
d) The Ministry of Education has expressed interest in equipping several boarding schools with solar water heaters. Discussions are currently underway.

UNDP

Under the UNDP/Government renewable energy programme MOR/97/004, an in-depth market assessment for solar water heaters has been undertaken and a national strategy (PROMASOL) developed (in collaboration with the Andalusian Government). The strategy aims at improving the quality and reducing the price of solar water heaters. Furthermore, a Guaranteed Solar Results (GRS) scheme (see Annex 8) has been designed and will be market-tested the first half of 1999. In addition, a number of demonstration projects in 2 or 3 rural hammams, one center for handicapped people in Bouskoura, and 2-3 other collective end-uses will be realized. The MOR/97/004 project will contribute $ 500,000 to this project.

Andalusian Government (Spain)

500 domestic solar water heaters equal to 1,000 square meters will be installed in Northern Morocco during the period 1999-2000 in cooperation with the Andalusian Government. The project has been launched in September 1999.

A.4 Institutional Framework for Sub-sector

The Moroccan solar sector represents a potentially important human, institutional and technical capacity. Most solar systems sold in Morocco over the past few years have been supplied by a small number of companies that import or assemble imported components, as well as one semi-industrial local manufacturer. Most of the companies are sufficiently large to be dynamic but insufficiently so to launch, by themselves, a development programme that could transform a marginal market with high prices to a low cost, high product quality mass market. These companies have made progress recently such that other companies that have a latent solar activity could react to an important market development. A trade association, " Association Marocaine de l'Industrie Solaire" (AMISOL) regroups all the different actors and is actively involved in common projects.

The Ministry of Energy and Mines (MEM), Department of Energy, is the principal governmental relay, in partnership with the Ministry of Environment, for activities concerning solar energy. The "Centre de Développement des Energies Renouvelables" (CDER) founded in 1982 and based in Marrakech, is the principal public organization concerned by this field of activity. The national electricity utility (ONE) and the Public Laboratory for Tests and Studies are the other public organizations that work with the CDER on solar energy. The Technical Committee on Renewable Energy Standardization at the MEM, in collaboration with the Moroccan Industrial Standards Service (SNIMA), will work on defining the pre-standards related to thermal solar energy technologies and performance.

The Office for Professional Training and Labor Promotion (OFPPT), the Institute for Thermal Engineering (ISGTF) and the Universities of Marrakech and Rabat are the principal training centers for active or potential designers, installers, engineers and research staff in solar energy.

B. Project Justification

B.1 Problems to be addressed: The Present Situation

A number of barriers to the development of commercially, institutionally and technically sustainable solar water heating systems in Morocco have been identified and discussed within the framework of the UNDP assisted renewable energy programme MOR/97/004. In addition, a UNDP/GEF project formulation mission has analyzed the existing barriers for solar water heater market development and discussed in detail with the main stakeholders the extent of these barriers as well as potential activities for their removal.

It is apparent that the principal barriers to be addressed are typical for an underdeveloped market, and relate to four principal marketing elements: product, price, promotion and policy. Specifically, the following barriers are preventing the market development for solar water heaters in Morocco:

Policy related barriers

(a) Lack of human and institutional capacity for solar water heater project development, including the development of financial mechanisms that encapsulate 'financial' criteria of the private sector, financial institutions and end-user groups (i.e. business plan development).
(b) Lack of sufficiently developed technical, institutional, financial and policy infrastructures to support the development of solar water heating market.
(c) Conflicting policy interests from different Ministries result in a policy environment that is not conducive for the development and promotion of the market for solar water heaters.

Promotion related barriers

(a) Little empirical knowledge on the costs and benefits of solar water heating technologies.
(b) Bad image for the solar water heater sector as a result of inefficient or nonfunctional solar water heaters in the market.

(c) Limited awareness on the potential of solar water heating for public, residential and private commercial sectors with key decision-makers, architects and engineers, and various end-user groups.

Price related barriers

(a) Competition based on a rational price/quality ratio is impossible as the solar water heaters supply market is distorted due to low price/low quality systems being offered side-by-side with high price/high quality systems, without a clear distinction by end-users.
(b) Due to the current small market, limited bulk procurement/import of solar water heater systems and/or components, thereby resulting in low volume and high prices.
(c) High prices: costs of solar water heater systems are typically 50% to 80% higher than in other Mediterranean countries.
(d) Lack of dedicated financial mechanisms leading to high up-front costs of solar water heating systems.
(e) Limited capacity in financial institutions to appraise loan applications for solar water heating systems from various end-user groups prevents developing dedicated financial mechanisms, although serious commitment exists to get involved.
(f) The time involvement and overhead costs related to providing small loans for domestic solar water heaters makes bundling of small loans into a package necessary for financial institutions to be involved. The inability to offer an 'aggregate' package to a financial institution hampers generating interest and hence no involvement (yet) in the project development, preparation and implementation phases by financial institutions.

Product related barriers

(a) The absence of norms, standards, certification, codes of practice and performance contracts for solar water heating systems, which eliminates competition (a key element for market development) based on product price and quality.
(b) Low quality (under-performing) solar water heating systems currently available in the Moroccan market, thus long-term development of the solar water heating sector/industry in Morocco is almost impossible.
(c) Limited private sector capacity for local assembly/manufacturing, distribution, installation and maintenance of high quality solar water heating systems.
(d) Heavy reliance on importing solar water heating technologies due to the limited local manufacturing capacity and infrastructure, resulting in relatively high prices.

B.2 Expected End of Project Situation

The expected results of the successful implementation of the proposed project will ensure that the overall objective (market development for solar water heaters) of the project is achieved, and will facilitate the investment in the amount of US$ 38 million by local contractors from the public, residential and private commercial sectors. More specifically:

(a) By early 2001, 50 solar water-heating systems in the public, private and residential sector have been rehabilitated as a direct result of this programme. Furthermore a strategy for the rehabilitation of the remaining systems has been developed, including an implementation plan.
(b) By the end of 2001, through co-financing with municipal and other entities, demonstration installations in various sectors and geographic areas will have been implemented as a result of this programme.
(c) By the end of 2001, the cost of hot water provided by good quality/durable solar water heating systems will have reached a level that can compete with low quality solar water heating systems, electric water heaters and, to a lesser extent, with gas-fired water heaters.
(d) By the end of 2001, a bundling procurement programme will have been designed and will be in place.
(e) By the end of 2003, standards and codes of practice and an institutional infrastructure and framework have been developed and implemented.
(f) By the end of 2003, a mature and well structured market for solar water heater equipment, installation and after sales services exists in Morocco to the extent that it can adequately respond to an increasing demand for solar water heating systems in the public, residential and private commercial sectors.
(g) By the end of 2003, a policy context (reduced VAT and import duties, mechanisms for ensuring quality of the product, solar water heating systems in public buildings and general awareness on the micro- and macro economic benefits of solar water heating systems) favorable for further development of solar water heating systems in Morocco has been developed, endorsed by the relevant authorities, and under implementation.
(h) By the end of 2003, an amount of 100,000 square meters of solar collectors will be installed, of which 80,000 square meters will be a direct result of the proposed GEF intervention. From 2004 onwards, an annual expansion of 40,000 square meters of solar collectors is expected. Direct fossil fuel savings as a result of this programme will represent approximately 1.28 million tons of CO_2 reduction. Over the period 2000-2010 a total amount of 5.12 million tons of CO_2 emissions will have been reduced.

B.3 Target Beneficiaries

The Morocco Solar Water Heater Project will have direct and indirect beneficiaries. The direct beneficiaries in the project are listed and described below:

Local agencies and institutions
The project will benefit the government agencies and non-governmental institutions and organizations involved in the project by building capacity for the implementation of this project and the development and implementation of similar projects in the future. The project will also increase the awareness of public and private policy makers as well as architects and engineers about the importance of solar water heater, renewable energy, and climate change mitigation. Specifically, MEM, CDER, ONE, SNIMA, and other relevant institutions will be the direct beneficiaries of the training programme and capacity building initiatives; government renewable energy policy analysts and technology research agencies will directly benefit from exposure to recent international experience in market mechanisms, financial incentive policies on renewable energy, and best practices on solar water heater technology applications.

Suppliers/installers/dealers
The solar water heater private sector (AMISOL and dealers) will benefit from the reduced mark-up and handling fees, increased access to information and financing from the Quality Guarantee Fund, increased market demand from the awareness campaign, marketing plan, and bundling program, and improved policy and regulatory arrangements which the project supports.

Consumers
Residents in both private and public buildings will benefit from greater access to hot water, as a result of the reduced price of better quality solar water heaters.

The indirect and long-term beneficiaries of the project include:
(a) urban and rural residents that benefit from reduced local pollution and its adverse health impacts;
(b) residents of impoverished areas that benefit from potential reprogramming of funds that would otherwise have been invested in increased power supply. Instead, as a result of the project, these funds could be used to meet other urgent social and humanitarian needs; and
(c) the global community that benefits from reduced climate change, particularly in small island nations and coastal areas.

B.4 Project Strategy and Implementation Arrangements

Project Strategy
This project relies on the market-based approach. The overall strategy is to remove the principal market barriers to solar water heaters in Morocco, thus increasing market demand, which in turn will lead to an increase in supply.

Solar water heaters are a commercially mature technology. In Morocco, however, the solar water heater market is underdeveloped, primarily resulting from high prices, poor quality, limited promotion, and insufficient policy. Hence, this project is intended to increase the market demand by addressing four principal market factors: product quality, product price, promotion/marketing, and financial incentive policies. The underlying assumption is that the increased market demand of solar water heaters will bring down the price. In addition, the local assembly and manufacturing capacity will develop once the sufficient market volume can justify the investment, leading to further decrease in prices.

To ensure sustainability of this project, only good quality products will be promoted through a preferential financing mechanism. However, the *end-user pays* principle will be applied. This stems from the fact that long-term costs of using solar water heaters are equal to, or lower than other alternatives currently in use (mainly electric water heaters). This will contribute to the development of a least cost development strategy, both in financial and economic terms, for the provision of hot water for various end-uses.

First, this project is designed to improve the financial incentive policies for renewable energy, particularly related to solar water heaters in Morocco, such as import tariff and tax incentives, thus

providing incentives for dealers to promote solar water heaters, and for consumers to purchase them. The goal is to increase market demand for solar water heaters by leveling the playing field between renewable energy and conventional energy.

The project will help develop an aggressive product promotion and marketing campaign for decision-makers and professionals, a national marketing plan targeting different consumer groups, and a bundling program targeting large groups of consumers. In addition, the rehabilitation program to retrofit existing solar water heater installations with poor quality will increase consumer confidence in the product, and improve local technical capability of installation and maintenance of high quality solar water heating systems through a hands-on training program.

This project will also develop financing mechanisms for the consumers, dealers, and investors, as well as prepare a business plan and a pipeline of 10-12 bankable proposals. It will also have increased access to information on internationally available systems for dealers, and improved dialogue between suppliers and installers, with a goal of reducing prices and mark-up fees. In addition, this project will put in place an incentive-based Quality Guarantee Fund mechanism, which will provide favorable financial arrangements for the good quality products. Thus, the market price for good quality solar water heaters is expected to drop with the increased market volume.

Finally, this project will have a quality control component to establish standards and codes of practice, develop testing procedures and capacities, develop certification and labeling, train manufacturers and inform consumers of the improved standards and certification, and design the performance contracting enforcement mechanism.

These activities together will facilitate an increase in market demand for good quality solar water heaters, which will lead to a decrease in prices, thus promoting widespread market penetration of solar water heaters in Morocco.

One of the main goals of this project will be to demonstrate the win/win nature of good quality solar water heaters investment to manufacturers, dealers and consumers so as to ensure private sector sustainability beyond the period of GEF support.

Implementation Arrangements

The Ministry of Energy and Mines (MEM) will designate the Center for Development of Renewable Energy (CDER) as the implementing agency. The CDER, created by the MEM in 1982, is a well-established public agency dedicated to promoting the commercialization and industrialization of renewable energy technologies.

The principal office of the CDER is located in Marrakech. In addition, there is a project office located at the MEM in Rabat that is executing the present UNDP-supported project on renewable energy (MOR/97/004). The Rabat office has been in place for over four years and it is the focal point for the development and execution of renewable energy projects. It is proposed that a Project Management Office (PMO) to execute this project be established at the CDER in Rabat. This will reduce costs by making use of the already established administrative and coordination units. The PMO will be staffed by CDER personnel and technically backstopped by national and/or

international experts as appropriate. MEM/CDER will appoint a National Project Director who will have overall responsibility for the implementation of the project.

The day-to-day responsibility of the project will be entrusted to a full-time national Project Manager (PM). The PM will be hired on project funds, based on a competitive recruitment process managed by UNDP and the executing agency cooperatively. S/He will prepare a detailed workplan during project initiation, and will carry out and coordinate the management, administrative and financial functions related to project implementation – this includes coordination among participating agencies, hiring of personnel, work scheduling, information collection and dissemination, and provision of technical assistance as well as technical/financial reporting.

Successful project execution will require close cooperation among the project stakeholders, which will assist the PMO by undertaking key roles as follows:

- The MEM will be responsible for defining quality performance standards and advise on strategic solar development issues.
- The CDER will test and certify products as well as accredit system suppliers and installers. They will also participate in training and information dissemination of project activities.
- The ONE will promote the installation of solar water heaters to release pressure on the power grid during peak hours. It will also provide feedback to the PMO particularly on the impact of project activities on the national power grid.
- The solar industry association, AMISOL, will ensure that its members conduct their professional activities consistent to high standards that engender a durable sustainable solar future.

A Technical Committee, formed of the above-mentioned stakeholders, and including representatives from UNDP and the Andalusian Government, will be established to follow the progress of the project on a regular basis (monthly or bi-monthly).

Finally, a Project Steering Committee (PSC) will be established by the MEM to oversee and direct the activities of the PMO. The PSC will include representatives of the Ministry of Energy and Mines, the Ministry of Environment, the Ministry of Housing, the Ministry of Education and the Ministry of Health. In addition, ONE, AMISOL, and the professional associations representing engineers and architects will also participate in the PSC. The concerns of end-user groups and individuals will be addressed through these PSC representatives. UNDP and representative of the Andalusian Government will also be invited to participate as a PSC member to ensure monitoring of the progress of the programme as well as providing the required guidance to the process where it concerns the administrative UNDP/GEF requirements.

B.5 Reasons for UNDP/GEF Assistance

Through technical assistance activities designed to remove identified barriers, the proposed project will ensure sustainable global benefits in terms of long-term GHG emission reductions. This will be achieved through introducing a renewable energy alternative for the provision of hot water in the public, residential and commercial sectors. As such, the current project is in line with GEF Operational Programme # 6 "Promoting the *Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs*" of the GEF Operational Strategy.

More specifically, the project is completely in conformity with the objectives set forth by Operational Programme # 6 in that:

- It is country driven (the initiative came from the CDER, which is instrumental in promoting renewable energy initiatives nation-wide) and is in full conformity with the commitments under Morocco's National Action Plan for the Environment; and

- It will remove the barriers to the use of commercial renewable energy technologies; in this case, solar water heaters.

- It will reduce any additional implementation costs for solar water heaters that result from lack of practical experience, initial low volume markets, and dispersed nature of applications resulting in economically profitable "win-win" transactions and activities that would increase the deployment of solar water heaters.

- The reduction in greenhouse gas emissions corresponding to the reduced fossil fuel based energy consumption will contribute to the mitigation of climate change.

Furthermore, the projects will ultimately lead to the reduction in the use of fossil based fuels for the generation of hot water, thus resulting in substantial long-term reduction in the amount of GHG (particularly CO_2) emitted to the atmosphere. Direct fossil fuel savings as a result of this programme represent approximately 1.28 million tons of CO_2 reduction. Over the period 2000-2010 a total amount of 5.12 million tons of CO_2 emissions is expected to be reduced.

In keeping with the guidelines and principles of the GEF, the project seeks to fund the increment associated with the activities needed to remove the barriers to wide-scale use and market penetration of solar water heaters. GEF assistance will, among other things, help cover the transaction costs associated with correcting the existing market failures, and ensure a transfer to a sustainable market-based approach to meeting the potential for solar water heaters in Morocco. These transaction costs, as well as the costs of removing other barriers, are deemed unrecoverable on a national level. Removing the identified barriers will ensure that "win-win" projects can be implemented successfully during and following GEF support, where cost-recovery mechanisms, financing systems and institutional as well as human capacity are set up to function sustainably.

B.6 Special Considerations

The premise of this project is to assist market development of solar water heating systems. As mentioned in section B.4.1, to ensure sustainability of this effort, only good quality products will be promoted through a preferential financing mechanism by applying the *end-user pays* principle. A number of current market conditions and trends contribute to the rationale for the proposed timely UNDP/GEF intervention:

(a) The increase in income leads to higher level of comfort requirements such as hot water.

(b) The improvement of the water distribution network provides the basis for solar water heating systems to be installed.
(c) Stable and good solar resources provide a reliable and high quality all-year round free and locally available energy resource.
(d) Reduction of foreign exchange requirements through the use of local resources that substitute fossil fuel based solar water heating.
(e) The hot water demand aggravates the peak supply of electricity, which is sold below peak generation costs. Substituting this demand with solar energy improves the overall cost-effectiveness of electricity generation.
(f) The development of a local market for solar water heating systems (assembly, production, design, installation and maintenance) will create local employment.

B.7 Coordination Arrangements

Successful execution of the project requires close cooperation among all stakeholders. As executing agency and the lead agency for renewable energy development, the CDER will ensure that project activities are coordinated with all related environmental activities, and the project complements all related government and private sector initiatives in the solar water heater sector.

The ONE will provide feedback to the PMO particularly on the impact of project activities on the national power grid, while AMISOL will ensure consistent high standards by its members in conducting their professional activities. The Moroccan industrial standards service (SNIMA) should eventually take over the technical sub-committee for standards from the Ministry of Industry in order to work, in collaboration with the other actors in the sector, on defining the pre-standards related to thermal solar energy technologies and performance.

The PSC will ensure coordination at a macro-level with ongoing developments in Morocco, particularly at the policy level.

The UNDP Country Office in Morocco will help ensure coordination with other UNDP projects, particularly those targeting the energy sector.

At the day-to-day level, the PMO will ensure that activities are coordinated with other similar activities elsewhere in the country as well as the region. The PMO is also responsible for coordinating all project inputs and activities, and disseminating all information prepared under the project.

B.8 Counterpart Support Capacity

The CDER was created by the MEM in 1982 and it is a well-established public agency dedicated to promote the commercialization and industrialization of renewable energy technologies. CDER has the capacity to execute national projects, as proven by its implementation and execution of other UNDP projects. The mission of the CDER includes undertaking studies and research designed to promote, develop and implement renewable energy technologies with particular focus on

demonstrating their technical, economic and social benefits. The CDER is currently implementing the energy component of the MOR/97/004 project.

The MEM, in cooperation with the ONE and the CDER, has been executing, since 1995, a rural electrification programme (PERG), with an annual budget of US$ 100 million over a 15-year period. Local authorities participate in the financial aspects with the end users, who can take advantage of soft loans. The actual rate of implementation of this electrification programme is approximately 1500 villages per year.

The AMISOL has worked closely with the MEM to develop the charter of the Guaranteed Results Scheme (GRS), and with the Andalusian Government to shortlist and select the suppliers/installers for the pilot phase of the PROMASOL.

C. Development Objective

The development objective of this project is to reduce CO_2 and other greenhouse gas emissions in Morocco by removing barriers preventing a sustainable market development for solar water heaters in Morocco.

More specifically, the proposed activities will remove barriers related to i) improving the solar water heating quality, ii) reducing the price and improving affordability, iii) increasing awareness, and iv) improving a policy context favorable for solar water heater market development.

D. Immediate Objectives, Outputs and Activities

Immediate Objective 1 **Design improved financial incentive policies and regulatory framework favorable to the development of the market for solar water heaters.**

Output 1.1 Lessons from other Mediterranean countries reviewed and disseminated.

Success Criteria
The success of this effort will be measured by the degree of capitalization on the regional experience and the number of cooperation programs with Mediterranean countries.

Activity 1.1.1: Identify concerned decision-makers from line ministries and agencies to participate in overseas study tours. [PMO]

Activity 1.1.2: Undertake overseas study tour
Undertake an overseas study tour to meet and discuss with their counterparts in other Mediterranean countries on the successful experience and lessons learned of the policy and regulatory framework favorable to the development of the market for solar water heaters. [PMO/International policy expert] See Annex 5.

Activity 1.1.3: Organise meetings to adapt the lessons learned to the Moroccan context
Hold meetings among the related line ministries and agencies to disseminate the results of the study tours from Activity 1.1.2, analyze the policy contexts related to solar water heaters in other Mediterranean countries, and discuss how to adapt the experience and lessons to the Moroccan context. [PMO]

Activity 1.1.4: Develop cooperation programmes with other Mediterranean countries
These programs would include cooperation in already tested activities relevant to the project, such as marketing/promotion campaigns, financial schemes, testing procedures, etc.

Output 1.2: Moroccan strategy and regulatory framework related to solar water heaters reviewed.

Success Criteria
A report that reviewed and assessed the current Moroccan strategy and regulatory framework related to solar water heaters, and document the initiative of public-private partnership.

Activity 1.2.1: Review the Moroccan strategy and regulatory framework related to solar water heater development
Review the Moroccan strategy and regulatory framework related to solar water heaters through meetings with different stakeholders, including representatives from the public sector, private sector, and consumers. The review will include a) energy pricing (oil, coal, LPG and electricity), b) import tariffs, c) electric utility regulation, d) tax/financial incentives (including VAT and income tax break/holiday) and disincentives for renewable and conventional energy, e) public sector procurement guidelines and f) equipment standards, codes and regulations. [PMO, International policy expert]

Activity 1.2.2: Organize national workshops to discuss Public Private Partnership
Organize workshops where public and private sector representatives will discuss problems and expectations of public-private partnerships to be developed to promote the market for solar water heaters. [PMO]

Output 1.3 Recommendations made on the national strategy to favor the development of the market for solar water heaters.

Success Criteria
- A set of recommendations/proposals that favor solar water heater development submitted to the national government for endorsement.
- Implementation of recommendations/proposals underway.

Activity 1.3.1: Make recommendations to improve the current policy and regulatory framework related to solar water heaters
Based on the lessons learned from other Mediterranean countries and the assessment of the Moroccan strategy and regulatory framework, this activity will make recommendations to adjust the

current strategy and regulatory framework related to solar water heaters in favor of the development of the market for solar water heaters in Morocco. [PMO, International policy expert]

Activity 1.3.2: Organize seminars to review and disseminate the recommendations
Review and disseminate the results of the recommendations for changes in strategy and regulatory framework among different stakeholders through seminars and workshops to reach agreement and gain support. [PMO]

Activity 1.3.3: Develop implementation plans and programs
Develop implementation plans and programs to support the introduction of these changes by the national government. [PMO, International policy expert]

Activity 1.3.4: Design a mechanism to assess the impact of strategy changes
Design a mechanism to assess the impact of strategy changes. The assessment will include the impact on the market, on the peak consumption, on the environment, etc.

Immediate Objective 2 **Undertake a promotion and marketing campaign for good quality solar water heaters to increase market demand.**

Output 2.1 A national solar water heater marketing plan targeting different consumer groups developed.

Success Criteria
Increased demand for solar water heater installations from different consumer groups.

Activity 2.1.1: Identify all the consumer groups for marketing solar water heaters
This activity will identify all the consumer groups for solar water heater installations, including but not limited to: residential houses; public buildings such as schools, hospitals, military buildings, and publicly managed low-cost buildings; as well as private buildings such as hotels, residential and commercial buildings. Each consumer group may require different design and size of solar water heaters, thus different marketing plan for promotion. [PMO, Subcontract item1]

Activity 2.1.2: Disseminate information targeting different consumer groups
This activity will develop different marketing plans and information packages tailored to each consumer group, and undertake their dissemination. [Subcontract item 1]

Activity 2.1.3: Undertake media marketing for solar water heaters
This activity will design and undertake marketing campaign through newspaper, radio, TV, and newsletters to promote solar water heaters. [Subcontract item1]

Output 2.2 Bundling a group of good quality solar water heater installations in public buildings.

Success Criteria

- Installation of 40 good quality solar water heaters in public buildings in accordance with the Guaranteed Solar Results (GRS) scheme.
- Increased demand for good quality solar water heaters.

Activity 2.2.1: Select sites for 40 demonstration installations
This activity will first develop selection criteria for the sites of the 40 solar water heater installation, then in consultation with all stakeholders, perform energy audits and select the sites accordingly. Such sites should be in rural and urban areas, located in visible places where large groups of potential future end-users can be introduced to solar water heaters. The demonstration installations should include representative types of public buildings and geographic locations such as hammams, schools, hospitals, military buildings, and publicly managed low-cost buildings. [Subcontracts item 2]

Activity 2.2.2: Facilitate dialogue with various line ministries
Hold seminars, workshops, and interviews to facilitate dialogue with line ministries and agencies to steer public investments in the direction of solar water heaters for public buildings. [PMO]

Activity 2.2.3: Design the installation of demonstration projects at various sites
The design, integration, and sizing of the solar water heater systems for the demonstration should follow the standards and procedures developed from Output 4.1. [Subcontracts item 2]

Activity 2.2.4: Procure and install solar water heater systems at identified sites
[Subcontracts item 2, item 4]

Activity 2.2.5: Provide on-the-job training
The process of solar water heater installations will provide on-the-job training to architects, engineers, and construction companies in design and installation expertise and skills. A certificate is given to the trainees by the end of the training program. [Subcontracts item 2]

Activity 2.2.6: Organize field visit for potential consumer groups
The potential consumer groups in the neighborhood of the demonstration sites are invited to a field visit to these demonstration installation projects to introduce them to the good quality solar water installations. [PMO]

Output 2.3 Existing public and private solar water heater installations with poor quality rehabilitated.

Success Criteria
50 good quality solar water heater systems retrofitted from the existing poor quality ones in accordance with the Guaranteed Solar Results (GRS) scheme.

Activity 2.3.1: Select 50 representative existing installations for retrofitting

This activity will first develop selection criteria for the 50 representative installations, and undertake wide consultations with stakeholders to select the sites after performing energy audits. The goal is to change the bad images of poor quality solar water heaters and restore consumer confidence in the products. [Subcontracts item 2]

Activity 2.3.2: Evaluate the technological and financial needs for the rehabilitation [Subcontracts item 2]

Activity 2.3.3: Rehabilitate the 50 selected existing installations into good quality solar water heater systems [Subcontracts item 2, item 4 and quality guarantee fund]

Activity 2.3.4: Provide on-the-job training to designers, installers, and maintenance personnel during the rehabilitation process [Subcontract item 2]

Activity 2.3.5: Develop rehabilitation plan for the remaining existing installations
Document the design, technology, and process of the 50 rehabilitation installations. Design and implement a strategy for the rehabilitation of the remaining installations in wide consultation with different stakeholders. [Subcontract item 2]

Output 2.4 Awareness of key decision-makers and professionals raised.

Success Criteria
Increasing interest and support to solar water heater development from decision-makers and professionals.

Activity 2.4.1: Hold a design competition for architects and engineers for good quality solar water heaters.
A design competition for architects and engineers is held for combining good quality solar water heater systems with other functions of roof space like satellite dishes, rest area. [PMO, international SWHS technical expert]

Immediate Objective 3 Reduce price and increase affordability of good quality solar water heaters.

Output 3.1 Reduction of VAT from 20% to 7% for solar water heating systems, components, and services.

Success Criteria
Reduction of VAT from 20% to 7% for solar water heater systems, components and services.

Activity 3.1.1: Facilitate dialogue with the Treasury to reduce VAT and import duties on solar water heating systems and components

Develop a mechanism to reduce VAT to 7% in such a way that it does not favor importers over local assemblers who buy their components locally (i.e. filter out components used for the production of solar water heaters). [PMO, TSG]

Output 3.2 The quality/price ratio on imports improved, and dealer mark-up fees reduced.

Success Criteria

Reduction in product prices and mark-up fees.

Activity 3.2.1: Organise two to three business meetings among local and regional private sector actors in the field of solar water heaters

Organise two to three business meetings (early, mid and end of project) among local and regional private sector actors in the field of solar water heaters. This will stimulate/encourage partnerships and joint ventures, which in turn would lead to synergies that would result in lower prices. [PMO, international SWHS technical expert]

Activity 3.2.2: Facilitate a process/dialogue with the suppliers/installers and the Government

Organize workshops to facilitate a process/dialogue with the suppliers/installers leading to a reduction in their mark-ups to promote market growth, and with various line ministries to steer public investments in the direction of solar water heaters for schools, hospitals, military buildings and publicly managed low-cost building. This would contribute to a market increase for solar water heaters, which in turn will bring down the price.

Activity 3.2.3: Promote local assembly

Promote local assembly and manufacturing at a later stage (2-3 years) when sufficient market volume exists to justify investments related to local manufacturing.

Output 3.3 Design, manage and implement the Quality Guarantee Fund.

Success Criteria

Success of this output will be shown through gradual reduction in market prices for good quality solar water heaters.

Activity 3.3.1: Design the mechanism for the Quality Guarantee Fund

This activity will design the detailed criteria for the operational mechanism and implementation as well as a monitoring mechanism for the Quality Guarantee Fund, including but not limited to: the eligibility criteria; the application procedure; the evaluation and approval procedure and guidelines; management, administration and operation of the fund; the selection procedure of the financial institution; and the screening and testing procedures for the quality of the solar water heaters and what is the testing procedure. [Subcontract item 3 & international and national financing experts]

Activity 3.3.2: Award good quality solar water heaters from the Quality Guarantee Fund
The Quality Guarantee Fund will provide 500, 350, and 200 Dirhams per square meter installed for the first three years of project implementation, complemented by a 13% reduction (from 20% to 7%) in VAT and a gradual reduction of supplier mark-ups. Only screened quality products that meet design, equipment, installation and performance standards will have access to the preferential financial arrangements made available by the Quality Guarantee Fund and the VAT reduction measure. [Subcontract item 5 / PMO, financial institution, and testing institution]

Activity 3.3.3: Monitor performance of the Quality Guarantee Fund
Monitor performance of the Quality Guarantee Fund based on the criteria identified under Activity 3.3.1. [Subcontracts item 4]

Output 3.4 Develop financing mechanisms for suppliers/dealers as well as end-users to increase their access to financing.

Success Criteria
Increased access to financing and growing affordability for solar water heaters.

Activity 3.4.1: Investigate potential financing sources
This activity will identify the available financing sources from the government, banks, multilateral, bilateral, and private for renewable energy, particularly solar water heaters, and hold seminars/workshops with potential investors. The potential various types of capital will be investigated, including the origin of these financial sources; i.e. equity capital, debts, loans, credit enhancements, grants as well as any operationally feasible combination of these sources. The Quality Guarantee Fund from Output 3.3 will be tapped as a financing source to provide preferential funding for good quality solar water heater systems. [PMO, Subcontract item 3]

Activity 3.4.2: Develop financing mechanisms for potential end-users
Review and evaluate the existing financing mechanism under PROMASOL's pilot phase, launched September 1999. Based on it, develop financing mechanisms for potential end-users.

Output 3.5 Develop business plans and prepare a pipeline of 10-12 bankable proposals.

Success Criteria
Participation of potential investors in the training workshop, and a pipeline of 10-12 bankable proposals.

Activity 3.5.1: Hold on-the-job training on the preparation of business plans for bankable solar water heating projects
This activity will be carried out through on-the-job training during the design and preparation of a pipeline of 10-12 business plans for commercially viable demonstration projects in the various end-use sectors. This training will target public sector and private commercial building owners and operators, and it will be conducted in close cooperation with local financial institutions. [Subcontract item 3 / International and national financial experts]

Activity 3.5.2: Disseminate the business plans
These business plans will be made available to potential investors free of charge. [PMO]

Immediate Objective 4 Improve the quality of solar water heaters

Output 4.1 Standards and codes of practice developed for solar water heaters.

The following activities will be undertaken in collaboration with the Technical Committee on Renewable Energy Standardization at the MEM.

Success Criteria
Implementation of improved standards and codes of practices

Activity 4.1.1: Develop design, integration, and sizing standards and procedures
[Subcontracts item 5]

Activity 4.1.2: Provide training to architects and engineers to apply these standards and procedures
[Subcontracts item 5]

Activity 4.1.3: Develop codes of practice for constructors, installers, and plumbers
The standards and codes of practice should address both the quality of the solar water heater hardware (imported unit, imported or locally produced components and assembly of these components), and the quality of the solar water heater 'software' (installation, maintenance, monitoring, after sales services and evaluation).[Subcontracts item 5]

Activity 4.1.4: Provide training for constructors, installers, and plumbers to facilitate compliance
[Subcontracts item 5]

Activity 4.1.5: Announce and disseminate the standards to assemblers and manufacturers to introduce them to the improved standards and specifications and to facilitate compliance
[Subcontract item 5]

Output 4.2 Testing procedures and capacities established for solar water heaters.

Success Criteria
Adoption of screening and testing procedures for solar water heaters.

Activity 4.2.1: Develop testing capacities
Provide training to the personnel responsible of testing in the testing procedures. [Subcontracts item 6]

Activity 4.2.2: Establish testing procedures
[Subcontract item 6]

Output 4.3 A nationally certified quality-labeling programme developed for solar water heaters.

Success Criteria
A certified quality-labeling programme for solar water heaters is in place.

Activity 4.3.1: Develop label concept and criteria
Concept and criteria for the quality label will be developed. This label will indicate to buyers that the product labeled is recognized nationally as good quality. [Subcontract item 6]

Activity 4.3.2: Implement national labeling programme for solar water heaters
[Subcontract item 6]
Activity 4.3.3: Educate consumers about the labeling program
[Subcontract item 6]

Output 4.4 An enforcement mechanism developed to control good quality solar water heaters.

Success Criteria
Increasing good quality solar water heater systems in the market.

Activity 4.4.1: Develop performance contracts for quality control of solar water heaters
Develop an enforcement mechanism, such as giving preferential funding for solar water heating systems only to screened/qualified products, as well as suppliers and installers in combination with performance contracts. The development of solar water heating performance contracts should adapt to the various end-user groups, learning experience and lessons from the Guaranteed Solar Results (GRS) approach currently being designed and market-tested in cooperation with the Andalusian Government in a 1,000 square meters residential solar water heating pilot project in Northern Morocco. [Subcontract Item 3]

E. Inputs

1. National Inputs

CDER has committed the Government of Morocco contribution in both cash and in-kind support from their own budgets. These inputs include project personnel, facilities, DSA assistance for on-site visits and transportation.

1.1 In kind contribution

A. Project personnel, national experts
The personnel input will include salaries, allowance, personnel welfare expenditures and medical insurance. The total input is estimated at $250,000.

B. Equipment and facilities

This input includes administrative support for project, including rent for office and meeting rooms, water, electricity, sanitary management charges, and various kinds of depreciation charges of office equipment.

C. Promotion program

$100,000 (subcontracts item 1)

1.2 Financing contribution

Quality Guarantee Fund:

CDER	$250,000
ONE	$350,000

The total government input is therefore estimated at $950,000 (in cash and kind).

2. Andalusian Government input

Bundling of solar water heater systems	$150,000
Training	$ 50,000
Monitoring	$ 50,000
Quality Guarantee Fund	$150,000

The total Andalusian government input is therefore estimated at $400,000 (in parallel financing).

3. GEF Inputs

A. International Consultants

A Technical Support Group will be subcontracted to provide technical support and backstopping to the project, as needed. TOR are provided in Annex 4. The total budget estimated is $220,000.

B. National Consultants

National consultants will be recruited by the project as follows:

(1) Administration Assistant (to PMO) (48 w/m)
(2) Bookkeeper/Accounting (to PMO) (12 w/m)
(3) National Program Adviser (48 w/m)

TOR for these positions are provided in Annex 3. Payment for national consultants will include fees, DSA and in-country travel costs. The total estimated cost for national consultants is $340,000.

C. Duty Travel

This component will cover the costs for project monitoring and evaluation by staff of UNDP and the Executing Agency. The total budget for duty travel is $70,000.

D. Subcontracts

A total of 6 types of subcontracts will be executed as follows:

(1) National marketing and promotion program
(2) Bundling and rehabilitation of solar water heater systems program
(3) Quality Guarantee Fund
(4) Independent monitoring and evaluation
(5) National standards and codes of practice
(6) National testing, certification and labeling program

Outline TOR for these are provided in Annex 3. The total budget for subcontracts is $760,000.

E. Training

The project will support in-country training, seminars and workshops. These include:

(1) Policy discussion seminars and workshops (Activity 1.1.3, 1.2.2, and 1.3.2)
(2) International Solar Water Heater Seminar and Exhibition (Activity 2.1.3)
(3) Line Ministry Public Investment Seminar (Activity 2.2.5, 2.3.4)
(4) Suppliers/Installers Dialogue Workshop (Activity 3.2.2)
(5) Potential Financing Source Seminar (Activity 3.4.1)

The project will support the following overseas training:

(1) Study tour for policy makers of lessons learned in other Mediterranean countries (Activity 1.1.2)
(2) Study tour for suppliers/dealers of good quality solar water heaters (Activity 3.2.1). See Annex 5 for outline TOR.

The total budget for training is $120,000.

F. Equipment

The project will provide necessary equipment to establish the Testing Lab ($70,000), and will co-finance solar water heating equipment ($210,000).

In addition, office equipment will be provided to the PMO to support the overall management of the project. ($10,000).

The total budget under equipment component is $290,000.

G. Miscellaneous

Administrative and other costs will be incurred in the conduct of this project. These include communication costs, internet access, postage, preparation of reports and published project outputs, and sundry. The estimated cost is $35,000.

Project preparation cost is $40,000. Costs for project support service is $90,000 for UNDP Rabat.

Total budget under miscellaneous component is $165,000.

Quality Guarantee Fund $1,000,000.

Total GEF Input: $2,965,000

4. UNDP/TRAC

Quality Guarantee Fund: $250,000.

5. UNDP MOR/97/004

Contribution to:	Subcontracts item 2	$50,000
	Subcontracts item 4	$50,000
	Subcontracts item 5	$50,000
	Subcontracts item 6	$50,000

Co-financing for solar water equipment $300,000

F. Risks

There are five principal risks to achieving sustainability of project results:

The cost-effectiveness of solar water heating systems is a significant determinant of the market penetration. Under present solar system capital costs and local financing costs, LPG is the most economically attractive option for water heating. Solar is competitive with electric water heating. However, the present day low international petroleum price will make LPG even more attractive and hence prevent any significant market penetration of solar water heaters. While the project does not make provision to counter possible future low petroleum prices, project activities are designed to reduce the cost of solar systems by reducing VAT, import duties, and dealer mark-ups through increased sales volumes, thereby increasing the competitiveness of solar water heating systems.

There is a potential risk that low quality solar products will reach the Moroccan marketplace and perpetuate the often-stated observation that solar systems are of low quality and an unreliable long-term option for water heating. The project stakeholders are well aware of the problems encountered with sub-standard components in some of the earlier installations. Solar system component quality issues are, at a limited scale, being addressed by the CDER through development of standards and certification procedures for equipment and installers. The GEF project will seek to mitigate the risk

through activities that put in place mechanisms that promote good quality products entering the market to ensure a sustainable/long-term market development.

There is some uncertainty within the professional engineering and architectural communities with respect to system sizing and there is no consistent code of practice for installations and system performance monitoring. There is therefore risk that systems will be over-sized resulting in loss of cost-effectiveness or that systems will be undersized resulting in poor hot water delivery performance. One component of the GEF project will address the training requirements of design professionals to ensure appropriate system sizing.

There is a risk that the solar water heating system market will not develop sufficiently during the project to ensure sustainability of the Moroccan supply and service industry. The present situation is that importer and installer mark-ups are higher than they will be at market maturity. The GEF project will provide support to market development activities that result in lower risks for suppliers and enable cost reductions.

G. Prior obligations and pre-requisites

Prior to receipt of funding support or participation in other project activities, participating enterprises must commit to contribute the necessary in-kind resources to the project in order to ensure its success. These resources include commitment of necessary design and management staff to participate in training programs and to attend all mandatory project events.

The reduction of VAT to the 7% level for solar water heating components and services (design, installation) is conditional for allocation of GEF assistance. To date, import duties on complete solar water heating systems have already been reduced to the lowest level possible. However import duties on components of solar water heaters still exist. The Government commits itself to supporting the project in developing a mechanism to reduce the VAT and present it for endorsement in the financial law by 2001, at the latest.

CDER has fulfilled all other necessary prior obligations and pre-requisites, including budgetary allocations for the Moroccan government contribution in cash and in kind.

H. Project Reviews, Reporting and Evaluation

Project Monitoring and Reporting

Ongoing project monitoring will be provided by the Ministry of Energy and Mining and UNDP Country Office with support from UNDP/RBAS/GEF, in accordance with UNDP and GEF established procedures.

In addition to normal UNDP project monitoring and evaluation activities, long-term impact assessment will be initiated during the course of the project and provisions will be made to continue this assessment activity after the project is completed. Indicators will be developed, a baseline will be established for the indicators, and the indicators will be tracked over time relative to the baseline.

Examples of "market response" indicators include market share by class of solar water heaters, the number of dealers or distributors who are stocking and selling solar water heaters, and household retention rates. More directly, the project will attempt to monitor reductions in market barriers, such as: (a) price of solar water heater products; (b) quality of solar water heater products; and (c) market demand for good quality solar water heaters.

The Project Director will prepare and submit to the UNDP Country Office an Annual Project Review (APR) for examination three months prior to each tripartite (TPR) meeting. Additional progress reports/APRs may be requested if necessary during the project.

Moreover, as mentioned above, a condition of signature of the project document will be that the Government agrees to ex-post verification of project impact and CO_2 emissions, in qualitative and quantitative terms, beyond the project period. In fulfillment of the GEF PIR requirements, the Government will report on progress in achieving the carbon abatement goals of the project, under the auspices of the National Climate Change Committee in the context of the regular follow-up and updating of GHG emissions, their reduction and sequestration.

Tripartite Reviews

The project will be subject to review by representatives of the Government, the UNDP Country Office and UNDP/GEF Headquarters at least once every year. The first TPR meeting will take place within twelve months following project start-up. During the TPR, the project performance will be measured against established work plans, expenditures will be reviewed, and the overall technical performance will be discussed.

Mid-term Review

One detailed mid-term review will be held during the second year of project implementation depending on the outcome and recommendations of the first tripartite meeting. The review process will be undertaken through a two-week mission to Morocco where the UNDP/GEF will be represented, in addition to experts in solar water heating technology.

During this mid-term review a thorough evaluation of the performance and the implementation of the project in accordance with identified targets of emissions reduction and project outputs. Moreover, an analysis of the degree to which the project objectives are achieved using the success criteria identified in the project document will be undertaken.

I. 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 the 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 following types of revisions may be made to this Project Document with the signature of the UNDP Resident Representative only, provided he or she is assured that the other signatories of the Project Document have no objections to the proposed changes:

1. Revision in, or addition of, any of the annexes of the Project Document.
2. 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.
3. Mandatory annual revisions that rephase the delivery of agreed project inputs or increased expert of other costs due to inflation or take into account agency expenditure flexibility.

J Budgets – Attached Budget 1 (in 2 pages) and Budget 2 (in 3 pages)

Annex 1: **Programme overall funding (in 1 page)**

Annex 2: **Programme Workplan (Attached in 2 pages)**

Annex 3: **TOR for Subcontracts**

Annex 4: **TOR for Consultants**

Annex 5: **TOR for Overseas Study Tours**

Annex 6: **Rationale for VAT Reductions**

Annex 7: **Description of Quality Guarantee Fund**

Annex 3: Outline TOR for Subcontracts

This annex contains the outlines (guideline) of the TORs for the 6 types of sub-contracts. These TORs will be further developed during the project by the PMO.

Terms of Reference: National Marketing and Promotion Campaign
Subcontract item 1
Output 2.1

Description:

The subcontractors for this work will implement a national wide public marketing and promotion campaign to introduce consumers to the benefits of solar water heaters. The campaign will potentially include a range of media tools, including national television advertising, local television advertising, local newspaper advertising, magazine advertising, and other public education/advertising media. Proposed distribution and combinations of media use will be based on an evaluation of the benefits and cost effectiveness of these various advertising media, and will be based on the recommendations of the successful bidder for the subcontract to be issued under this Terms of Reference. Funding for this work is from the Global Environmental Facility (GEF) via the United Nations Development Programme.

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Although cooperative and other solar water heater advertising by suppliers/dealers will continue beyond the duration of the UNDP/GEF-funded advertising campaign, the limited duration of the latter requires that the public marketing and promotion campaign be well designed and focused so as to achieve maximum impact with the advertising dollars available.

The campaign is expected to begin 6 months after the starting date of the project and should last 2 years. The campaign will be timed so as to take place in parallel the introduction of rehabilitation and bundling programs. The campaign will also seek to inform consumers of the quality label to be developed through the project, and potentially also promote the benefits of good quality solar water heaters to consumer attention regarding new mandatory quality labels now in development in Morocco.

Qualifications:

- Must have experience in media planning for a variety of media, including ideally as many media types as possible (e.g. national television, local television, newspapers, magazines, radio, outdoor). The bidder should indicate which of these areas in which the bidder possesses experience, and the degree of experience (evaluation criteria: years experience in area, number of staff working in area, value and number of placements in area).
- Must have strong execution ability (evaluation criteria: track record in placing advertising spots in premium spots with quick turnaround; ability to obtain discounts from published rates.) The ability to obtain discounts is key, given the limited advertising budget. The bidder should include a history and evaluation of discounts of list rates obtained in the past.

- Should have budget/reach/frequency allocation modeling software and market prioritization model (key to media planning and execution).
- Should subscribe to industry rating reports.
- Must have the ability to track placement fulfillment through national and regional tracking services.
- Must have offices and permanent professional and support staff in Morocco (evaluation criteria: number of staff based in Morocco; individual and total number of years experience of professional staff based in Morocco).
- Should have extensive advertising campaign implementation track record in Morocco (evaluation criteria: years of experience in Morocco, volume of current and past work (billings)).
- Should have experience in work with both international and Moroccan clients (evaluation criteria: number of billing volume of international and Moroccan clients).
- Must work nation-wide in scope and in multiple media.
- Experience with and/or knowledge of the Moroccan solar water heater industry beneficial.

Activities:

- Identify all the consumer groups for marketing solar water heaters
- Develop national marketing plans targeted at different consumer groups
- Prepare information package as campaign material tailored to each consumer groups
- Provide support to implementation of information dissemination to reach consumers to promote solar water heaters
- Design a news media marketing plan and strategy based on target audience, media reach, and frequency allocation models
- Implement news media marketing campaign through media purchase nationwide.
- Track media placement fulfillment
- Prepare a monthly report on media placement results

Output:

The output under this subcontract will be the campaign design, creative support, and the execution of a nationwide media campaign promoting the benefits of good quality solar water heaters to Moroccan consumers. The program's success will be indicated by increased consumer awareness of the benefits of solar water heaters, as well as increased number of solar water installations. Specifically, the public education campaign will seek to:

- Gain broad acceptance of good quality solar water heater technology; and
- Attract different group consumers to purchase good quality solar water heaters.

Estimated Budget:
$180,000

Location:

Morocco

Deliverables and Due Dates:

- Draft public marketing and promotion campaign strategy document
- Creative campaign material
- Successful campaign implementation
- Monthly reports on campaign development

(Due dates should be added based on current project schedule at time of TOR issuance, based on an updated project timeline.)

Terms of Reference: Bundling and Rehabilitation of Solar Water Heaters Program
Subcontracts item 2
Output 2.2 and 2.3

Description:
The subcontracts of this work should bundle 40 solar water heater demonstration installations at public buildings, such as schools, hospitals, military buildings, and publicly managed low-cost buildings in the visible places in rural areas where large groups of potential future end-users can be introduced to solar water heaters. The demonstration installations should include representative types of public buildings at representative geographic locations. The goal is to increase public awareness and the volume of installations through the bundling of demonstration projects, which will further bring down the prices of good quality solar water heaters.

These subcontracts should also rehabilitate 50 existing public and private solar water heater installations, with the goal to change bad images of poor quality solar water heaters, and restore consumers' confidence in the products. At the same time, the rehabilitation demonstration process will be used to provide hands-on training for designers, installers and maintenance personnel.

The demonstration projects can be financed through the financing mechanism developed from Output 3.4, and the Quality Guarantee Fund from Output 3.3 can be tapped as a financing source for both the demonstration and rehabilitation projects.

Qualifications:
- Strong international and national engineering capability, in-depth knowledge and extensive experience in the design, procurement, installation, and maintenance of solar water heater systems;
- Engineering background required;
- International work experience preferred, particularly in non-English speaking locations.

Activities:
- Carry out a best-practice study of international experience in solar water heater systems.
- Provide technical assistance in site select for the 40 solar water heater system demonstrations. The sites should represent typical consumer groups at strategic geographic locations. A pipeline of 10-12 bankable proposals prepared under Output 3.5 can be used as inputs for site selection.
- Prepare design drawings and specifications for the equipment and construction.
- Analyse the equipment and training requirements.
- Provide technical assistance in specified equipment procurement.
- Supervise equipment installation.

- Provide technical assistance in site select for the 50 solar water heater system rehabilitation demonstrations. The sites should represent typical consumer groups at strategic geographic locations.

- Evaluate the technological and financial needs for the selected 50 representative existing installations for retrofitting

- Supervise the rehabilitation process.

- Design a rehabilitation strategy and implementation plan for the existing remaining installations.

- Provide on-the-job training in design, installation, and maintenance of solar water heater systems during the installation and rehabilitation process.

- Design and implement a one-year monitoring program of the systems' technical and financial performance for both the demonstration and rehabilitation projects.

Output:
- Project design and specifications for the demonstration installations
- Training material
- Successful demonstration installations
- Assessment of technological and financial needs for the rehabilitation
- Successful demonstration rehabilitation
- A national rehabilitation strategy and implementation plan
- Monthly reports on the installation and rehabilitation
- Monitoring reports

Estimated budget:
$150,000 ($100,000 for demonstration and $50,000 for rehabilitation)

Location:
Morocco

Terms of Reference: Design of Quality Guarantee Fund
Subcontracts item 3
Output 3.3, 3.4, 3.5, and 4.4

Description:

To reduce the risk of low quality solar water heater products entering the market during the first 3 years it is proposed to put in place a mechanism that levels the playing field for good quality products; *a Quality Guarantee Fund* (see Annex 7 for the detailed description of the Quality Guarantee Fund).

The Quality Guarantee Fund will reduce the price of good quality products for the first 3 years of market introduction and is being complemented by a 13% reduction (from 20% to 7%) in Value Added Tax (VAT) and a gradual reduction of supplier mark-ups. Only screened quality products which meet design, equipment, installation and performance standards, will have access to the preferential financial arrangements made available by the Quality Guarantee Fund and the VAT reduction measure.

These subcontracts should design the financing schemes and implementation mechanism for the Quality Guarantee Fund. Based on the criteria for the operational mechanism as well as the fund management system, a local financial institution will be designated to manage the Quality Guarantee Fund to provide favorable financing arrangement to good quality solar water heaters. (The TOR for the certified national institution to screen and test the product is under Subcontract 7). The Quality Guarantee Fund is complemented by a 13% reduction in VAT and a gradual reduction of supplier mark-ups.

In general terms two main actors will be involved: (1) the CDER, who will be responsible for providing the screened quality products that are eligible for support from this preferential funding mechanism; and (2) a banking institution that has experience with public and private investments and the provision of consumer credits (e.g. BMCE) for the administration and operation of the Quality Guarantee Fund.

The underlying assumptions and conditions for the operational mechanism of the Quality Guarantee Fund are as follows:

- Currently the annual installation of solar water heater systems reaches a maximum of 5,000 square meters. As a result of the proposed GEF intervention 100,000 will be installed after 4 years of project implementation. This build-up will be gradual with respectively 10,000, 20,000, 30,000 and 40,000 square meters installed per year of project implementation. Low quality solar water heating systems are available for around 3,000 Dirhams per square meter installed, whereas good quality systems cost around 5,000 Dirhams per square meter installed. The first three years of project implementation, screened quality products will have access to the Quality Guarantee Fund up to the anticipated market volume of 10,000, 20,000 and 30,000 square meters installed respectively.

- Contribution from the Quality Guarantee Fund varies from 500, 350 to 200 Dirhams per square meter installed for the 1st, 2nd and 3rd year of project implementation respectively.

- It is anticipated that the supplier mark-up will decrease in line with an increase in market volume. This will have a direct effect on the price of the good quality solar water heating systems. It is estimated that market prices will decrease from 5,000, 4,500, 4100 to 3,800 Dirhams per square meter installed over the 4-year project period.

- After three years of project implementation the price for a good quality product will stabilize at around 3,300 Dirhams per square meter installed with the condition that the VAT will remain at 7%;

- After three years the price of good quality solar water heater products is comparable to low quality products, so the rationale for a Quality Guarantee Fund no longer exists. At that time the increased market volume provides the rationale for the reduced supplier mark-ups as well as the reduced VAT reduction in percentage terms.

In addition, this subcontract will develop other financing mechanisms to complement the Quality Guarantee Fund, prepare business plans and a pipeline of 10-12 bankable proposals, and provide technical assistance in performance contracts.

The pipeline identified under Output 3.5 could become the potential candidates to receive favorable financial arrangement from the Quality Guarantee Fund, and other financing mechanisms. Furthermore, the 40 demonstration installations under Output 2.3 and 50 rehabilitation of existing solar water heater systems under Output 2.4 could also tap the Quality Guarantee Fund as a financing source. The development of performance contracts under Output 4.4 is the key element for the design and implementation of the Quality Guarantee Fund.

Qualifications:
- Financing/banking background required.
- Extensive international experience with banking and financing systems in developing countries, particularly related to guarantee mechanism.
- Familiarity with the financial sector in Morocco.
- Experience of financing arrangement with Morocco banks.
- Experience and knowledge with solar water heaters.
- Previous related experience with international assistance project preferred.

Activities:
- Draw the experience and lessons learned from the Guarantee Solar Results project, where performance contracts are combined with favorable financing schemes (partial hardware grant/subsidy from the Andalusian Government) in Northern Morocco, for the Quality Guarantee Fund and the performance contracts to be developed for solar water heaters.
- Design the financing scheme for the Quality Guarantee Fund, including technical and financial guidelines and eligibility criteria to receive favorable funding from the fund, application procedure, as well as project evaluation and approval procedure and guidelines.

- Develop the implementation and management mechanism for the Quality Guarantee Fund. Specifically, this task will assist to prepare terms of reference and select the financial institution to manage, administer and operate the fund. The CDER will be responsible for the screening and testing of the quality of the solar water heaters.
- Provide technical assistance to establish the Quality Guarantee Fund within the local financial institution to be selected to manage the fund. Specifically, this task will assist to 1) prepare term of references; 2) identify staff; 3) prepare work programs; and 4) establish institutional arrangement for the fund. The staff who will be selected to manage the fund should have 1) engineering and financing backgrounds; 2) knowledge of the Bank's loan processing guidelines and project monitoring procedures; 3) experience in project loan evaluation and project packaging; and 4) knowledge and experience with solar water heaters preferred. A senior-ranked Bank staff should be appointed as the head of the fund.
- Provide training to the financial institution in the technical evaluation and management of the Quality Guarantee Fund to support good quality solar water heater systems.
- Develop performance contracts for suppliers and installers as an enforcement scheme for quality control of solar water heaters, complementing the Quality Guarantee Fund.
- Investigate potential financing sources from the government, banks, multilateral, bilateral, and private for renewable energy, particularly solar water heaters, as equity capital, debts, loans, credit enhancements, and grants for financing solar water heater systems in Morocco.
- Develop financing mechanisms for potential investors, suppliers, and dealers. Design a financing mechanism - investment/repayment - that indicates how dedicated financial resources can be used to provide solar water heating services to the different end user groups. The players and intermediaries involved at various stages of the financing mechanism will be identified and the incentives for their long-term involvement (e.g. mark ups, handling fees, future market) will be assessed and the conditions for putting in place such incentives will be designed.
- Provide on-the-job training to public sector and private commercial building owners and operators, in close cooperation of with local financial institutions, in preparation of business plans for the bankable solar water heater projects.
- Prepare a pipeline of 10-12 bankable proposals for commercially viable demonstration projects in various end-use sectors.

Outputs:

- Criteria, guidelines, and procedures for the Quality Guarantee Fund
- Management and administration scheme for the Quality Guarantee Fund
- Training material and workshops for the local financial institutions in the Quality Guarantee Fund
- $2,000,000 is disbursed to the 60,000 square meters of solar water heater installations that meet the quality standards, in the form of grant or subsidy.
- Sample performance contracts and implementation plan
- A list of potential financing sources for solar water heater development in Morocco
- A financing mechanism to increase easy access to dedicated financing
- Training material and workshops on preparation of business plans
- A pipeline of 10-12 bankable business proposals

Estimated budget:
$200,000.

Location: Morocco

Terms of Reference: Independent Monitoring and Evaluation
Subcontracts item 4

Description:
Collect statistical information on Moroccan consumer awareness of and opinions about renewable energy and solar water heaters and socioeconomic and other barriers that hinder the widespread adoption of solar water heater technology.

Qualifications:
- Must have ability and experience to draft questionnaires, implement consumer research surveys, compile survey results, analyze survey data, prepare analytical reports, and develop comprehensive marketing plans.
- Must have offices and permanent professional staff in Morocco.
- Should have experience in working with international clients.
- Should have local staff.
- Should have extensive track record in Morocco.

Activities:
- Work with PMO and project experts to develop survey questionnaire.
- Conduct market survey in several Moroccan locations to be determined in conjunction with the PMO and project experts.
- Work with project experts to develop survey participant qualifications.
- For each location, qualify and survey a minimum of 250 participants.
- Perform a statistical analysis of survey results
- Prepare comprehensive analytical report and provide to PMO

Output:
- Comprehensive report containing survey results and analysis.

Estimated budget:
$90,000

Location:
Morocco

Terms of Reference: National Standards and Codes of Practice
Subcontracts item 5
Output 4.1

Description:
Implementation of new minimum quality standards for solar water heaters

Qualifications:
- Must be thoroughly familiar with Morocco's draft minimum standard for solar water heaters.
- Must have good working relationship with CDER (or whoever is in charge of standardization, metrology, and quality control)
- Should have good knowledge of standards and their application internationally.

Activities:
- Collect data on solar water heater industry technology and economics, and undertake industry survey.
- Develop standards and codes of practice for three elements of solar water heater systems: (1) the design, integration, and sizing; (2) the quality of the solar water heater hardware (imported unit, imported or locally produced components and assembly of these components); and (3) the quality of the solar water heater 'software' (installation, maintenance, monitoring, after sales services and evaluation).
- Propose to CDER a draft of new minimum quality standards for solar water heater systems.
- Provide training to architects and engineers to apply the standards and procedure for the design, integration, and sizing of solar water heaters.
- Provide training to constructors, installers, and plumbers in the quality standards and codes of practice to facilitate compliance.
- Announce and disseminate new standards and specifications to manufacturers, suppliers and installers in order to facilitate compliance. Meet with solar water heater manufacturers and assemblers to announce and distribute proposed new quality standard.

Output:
- New national minimum quality standard for solar water heaters
- Successful compliance with the new standards
- Training material

Estimated budget:
$150,000

Location:
Morocco

Terms of Reference: National Testing, Certification, and Labeling
Subcontract item 6
Output 4.2 and 4.3

Description:

This subcontract will conduct testing activities and strengthen national testing capacity to promote good quality solar water heaters products. Testing and screening of good quality solar water heaters that meet the quality standards is a crucial prerequisite for the successful implementation of Quality Guarantee Fund.

This subcontract also covers activities designed to develop quality criteria for inclusion in a new label to be applied to good quality solar water heaters.

Qualifications:
- National testing certification
- Must be familiar with Morocco's existing labeling programs
- Should be familiar with international labeling programs
- Must be familiar with quality issues and measurement standards of solar water heaters

Activities:
- Establish testing procedures
- Provide training to the CDER staff in testing procedure and skills
- Upgrade testing facilities ?
- Develop label concept and quality criteria
- Prepare implementation plan for label
- Promote label and educate consumers

Output:
- Test results of the quality of the solar water heater products
- A nationally certified label with quality criteria for solar water heaters

Estimated budget:
$70,000

Location:
Morocco

Deliverables and Due Dates:

Testing will be conducted:
- At the beginning of the project
- Before the Quality Guarantee Fund awards,
- Before the public marketing and promotion campaign,
- Before the completion of the project

Annex 4: TOR for Consultants

Terms of Reference: International Solar Water Heater Technical Expert

Description:

International expert to introduce good quality solar water heater system options available internationally to decision makers from the public and private sectors, professions of architects and engineers, suppliers, installers, and different groups of consumers.

Qualifications:

- In-depth knowledge of the international solar water heater industry required
- Engineering background required
- International work experience preferred, particularly in non-English speaking locations

Activities:

- Introduce the decision-makers, national professionals, and consumers to good quality solar water heater technology available internationally through seminars, trade fair, and exhibition to raise the awareness
- Select the winner for the design competition for domestic architects and engineers for good quality solar water heaters
- Disseminate updated information and introduce the suppliers and installers to good quality solar water heater technology available internationally through newsletters and overseas study tours to improve the quality/price ratio on imports.

Output:

- Training agenda and materials to increase public awareness of good quality solar water heaters
- Training agenda and materials of the overseas study tour
- Mission reports

Estimated budget:
12 months - $120,000

Location:
International travel to Morocco

Term of Reference: International Policy Expert

Description:

The international policy expert will help formulate financial incentive policies to support solar water heater development in Morocco, and facilitate dialogue with the Treasury to permanent reduction of VAT.

Qualifications:

- Extensive experience with and knowledge of international financial incentive policies for renewable energy, particularly solar water heaters
- Familiarity with Moroccan policy and regulatory framework related to renewable energy

Activities:

- Introduce the international experience of financial incentive policies for renewable energy to Moroccan policy-makers through overseas study tours
- Review and evaluate Moroccan policy and regulatory framework related to solar water heater development
- Make recommendations to improve current policy and regulatory framework
- Develop implementation plans and programs
- Facilitate dialogue with the Treasury to permanently reduce VAT and import duties on solar water heating systems and components in Morocco as a condition for GEF assistance.

Output:

- Reports

Estimated Budget:
8 months - $80,000

Location:
Morocco

Terms of Reference: International Program and Training Advisor

Description:

The complexity of the project necessitates management support from a part-time International Program Advisor, during the project implementation phase to ensure timely completion and integration of results for the tripartite review. The International expert will work as a liaison and coordinator with Moroccan counterparts and with other international expert contracted through the GEF in the task areas described above under the individual sections of this document.

The Programme advisor should also play a key role in the definition and implementation of the project training programmes.

Qualifications:

- Have professional experience with project management.
- Have professional experience in working in Morocco and with Moroccan counterparts.
- Have the ability to speak, read, and write Moroccan.
- Be familiar with solar water heater and renewable energy issues.
- Be familiar with international solar water heater programs.
- Be familiar and able to work with international and national expert in relevant fields.
- Be familiar with safety, testing, and certification issues in the solar water heater sector.
- Be familiar with energy development in Morocco, economic analysis, spreadsheet analysis and related social and technical issues in the building and energy sectors.
- Have good communications and writing skills.

Activities:

- Play a key role in the training workshop and draft the inception report
- Advise UNDP and Moroccan project participants on substantive project issues.
- Advise the Project Management Office regarding establishment of systems for project management.
- Assist the PMO in the finalization of all TOR for personnel and sub-contractors;
- Provide advice in development and monitoring of workplans and schedules.
- Provide advice in development of competitive bid materials.
- Review GEF outputs to ensure fulfillment of requested efforts.
- Perform GEF-related communication and liaison work.
- Review agendas, curricula, training materials, and training work plans (TORs) for international training activities.
- Provide assessment and comments to PMO for each activity
- Provide PMO with list of potential workshop participants, workshop locations, and international expert trainers.
- Provide advisory services to international subcontractors undertaking training activities

Budget:
4 months, $ 40,000

Location: Morocco
May be based either in Morocco or elsewhere. If foreign based, the expert will be expected to travel periodically to Morocco in support of GEF work.

Deliverables and Due Dates:
1. Trip report (within 4 weeks of completion of each project mission)
2. Copies of correspondence and communications with project participants.

Terms of Reference: Administrative Assistant

Description:

Work with the PMO staff, International and national program advisors in developing and implementing workplans and schedules and supporting the liaison work between UNDP, Moroccan project participants, and Moroccan and international experts and subcontractors. .

Qualifications:

- Candidate is adept in speaking, reading, and writing English. He/she should be able to comprehend relevant English technical and project management terms and convey their meaning to Moroccan peers.
- Have university degree in management field or relevant technical field in solar water heater sector
- Candidate should have good communication and writing skills
- Working experience on international cooperation projects

Activities:

- Provide secretariat support to PMO office in project implementation
- Support the PMO in preparing workplan, progress report, etc.
- Provide translation service during management meetings
- Perform project -related communication and liaison work.

Estimated budget:
48 m/m $40,000

Location:
Morocco

Terms of Reference: Bookkeeper/Accountant

Description:

Work with PMO in implementation of project activities, especially in financial reporting and book-keeping work.

Qualifications:

- Candidate should have university degree in accounting
- Candidate is adept in speaking, reading, and writing English
- Working experience in international organization or international project management is an asset.

Activities:

- Support the PMO in preparation of financial reports to UNDP and other relevant agencies
- Keeping financial records in project expenditures and carry out other relevant book-keeping task

Estimated budget:
12 m/m, $18,000

Location: Morocco

Terms of Reference: National Program Advisor

Description:

Work with the International program advisor in developing and implementing workplans and schedules, act as liaison between UNDP, Moroccan project participants, and Moroccan and international experts and subcontractors. Support PMO in implementation of project activities. The Program Advisor should have in-depth knowledge of and direct experience with Morocco's solar water heater sector.

Qualifications:

- Expert is adept in speaking, reading, and writing English; expert should be able to comprehend relevant English technical and project management terms and convey their meaning to Moroccan peers.
- Expert should speak and read Moroccan.
- Expert is familiar with solar water heater and renewable energy issues.
- Expert is familiar and able to work with international and national experts in relevant fields.
- Expert is familiar with safety, testing, and certification issues in the solar water heater sector.
- Expert should have good communication and writing shills.

Activities:

- Coordinate GEF activities in conjunction with UNDP and Moroccan project participants to ensure timely completion.
- Review GEF outputs to ensure fulfillment of requested efforts.
- Perform GEF-related communication and liaison work.

Estimated budget:
48 m/m, $80,000

Location:
The Program Advisor should be based in Morocco in order to ease coordination and communication with Moroccan government project participants, UNDP Morocco, and visiting experts and subcontractors.

Annex 5: TOR for Overseas Study Tours

Term of References: Overseas Study Tour of Public Sector Policy Makers

Background:

The selected representatives from the line ministries and agencies that are in the position to make policy decisions related to solar water heater development will undertake an overseas study tour to meet and discuss with their counterparts in other Mediterranean countries on the successful experience and lessons learned of the policy and regulatory framework favorable to the development of the market for solar water heaters.

Outputs:

- A 10 day tour for 10 policy makers from the line ministries and agencies, one interpreter and international policy expert
- A tour report

Estimated Budget: $30,000

Term of References: Overseas Study Tour of Suppliers/Dealers

Background:

The selected major SWHS suppliers and dealers will undertake an overseas study tour to neighboring countries such as Spain, Greece, Cyprus, Israel, Egypt, Tunisia, and France, to learn the latest technical, manufacturing, and supply information on good quality solar water heater technologies available internationally, to improve quality/price ratio on imports.

Outputs:

- A 10 day tour for 10 suppliers and installers from the major suppliers and dealers, one interpreter and international technical expert
- A tour report

Estimated Budget:$30,000

Annex 6: Rationale for VAT reduction

There are a number of macro reasons for permanently reducing the VAT level on solar water heating systems from the current level of 20% to 7%. These reasons are presented below, accompanied with calculations, including the underlying assumptions used in these calculations. These underlying assumptions have been taken from the proposed course of action as a result of the GEF intervention.

1. Current State income from the sales and installation of solar water heating systems is calculated as 5,000 square meters at 5,000 Dh per square meter on which 20% VAT is levied. In the absence of the proposed GEF intervention a total amount of 20,000 square meters will be installed over the coming 4 years. This translates to 20 million Dirhams State income.

   In the case of the proposed GEF intervention 100,000 square meters will be installed over the coming 4 years, on which an amount of 24.04 million VAT will be levied (i.e. at 7% VAT level).

   The difference within a 4-year time frame is small, but the real advantage follows after the project period has ended. It is expected that after the GEF project, an annual amount of 40,000 square meters will be installed at 3,300 Dh per square meter on which 7% VAT is levied. This generates 9.24 million Dirhams State income per year. Without the GEF intervention an estimated 5,000 square meters at 5,000 Dh per square meter, on which 20% VAT is levied, would only generate 5 million Dirhams; i.e. approximately half the amount in comparison with the GEF scenario.

   In summary, with the proposed GEF intervention where the VAT level for solar water heating systems is reduced from 20% to 7%, State income raises with 4.04 million Dirhams during the 4-year project period and with an annual 4.24 million Dirhams thereafter.

2. Currently, domestic hot water, and to a lesser extent public and commercial sector hot water, is generated with electric boilers. Hot water demand is mainly during the peak hours, thereby adding to the electricity (peak) supply problems that the Moroccan electricity sector is facing. Although sector-wide the electricity sector is not-subsidized, internal cross-subsidies in the electricity sector do exist. For instance the electricity costs for generating the electricity to meet the peak demand is 20% higher than the price it is being sold for to the end-users. Thus every kWh sold during the peak period creates a loss for the electricity sector that is covered by the internal tariff settings.

   Substituting electric water heaters with solar heating systems therefore reduces the losses induced as described above. For instance, a single domestic electric water heating system consumes approximately 2,400 kWh per year, for which 2,400 Dirhams is being paid by the end-users. The losses per domestic electric water heating system are 20%, which is 480 Dirhams/year. At the end of the project period the equivalent of 50,000 domestic electric water heaters will be installed, thereby saving the cumulative amount of 48 million Dirhams over the project period. After the project period an additional annual estimated amount of 9.6 million Dirhams will be saved. This is in addition to the improvements in quality of the electricity supply as a result of reducing the pressure on the nation-wide electricity system during the peak hours.

In summary, with the proposed GEF intervention savings from the reduction in losses of electricity generated and distributed during the peak period amount to 48 million Dirhams during the 4-year project period. Ten years from now a total estimated cumulative amount of 375 million Dirhams will have been saved as a result of the proposed GEF intervention.

3. In general terms Morocco has to import either coal or fuel oil for the generation of electricity. Per kWh consumed, 1.16 kWh has to be generated due to transmission and distribution losses. For the case of fuel oil 350 grams is required to generate one kWh. It is assumed that as a result of the GEF intervention the equivalent of 50,000 domestic electric water heaters will have been replaced at the end of the 4-year project period. This equals a consumption of 240,000 MWh; i.e. 278,400 MWh generated which in its turn equals 97,440 tons of fuel oil.

   If we assume a barrel of oil contains 0.15 tons of fuel oil, then 650,000 barrels of oil have to be imported. This translates to foreign exchange expenditures that range from US$ 7.15 million to US$ 8.45 million (price per barrel ranging from US$ 11 to US$13 per barrel) during the 4-year project period. Ten years from now a total estimated amount of foreign exchange ranging from US$ 56 million to US$ 66 million will have been saved as a result of the proposed GEF intervention. Thus using locally available energy resources can have a substantial effect on the future foreign exchange expenditures.

4. Developing the solar water heaters sector in Morocco will contribute to local employment for the design, installation and maintenance of the solar water heating systems. Although employment related to electric and gas-based water heaters will decrease, the increase in the solar water heating sector will more than make up for that effect. This is the result of the employment that relates to the design, manufacture/assembly and maintenance of the solar collectors and the piping, activities that are non-existent with the other two categories of water heating systems. Moreover, over time it is anticipated that solar water heating systems will be fully designed and manufactured locally, whereas at the moment the majority of the system is being imported.

   In summary the development of the (indigenous) solar water heaters sector will have positive effects on local employment that are larger than the reductions of employment in the electric and/or gas-based water heaters sectors, that are being substituted.

5. Implementation of the proposed GEF intervention will assist in meeting the objectives as outlined in the National Action Plan for the Environment (PANE). Furthermore, it will assist in meeting Morocco's *'obligations'* as a result of the UNFCCC ratification in December 1995. The proposed GEF intervention is - as in many other similar situations in other projects world-wide - made conditional to government support; i.e. amongst other issues, the VAT reduction from the 20% level to the 7% level.

   In summary, in case the government decision is taken not to reduce the VAT level to the 7% level, the US$ 2.965 million (26.685 million Dirhams) GEF assistance is jeopardised as well as meeting (part of) the objectives under PANE and the UNFCCC.

Annex 7 Quality Guarantee Fund

Rationale:

Sustainable/long-term market development is only possible based on good quality products that provide a service equal or better than the existing alternatives for (preferably) lower costs.

Current situation:

Solar water heating products (design, equipment, installation and maintenance services) are available at different quality levels and are varying in costs from 3,000 to 5,000 Dirhams per square meter installed. In general terms low quality products have lower prices, but do not provide good prospects for a long-term market development.

Problems:

To distinguish the difference in quality levels is difficult due to the lack of norms, standards, certification and codes of practice. Therefore, market competition based on product price is unrealistic. Choices made by solar water heater end-users will in most cases be in favour for low-priced, low quality products.

The proposed GEF intervention will put in place a quality system for solar water heating systems, including an enforcement mechanism, but it is estimated that this will only be fully operational 3 years after the project starting date. Many of the technical assistance components (awareness raising, rehabilitation, training and business plan development) that will be provided during the first 3 years of the GEF proposed intervention will facilitate market development for solar water heaters. However, during this period the technical assistance activities do not *'discriminate'* between good and bad quality products. Therefore parallel to these activities a mechanism has to be put in place that promotes good quality products entering the market to ensure a sustainable/long-term market development.

Quality Guarantee Fund:

To reduce the risk of low quality solar water heater products entering the market during the first 3 years it is proposed to put in place a mechanism that levels the playing field for good quality products; *a Quality Guarantee Fund*. This Quality Guarantee Fund will reduce the price of good quality products for the first 3 years of market introduction and is being complemented by a 13% reduction (from 20% to 7%) in Value Added Tax (VAT) and a gradual reduction of supplier mark-ups. Only screened quality products which meet design, equipment, installation and performance standards, will have access to the preferential financial arrangements made available by the Quality Guarantee Fund and the VAT reduction measure.

The underlying assumptions and conditions for the operational mechanism of the Quality Guarantee Fund are as follows:

- Currently the annual installation of solar water heater systems reaches a maximum of 5,000 square meters. As a result of the proposed GEF intervention 100,000 will be installed after 4 years of project implementation. This build-up will be gradual with respectively 10,000, 20,000, 30,000 and 40,000 square meters installed per year of project implementation;

- Low quality solar water heating systems are available for around 3,000 Dirhams per square meter installed, whereas good quality systems cost around 5,000 Dirhams per square meter installed;

- The first three years of project implementation, screened quality products will have access to the Quality Guarantee Fund up to the anticipated market volume of 10,000, 20,000 and 30,000 square meters installed respectively;

- Contribution from the Quality Guarantee Fund varies from 500, 350 to 200 Dirhams per square meter installed for the 1st, 2nd and 3rd year of project implementation respectively;

- It is anticipated that the supplier mark-up will decrease in line with an increase in market volume. This will have a direct effect on the price of the good quality solar water heating systems. It is estimated that market prices (without VAT and quality guarantee corrections) will decrease from 5,000, 4,500, 4100 to 3,800 Dirhams per square meter installed over the 4 year project period;

- After three years of project implementation the price for a good quality product will stabilize at around 3,300 Dirhams per square meter installed with the condition that the VAT will remain at 7%;

- After three years the price of good quality solar water heater products is comparable to low quality products, so the rationale for a Quality Guarantee Fund no longer exists. At that time the increased market volume provides the rationale for the reduced supplier mark-ups as well as the reduced VAT reduction in percentage terms.

Quality Guarantee Fund mechanism (1 US$ = 9 Dh - Dirhams):

Year	Market Volume (in square meters installed)	VAT reductio (in million Dh)	Quality Guarantee contribution (in million Dh)	Supplier price (per square meter installed)	End-user price (per square meters installed)
0	5,000	0	0	5,000	5,000
1	10,000	6.5	5	5,000	3,850
2	20,000	11.7	7	4,500	3,570
3	30,000	15.6	6	4,100	3,370
4	40,000	19.76	0	3,800	3,310

Capitalization of the Quality Guarantee Fund:

Capitalization of the Quality Guarantee Fund requires US$2 million for a period of 3 years. An amount of US$600,000 will be made available from local financing sources (divided between ONE and CDER, i.e. US$350,000 and US$250,000 respectively), complemented with an amount of $250,000 from UNDP/TRAC and US$150,000 contribution from the Government of Andalusia. The proposed GEF contribution to put this essential market development instrument in place is US$ 1 million.

Implementation arrangements:

Under the proposed GEF intervention detailed criteria for the operational mechanism of the Quality Guarantee Fund will be designed as well as a fund management system. In general terms two main actors will be involved; the CDER, who will be responsible for providing the screened quality products that are eligible for support from this preferential funding mechanism and a banking institution that has experience with public and private investments and the provision of consumer credits (e.g. BMCE) for the administration and operation of the Quality Guarantee Fund.

Risks:

The following (controllable) risks do exist:

- End-user default payments due to below-expectation performance of the solar water heating system.

  This risk will be reduced by the screening of the equipment, suppliers and installers (including performance contracts between the supplier and the end-user) in the process of selecting good quality products that will have access to the preferential funding mechanism. Non-compliance with the performance contract (after this screening process) is considered normal business risk and has to be dealt with by the suppliers and the installers.

- Restoring the VAT at the level of 20% after the project implementation.

  This measure can only be taken by the Moroccan Government and is as such not controllable by mechanisms set-up under the proposed GEF intervention. However, during the implementation of the proposed project a policy dialogue, that builds on results in line with the proposed Quality Guarantee Fund, will be initiated and a macro-economic analysis will be made to provide the rationale to sustain the low-percentage VAT on solar water heating products. In addition it is anticipated that the reduced peak demand (currently supplied below the cost of electricity generation), reduced foreign exchange requirements, increased local employment in the solar water heating sector and the importance of solar-based systems for the implementation of the National Action Plan for the Environment (PANE), will strengthen the case for a continuation of the 7% VAT level.