

GEF



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**Government of India
and
United Nations Development Programme
Global Environment Facility**

PROJECT DOCUMENT

**Project ID: 00061121
Global Solar Water Heating Market
Transformation and Strengthening Initiative:
India Country Program**

October 2008

NEW DELHI

**United Nations Development Programme
India**

Project Title Global Solar Water Heating Market Transformation and Strengthening Initiative: India Country Program

UNDAF Outcome(s): Communities are aware of their vulnerabilities and adequately prepared to manage (and reduce) disaster and environmental related risks.

Expected CP Outcome(s): Progress towards meeting national commitment under multilateral environmental agreements.

Expected Output(s): National efforts supported to leverage environmental finance to address climate change, biodiversity, land degradation and chemical management issues.

Implementing Partner: Ministry of New & Renewable Energy

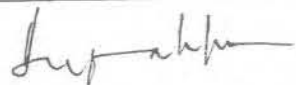
Responsible Parties: Ministry of New & Renewable Energy

Brief Description

As a part of the UNDP/UNEP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiative, this country programme of India aims at accelerating the market development of solar water heating with an objective to facilitate the installation of 10 million m² of installed collector area by 2012 (11th Five Year Plan). In the absence of any intervention, the market was projected to reach 3 million m² during this period. The GEF project will contribute partially to the achievement of India's new target in the amount of about 2 million m² while carbon credit mechanisms and other support will be needed to achieve the full target and longer term growth. By this, the project is expected to reduce GHG emissions directly by 11 million tonnes of CO₂ over 15 years life of equipment.


Programme Period:	2008-2012	2008 AWP budget:	USD	25,000
Key Result Area (Strategic Plan):	Mainstreaming Energy & Environment	Total resources required	USD	13,100,000
Atlas Award ID:	00049818	Total allocated resources:		
Start date:	October 2008	• Regular		
End Date	December 2012	• Other:		
PAC Meeting Date	8 April 2008	◦ GEF	USD	2,000,000
Management Arrangements	National Execution	◦ ICPCI	USD	300,000
		◦ Government	USD	10,800,000
		Unfunded budget:		Nil
		In-kind Contributions		-

Agreed by (Implementing Partner):


Ministry of New & Renewable Energy

देवक गुप्ता DEEVANK GUPTA
Secretary
Ministry of New and Renewable Energy
New Delhi, India
Tel: 261110003

Agreed by:


United Nations Development Programme

Deirdre Boyd
UNDP Country Director
21 NOV 2008

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ACRONYMS

APR	Annual Project Report
BIS	Bureau of Indian Standards
CEO	GEF Chief Executive Officer
CO	UNDP Country Office
CO ²	Carbon dioxide
CTA	Chief Technical Adviser
EE	Energy Efficiency
ERE	Electricity Regulatory Authority
ESCO	Energy Service Company
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GPMU	Project Management Unit of the Global SWH Project at UNEP
HQ	UNDP Headquarters
ICPCI	Indian Copper Promotion Council India
IEA	International Energy Agency
MDG	UN Millennium Development Goals
MoETE	Ministry of Economy, Trade and Energy
MoEF	Ministry of Environment & Forests
MoEFWM	Ministry of Environment, Forestry and Water Management
M&E	Monitoring and Evaluation
MYFF	Multi-year Funding Framework
NEA	National Energy Agency
NES	National Energy Strategy
QPR	Quarterly Progress Report
PDF	Project Development Facility
PIR	Project Implementation Review
PM	Project Manager
PMT	Project Management Team
PSC	Project Steering Committee
RCU	UNDP Regional Co-ordination Unit
SESCO	Solar Energy Service Company
SWH	Solar Water Heating
SRF	Strategic Results Framework
TPR	Tripartite Review
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change

1. PROJECT OVERVIEW:

1.1 Situation Analysis:

The climate of India is difficult to lay due to the country's large geographic size and varied topography. Many regions have their own microclimates (e.g. in mountain tops), and the main climate conditions in Kashmir (extreme north) are very different from those in the extreme south. India's climate is strongly influenced by the Himalayas and the Thar Desert. High altitude areas are cool and the climate influences demand for hot water significantly. Hot water for domestic use in urban areas is also commonly desired and is heated with electricity which is very expensive. India has adequate sunlight – the solar radiation varies from 3.5 kWh/m² in the rainy northeast up to 5.0 moving west past Kolkata and up to 6.0 around Bangalore in the south and Rajasthan in the west. A significant effort has gone into the development, trial and induction of a variety of renewable energy technologies by the Government of India for use in different sectors of the economy and sections of society in India, among which is solar thermal water heating.

1.2 Project Rationale:

Hot water for domestic use in urban areas is commonly heated with electricity. The electricity price is set a Rs.3 to 4 (7 cents US) per kWh. The commercial price is estimated at Rs.6 (12 cents). A gradual increase of the price over the coming years up to the commercial level is expected. In rural areas, locally available biomass and oil is used to heat water. In non-domestic and industrial applications, oil is used for heating water. The oil prices are very high and the subsidy on oil has gradually increased over the years. The demand for energy in the country has been growing rapidly, and India continues to be a large-scale importer of energy. The importance of increasing use of renewable energy sources in the transition to a sustainable energy base was recognised in India in the early 1970s. A significant effort has since gone into the development, trial and induction of a variety of renewable energy technologies by MNRE. The Government of India is supporting the application of solar thermal by a broad package of incentives. From the consumer point of view, the high prices of energy and the power cuts are the main reasons of interest in solar hot water systems. The utilities are also involved in supporting the market for solar hot water products motivated by the shortage of electricity (average 10%) and the resulting necessity for frequent power cuts (demand side limiting).

1.3 Project Strategy:

The GEF's experience to date has shown that the barriers being removed, relating to solar water heating systems, generally relate to five market characteristics: policy, finance, business skills, information; and technology. As identified in the second Climate Change Programme Study (CCPS2, 2004) as well as in the new programming framework for GEF-4, the removal of market barriers relating to these qualities "can form the basis for a market development strategy that is applicable to all of GEF's Operational Programs as well s being replicable, sustainable, and cost-effective". The project goal, objectives and expected outcomes have been defined on the basis of this strategic approach.

2. ANNUAL WORK PLAN

Year: 2008

EXPECTED OUTPUTS <i>And baseline, associated indicators and annual targets</i>	PLANNED ACTIVITIES <i>List activity results and associated actions</i>	TIMEFRAME				RESPONSIBLE PARTY	PLANNED BUDGET		
		Q 1	Q 2	Q 3	Q4		Funding Source	Budget Description	Amount (US \$)
Output 4 <i>Baseline: Inadequate capacity at supply chain</i> <i>Indicators: Level of marketing, product and installation services available in the market</i> <i>Targets: Enhanced capacity</i> <i>Related CP outcome: Progress towards meeting national commitment under multilateral environmental agreements..</i>	1. Enhanced capacity of supply chain -Inception Workshop				X	MNRE	GEF	72100	15,000
Output Management -Project <i>Baseline: None</i> <i>Indicators: Project staff in place</i> <i>Targets: NPC and support staff appointed.</i> <i>Related CP outcome: As in Output 4 above.</i>	1. Project Management - Deployment of NPC & support staff - Misc. PMU support activities.				X	MNRE	GEF	71400	8,000
					X	MNRE	GEF	74500	2,000
TOTAL									25,000

3. MANAGEMENT ARRANGEMENTS:

3.1 Implementation Arrangements – Institutional Mechanisms & Monitoring:

3.1.1 Programme Management Board (PMB):

PMB for the Energy & Environment Programme Outcome (Outcome 1.1 in CPD/CPAP) will be set up and co-chaired by DEA and UNDP. The PMB will oversee the delivery and achievement of results for all the initiatives under the Energy & Environment Programme Outcome and provide strategic direction for future programmes in this Outcome area. The PMB will also appraise the new programme initiatives prior to sign off with the Implementing Partners (IPs). The PMB will comprise ministries relevant to the Programme Outcome and relevant stakeholders identified in consultation with UNDP and IPs. It will meet twice a year, in the 2nd and 4th quarter, to take stock of the physical and financial progress.

3.1.2 The Implementing Partner:

This national sub-component (referred as the "Project") of the joint UNDP/UNEP Global Solar Water Heating Market Transformation and Strengthening Initiative will be nationally implemented by the Ministry of New & Renewable Energy (MNRE). The MNRE will designate a National Project Director, who will be responsible for overall management, including achievement of planned results, and for the use of UNDP funds through effective process management and well established project review and oversight mechanisms.

The Implementing Partner will also sign a budgeted Annual Work Plan with UNDP on an annual basis, as per UNDP rules and regulations.

3.1.3 Responsible Party:

MNRE will provide day-to-day implementation support in achievement of the overall project objectives in accordance with the policies of the Government of India.

3.1.4 Project Steering Committee:

A PSC would be constituted at the apex level with the participation of the MNRE, the Bureau of Energy Efficiency, Ministry of Environment and Forest (including those responsible for CDM), UNDP as well as representatives of other institutions providing direct cost-sharing for the project activities to review the progress and provide direction & guidelines for implementation of the project. The UNEP Global PMU will be a corresponding member. The PSC will carry out the following functions:

- Ensure that the project goals and objectives are achieved in a defined timeframe;
 - Review the project progress and suggest implementation strategies periodically;
 - Review the project expenditures against activities and outcomes; and
 - Approve Annual and Quarterly Work Plans.
- Mobilize cost-sharing and follow-up financing;
- Ensure all stakeholders are appropriately involved in the project planning and management;

Facilitate linkages with high-level decision-making.

The PSC will be the group responsible for making, by consensus, management decisions for the project and holding periodic reviews. In order to ensure UNDP's ultimate accountability, final decision making rests with UNDP in accordance with its applicable regulations, rules, policies and procedures. Project review will be carried out with regular periodicity established by the PSC during the running of a project, or as necessary when raised by the Project Manager.

3.1.5 National Project Director:

The NPD will coordinate project implementation on behalf of MNRE and ensure its proper implementation.

3.1.6 Project Manager:

A Project Manager will be designated by MNRE for the day-to-day management and decision making of the project and will be accountable to the NPD and PSC. S/he will prepare the detailed activity and monitoring plan based on the Annual Work Plan (AWP) and Budget and submit it to the PSC for approval. The Project Manager will ensure that the project produces the results specified in the project document, to the required standards of quality and within the specified constraints of time and cost. The Project Manager will prepare and submit to UNDP the following reports/ documents:

Annual and Quarterly Work Plans, Quarterly and Annual Progress Reports (substantive and financial), Issue Log, Risk Log, Quality Log, Lessons Learnt Log, Communications and Monitoring Plan using standard reporting format to be provided by UNDP.

The Project Manager will head the PMU and will work in close collaboration with MNRE and other partner organizations and undertake periodic monitoring and review of the project activities.

3.1.7 Project Management Unit (PMU):

For day-to-day management of the project, MNRE would set up a Project Management Unit and all project activities will be carried out from the PMU which will be headed by a Project Manager, supported by the required professional staff and an administrative assistant. The PMU will also coordinate the project activities including the preparation of Annual and Quarterly Work Plans, Budget, Financial Reports, etc. and will interface on project management issues.

In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF-supported project publications, including among others, project hardware, if any, purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgement to GEF. The UNDP logo should be prominent – and separated from the GEF logo.

3.1.8 Project Assurance:

Project Assurance will be the responsibility of UNDP. The Project Assurance role will support the PSC by carrying out objective and independent project oversight and monitoring functions.

This role ensures that the appropriate project management milestones are managed and completed.

3.2 Funds Flow Arrangements and Financial Management:

Based on the AWP, quarterly work plan will be provided by the Project Manager and funds will be released. The Responsible Party will account for funds received from UNDP on a quarterly basis through the standard Fund Authorization and Certificate of Expenditures (FACE) Report. The funds will be released to the Responsible Party at the signed request and approval of the NPD, also through the standard FACE format. The Project Manager will be responsible for compilation and collation of these Financial Reports. Unspent funds from the approved AWP's will be reviewed in the early part of the last quarter of the calendar year and funds reallocated accordingly. The detailed UNDP financial guidelines will be provided on signature of the project.

0.5 % of the total project budget will be allocated for communication and advocacy activities undertaken by UNDP.

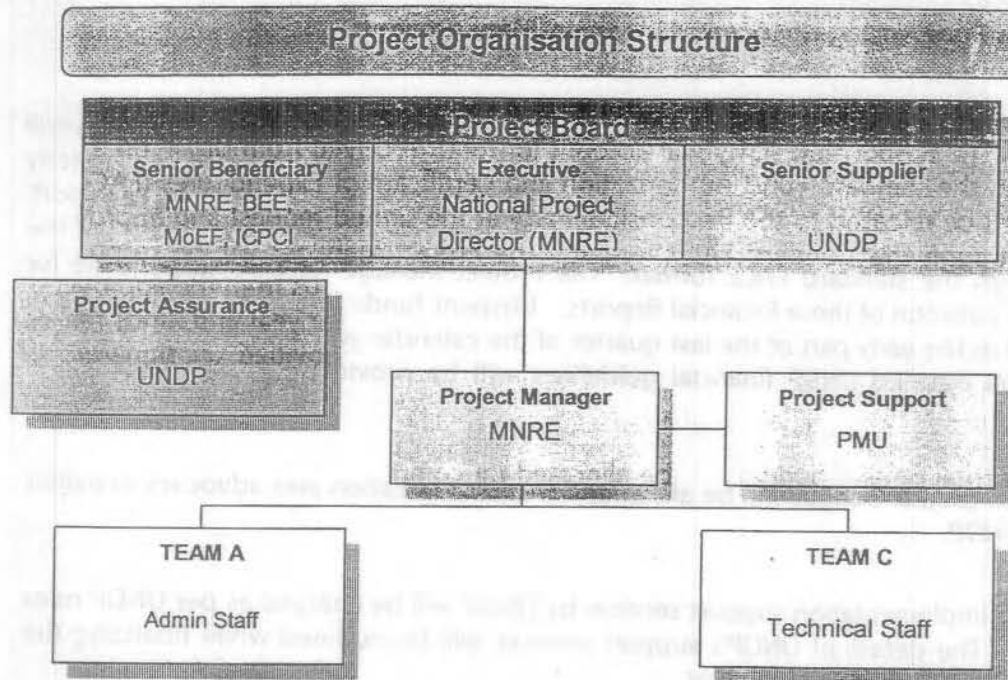
Cost recovery for implementation support services by UNDP will be charged as per UNDP rules and regulations. The details of UNDP's support services will be outlined while finalizing the annual work plan and budget for each year.

Interest Clause: A separate Savings Bank Account will be opened in the name of the project and any interest accrued on the project money during the project cycle will be ploughed back into the project or refunded to UNDP if there is no scope for ploughing back.

3.3 Audit:

The project shall be subject to audit in accordance with UNDP procedures and as per the annual audit plan drawn up in consultation with DEA. The project shall be informed of the audit requirements by January of the following year. The audit covering annual calendar year expenditure will focus on the following parameters – (a) financial accounting, documenting and reporting; (b) monitoring, evaluation and reporting; (c) use and control of non-extendable reporting; (d) UNDP Country Office support. In line with the UN Audit Board requirements for submitting the final audit reports by 30 April, the auditors will carry out field visits during February/March. Detailed instructions on audit will be circulated by UNDP separately and on signature.

4. PROJECT ORGANISATION STRUCTURE:



5. MONITORING FRAMEWORK & EVALUATION:

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures. The details of Monitoring and Evaluation Plan have been enumerated in the attached GEF-approved proposal. This Plan will be presented and finalized at the Project's Inception Workshop following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

The project will be monitored through the following:

An M&E system within the overall results framework outlined in the project document will be established. The Project Management Team should use a variety of formal and informal monitoring tools and mechanisms. This would include field visits as well as reports such as progress reports, annual reports and annual reviews in standard UNDP formats and as per UNDP's web-based project management system (ATLAS). Within the annual cycle, the Project Manager in consultation with the NPD and UNDP will ensure the following:

Quarterly Basis:

On a quarterly basis, a quality assessment shall record progress as per established quality criteria and methods towards the completion of key results. It should also capture feedback from the beneficiary perspective as well as information related to timeliness and resources usage.

An Issue Log shall be activated in Atlas and updated by the Project Manager to facilitate tracking and resolution of potential problems or requests for change.

Based on the initial risk analysis, a risk log shall be activated in Atlas and regularly updated by reviewing the external environment that may affect the project implementation.

Based on the above information recorded in Atlas, a Project Progress Report (PPR) shall be submitted by the Project Manager to the PSC through Project Assurance, using the standard UNDP report format.

A project Lessons-learned log will be activated and regularly updated to ensure on-going learning and adaptation within the Implementing Partner, and to facilitate the preparation of the Lessons-learned Report at the end of the project.

A Monitoring Schedule Plan shall be activated in Atlas and updated to track key management actions/events.

Annual Basis:

1. Annual Review Report: As per UNDP requirement, an Annual Review Report will be prepared by the Project Manager and shared with the PSC and the Project Board. As minimum requirement, the Annual Review Report shall consist of the Atlas standard format for the PPR covering the whole year with updated information for each above element of the PPR as well as a summary of results achieved against pre-defined annual targets at the output level.
2. Annual Project Report (APR)/Project Implementation Review (PIR): The APR/PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed. The PIR can be prepared any time during the year (July-June) and ideally prior to the Annual Project Review. The PIR should then be discussed in the Annual Review so that the result would be a PIR that has been agreed upon by the project, the executing agency, and the UNDP CO.

Annual Project Review: Based on the above reports, an annual project review with Implementing Partner and Responsible Party will be conducted during the fourth quarter of the year or soon after, to assess the performance of the project and appraise the Annual Work Plan (AWP) for the following year. In the last year, this review will be a final assessment. This review is driven by the PSC and may involve other stakeholders as required. It will focus on the extent to which progress is being made towards outputs, and that these remain aligned to appropriate outcomes.

Field visits: A representative from the UNDP office will visit each project periodically. Field visits serve the purpose of results validation, especially when undertaken in the first half of the year. If undertaken in the latter part of the year, the field visit should provide latest information on progress for annual reporting preparation. Field visits will be documented through brief and action-oriented reports, submitted within the week of return to the office.

In addition, a mid-term and a terminal evaluation of the project will be commissioned based on approval of the PSC. It will be conducted by external agencies/experts.

A detailed Communication and Advocacy Plan will be prepared that describes which activities and outputs will be monitored, reviewed and evaluated, how and by whom. A detailed Communication and Advocacy Plan needs to be drawn out by MNRE and approved by the PSC.

The Plan will articulate the types of communication and associated scheduling required during the project, as well as methods of communicating project results to stakeholders shall be activated in Atlas and updated to track key management actions/events.

6. QUALITY MANAGEMENT FOR PROJECT ACTIVITY RESULTS

OUTPUT 1: Enabling institutional, legal and regulatory framework established to promote sustainable SWH market in 10 States.		
Activity Result 1 (Atlas Activity ID)	<i>Enabling framework</i>	Start Date: 2008 End Date: 2012
Purpose	Expansion of solar program to other States of India.	
Description	Adoption and effective enforcement of new legal and regulatory provisions promoting sustainable SWH market.	
Quality Criteria	Quality Method	Date of Assessment
Adoption and effective enforcement of new legal and regulatory provisions promoting sustainable SWH market.	Official government publications. Project monitoring and evaluation reports.	On quarterly basis.

OUTPUT 2: Enhanced awareness and capacity of the targeted end users and building sector professionals to consider and integrate SWH systems into different types of buildings.		
Activity Result 1 (Atlas Activity ID)	<i>Enhanced awareness and capacity</i>	Start Date: 2008 End Date: 2012
Purpose	To reach a target of >2,000,000 m ² a year at the end of the project.	
Description	Materials for public awareness raising and marketing campaigns developed or adapted into Indian conditions. Public awareness raising and marketing campaigns implemented in cooperation with relevant public entities and private SWH suppliers and manufacturers. Broadening the application range of solar.	
Quality Criteria	Quality Method	Date of Assessment
<i>Annual sale of SWH system</i>	Project reports and market surveys.	On quarterly basis

OUTPUT 3: Increased demand for SWH systems by the availability of attractive end-user financing mechanisms or other delivery models.		
Activity Result 1 (Atlas Activity ID)	Financing mechanisms	Start Date: 2008 End Date: 2012
Purpose	The agreed financial support mechanisms and new delivery models in operation to meet the announced MNRE target to reach 10 m ² of	

	installed SWH capacity by 2020.	
Description	Enhanced awareness of the key financial sector stakeholders. Design the financial structuring and the implementation arrangements and integrate into the overall SWH marketing package.	
Quality Criteria	Quality Method	Date of Assessment
Amount of financing leveraged through new financing models and level of interest created.	Project monitoring reports.	On quarterly basis

OUTPUT 4: A certification and quality control scheme applicable for Indian conditions and enhanced capacity of the supply chain to offer products and services promoting sustainable SWH market in multiple States.

Activity Result 1 (Atlas Activity ID)	Enhanced capacity of supply chain	Start Date: 2008 End Date: 2012
Purpose	Enhanced capacity of the supply chain to respond to the growing demand with good quality services sustaining the market growth.	
Description	Proceedings and physical facilities for adequate testing and quality control of SWH systems developed and effectively taken into use. Certification and training system in place for SWH system installers. SWH system installers trained and certified.	
Quality Criteria	Quality Method	Date of Assessment
Level of marketing, product and installation services available in the market. Availability of adequate testing facilities for compliance checking.	Project reports and supply side surveys.	On quarterly basis

OUTPUT 5: Provided support institutionalised and the results, experiences and lessons learned documented and disseminated (including monitoring, learning, evaluation and other feedback for adaptive management).

Activity Result 1 (Atlas Activity ID)	Documentation of lessons learnt	Start Date: 2008 End Date: 2012
Purpose	To establish reporting framework and arrangements for SWH market.	
Description	The reporting framework and arrangements for SWH market monitoring established. The national project web-site and network successfully established and marketed.	
Quality Criteria	Quality Method	Date of Assessment
The reporting framework and arrangements for SWH market monitoring under implementation. Number of visits in the website, level and type of information on website and the frequency of updating.	Project reports	On quarterly basis

7. EXIT STRATEGY:

At the national level, the sustainability issues of the project activities will be addressed within the frame-work specified in the approved project proposal (attached). This being a global project, an Exit Strategy will be devised and adopted by the Project Management Unit of the Global SWH Project at UNEP.

8. LEGAL CONTEXT:

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together the instrument envisaged in the Supplemental Provisions to the Project Document, attached hereto (Annex 1).

Consistent with the above Supplemental Provisions, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

9. ANNEXES:

- A. Endorsement Letter from MoEF (Annex 1)
- B. Annex to Legal Context (Annex 2)
- C. Total Project Budget and Work Plan (Annex 3)
- D. Approved MSP Proposal by GEF (Annex 4)



SUDHIR MITAL
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भारत सरकार
पर्यावरण एवं वन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

SNS

D No. 4(2)/3/2007 – IC & SD.I

Dated: 8th April 2008

Dear Mr Hamlin.

This is regarding your email (dated: March 26, 2008) seeking co-financing commitment for UNEP/ UNDP/ GEF 3/ FSP on "Solar Water Heating Markets Transformation and Strengthening Initiative" from India. We understand that the total project cost is USD 12.8 million of which USD 2 million is GEF grant for the Indian component of this global project. We confirm the co-financing against this Indian component of this project to the tune of USD 10.8 m through the Union Ministry of New and Renewable Energy (MNRE). The detail of this co-financing is as follows:

Outcomes	Total USD	GEF USD	MNRE USD
Outcome: 1	425,000	325,000	100,000
Outcome: 2	581,000	481,000	100,000
Outcome: 3	10,250,000	250,000	10,000,000
Outcome: 4	858,000	458,000	400,000
Outcome: 5	400,000	250,000	150,000
Project Management Unit at SEC	180,000	130,000	50,000
Monitoring and Evaluation	106,000	106,000	X
Grant Total	12,800,000	2,000,000	10,800,000

With warm regards,

Yours sincerely,

(Signature)
(Sudhir Mital)

16 APR 2008

Mr. Tom Hamlin
Climate Change Task Manager
UNEP/ DGEF Coordination
15 rue de Milan,
75441 Paris CEDEX 09 France

Copy to:

Mr. M Prasad, Joint Secretary, DEA, North Block, New Delhi
Ms. Gauri Singh, Joint Secretary, MNRE, CGO Complex, Lodhi Rd, New Delhi
Dr. Preeti Soni, Team Leader, UNDP Co, 55 Lodhi Estate, New Delhi



जहाँ है हरियाली।
वहीं है खुशहाली।।

Amil

पर्यावरण भवन, सी.जी.ओ. कॉम्प्लेक्स, लोदी रोड, नई दिल्ली - 110 003
PARYAVARAN BHAWAN, C.G.O. COMPLEX, LODHI ROAD, NEW DELHI - 110 003

Standard Text: Supplemental Provisions to the Project Document: The Legal Context

General responsibilities of the Government, UNDP and the executing agency

1. All phases and aspects of UNDP assistance to this project shall be governed by and carried out in accordance with the relevant and applicable resolutions and decisions of the competent United Nations organs and in accordance with UNDP's policies and procedures for such projects, and subject to the requirements of the UNDP Monitoring, Evaluation and Reporting System.
2. The Government shall remain responsible for this UNDP-assisted development project and the realization of its objectives as described in this Project Document.
3. Assistance under this Project Document being provided for the benefit of the Government and the people of (the particular country or territory), the Government shall bear all risks of operations in respect of this project.
4. The Government shall provide to the project the national counterpart personnel, training facilities, land, buildings, equipment and other required services and facilities. It shall designate the Government Co-operating Agency named in the cover page of this document (hereinafter referred to as the "Co-operating Agency"), which shall be directly responsible for the implementation of the Government contribution to the project.
5. The UNDP undertakes to complement and supplement the Government participation and will provide through the Executing Agency the required expert services, training, equipment and other services within the funds available to the project.
6. Upon commencement of the project the Executing Agency shall assume primary responsibility for project execution and shall have the status of an independent contractor for this purpose. However, that primary responsibility shall be exercised in consultation with UNDP and in agreement with the Co-operating Agency. Arrangements to this effect shall be stipulated in the Project Document as well as for the transfer of this responsibility to the Government or to an entity designated by the Government during the execution of the project.
7. Part of the Government's participation may take the form of a cash contribution to UNDP. In such cases, the Executing Agency will provide the related services and facilities and will account annually to the UNDP and to the Government for the expenditure incurred.

(a) Participation of the Government

1. The Government shall provide to the project the services, equipment and facilities in the quantities and at the time specified in the Project Document. Budgetary provision, either in kind or in cash, for the Government's participation so specified shall be set forth in the Project Budgets.
2. The Co-operating Agency shall, as appropriate and in consultation with the Executing Agency, assign a director for the project on a full-time basis. He shall carry out such responsibilities in the project as are assigned to him by the Co-operating Agency.
3. The estimated cost of items included in the Government contribution, as detailed in the Project Budget, shall be based on the best information available at the time of drafting the project proposal. It is understood that price fluctuations during the period of execution of the project may necessitate an adjustment of said contribution in monetary terms; the latter shall at all times be determined by the value of the services, equipment and facilities required for the proper execution of the project.
4. Within the given number of man-months of personnel services described in the Project Document, minor adjustments of individual assignments of project personnel provided by the Government may be made by the Government in consultation with the Executing Agency, if this

is found to be in the best interest of the project. UNDP shall be so informed in all instances where such minor adjustments involve financial implications.

5. The Government shall continue to pay the local salaries and appropriate allowances of national counterpart personnel during the period of their absence from the project while on UNDP fellowships.

6. The Government shall defray any customs duties and other charges related to the clearance of project equipment, its transportation, handling, storage and related expenses within the country. It shall be responsible for its installation and maintenance, insurance, and replacement, if necessary, after delivery to the project site.

7. The Government shall make available to the project - subject to existing security provisions - any published and unpublished reports, maps, records and other data which are considered necessary to the implementation of the project.

8. Patent rights, copyright rights and other similar rights to any discoveries or work resulting from UNDP assistance in respect of this project shall belong to the UNDP. Unless otherwise agreed by the Parties in each case, however, the Government shall have the right to use any such discoveries or work within the country free of royalty and any charge of similar nature.

9. The Government shall assist all project personnel in finding suitable housing accommodation at reasonable rents.

10. The services and facilities specified in the Project Document which are to be provided to the project by the Government by means of a contribution in cash shall be set forth in the Project Budget. Payment of this amount shall be made to the UNDP in accordance with the Schedule of Payments by the Government.

11. Payment of the above-mentioned contribution to the UNDP on or before the dates specified in the Schedule of Payments by the Government is a prerequisite to commencement or continuation of project operations.

(b) Participation of the UNDP and the executing agency

1. The UNDP shall provide to the project through the Executing Agency the services, equipment and facilities described in the Project Document. Budgetary provision for the UNDP contribution as specified shall be set forth in the Project Budget.

2. The Executing Agency shall consult with the Government and UNDP on the candidature of the Project Manager a/ who, under the direction of the Executing Agency, will be responsible in the country for the Executing Agency's participation in the project. The Project Manager shall supervise the experts and other agency personnel assigned to the project, and the on-the-job training of national counterpart personnel. He shall be responsible for the management and efficient utilization of all UNDP-financed inputs, including equipment provided to the project.

3. The Executing Agency, in consultation with the Government and UNDP, shall assign international staff and other personnel to the project as specified in the Project Document, select candidates for fellowships and determine standards for the training of national counterpart personnel.

4. Fellowships shall be administered in accordance with the fellowships regulations of the Executing Agency.

a/ May also be designated Project Co-ordinator or Chief Technical Adviser, as appropriate.

5. The Executing Agency may, in agreement with the Government and UNDP, execute part or all of the project by subcontract. The selection of subcontractors shall be made, after consultation with the Government and UNDP, in accordance with the Executing Agency's procedures.

6. All material, equipment and supplies which are purchased from UNDP resources will be used exclusively for the execution of the project, and will remain the property of the UNDP in whose name it will be held by the Executing Agency. Equipment supplied by the UNDP shall be marked with the insignia of the UNDP and of the Executing Agency.

7. Arrangements may be made, if necessary, for a temporary transfer of custody of equipment to local authorities during the life of the project, without prejudice to the final transfer.

8. Prior to completion of UNDP assistance to the project, the Government, the UNDP and the Executing Agency shall consult as to the disposition of all project equipment provided by the UNDP. Title to such equipment shall normally be transferred to the Government, or to an entity nominated by the Government, when it is required for continued operation of the project or for activities following directly therefrom. The UNDP may, however, at its discretion, retain title to part or all of such equipment.

9. At an agreed time after the completion of UNDP assistance to the project, the Government and the UNDP, and if necessary the Executing Agency, shall review the activities continuing from or consequent upon the project with a view to evaluating its results.

10. UNDP may release information relating to any investment oriented project to potential investors, unless and until the Government has requested the UNDP in writing to restrict the release of information relating to such project.

Rights, Facilities, Privileges and Immunities

1. In accordance with the Agreement concluded by the United Nations (UNDP) and the Government concerning the provision of assistance by UNDP, the personnel of UNDP and other United Nations organizations associated with the project shall be accorded rights, facilities, privileges and immunities specified in said Agreement.

2. The Government shall grant UN volunteers, if such services are requested by the Government, the same rights, facilities, privileges and immunities as are granted to the personnel of UNDP.

3. The Executing Agency's contractors and their personnel (except nationals of the host country employed locally) shall:

(a) Be immune from legal process in respect of all acts performed by them in their official capacity in the execution of the project;

(b) Be immune from national service obligations;

(c) Be immune together with their spouses and relatives dependent on them from immigration restrictions;

(d) Be accorded the privileges of bringing into the country reasonable amounts of foreign currency for the purposes of the project or for personal use of such personnel, and of withdrawing any such amounts brought into the country, or in accordance with the relevant foreign exchange regulations, such amounts as may be earned therein by such personnel in the execution of the project;

(e) Be accorded together with their spouses and relatives dependent on them the same repatriation facilities in the event of international crisis as diplomatic envoys.

4. All personnel of the Executing Agency's contractors shall enjoy inviolability for all papers and documents relating to the project.

5. The Government shall either exempt from or bear the cost of any taxes, duties, fees or levies which it may impose on any firm or organization which may be retained by the Executing Agency and on the personnel of any such firm or organization, except for nationals of the host country employed locally, in respect of:

(a) The salaries or wages earned by such personnel in the execution of the project;

(b) Any equipment, materials and supplies brought into the country for the purposes of the project or which, after having been brought into the country, may be subsequently withdrawn therefrom;

(c) Any substantial quantities of equipment, materials and supplies obtained locally for the execution of the project, such as, for example, petrol and spare parts for the operation and maintenance of equipment mentioned under (b), above, with the provision that the types and approximate quantities to be exempted and relevant procedures to be followed shall be agreed upon with the Government and, as appropriate, recorded in the Project Document; and

(d) As in the case of concessions currently granted to UNDP and Executing Agency's personnel, any property brought, including one privately owned automobile per employee, by the firm or organization or its personnel for their personal use or consumption or which after having been

brought into the country, may subsequently be withdrawn therefrom upon departure of such personnel.

6. The Government shall ensure:

(a) prompt clearance of experts and other persons performing services in respect of this project; and

(b) the prompt release from customs of:

(i) equipment, materials and supplies required in connection with this project; and

(ii) property belonging to and intended for the personal use or consumption of the personnel of the UNDP, its Executing Agencies, or other persons performing services on their behalf in respect of this project, except for locally recruited personnel.

7. The privileges and immunities referred to in the paragraphs above, to which such firm or organization and its personnel may be entitled, may be waived by the Executing Agency where, in its opinion or in the opinion of the UNDP, the immunity would impede the course of justice and can be waived without prejudice to the successful completion of the project or to the interest of the UNDP or the Executing Agency.

8. The Executing Agency shall provide the Government through the resident representative with the list of personnel to whom the privileges and immunities enumerated above shall apply.

9. Nothing in this Project Document or Annex shall be construed to limit the rights, facilities, privileges or immunities conferred in any other instrument upon any person, natural or juridical, referred to hereunder.

Suspension or termination of assistance

1. The UNDP may by written notice to the Government and to the Executing Agency concerned suspend its assistance to any project if in the judgement of the UNDP any circumstance arises which interferes with or threatens to interfere with the successful completion of the project or the accomplishment of its purposes. The UNDP may, in the same or a subsequent written notice, indicate the conditions under which it is prepared to resume its assistance to the project. Any such suspension shall continue until such time as such conditions are accepted by the Government and as the UNDP shall give written notice to the Government and the Executing Agency that it is prepared to resume its assistance.

2. If any situation referred to in paragraph 1, above, shall continue for a period of fourteen days after notice thereof and of suspension shall have been given by the UNDP to the Government and the Executing Agency, then at any time thereafter during the continuance thereof, the UNDP may by written notice to the Government and the Executing Agency terminate the project.

3. The provisions of this paragraph shall be without prejudice to any other rights or remedies the UNDP may have in the circumstances, whether under general principles of law or otherwise.

TOTAL PROJECT WORKPLAN AND BUDGET

Award ID:	00049818
Award Title:	Progress towards meeting the national commitment under multilateral environmental agreements
Business Unit:	IND10
Project Title:	National efforts supported to leverage environmental finance to address climate change, biodiversity, land degradation and chemical management issues (PIMS 3611)
Implementing Partner:	Ministry of New and Renewable Energy (MNRE)

GEF Outcome/ Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)
Outcome 1 Enabling Framework	MNRE	62000	GEF	71200	International Consultants Short Term		20,000	5,000		15,000	40,000
				71300	Local Consultant Short Term		20,000	20,000	20,000	40,000	100,000
				71400	Contractual services – individuals		15,000	15,000	15,000	30,000	75,000
				71600	Travel		2,000	2,000	2,000	4,000	10,000
				72100	Contractual services – companies		20,000	20,000	15,000	25,000	80,000
				74200	Printing and publication costs		2,000	2,000	2,000	4,000	10,000
				74500	Miscellaneous		2,000	2,000	2,000	4,000	10,000
					TOTAL OUTCOME 1			81,000	66,000	56,000	122,000
Outcome 2 Enhanced	MNRE	62000	GEF	71200	International Consultants Short Term		20,000	10,000		15,000	45,000
				71300	Local Consultants Short Term		10,000	10,000		10,000	30,000
				71400	Contractual services – individuals		10,000	10,000	10,000	20,000	50,000
				71600	Travel		3,000	3,000	3,000	6,000	15,000
				72100	Contractual services– companies		50,000	40,000	30,000	70,000	190,000

awareness and capacity				72200	Equipment		50,000	50,000			100,000
				74200	Printing and publication costs		5,000	5,000	5,000	9,000	24,000
				74500	Miscellaneous		6,000	5,000	5,000	11,000	27,000
				TOTAL OUTCOME 2			154,000	133,000	53,000	141,000	481,000
Outcome 3 Financing Mechanism	MNRE	62000	GEF	71200	International Consultants		25,000	10,000			35,000
				71300	Local Consultants Short Term		15,000	5,000	5,000	15,000	40,000
				71400	Contractual services –individual		15,000	15,000	15,000	30,000	75,000
				71600	Travel		3,000	3,000	3,000	6,000	15,000
				72100	Contractual services –companies		20,000	15,000	15,000	20,000	70,000
				74200	Printing and publication costs		2,000	1,000	1,000	1,000	5,000
				74500	Miscellaneous		2,000	2,000	2,000	4,000	10,000
				TOTAL OUTCOME 3			82,000	51,000	41,000	76,000	250,000
Outcome 4 Enhanced Capacity of Supply Chain	MNRE	62000	GEF	71200	International Consultants Short term		25,000	20,000		20,000	65,000
				71300	Local Consultants short term						
				71400	Contractual services –individuals		10,000	10,000	5,000	15,000	40,000
				71600	Travel		3,000	3,000	3,000	6,000	15,000
				72100	Contractual services –companies	15,000	20,000	20,000	15,000	15,000	85,000
				72200	Equipment		130,000	100,000			230,000
				74200	Printing and publication costs		2,000	2,000	2,000	4,000	10,000
				74500	Miscellaneous		3,000	3,000	2,000	5,000	13,000
TOTAL OUTCOME 4		15,000	193,000	158,000	27,000	65,000	458,000				

Outcome 5 Documentation of lessons Learnt	MNRE	62000	GEF	71200	International Consultants Short term			20,000		30,000	50,000
				71300	Local Consultants Short term			10,000		10,000	20,000
				71400	Contractual services –individuals		15,000	15,000	15,000	30,000	75,000
				71600	Travel		3,000	3,000	3,000	6,000	15,000
				72100	Contractual services –companies		27,000	27,000	27,000	64,000	145,000
	UNDP UNDP	62000 62000	GEF GEF	74200	Printing and publication costs		4,000	4,000	3,000	8,000	19,000
				74500	Miscellaneous		4,000	3,000	3,000	7,000	17,000
				74500	Communication & Advocacy		2,000	2,000	2,000	4,000	10,000
				74500	Evaluation & capacity building		1,000	1,000	1,000	2,000	5,000
				TOTAL OUTCOME 5					56,000	85,000	54,000
Project Management	MNRE	62000	GEF	71400	Contractual services –individuals	8,000	23,000	23,000	23,000	38,000	115,000
				71600	Travel		3,000		2,000		5,000
				74500	Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000
				TOTAL PROJECT MGMT.				10,000	28,000	25,000	27,000
PROJECT TOTAL				25,000	594,000	518,000	258,000	605,000	2,000,000		

SIGNATURE PAGE

Country: India

UNDAF Outcome(s)/Indicator(s):
(Link to UNDAF outcome. If no UNDAF, leave blank)

Expected Outcome(s)/Indicator (s):
(CP outcomes linked to the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s):
(CP outcomes linked t the SRF/MYFF goal and service line)

Implementing partner: Ministry of New and Renewable Energy (MNRE) *(Designated institution/Executing agency)*

Other Partners:

Programme Period: 2008-2013

Programme Component: _____

Project Title: Global Solar Water Heating Market
Transformation and Strengthening Initiative: India Country
Programme

Project ID: PIMS 3611

Project Duration: 4.5 years

Management Arrangement: NEX

Total budget: USD 13,100,000
Total budget (UNDP managed): USD 2,000,000

Allocated resources:

- Government: USD 12,800,000
- GEF: USD 2,000,000
- Others: USD 300,000

Agreed by (Government): _____

Agreed by (Implementing partner/Executing agency): _____

Agreed by (UNDP): _____



UNDP Project Document

Government of India

United Nations Development Programme

United Nations Environment Programme

The Country Programme of India under the Global Solar Water Heating Market Transformation and Strengthening Initiative (PIMS 3611)

As a part of the UNDP/UNEP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiative, this country programme of India aims at accelerating the market development of solar water heating with an objective to facilitate the installation of 10 million m² of installed collector area by 2012 (11th Five year plan). In the absence of any intervention the market was projected to reach 3 million m² during this period. The GEF project will contribute partially to the achievement of India's new target in the amount of about 2 million m² while carbon credit mechanisms and other support will be needed to achieve the full target and longer term growth. By this, the project is expected to reduce GHG emissions directly by 11 million tonnes of CO₂ over 15 years life of equipment.

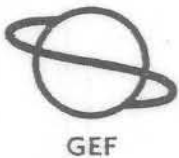


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As a part of the UNDP/GEF Solar Water Heating Project, the Government of India is implementing the market development of solar water heating with an objective to facilitate the installation of 10 million sq. m of installed capacity by 2012 (17.5 million sq. m in the period of the investment the market was projected to reach 7 million sq. m during the period). The GEF project will contribute partially to the achievement of India's water saving in the amount of about 1 billion m³ of water during the investment period and after support will be needed to achieve the full target and beyond. The project is expected to reduce GHG emissions directly by 11 million tonnes of CO₂ over 15 years life of equipment.



ACRONYMS

APR	Annual Project Report
BIS	Bureau of Indian Standards
CEO	GEF Chief Executive Officer
CO	UNDP Country Office
CO ₂	Carbon dioxide
CTA	Chief Technical Adviser
EE	Energy Efficiency
ERE	Electricity Regulatory Authority
ESCO	Energy Service Company
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GPMU	Project Management Unit of the Global SWH Project at UNEP
HQ	UNDP Headquarters
IEA	International Energy Agency
MDG	UN Millennium Development Goals
MoETE	Ministry of Economy, Trade and Energy
MoEFWM	Ministry of Environment, Forestry and Water Management
M&E	Monitoring and Evaluation
MYFF	Multi-year Funding Framework
NEA	National Energy Agency
NES	National Energy Strategy
QPR	Quarterly Progress Report
PDF	Project Development Facility
PIR	Project Implementation Review
PM	Project Manager
PMT	Project Management Team
PSC	Project Steering Committee
RCU	UNDP Regional Co-ordination Unit
SESCO	Solar Energy Service Company
SWH	Solar Water Heating
SRF	Strategic Results Framework
TPR	Tripartite Review
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change

SECTION 1: ELABORATION OF THE NARRATIVE

Part I: Situation Analysis

Climate

The climate of India is difficult to lay due to the country's large geographic size and varied topography. Many regions have their own microclimates (e.g. in mountain tops), and the main climatic conditions in Kashmir (extreme north) are very different from those in the extreme south. India's climate is strongly influenced by the Himalayas and the Thar Desert. The Himalayas ensure, by acting as a barrier to the cold north winds from Central Asia, that northern India is warm or mildly cool during winter and hot during summer. So, although the Tropic of Cancer (the dividing line between the tropical and sub-tropical regions) passes almost through the middle of India, India as a whole is considered to be a tropical country. High altitude areas are cool as well and the climate influences demand for hot water significantly. Global horizontal solar radiation varies from 3.5 kWh/m² in the rainy northeast up to 5.0 moving west past Calcutta and up to 6.0 around Bangalore in the south and Rajasthan in the west.

Energy

Hot water for domestic use in urban areas is commonly heated with electricity. The electricity price is set at 3-4 Roepies (7 cents US) per kWh. The commercial price is estimated at 6 Roepies (12 cents). A gradual increase of the price over the coming years up to the commercial level is expected.

In rural areas locally available biomass and oil is used to heat water. In non-domestic and industrial applications oil is used for heating water. The oil prices are 22 Roepies per litre. The subsidy on oil is gradually increased over the years. The demand for energy in the country has been growing rapidly, and India continues to be a large-scale importer of energy. India has very limited known reserves of oil and natural gas, which may last only 16 and 23 years respectively. Projections for crude imports indicate that import dependence, which is 66% at present, will rise to 80% by 2010. Moreover, to bridge India's peak power shortages of 13%-15% and average shortages of 8%-10% in the business as usual scenario, nearly 100,000 MW of fresh capacity addition would be required by 2012. The rapidly growing population, along with increased economic development, has placed a strain on India's infrastructure, and ultimately on the environment. The importance of increasing use of renewable energy sources in the transition to a sustainable energy base was recognised in India in the early 1970s. A significant effort has gone into the development, trial and induction of a variety of renewable energy technologies for use in different sectors of the economy and sections of society in India.

The government of India is supporting the application of solar thermal by a broad package of incentives (see the section "Country Drivenness").

From the consumers point of view the high prices for energy and the power cuts are the main reasons of interest in solar hot water systems. The utilities also are involved in supporting the market for solar hot water products motivated by the shortage of electricity (average 10%) and the resulting necessity for frequent power cuts (demand side limiting). Commercial buildings and

industry are interested in solar due to the high costs for backup fuel, electricity and availability during power cuts.

Thermal energy in industrial, commercial and domestic sectors constitutes one of the major portions of overall energy demand in the country. These thermal requirements are presently met either through combustion of fossil fuels like coal, lignite, diesel, and fuel oil, or through electricity. There are 22 major industrial sectors where boilers supply process heat up to a temperature of 150°C. These include dairy, food processing, textiles, hotels, edible oil, chemical, marine chemicals, bulk drug, breweries, and distilleries.

Around 1,000,000 m² collector area for water heating has been installed. Solar water heating systems are now being manufactured on a commercial scale at around 250,000 m² collector area annually. In the last five years the turnover has increased from 50,000 m² to 250,000 m² (2005) bringing the total installed collector area to a total of one million m². Government will continue to actively support a further market growth with incentives that have had impact, but are being revamped to improve effectiveness. The fact that the total installed collector area in India has increased five times in the last five years, has established the techno-economic viability of solar water heating systems in some geographic and sector markets. The market growth rate needed to meet the 10 million m² target by 2011 is 50%. This is very aggressive, exceeding China's growth rate, but is feasible considering the significant investments that India intends to make to support the market growth together with the timely assistance this project can provide.

The fast market growth is currently limited to only a minor part of India and has focused on bigger cities. In these regions the awareness is high among all stakeholders and is often combined with municipal mandatory building regulations or a large concentration of government owned buildings.

Institutional Framework

The Ministry of New and Renewable Energy Sources (MNRE) – formerly Ministry of Non-conventional Energy Sources -- is responsible for renewable energy and fuel cells development with respect to policy making, incentives and regulations. Their financial agency, the Indian Renewable Energy Development Agency Ltd (IREDA) had been responsible for financing, but is now shifting to fund management on behalf of MNRE, while the actual financing is flowing through 27 intermediaries i.e. national and private banks. State Agencies are implementing MNRE policies and supporting state agencies and state policies. Examples are: MEDA, HAREDA and REDA. The Bureau of Indian Standards is involved with the solar standards with the panel test standard in use and a systems standard being considered to cover thermo-syphon technology and durability issues.

The Solar Energy Center, under the MNRE is designated as the lead technical agency for the project and is also involved in the testing and guidelines development for solar water heaters.

National policy framework

The National Renewable Energy Policy had identified a goal of installing 5 million m² collector area during 2000-2012, while MNRE recently announced at the UNEP/SEFI sponsored REFF-India doubling that figure during the 11th 5 year plan to 10 million m². They plan equal distribution of

collector area in the domestic as well as the commercial and industrial sectors. The main issues for energy conservation policies are the environment and fuel importation dependency. Electricity is commonly produced with coal, which is indigenous. Oil and gas are mainly imported goods.

The MNRE is involved in the implementation of programmes for development, demonstration and utilization of various renewable energy based technologies, among which is solar thermal water heating.

Several government granted financial incentives are available, like funds for demonstration projects, set-up of solar vending shops, interest subsidies for organisations and businesses, finance for manufacturing and buying fabrication equipment, a soft loans scheme for individual consumers and special customs duty. Some building regulations are also being implemented. It has been made mandatory for newly built government buildings to install solar systems. In some districts and cities it is made mandatory to install solar systems on newly built buildings and living quarters above a certain living area. Government policies are mainly implemented through the state agencies and supported by state laws and municipal (building) regulations.

Technology Introduction and Supply Chain

At this phase of market development, two main barriers for further growth are identified: i) the supply side of the market should rapidly reform to a more professional level in order to meet the growing demand for quality issues and ii) the successes in parts of India should be duplicated in up to now less explored areas where demand may exist.

The current level of professionalism in all parts of the supply chain is low. A large number of small manufacturers are active with an average yearly production of 2,500 m² of collectors. Only a minor share of these companies offer full service (responsible for production, sales, installing and services), while the biggest share consists of unorganised installers with a doubtful level of professionalism. Some of the full service companies work with a dealer network. Due to the lack of systematic monitoring of the performance of installed systems, no real cycle of 'learning and improving' is in place in the supply chain. The knowledge level can be described as 'rules of the thumb' and has a low scientific base.

The Indian market is dominated by local production and is very self contained. It is not expected that the lessons learned in other countries will be easily adopted without intervention. This makes the Indian market especially vulnerable for quality issues. About 100 manufactures are identified, of which 10 provide imported vacuum tube collectors. An evacuated tube manufacturing facility is being considered by at least one company. India announced the creation of tax free zones for manufacturing of solar equipment at the Intersolar 2007 conference. Manufacturing in the tax free zone must be 80% for export.

The distribution and sales system is currently dominated by unorganised small companies but some major national and international companies are now interested.

Without a major reform of the supply chain towards a higher level of professionalism, a real risk exists for market frustration and a resulting market drop lasting for decades. In order to improve the level of professionalism, the following issues should be addressed: i) the demand for

professionalism should be institutionalised through a system of certification, labelling, branding or recognition; ii) knowledge of a more scientific nature should be introduced in the supply chain; and iii) capacity building should be undertaken in the complete supply chain.

Increasing professionalism in the supply chain calls for higher investments in terms of test services, manufacturing facilities, installation procedures and human capital. This can be justified by the rapidly increasing market, as is the case in India. As a result of such a reform, this may lead to a concentration of companies; fewer but bigger companies. The market will be guarded against low quality products through the certification process.

Quality assurance should be aimed both at internal quality issues (e.g. ISO 9000 series) and product quality (CEN, ISO or ASHRAE). Certification, labelling, and program branding should be jointly supported by industry, government and GEF. In addition, the possible harmful environmental impacts of the processes used for the production of SWH systems need to be considered.

The current standards on solar of the Bureau of Indian Standards are focussed on the collector, being only a part of the total system. The system performance is not part of the BIS standards. Improvements are needed to reflect international state-of-the-art on solar standards (ISO or EN). These standards should be the base for the product quality.

The installation quality should be addressed by introducing a system of dealers' networks (supplier is responsible) and a system of recognition of approved installers / plumbers. In general, the distribution should be reformed towards a more professional level, giving outlets for the manufacturers throughout the whole nation. The installers (large systems) and plumbers (domestic systems) should be trained to improve quality of workmanship and maintenance.

Solar thermal is basically a low-level technology, which is frequently underestimated. In a starting market, many companies can participate with only minor knowledge. Due to the underestimation of the skills needed, inevitable poor quality of the products will result. Improving professionalism also includes improvements in the knowledge of the solar thermal technology. Introducing a wide spread 'learning and improving' system (monitoring) is a basic condition for this. Making design or engineering manuals or learning books (based on scientific research) available will also be needed. An impulse of high level technologies, like high temperature collectors or hybrid gas/solar systems and solar cooling systems, will support this. Altogether, the introduction of these knowledge improving mechanisms should be imbedded in the certification / labelling / branding scheme through a demand for ISO 9000 series quality systems in the processes of the supply chain.

Continuous capacity building aimed at the stakeholders in the supply chain will be needed to support the reform to higher levels of professionalism. This involves manufacturers, installers, technical schools, architecture and engineering universities, banks, state agencies and others.

Up to now most of the market growth has been accomplished with solar hot water applications for cleaning processes and it has focused on urban areas. In rural areas, there is a big potential in industrial applications (e.g. textile, paper) and agricultural drying processes (e.g. tobacco, chilly). This potential can be utilised by demonstration projects and possibly by SESCOs. An assessment is needed to identify these opportunities.

Through the implementation of high temperature collectors (120 to 150 °C), solar cooling and industrial processes with steam, can be addressed. Both applications represent a growing demand for electricity and fuels. This can be supported by dissemination of existing knowledge available in other countries. Approaching more advanced applications can also help to uplift the workmanship to higher technical level and build the professionalism of the supply chain.

Despite the successes, it should be observed that the successes in market growth are specific for some urban areas (big cities) in only a minor part of India. A further dissemination of the successful incentives throughout India is needed in order to reach the given goals. Awareness raising, promotion and demonstration aimed at a broad range of stakeholders (including end users) are called for.

Currently, in India the installation of collector area per 1000 inhabitants is 0.90 m². Compared to an estimated potential of 140 m² per 1000 inhabitants, this shows only a minor penetration of solar hot water systems. Globally, a rule of thumb used is giving a potential of 500 m² per 1000 inhabitants. In hot humid climates where cool showers are more in demand and solar radiation is stronger, the potential will be lower, less than 200 m² per 1000. From the consumers point of view, the high prices for energy and the power cuts are the main motivation for solar hot water systems. The current price for electricity is 3-4 Rs (6 – 8 US cents) per kWh and the price is rising each year. The payback time for solar hot water systems is estimated at between three and five years.

SWH financing environment

The solar home water heater program has been redesigned and will be launched through 27 Banks all with IREDA as fund manager and 56 qualified vendors. The Government representatives have followed the UNEP-Tunisia SWH program and the UNEP India Solar Home System program and they are interested in more interaction with UNEP-DTIE to finetune the financial instruments. The consumer loans for eligible vendor equipment are currently offered with an interest rate subsidy that is now paid upfront to the banks, while the consumers see the normal payment pattern with reduced payments over 5 years. The interest rates to the consumers are 2% to domestic users, 3% to institutional users not availing accelerated depreciation, and 5% to industrial/commercial users availing depreciation. A 15% downpayment is required and the loan tenure is 5 years. Banks require income certificate, electrical bill, photo of the installation and the address, to process the loan.

Other fiscal incentives vary state by state and include electricity rate reduction, property tax rebates and solar water heating requirements. National Housing Bank refines all housing and can consider to include also SWH. MNRE is concerned, however, that the SWH system life is too short. Durability standards may assist in this regard, although water quality is a severe issue and would only permit all glass systems.

Other Planned or Ongoing Projects

The Energy Conservation Code for Buildings has been issued in 2006 and includes a requirement for at least 20% of water heating to be met by solar.

Part II: Strategy

The GEF's experience to date has shown that the barriers being removed generally relate to five market characteristics: policy; finance; business skills; information; and technology. As identified in the second Climate Change Program Study (CCPS2, 2004) as well as in the new programming framework for GEF-4, the removal of market barriers relating to these qualities "can form the basis for a market development strategy that is applicable to all of GEF's Operational Programs as well as being replicable, sustainable, and cost-effective". The project goal, objectives and expected outcomes have been defined on the basis of this strategic approach.

Project Goal and Objective

The goal of this national component of the global UNDP/UNEP Solar Water Heating Market Transformation and Strengthening Initiative is to accelerate and sustain the SWH market growth in India and to use the experiences and lessons learnt in promoting a similar growth in other countries. It will establish supportive regulatory environment, build up the market demand and strengthen the supply chain with the aim to reach the target of 10 million m² of installed SWH systems in India by 2012. The average growth rate of 50 % during these heavily supported market scale up years would enable this. The focus will be on: i) a reform of the supply chain to a higher level of professionalism ii) awareness building and iii) refinement and replication of incentives programs throughout India.

The long term goal of the project is to accelerate a sustainable market development of solar water heating in India with good quality products and services. At current rates of installation under the business as usual scenario, 3 million m² of new solar thermal panels would be installed in India by 2020. Under the Alternative scenario, new solar thermal installations of 10 million m² are expected by 2012, to which the GEF project is expected to contribute to at least 2 million m². Even more importantly, however, the support provided by the GEF project is expected to facilitate sustainable growth also after the project by paying specific attention on the quality issues.

The GHG emission reduction resulting from this alternative scenario has been estimated at 11 million tons of CO₂ over 15 years lifetime for the GEF increment of 2 million m² and over 50 million tons for 10 million m². Since the government subsidies on energy as well as SWH will decrease, UNEP/UNF and UNDP are independently supporting the development of a carbon finance opportunity aggregated through the banks or other mechanisms that can replace government subsidy and sustain market growth. This can be coordinated at the Project Steering Committee.

Project Outcomes and Outputs

The project intervention is presented according to the logical framework approach. The essence of this approach is that outputs are clustered by outcomes: sustainable growth in demand by an i) enabling policy framework, ii) enhanced awareness and iii) financial instrument design, iv) supply of reliable technology and services and v) replication, which together will achieve the project objective. The envisaged project components leading to these outcomes are summarized below with further details in the Logframe Matrix in section II.

The envisaged co-ordination and cost-sharing arrangements with the MNRE supported program are discussed in further detail in sections "Project Financing" and "Project Management Arrangements". The specific outputs and set targets are presented in further detail in the project's logframe matrix, in section II.

In order to reach the government stated goals, the intervention from GEF should primarily aim at creating professionalism in the supply chain and secondly at the dissemination of the learned lessons throughout India, including:

- Introducing a system for certification, labelling or branding based on revised BIS standards;
- Introducing a system of recognition of professional installers / plumbers and an associated working network of dealers throughout the country;
- Increasing the level of knowledge in the supply chain through dissemination of available knowledge in the world regarding designing, engineering, high level technologies (high temperature collectors, gas/solar systems, solar cooling), monitoring and diversity in applications;
- Building capacity throughout the supply chain; and
- Duplicating the successes in currently well doing regions in India to less explored regions, by creating awareness in rural areas with a focus on demonstration projects or SESCOs and by taking into account that the success factor may also differ.

For further details, see the component specific descriptions below and the logframe matrix in Section II.

The national level activities listed here will be supported by and implemented in close co-operation with the parallel global knowledge management and technical backstopping component elaborated in a separate document of the "Global SWH Market Transformation and Strengthening Initiative".

Outcome 1: An enabling legal and regulatory framework to promote sustainable SWH market (policy)

The outputs and activities under this subcomponent will raise the awareness of the key national policy makers on the benefits of SWH and facilitate the development and adoption of a legal and regulatory framework conducive for sustainable development of the SWH market in India. Critical here are the state and municipal authorities struggling to meet energy needs.

Typical policy instruments to promote the SWH market include: 1) obligations to use solar water heaters in certain types of buildings, such as the Spanish, Cyprus, Mexico City and Israeli models; 2) Solar Water Heater requirements in the building regulations; 3) a regulatory framework for quality control and certification; and 4) different direct or indirect financial and fiscal incentives, as discussed earlier in this document.

The model Energy Conservation Building Code includes SWH and should be engaged to improve that requirement where possible. States will be encouraged to adopt the requirement and include industrial or commercial business requirements where feasible. SWH requirements should be harmonised across the states where possible.

In addition, the feasibility of other complementary or alternative measures can be explored such as:

- Some utilities offer rate discounts for SWH users since peak demand can be reduced
- Some states offer property tax incentives for SWH
- Requirements for low flow shower heads also save hot water
- Obligation to install piping for hot water up to the roof of new buildings and on buildings undergoing a major renovation.
- Abolition of regulations hampering the diffusion of solar thermal. In some areas, it is necessary to ask a permission to install a solar system on the roof. The long procedure discourages potential users. The permission may even not be granted, for example, due to aesthetic restrictions, often set without reflecting on the consequences for solar energy;
- Household applications (dishwasher, washing machine) compatible with solar thermal systems (adapted to get hot water from pipes) should be widely available on the market. An "A" label should be given only in this case. Customers should be explicitly and clearly informed, if this is not the case; and
- Most hot water storage tanks sold in the market should be compatible with solar thermal, and make possible integration at a later time. Customers should be explicitly and clearly informed, should this not be the case.

Outcome 2: Enhanced awareness and capacity of the targeted end-users and building professionals to consider and integrate SWH systems into different types of buildings (information).

In many states of India, solar thermal is not yet perceived as a standard option. A market assessment is needed in order to understand why certain states and sectors have strong markets while others do not. A techno-economic study would include use of the new Indian Meteorological Department solar atlas and surveys of stakeholders – particularly users to estimate market opportunities, but as well suppliers and installers. Building the trust and raising the awareness among the targeted end users, building constructors, architects, mechanical and HVAC engineers, plumbers, local government and business decision makers about the technical feasibility and the environmental and cost benefits of SWH technology are essential for positive market development.

The outputs and activities under this subcomponent will complement the marketing efforts of the private sector by raising the awareness of the targeted end-users on the benefits, economic feasibility and other characteristics influencing a positive purchasing decision. The SWH industry consists of a few larger component manufacturers, importers and many relatively small, SME type of enterprises that assemble systems. There is no active facility for sputtering of low emissivity coatings nor manufacturers of evacuated tube collectors. If the market growth is firmly established, additional manufacturing may take place in India. While the project will not promote any particular technology, information on products that are available internationally may influence local industry to seek higher performance products.

In order to fulfill their purpose, the campaigns and the information mechanisms and channels to be used need to be carefully designed to reach the actual decision makers. This can be either in a specific market segment (single-family house owners, hotels, larger public sector buildings, industrial facilities etc.) or a geographical area, in which the built environment, the climatic conditions, the solar thermal market structure as well as the psychological and economic preferences (or other priorities and decision making "drivers") of the targeted clients need to be taken into account. In areas where solar thermal is not yet widely used, demonstration projects can also be a useful tool to support awareness and promotion campaigns.

The activities will be coordinated by the PMU, which will seek to establish contacts and enter into co-operation with various information channels and program formats in TV and radio and use also printed materials (newspaper and magazine articles, leaflets, posters), public discussion events etc. in reaching its objectives. The design of the marketing campaign(s) is envisaged to be supported by professional market research and marketing companies. While the Ministry of New and Renewable Energy has been very active in public awareness, new strategies may include partnering promotion with industry associations and banks.

There is no need to start the preparation of public awareness material from the scratch, but useful materials exist at MNRE or can be made available through the knowledge management component of the global SWH project, which is further envisaged to co-operate and facilitate contacts with organizations such as European Solar Thermal Industry Federation (ESTIF), the International Solar Energy Society (ISES) as well as with SWH projects in other countries, from where results, experiences and best practices can be taken and applied for local conditions. To the extent possible, materials will also be drawn from the already existing, highly visible demonstration projects in India.

Outcome 3 Increased demand for SWH systems by the availability of attractive end-user financing mechanisms or other delivery models.

Component 3 is designed to generate demand for the technology through applicable consumer financing and, as applicable, financial support schemes with an objective to leverage financing for SWH investments through the ongoing and improved MNRE financing mechanisms. GEF resources under this component are not sought for the actual capitalisation of any new financing instruments, but for technical assistance to support their design, development and launching. The project is seeking to combine the different available public and private resources into a coherent and sustainable public incentive and financial support scheme, which can accelerate the SWH market development and leverage additional commercial financing for SWH investments, while also taking into account the sustainability concerns discussed earlier in chapter "Situation Analysis". UNEP GPMU will provide technical assistance and knowledge sharing across regions while local consultants would be jointly supervised by UNEP and UNDP CO to support financial program design.¹

¹ Local consultants are budgeted for MNRE execution while the GPMU will budget their finance technical assistance activities and travel in their separate budget.

Outcome 4: A certification and quality control scheme applicable for Indian conditions and enhanced capacity of the supply chain to offer products and services promoting sustainable SWH market (technology and business skills).

Product Standards and Certification

After creating the demand for the technology, component 4 is about ensuring that consumers have a satisfactory experience with it. Certification and quality assurance contribute to a trouble free use of solar water heating and subsequently increase consumer confidence in the technology. As such, it should be seen as an explicit part of awareness campaigns and all other incentives to stimulate the market and gain public acceptance.

A quality control scheme typically consists of:

- product standards looking at safety, performance and durability of the system components (such as collectors, tanks etc.) as well as the system as a whole (i.e. configuration of the components);
- environmental impact considerations for production², use and disposal of SWH systems, including chemicals and recycling
- a methodology for testing; and
- a certification procedure (basically a vendor declaration of compliance with a standard and a pseudo-random sampling surveillance system).

Bureau of Indian Standards currently has standards in place for Indian manufactured panels. Imported components are considered for acceptance by review of international testing by MNRE officials.

The system of SWH standards and certification will be developed in co-operation with the Bureau of Indian Standards. MNRE has initiated standards work for product testing and rating of solar collector panels but not systems or durability. A test procedure for a thermosyphon type solar water heating system was developed under a joint project by SEC and IIT Bombay in 2003. The activities of this project will take into account and, as applicable, build on the results of these past activities, including support for upgrading testing facilities.

In developing the quality control scheme, the project is also actively seeking to engage industry partners as well as concerned research and other development organisations involved in the testing procedures of solar collectors and solar water heating systems. SEC, MNRE can act as the focal point for this aspect.

The installation aspect is proposed to be handled by certified installers that are trained to a set of guidelines and their respective manufacturers requirements. The panel testing costs only 300 USD or so and is waived for imported goods that can show independent test results and certification.

² Interventions are needed, among others, to adopt environmentally friendly processes for the coating of SWH panels. The current process adopted by many Indian solar thermal suppliers is not environmentally friendly, while developed countries have already relegated such environmentally polluting processes.

MNRE also sees a need for multi-storey building guidelines for equitable hot water distribution and charges to individual water users. This may involve individual apartment systems or whole building systems with pumped recirculation of hot water in a loop and hot water metering to individual apartments. The relevant engineering practises (ASHRAE, CIBSE) will be drawn on to develop appropriate design options for India.

The well developed EU/Committee of Europe for normalisation of product standards and the Solar Keymark certification scheme are sought to be duplicated to the extent possible or at least used for general guidance to select appropriate issues, so as to serve harmonization and to provide a common baseline product quality.

At the product level, a set of requirements and criteria will be developed that proves the conformity of the products with the standards. At the current phase of market development, the criteria are mainly expected to look at technical quality issues: safety, performance and durability. All standards should be published in relevant and publicly accessible documents, available at a normal fee. A simplified version will be made available free for promotional use.

For the introduction of a recognition scheme for SWH installers, the activities under this component will support the development of a course and exam for SWH installers. Each installer passing the exam will be recognised as a "Solar Trained Installer." The materials to be made available through the knowledge management component of the Global SWH project, including the EU supported SUNTRAIN programme, will be utilized to the extent possible and adapted to the Indian conditions.

While for the household system installation, the main target group for training will be the plumbers, for the commercial building sector the training activities will focus on mechanical / HVAC engineers. Integration of solar system in heating and cooling installations will be part of training scheme, and in particular for larger commercial solar systems, the technical engineering aspects will be addressed.

The training provided is also sought to be embedded into the curricula of vocational schools in order to be continued after the project. The training facilities can be combined with the testing facilities with an objective to provide the theoretical and practical background for designing, building and installing solar thermal plants. The main content of the training can consist of: i) preconditions for solar energy utilization, ii) the solar resource by location, orientation and shadowing, iii) design of small and large-scale solar thermal systems, iv) types of collectors, their materials, and performance criteria, v) control, vi) manufacturing possibilities, vii) installation, viii) standards for solar thermal collectors and systems; and ix) test procedures and quality requirements.

Capacity Building of the Local Hardware Supply Chain

The establishment of the quality control/improvement scheme discussed above will be complemented by technical assistance to the local SWH supply chain to meet the requirements and to improve the quality of their products and services in general. This technical support is not going to be limited to local manufacturers, but can also facilitate the access of international manufacturers

to enter the market, either alone or through joint ventures, so as to promote competition and, as applicable, technology transfer.

Beside the training activities already discussed, the specific forms of technical assistance to be offered to the local supply chain are expected to consist of:

Study tours, match making missions and trade seminars can be organized for local SME's interested in import or manufacturing of SWH and in getting contact with foreign suppliers, experiences and lessons learnt, thereby facilitating technology transfer. The foreign contacts can aim at countries, which are well developed on solar market like China and Turkey. A spin off effect of these missions can be that companies with the same interest can meet and, as applicable, form a basis for a national SWH industry or trade association.

A series of solar seminars can transfer know how for the various target groups: producers, importers, plumbers, planners, architects, mechanical and HVAC engineers, builders and housing associations. The program for the seminars will be compiled from product knowledge, knowledge of improved thermosyphon systems, theoretical backgrounds, costs, quality systems and other outcomes of the project - all prioritised towards the target groups. Technical materials, syllabus etc., will be prepared, distributed and made available also through the internet.

Support for evaluating the feasibility and for introducing new delivery and marketing approaches such as vendor financing or the scheme of "Guarantee Solar Results" piloted by some suppliers in other countries, including a specific performance contract similar to the one used by Energy Service Companies (ESCOs) in the energy efficiency field.

Outcome 5: The provided support institutionalized and the results, experiences and lessons learned documented and disseminated (including monitoring, learning, evaluation and other feedback for adaptive management).

Component 5 is designed to ensure continuing SWH market monitoring and promotion in India both during and after the project has ended, and to support next generation project designers and governments with experience and recommendations from the project by compiling and disseminating the project results and lessons learnt, thereby also serving the knowledge management component of the global SWH project. Furthermore, the information produced under this outcome will serve the adaptive management of the project, as outlined in further detail in part IV "Monitoring and Evaluation".

Project Indicators, Risks and Assumptions

The key indicators of the success of the project are as follows:

The target of 2 million m² new installed SWH capacity influenced by the GEF project by the end of the project and with sustainable growth to meet the MNRE target of 10 million m² by 2012. UNEP and UNDP are supporting CDM mechanisms for SWH from non-GEF resources to ensure this parallel activity meets India's needs.

The quality issues with equipment and installations are covered by the BIS and MNRE planned activities and have shown success in some regions. Enhanced capacity of the supply chain to offer their products and services and verified customer satisfaction. The main envisaged challenge and at the same time the risk will be ensuring adequate and timely technical support to MNRE for promoting the stated project goal, including issues related to the finance, public incentives and product standards as well as full involvement of the private sector to enter a new market area, in which they may have not had such a strong experience before.

Another risk is at the actual enforcement of the new laws and regulations i.e. even if adopted the country may lack the capacity or political will for their effective enforcement. Similarly, the project is seeking to address this risk by proper stakeholder consultations, involvement of the relevant institutions responsible for the actual enforcement and implementation of the new laws and regulations in the project activities and paying specific attention not only on the design and adoption of an enabling policy framework, but on the specific mechanism and incentives on how it can be effectively implemented and enforced.

There is a risk that insufficient demand exists by/in some populations and climates. A continual process of market analysis and targeting of effort will be supported to ensure maximum program cost effectiveness.

The key assumptions in order to successfully promote the SWH market in any particular country are that:

- The basic framework conditions for increasing the interest and demand for SWH systems exist, as indicated, in particular, by the financial feasibility of SWH compared to other energy sources;
- Political will to promote the SWH systems, as indicated by the Government strategies, laws, regulations and incentives already adopted;
- Active and committed local stakeholders(s) can be identified to act as "local champions" in promoting the project goals.

For further details on how these assumptions are foreseen to be met in the case of this project, please see section "Country Drivenness".

Global and National Benefits

The incremental, direct GHG reduction resulting from reaching the target of 2 million m² of new installed SWH capacity by the end of the project compared to the expected baseline development during the same period has been estimated at over 11 million tons of CO₂eq over the 15 years lifetime of the systems. The cumulative, overall GHG reduction potential by reaching the MNRE target of 10 million m² of installed SWH capacity by 2012 and with an average growth of 20-30% after that can be estimated at over 100 million tons of CO₂ by the end of 2020.

The main national benefits are expected to be:

- Reduced costs of hot water preparation for the local population;
- Economic costs savings at the national level and reduced dependency and expenditures on imported energy;

- Reduced load on the peak power system reducing the imbalance between the supply and demand especially during the peak periods
- Reduced environmental pollution produced by conventional energy sources;
- Enhanced employment opportunities and development of the country's SME sector in the SWH field, including increased export opportunities; and
- Enhanced product and service quality.

Country Ownership

Country eligibility

India qualifies for GEF financing since it receives development assistance from UNDP's core resources and has ratified the United Nations Framework Convention on Climate Change (UNFCCC) in October 1994 as a non-Annex I country to the Convention;

Country drivenness

The National Renewable Energy Policy had identified a goal of installing 5 million m² collector area during 2000-2012, while current plan calls for doubling that figure during the 11th Five Year Plan to 10 million m². The plan is envisaging an equal distribution of collector area in the domestic as well as the commercial and industrial sectors. The main issues for energy conservation policies are the environment and fuel importation dependency. Electricity is commonly produced with coal, which is indigenous. Oil and gas are mainly imported goods.

The Ministry of Non-conventional Energy Sources, now called the Ministry of New and Renewable Energy (MNRE) is involved in the implementation of programmes for development, demonstration and utilization of various renewable energy based technologies, among which is solar thermal water heating. The implementation act (3/1/2005.UICA SE) of the ministry states a goal of 300,000 m² collector area over the years 2005 – 2006 and a further 1,000,000 m² over 2007 – 2008. According to the most recent information (Nov. 2007), nearly 2 million square meters of collector area should have already been installed, of which nearly half was done in the last two years. For further developing these programs, the MNRE is requesting the support of the GEF.

Several government granted financial incentives are available, like funds for demonstration projects, set-up of solar vending shops, interest subsidies for organisations and businesses, finance for manufacturing and buying fabrication equipment, a soft loans scheme for individual consumers and special customs duty.

Some building regulations are also being implemented. It has been made mandatory for newly built government buildings to install solar systems. In some districts and cities it is made mandatory to install solar systems on newly built buildings and living quarters above a certain living area.

Hot water for domestic use in urban areas is commonly heated with electricity. The electricity price is set at 3-4 Roepies (7 cents US) per kWh. The commercial price is estimated at 6 Roepies (12 cents). A gradual increase of the price over the coming years up to the commercial level is expected. Imported liquified natural gas currently produces electricity at 7 cents/kWh. Utility participation

may be driven by the expectation that SWH demand is at peak electricity demand times of the day. The value of peak demand savings could be around 17 cents per kWh (diesel medium speed generators).

In rural areas locally available biomass and oil is used to heat water. In non-domestic and industrial applications oil is used for heating water. The oil prices are 22 Roepies per litre. The subsidy on oil is gradually increased over the years but the government would be interested to withdraw from the subsidy.

Government policies are mainly implemented through the state agencies and supported by state laws and municipal (building) regulations.

Sustainability (including financial sustainability)

It is obvious that in order to facilitate sustainable market transformation, there is a need for both demand and supply side measures, which together can increase the market demand for solar water heating, while simultaneously ensuring the supply of reliable, customer friendly technology, thereby building the long term confidence and customer satisfaction. As highlighted by experiences from some countries with more mature markets, word of mouth impressions are particularly important in guiding the decisions of second-generation investors, when there is still relatively little actual experience with the technology and little support data, upon which investors can make their investment decisions. To some extent, this problem can be addressed through manufacturers' warranties. In the long run, however, sustainability will depend on a broad base of cost effective, trouble free customer experience with the technology. Such good experience can be supported, among others, by understood production standards, certification and labelling. Furthermore, training of designers, sales persons, plumbers and heating and hot water systems installers, which often are the first points of contact to the customers, who are considering the installation of a new hot water system or changing the old one, is expected to be among the core national level activities supported by the project. This also includes a well-educated and trained capacity for designing and engineering proper solar installations.

On the policy side, the Government of India has committed itself to a long and stable national level effort to stimulate investment in energy efficiency and promotion of renewable energy.

For the sustainability of the project, it is obviously also critical that the consumer prices of competing energy sources for sanitary hot water preparation such as electricity, gas or liquid fuels reflect full market prices or, in the case existing public subsidies, the Government is prepared to provide for new and renewable energy sources similar support as for fossil fuel based energy sources (incl. electricity) thereby creating an level playing field. In India, the average residential consumer prices for electricity are 3-4 roepies per kWh at an estimated commercial rate of 6 Rs per kWh. Currently hot water for sanitary use is produced with geysers (instant heaters) and boilers with electricity. The current payback time of 3 - 5 years is acceptable for large groups of end users.

The main risk of the project is that in spite of the available technical and financial assistance, the SWH market can not be accelerated at the expected rate. The project tries to avoid this risk by proper project planning and market research so as to reflect the customer expectations and

preferences. Another major risk is that the public authorities will not be willing or able to adopt and/or enforce the recommended legal and regulatory changes at the adequate level to effectively advance the SWH market. This risk will be mitigated by proper stakeholders consultations in-prior starting the actual implementation of the project and by taking stock on the experiences and lessons learned on promoting solar water heating in other countries.

The current experiences with support are limited to minor, but important regions in the country. Since India is a large and diverse country the dissemination of current experiences may be prove to be inadequate. By involving state agencies and possibly districts in the project this risk will be contained.

Especially for rural areas and industrial applications, there is a need to prove the technology and to demonstrate and guarantee the quality and performance. Simple awareness raising and promotion is not enough. Demonstration projects and ESCO's can overcome this barrier. A number of agencies can accept a role as ESCOs in those regions to supply solar systems on a turn key base. UNDP funds could be applied for awareness making (dissemination of the results), risk sharing, monitoring or a contribution to the investments.

Finally, in a project of this complexity, an experienced and good quality local project management is absolutely essential for its success. Beside experience and good knowledge of the technical questions the project is dealing with, the project management has to be experienced with the associated institutional aspects, project financing as well as working with local and international financing organisations and knowledge of their financing requirements in general. In addition, good marketing skills and an ability for adaptive management addressing innovatively the emerging, unforeseen issues and changing circumstances is crucial for the successful completion of the project.

Replicability

The energy consumption for hot water preparation accounts for 23% of the total electricity consumption of India, and poses large and feasible opportunities for GHG reduction.

The market development potential in India with active, public market development support has been estimated at 10,000,000 m² by the end of 2012, representing a penetration rate of approximately 10 m² per 1000 people. In the longer term, the saturation point has been estimated at 140 m² per 1000 inhabitants.

The replication strategy of the project will be based on the following features of the project design:

- Strengthening the supply side of the market in order to lift it to the expected demand for professionalism and aimed at introducing a "learn and improve" cycle, labelling, strengthening the distribution sector, revisions of BIS standards, strengthening the knowledge base for engineering and improving the skills of installers.
- Enhancing awareness and promotion of solar hot water systems in, up to now, not involved regions of India, focussing on dissemination of current support mechanism in urban areas and adding rural areas with demonstration projects and possibly ESCOs.

- Co-ordinating with green energy programs including carbon finance to reinforce investment in solar water heating market.

It is evident that the effective replication of project activities will require effective dissemination of the project results and lessons learned, thereby providing applicable examples for the implementation of the things in practice. Often some results at the practical side are needed, before the necessary changes at the policy level can be effectively promoted and implemented. The project will facilitate continuing contacts and co-operation between the different stakeholder groups by organising seminars, workshops and other public events, thereby bringing the project proponents, the policy makers and the potential investors / other donors together. UNEP and UNDP are supporting carbon finance initiatives in their respective parallel programs.

Part III: Project Management Arrangements

This national subcomponent (later referred as the "Project") of the joint UNDP/UNEP Global Solar Water Heating Market Transformation and Strengthening Initiative will be executed by the Ministry of New and Renewable Energy through the Solar Energy Centre under the UNDP national execution modality (NEX). The executing agency will appoint a National Project Director (NPD), who as a representative of the SEC will assume the overall responsibility for the project, i.e. accountability for the use of funds and for meeting the overall objectives of the project.

For supervising and guiding the project implementation, a Project Steering Committee (PSC) will be established with the participation of the Ministry of New and Renewable Energy, the Bureau of Energy Efficiency, Ministry of Environment and Forestry (including those responsible for CDM), UNDP CO as well as representatives of other institutions providing direct cost-sharing for the project activities. The UNEP Global PMU will be a corresponding member. The responsibilities of the PSC are envisaged to consist of:

- Providing the necessary political support to the project implementation;
- Commenting on project workplans and progress reports;
- Mobilizing cost-sharing and follow-up financing;
- Approving main project outputs;
- Assuring coordination between this project and other ongoing Gov't activities and programmes;
- Assuring all stakeholders are appropriately involved in the project planning and management;
- Facilitating linkages with high-level decision-making.

For day to day management of the project, a separate Project Management Unit will be established in SEC, led by a full time national project manager and supported by the required professional staff (incl. a PR and financial expert) and an administrative assistant.

The UNDP Country Office in India will monitor the progress towards intended results through regular contacts with the Project Management Unit and monitoring visits, on implementation matters and problem solving. UNDP will also provide administrative support upon request and ensure financial oversight. In this respect, the project will be implemented following the standard UNDP National Execution Guidelines.

Finally, the project will benefit from the technical backstopping provided by the knowledge management component of the global SWH umbrella project and will also be subject to the agreed monitoring and evaluation activities³ and the associated country program reporting obligations under the global project, thereby contributing to the global knowledge sharing and effective dissemination of the best practices and lessons learnt.

In co-operating with other donors, UNEP GPMU will share the experiences of the MEDREP project supported by the Ministry of Environment of Italy in other Mediterranean countries. The envisaged cost-sharing and co-operation arrangements with both projects have been elaborated in further detail in the section Project Financing and Budget.

Stakeholder Involvement

The basic institutional framework of the project has already been discussed earlier in this document in the section "Situation Analysis". By building on that, the key stakeholders to be involved in the implementation of the project will include:

- MNRE is responsible for solar energy programs in India
- The state nodal agencies and municipalities enact local legislation.
- The Bureau of Energy Efficiency is responsible for national energy efficiency programs for buildings and will include solar water heating in their programs as well, most notably the Energy Conservation Code for Buildings.

MNRE has engaged 27 banks in the revised Solar Water Heating program and these will be an important group to consult. IREDA will organise these consultations as they are the Fund Manager for MNRE. These consultations are attempting to reduce finance barriers and speed up transactions through information sharing. UNEP Renewable Energy Finance Unit personnel will be included in these consultation processes to share international experience.

In addition, the project is seeking to involve:

- Local solar water heating industry associations and individual providers;
- IIEC, International Institute for Energy Conservation for local projects and developments, including international settings;
- Solar Energy Society of India for networking and meetings advocating solar energy research and deployment; and
- ICPCI, International Copper Promotion Centre India for Promotion and contacts with manufacturers and installers.

In providing technical backstopping for country specific activities and working with international experts, major emphasis will be placed on making sure that the work will be done jointly and in close co-operation with local experts, government agencies and interest groups.

³ For further details, see the section "Monitoring and Evaluation Plan and Budget".

Part IV: Monitoring and Evaluation (M&E) Plan and Budget

While the project will be monitored and reported to the GEF as a part of the global SWH umbrella project (for further details see the relevant sections of the M&E plan of the global project), this country program will otherwise follow the standard UNDP and GEF procedures for nationally executed UNDP/GEF projects. The Logical Framework Matrix in section II provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's M&E system will be built.

The following sections outline the principle components of the project's M&E plan and its indicative costs. This plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of M&E responsibilities of the project staff.

Monitoring and Reporting

Project Inception Phase

A Project Inception Workshop will be organized with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the Global SWH Project Management Unit (GPMU) at UNEP and, as applicable, the UNDP-GEF Regional Coordinating Unit (RCU) or UNDP-GEF (HQs).

The main objective of this Inception Workshop is to assist the project team to understand and take ownership of the project's goals and objectives, as well as to finalize the preparation of the project's first annual workplan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes of the project.

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

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

Monitoring responsibilities and events

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

Day to day monitoring of implementation progress will be the responsibility of the project manager based on the project's Annual Workplan and its targets and performance indicators. The project team will inform the UNDP-CO of any delays or difficulties faced during implementation so that appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The project manager and the responsible GPMU staff and, as applicable, UNDP/GEF RCU or HQ staff will jointly fine-tune the progress and performance/impact indicators of the project in consultation with the project team at the Inception Workshop with support from UNDP-CO. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form a part of the Annual Workplan. The local implementing agencies will also take part in the Inception Workshop, in which a common vision of overall project goals will be established. Targets and indicators for subsequent years will be defined annually as part of the internal evaluation and planning processes undertaken by the local project management team and its international support staff (including the GPMU).

Measurements of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and outlined in the annual APR/PIR template. The measurement of these will be undertaken, as applicable and needed, through subcontracts or retainers with relevant institutions or through specific studies that are to form a part of the projects activities (e.g. measurement of carbon benefits or through surveys for capacity building efforts).

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

The representatives of the UNDP CO and the GPMU will conduct yearly visits to assess first hand project progress or more often based on an agreed schedule to be detailed in the project's Inception Report / Annual Workplan. Any other member of the Project Steering Committee can also accompany, as decided by the PSC. A Field Visit Report will be prepared jointly by the CO and the GPMU and circulated no less than one month after the visit to the project team, all PSC members and the responsible UNDP-GEF Task Manager.

Annual Monitoring will occur through the **Tripartite Review (TPR)**. This is the highest policy-level meeting of the parties directly involved in the implementation of the project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held

within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report/Project Implementation Review (APR/PIR) and submit it to UNDP-CO, the UNEP-GPMU and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

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

The annual APR/PIRs of the national country programs will form the basis for the consolidated APR/PIR of the global project to be prepared by the GPMU and submitted to the GEF to report on the progress of the global SWH project as a whole.

Terminal Tripartite Review (TTR)

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

The TPR has the authority to suspend disbursement, if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on the performance and impact indicators defined in the projects logical framework matrix.

Project Monitoring Reporting

The project manager will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function, the frequency and nature of which will be project specific and is to be defined during the project implementation.

Inception Report (IR)

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan should include the dates of specific field visits, support missions from the UNDP-CO, the UNEP-GPMU or the Regional Coordinating Unit (RCU) or consultants, as well as time-

frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

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

When finalized the report will be circulated to project counterparts, who will be given a period of one calendar month to respond with comments or queries. Prior to this circulation, the UNDP Country Office, the UNEP-GPMU and, as applicable, the responsible UNDP-GEF's task manager will review the document.

Annual Project Report and Project Implementation Review (APR/PIR)

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

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

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

The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Review must be completed by the CO together with the project manager. The PIR is usually prepared after the end of each UNDP/GEF financial year (June 30) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result has been agreed upon by the project, the executing agency, UNDP CO, the UNEP-GPMU and, as applicable, the responsible UNDP/GEF task manager. The UNEP-GPMU will integrate all country PIRs and the global outreach activities to form one consolidated PIR under the supervision of the UNEP/GEF Task Manager for submission to GEFSec through UNDP New York.

The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for a joint annual APR/PIR report, which is available from UNDP/GEF's M&E Unit.

Quarterly Progress Reports

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office, the UNEP-GPMU, the UNDP-GEF RCU and the responsible UNDP/GEF task manager.

Periodic Thematic Reports

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

Project Terminal Report

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

Technical Reports (project specific- optional)

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Report List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project and their tentative due dates. Where necessary this Report List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels through the GPMU Knowledge Management Activities.

Project Publications (project specific- optional)

Project publications will form a key method of crystallizing and disseminating the results and achievements of the project. These publications may be scientific or informational texts on the

activities and achievements of the project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, GPMU, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

Independent Evaluation

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

Mid-term Evaluation

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

Final Evaluation

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

Audit Clause

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

Learning and Knowledge Sharing

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums facilitated, in particular, by the knowledge management component of the global SWH umbrella project. In addition:

the project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for senior personnel working on projects that share common characteristics;

the project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may benefit the project implementation through lessons learned.

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

Table 4: Indicative Monitoring and Evaluation Work plan and corresponding Budget

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team staff time	Time frame
Inception Workshop	Project Manager , UNDP CO, UNEP GPMU, UNDP GEF (as applicable)		Within first two months of project start up
Inception Report	Project Team, UNDP CO	None	Immediately following Inception Workshop
Measurement of Means of Verification for Project Purpose Indicators	Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop.	Start, mid and end of project
Measurements of Means of Verification for Project Progress and Performance (on an annual basis)	Oversight by CO, GPMU and Project Manager Measurements by COs and local IAs	To be determined as part of the Annual Work Plan's preparation.	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	Project Team, UNDP-CO, GPMU and , as applicable, UNDP/GEF	None	Annually
TPR and TPR report	Project Team, Government Counterparts, UNDP CO, GPMU and, as applicable UNDP-GEF	None	Every year, upon receipt of APR
Steering Committee Meetings	Project Manager, UNDP CO	None	Following Project IW and subsequently at least once a year
Periodic status reports	Project team	None	To be determined by Project team and UNDP CO
Technical reports	Project team Hired consultants as needed	10,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	Project team, UNDP- CO, GPMU, UNDP-GEF (as applicable), External Consultants (i.e. evaluation team)	25,000	At the mid-point of project implementation.
Final External Evaluation	See above	30,000	At the end of project implementation
Terminal Report	Project team, UNDP-CO External Consultant	None	At least one month before the end of the project
Lessons learned	Project team GPMU (suggested formats for documenting best practices, etc)	15,000 (average 3,000 per year)	Yearly
Audit	UNDP-CO, Project team	5,000 (average \$1000 per year)	Yearly
Visits to project sites (UNDP staff travel costs to be charged to IA fees)	UNDP Country Office, GPMU, UNDP-GEF (as applicable), Government representatives	15,000 (average one visit per year)	Yearly
TOTAL INDICATIVE COST <i>Excluding project team staff time and UNDP staff and travel expenses</i>		US\$ 100,000	

SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Objective: To accelerate and sustain the solar water heating market in India as a part of the Global SWH Market Transformation and Strengthening Initiative.	The total, estimated amount of installed SWH systems measured as m2 per 1000 inhabitants.	Estimated 2 m2 in India per 1000 inhabitants by the end of the project following the current baseline development.	2 million m2 market acceleration contributing to (10 million m2/ 1 billion inhabitants)	Official import and company statistics and vendor/manufact. interviews	Economic and financial feasibility of the SWH investments to be promoted
	Growth of the annual sale of SWH systems.	6 % in India being lower than previous years as a result of market mistrust	A steady, average growth rate of >30 % in India reached by the end of the project and continuing growth toward the expected saturation point of 140 m2 per 1000 inhabitants towards 2025.	See above, including eventual ex-post project evaluations	Continuing commitment of the key partners, such as relevant public entities, financiers and other key interest groups to work towards meeting the project objectives.
	The level of customer satisfaction with the systems installed.	Mixed.	Over 90% customer satisfaction on new installations on the basis of problem free good quality products and installation services.	Customer surveys incl. eventual ex-post project evaluations.	
Outcome 1 An enabling institutional, legal and regulatory framework to promote sustainable SWH market.	The adoption and effective enforcement of new legal and regulatory provisions promoting sustainable SWH market	Currently only a minor part of India is effected by the institutional entities.	Expansion of solar program to other states of India.	Official government publications.	See above
		The standards do not reflect all the needed quality issues.	Update current standards	Project monitoring and evaluation reports.	
		Listings of suppliers with products complying to the current BIS standards valid for interest subsidy.	All government support should be linked to a certification system guaranteeing better quality		
		Regulations are not well disseminated throughout India.	Dissemination of existing regulations throughout India (states and cities).		
Output 1.1 Enhanced capacity of public institutions to support sustainable SWH market.	Availability of public support to promote the SWH market in up to now unexplored regions in India.	Only a minor part of India is actively involved in support for SWH market.	Disseminated over main market regions of India.	Project reports	See above

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Output 1.2 Adoption of a system for standards, labels and adequate quality control of SWH systems (including regulations, recommended institutional set-up etc.).	Updated BIS standards. System for certification, labelling, branding or recognition based on the revised standards.	Current standards reflect mostly the collector. Listings ('recognition') in relation to the interest subsidy scheme.	Extensions towards the complete system, including a performance indicator looked at the EN and ISO standards and best practices. All government support should be linked to a certification system showing quality of products, systems, production and installation work.	Project reports	
Output 1.3 Adoption of new regulations to consider or oblige the integration of SWH systems into the design and construction of new buildings.	Dissemination and updates of currently existing (in some parts of India) mandatory building regulations.	Only valid for a limited number of bigger cities and states.	Wide spread implementation of these mandatory building regulations.	Project reports	See above
Output 1.4 Adoption of additional, public financial and fiscal incentives to promote SWH market.	t.b.d, as applicable	t.b.d, as applicable	t.b.d, as applicable	t.b.d, as applicable	t.b.d, as applicable
Outcome 2 Enhanced awareness and capacity of the targeted end-users and building professionals to consider and integrate SWH systems into different types of buildings.	Annual sale of SWH system	750,000 m2 a year	>2,000.000 m2 a year at the end of the project.	Project reports and market surveys.	
Output 2.1 Materials for public awareness raising and marketing campaigns developed or adapted into Indians conditions.	Availability of materials Certification system showing quality of products, systems, production and installation work.	Materials only fitted for a limited part of India. Government linked recognition system	Fitting materials for different parts of India. Self contained system to be effective after government incentives stop.	Project reports Market surveys	

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Output 2.2 Public awareness raising and marketing campaigns implemented in co-operation with relevant public entities and private SWH suppliers and manufacturers.	The visibility of the public awareness raising and marketing campaign.	Only parts of India are reached and mostly aimed at end users.	Create awareness for the whole of India, focussing on domestic, commercial, industrial or agricultural applications whatever is fitted for a certain region (geographical, cultural, urban or rural). Aim at state agencies, municipals, banks and end users.	Project reports Market surveys	
Output 2.3 Broadening the application range of solar.	Penetration rate of solar on rural and urban industrial areas	Mainly domestic and commercial buildings in cities	Awareness of possibilities for solar in industrial and agricultural applications in rural/industrial areas through demonstration projects or SESCOs. Two demonstration projects or one SESCO.	Project reports	
Outcome 3 Increased demand for SWH systems by the availability of attractive end-user financing mechanisms or other delivery models.	The amount of financing leveraged through new financing models specifically tailored for SWH market needs.	No specific longer term financing and new delivery mechanisms offered and marketed for the SWH purchase.	The agreed financial support mechanisms and new delivery models in operation to meet the announced MNRE target to reach 10 m ² of installed SWH capacity by 2020	Project monitoring reports	Initial demand for the financial services created and interest of the local financing sector to enter new market areas.
Output 3.1 Enhanced awareness of the key financial sector stakeholder and local suppliers on the specific characteristics and financing opportunities in the SWH market.	The level of interest created.	Lack of information on the specific SWH market characteristics and financing models tested in other countries.	All the key financial sector stakeholders and local suppliers informed on the specific characteristics and opportunities provided by the Indian SWH market (by building on the results of the market analysis), and on the experiences and lessons learnt from the financing models tested in other countries.	Project reports	See above
Output 3.2 Design, the financial structuring and the implementation arrangements for the	New financing instruments and, as applicable, delivery models made	No financing and delivery models specifically tailored for SWH market requirements available.	New financing instruments and business models (such as specific purpose bank loans, vendor financing, SESCOs etc.)	Project reports	See above

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
specific purpose financing vehicles responding to specific SWH market needs finalized and agreed with the key stakeholders, and integrated into the overall SWH marketing package.	available.		specifically tailored and marketed for the SWH purchase offered to the end users as a part of the overall marketing package and integrating the available public incentives.		
Output 3.3 Trained staff of the local financing institutions to finance SWH investments.	Dissemination of system for interest subsidies throughout all regions of India.	Limited to south east part of India.	Implemented at an effective level.	Government reports	
Outcome 4 A certification and quality control scheme applicable for Indian conditions in place and enhanced capacity of the supply chain to respond to the growing demand with good quality services sustaining the market growth.	The level of marketing, product and installation services available in the market.	Generally, the supply side capacity is not up to the required level of professionalism.	Enhanced capacity of the supply chain to respond to the growing demand with good quality services sustaining the market growth.	Project reports and supply side surveys.	
Output 4.1 Proceedings and physical facilities for adequate testing and quality control of SWH systems developed and effectively taken into use.	Availability of adequate testing facilities and proceedings for compliance checking.	Testing facilities fitted to the current BIS standards.	Adequate testing facilities and proceeding for compliance checking developed and effectively taken into use aimed at the updated standards and the type of certification adopted.	Project reports	See above
Output 4.2 A certification and training system in place for SWH system installers	The availability of a training system.	Only a minor portion covered by a 'dealership' of a full service manufacturer. No specific accessible training system in place for SWH system installers.	Wide spread system for recognition (listings) and dealer networks, including rules for good craftsmanship for installing and after sales. Training infra structure in place for SWH system installers.	Project reports	

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
	Design and engineering course or handbook for system designer's and engineers. Dissemination of available (global) technology regarding solar applications for high temperatures	None Only minor (vacuum tube collectors)	Information regarding design and engineering in printing or electronically available. Integration of material in existing schooling Boosting demand for more scientific technology regarding solar thermal and high tech applications through creating joint ventures with foreign companies.		
Output 4.3 SWH system installers trained and certified	The number of SWH system installers trained.	None	500 at the end of the project	Project reports	
Output 4.4 Trained local suppliers and manufacturers to produce and market their products.	Availability of information Dissemination level. The number of SWH system suppliers and manufacturers trained. Monitored system performance on installed systems	None None Minor	Guidelines for design and engineering of (more) complex solar systems based on a scientific approach. 100 manufactures, technical consultants or (larger) installers 100 manufactures, technical consultants or (larger) installers Introduction of the 'learn and improve' cycle, by 200 systems monitored and reported to key stakeholders like manufacturers, technical consultants and (larger) installers	Project reports	
Outcome 5 The provided support institutionalised and the results, experiences and lessons learned documented and	Access to project related information by local and international experts.	No results and experiences documented and disseminated	The reports and other public material from the project can be easily found and accessed.	Project reports	

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
disseminated (including monitoring, learning, evaluation and other feedback for adaptive management).					
Output 5.1 The reporting framework and arrangements for SWH market monitoring established.	The reporting framework and arrangements for SWH market monitoring under implementation.	None	The reporting framework and arrangements for SWH market monitoring successfully under implementation.	Project reports	
Output 5.2 The national project web-site and network successfully established and marketed.	Number of visits in the project website The level and type of information in the website. The frequency of updating.	None	Project web-site and network successfully established with information on the scope and results of the project . (The details to be specified later)		
Output 5.3 Mid-term and final evaluation	Delivery of the mid-term and final evaluations	N/A	The mid-term and final evaluations finalized on time.		
Output 5.4 Final report prepared and published	Delivery of the final report	N/A	Final report delivered in the end of the project		

SECTION III: Total Budget And Workplan

The requested GEF financing of USD 2 million will complement the ongoing Government funded SWH market development program, including the MNRE loan program providing (through IREDA) an interest rate subsidy for SWH loans.

While the GEF support will focus on technical assistance type of activities, as elaborated in further detail in section I, part II (Project Strategy), the funding for any financial incentives and support mechanisms is expected to be covered by the Government of India.

Significant cost sharing is also expected to be leveraged from the local SWH industry, R&D organisations and civil society organisations private sector, where as a pre-requisite for GEF project support in strengthening, for instance, the supply side capacity, developing the testing facilities and launching specific marketing campaigns, cost sharing is also expected from the final beneficiaries. The component specific requirements for this will be worked out at the outset of project operations on the basis of a more elaborated market assessment and consultations with the envisaged project partners. Additional co-financing for supporting the capacity building of the local SWH industry is also expected by the ICPCI, International Copper Promotion Centre India. The summary of the project financing is presented in Table 6.

Table 6: Project Financing

OUTCOMES	TOTAL USD	GEF USD	GOV'T MNRE USD	OTHERS ⁴ USD
Outcome 1 An enabling institutional, legal and regulatory framework to promote sustainable SWH market in 10 states.	465,000	325,000	100,000	40,000
Outcome 2 Enhanced awareness and capacity of the targeted end users and building sector professional to consider and integrate SWH systems into different types of buildings.	631,000	481,000	100,000	50,000
Outcome 3 Increased demand for SWH systems by the availability of attractive end-user financing mechanisms or other delivery models, such as SESCOs or utility driven models.	10,250,000	250,000 ⁵	10,000,000 ⁶	
Outcome 4 A certification and quality control scheme applicable for Indian conditions and enhanced capacity of the supply chain to offer products and services promoting sustainable SWH market in multiple states.	1,008,000	458,000	400,000 ⁷	150,000
Outcome 5 The provided support institutionalized and the results, experiences and lesson learnt documented and disseminated (including monitoring, learning, evaluation and other feedback for adaptive management).	536,000	356,000	150,000 ⁸	30,000
Project management unit SEC India	210,000	130,000	50,000 ⁹	30,000
GRAND TOTAL (INCL. CONFIRMED COFINANCING)	13,100,000	2,000,000	10,800,000	300,000

⁴ with a tentative allocation – subject to further discussions

⁵ This funding to address local design and finance consulting in the 10 states, technical assistance from the UNEP GPMU specific to India will be budgeted in the UNEP Global PMU project

⁶ conservative estimate from the interest rate reduction on the MNRE loan program through IREDA project period only

⁷ BIS ongoing activity and MNRE support project period only

⁸ MNRE in kind

⁹ SEC facilities and support during project

Table 7 Project co- and parallel financing

CO-FINANCING SOURCES				
Name of Co-financier (source)	Classification	Type	Amount (US\$)	Status*
MNRE	Government	In-kind	800,000	Confirmed
MNRE finance	Government	Grant subsidy	10,000,000	Confirmed
Indian Copper Association	Private association	Cash + in kind	300,000	Confirmed
Confirmed co-financing			11,100,000	

Table 8 Total Project Workplan and Budget in Atlas

Award ID:	Tbd
Award Title:	PIMS 3611 Global - Solar Water Heating Market Transformation and Strengthening Initiative: India Country Program
Business Unit:	Tbd
Project Title:	PIMS 3611 Global - Solar Water Heating Market Transformation and Strengthening Initiative: India Country Program
Implementing Partner (Exec. Agency)	Ministry of New and Renewable Energy (MNRE)

GEF Outcome/ Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
Outcome 1	MNRE	62000	GEF	71200	International Consultants Sht Term	15,000	20,000	5,000			40,000	
				71300	Local Consultants Sht Term	20,000	20,000	20,000	20,000	20,000	100,000	
				71400	Contractual services – individuals	15,000	15,000	15,000	15,000	15,000	75,000	
				71600	Travel	3,000	2,000	2,000	2,000	1,000	10,000	1)
				72100	Contractual services - companies	25,000	20,000	20,000	15,000		80,000	2)
				74200	Printing and publication costs	2,000	2,000	2,000	2,000	2,000	10,000	3)
				74500	Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000	4)
					sub-total GEF	82,000	81,000	66,000	56,000	40,000	325,000	
	TOTAL OUTCOME 1	82,000	81,000	66,000	56,000	40,000	325,000					
Outcome 2	MNRE	62000	GEF	71200	International Consultants Sht Term	15,000	20,000	10,000			45,000	
				71300	Local Consultants Sht Term	10,000	10,000	10,000			30,000	
				71400	Contractual services – individuals	10,000	10,000	10,000	10,000	10,000	50,000	
				71600	Travel	3,000	3,000	3,000	3,000	3,000	15,000	1)
				72100	Contractual services - companies	40,000	50,000	40,000	30,000	30,000	190,000	2)
				72200	Equipment		50,000	50,000			100,000	8)
				74200	Printing and publication costs	5,000	5,000	5,000	5,000	4,000	24,000	3)
				74500	Miscellaneous	6,000	6,000	5,000	5,000	5,000	27,000	4)
	sub-total GEF	89,000	154,000	133,000	53,000	52,000	481,000					
	TOTAL OUTCOME 2	89,000	154,000	133,000	53,000	52,000	481,000					
Outcome 3	MNRE	62000	GEF	71200	International Consultants		25,000	10,000			35,000	
				71300	Local Consultants Sht Term	10,000	15,000	5,000	5,000	5,000	40,000	
				71400	Contractual services – Individual	15,000	15,000	15,000	15,000	15,000	75,000	
				71600	Travel	3,000	3,000	3,000	3,000	3,000	15,000	1)
				72100	Contractual Services – Companies	20,000	20,000	15,000	15,000		70,000	2)
				74200	Printing and publication costs	1,000	2,000	1,000	1,000		5,000	3)
				74500	Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000	4)
					sub-total GEF	51,000	82,000	51,000	41,000	25,000	250,000	
	TOTAL OUTCOME 3	51,000	82,000	51,000	41,000	25,000	250,000					

Outcome 4	MNRE	62000	GEF	71200	International Consultants Sht Term	20,000	25,000	20,000			65,000		
				71300	Local Consultants Sht Term								
				71400	Contractual services – individuals	10,000	10,000	10,000	5,000	5,000	40,000		
				71600	Travel	3,000	3,000	3,000	3,000	3,000	15,000	1)	
				72100	Contractual services - companies	20,000	20,000	20,000	15,000	15,000	85,000	2)	
				72200	Equipment		130,000	100,000			230,000	5)	
				74200	Printing and publication costs	2,000	2,000	2,000	2,000	2,000	10,000	3)	
				74500	Miscellaneous	3,000	3,000	3,000	2,000	2,000	13,000	4)	
					sub-total GEF	58,000	193,000	158,000	27,000	22,000	458,000		
TOTAL OUTCOME 4				58,000	193,000	158,000	27,000	22,000	458,000				
Outcome 5	MNRE	62000	GEF	71200	International Consultants Sht Term			20,000		30,000	50,000	t	
				71300	Local Consultants Sht Term			10,000		10,000	20,000		
				71400	Contractual services – individuals	15,000	15,000	15,000	15,000	15,000	75,000		
				71600	Travel	3,000	3,000	3,000	3,000	3,000	15,000	1)	
				72100	Contractual services - companies	40,000	30,000	30,000	30,000	30,000	180,000	7)	
				74200	Printing and publication costs	3,000	4,000	4,000	3,000	5,000	19,000	3)	
				74500	Miscellaneous	4,000	4,000	3,000	3,000	3,000	17,000	4)	
					sub-total GEF	65,000	56,000	85,000	54,000	96,000	356,000		
				TOTAL OUTCOME 5				65,000	56,000	85,000	54,000	96,000	356,000
Project Management	MNRE	62000	GEF	71400	Contractual services – Individual.	23,000	23,000	23,000	23,000	23,000	115,000		
				71600	Travel	3,000		2,000			5,000	1)	
				74500	Miscellaneous	2,000	2,000	2,000	2,000	2,000	10,000	4)	
					sub-total GEF	28,000	25,000	27,000	25,000	25,000	130,000		
TOTAL PROJECT MANAGEMENT				28,000	25,000	27,000	25,000	25,000	130,000				
Total	MNRE	62000	GEF			373,000	591,000	520,000	256,000	260,000	2,000,000		
Project Total						373,000	591,000	520,000	256,000	260,000	2,000,000		

Budget Notes:

Number	Note
1	Required travel for co-ordination, consultations and exchange of information
2	Can be used for both international and national contracts on as needed basis
3	Including public awareness raising and marketing support as well as training materials
4	Miscellaneous expenses, including the costs of training workshops and stakeholder consultation meetings
5	Required equipment for training of operators, installers and other supply side professionals
6	Including the costs of international experts for independent mid term and final evaluations
7	Including, among others, audit costs
8	Cost sharing for the hardware costs of demo projects (see output 2.3)

SECTION IV: ADDITIONAL INFORMATION

Part I: Other agreements (Endorsement letter)

Commitment letters are attached in a separate file.

Part II: Terms of Reference for key project staff and main subcontracts

Standard basic ToRs - To be adjusted to the country specific needs of the at the outset of project operations.

Project Steering Committee (PSC)

Duties and responsibilities

The Project Steering Committee (PSC) is the main body to supervise the project implementation in accordance with UNDP rules and regulations and referring to the specific objectives and outcomes of the project with their agreed performance indicators;

The main functions of the PSC are:

- General monitoring of the project progress in meeting of its objectives and outcomes and ensuring that they continue to be in line with the national development objectives;
- Facilitating the co-operation between the different Government entities, whose inputs are required for successful implementation of the project, ensuring access to the required information and resolving eventual conflict situations raising during the project implementation when trying to meet its outcomes and stated targets;
- Supporting the elaboration, processing and adoption of the required institutional, legal and regulatory changes to support the project objectives and overcoming of the related barriers;
- Facilitating and supporting other measures to minimize the identified risks to project success, remove bottlenecks and resolve eventual conflicts;
- Approval of the annual work plans and progress reports, the first plan being prepared at the outset of project implementation;
- Approval of the project management arrangements; and
- Approval of any amendments to be made in the project strategy that may arise due to changing circumstances, after the careful analysis and discussion of the ways to solve problems.

PSC Structure and Reimbursement of Costs

The PSC will be chaired by the Project Director or another person assigned by the National Executing Agency for this purpose. The PSC will include a representative from each of the key Ministries and Agencies involved in the project, a representative of UNDP and, as applicable, representatives of project's other cofinancing partners. Other members can be invited by the decision of the PSC, however, by taking care that the PSC still remains operational by its size. The project manager will participate as a non-voting member in the PSC meetings. When and as needed, the meetings of the PSC can be extended to Technical Advisory Group meetings.

The costs of the PSC's work shall be considered as the Government's or other project partners' voluntary in-kind contribution to the project and shall not be paid separately by the project.

Members of the PSC are also not eligible to receive any monetary compensation from their work as experts or advisers to the project.

Meetings

It is suggested that the PSC will meet at least twice a year, including the annual TPR meeting. A tentative schedule of the PSC meetings will be agreed as a part of the annual work plans, and all representatives of the PSC should be notified again in writing 14 days prior to the agreed date of the meeting. The meeting will be organized provided that the executing agency, UNDP and at least 2/3 of the other members of the PSC can confirm their attendance. The project manager shall distribute all materials associated with the meeting agenda at least 5 working days in prior to the meeting .

National Project Director

As a representative the Government and project's executing agency, the National Project Director is having the main responsibility to ensure that the project is executed in accordance with the project document and the UNDP guidelines for nationally executed projects.

His/her main duties and responsibilities include:

- Supervising the work of the Project Manager through meetings at regular intervals to receive project progress reports and provide guidance on policy issues;
- Certifying the annual and, as applicable, quarterly work plans, financial reports and requests for advance of funds, ensuring their accuracy and consistency with the project document and its agreed amendments;
- Authorizing the project contracts, following the approval of UNDP;
- Unless otherwise agreed, chairing the Project Steering Committee and representing the project in other required meetings;
- Taking the lead in developing linkages with the relevant authorities at national, provincial and governmental level and supporting the project in resolving any institutional or policy related conflicts that may emerge during its implementation;

Project Manager (full time)

Duties and responsibilities:

Operational project management in accordance with the project document and the UNDP guidelines and procedures for nationally executed projects, including:

- General coordination, management and supervision of project implementation;
- Managing the procurement and the project budget under the supervision of the Executing Agency and with support from UNDP to assure timely involvement of local and international experts, organisation of training and public outreach, purchase of required equipment etc. in accordance with UNDP rules and procedures;

- Submission of annual Project Implementation Reviews and other required progress reports (such as QPRs) to the PSC, Executing Agency and the UNDP in accordance with the section "Monitoring and Evaluation" of the project document;
- Ensuring effective dissemination of and access to information on project activities and results, (including an regularly updated project website);
- Supervising and coordinating the contracts of the experts working for the project;
- Communicating with international investors and financial organizations to define fields of cooperation and attracting additional financing in order to fulfill the project objectives; and
- Ensuring successful completion of the project in accordance with the stated outcomes and performance indicators summarized in the project's logframe matrix and within the planned schedule and budget otherwise.

Expected Qualifications:

- Advance university degree and at least 15 years of professional experience in the specific areas the project is dealing with, including good knowledge of the international experiences, state of the art approaches and best practices (by applying different policy measures, new financing mechanisms etc.)
- Experience in managing projects of similar complexity and nature, including demonstrated capacity to actively explore new, innovative implementation and financing mechanisms to support the SWH market and leveraging of financing for that;
- Demonstrated experience and success on the engagement of and working with the private sector and NGOs, creating partnerships and leveraging financing for activities of common interest;
- Good analytical and problem solving skills and the related ability to adaptive management with prompt action on the conclusion and recommendations coming out from the project's regular monitoring and self-assessment activities as well as from periodical external evaluations;
- Ability and demonstrated success to work in a team, to effectively organise it works and to motivate its members and other project counterparts to effectively work towards the project's objective and expected outcomes;
- Good communication skills and competence in handling project's external relations at all levels;
- Good working knowledge of English in addition to the national languages of the host country; and
- Familiarity and prior experience with the specific UNDP and GEF requirements are considered as assets

Project Assistant (full time)

Duties and responsibilities:

Supporting the project manager in the implementation of the project, including:

- Responsibility for logistics and administrative support of the project implementation, including administrative management of the project budget, required procurement support etc.

- Maintaining the business and financial documentation up to date, in accordance with UNDP and other project reporting requirements;
- Organizing meetings, business correspondence and other communication with the project partners;
- Supporting the project outreach and PR activities in general, including keeping of the project web-site up to date;
- Managing the projects files and supporting the project manager in preparing the required financial and other reports required for monitoring and supervision of the project progress;
- Supporting the project manager in managing the contracts, in organising correspondence and in ensuring effective implementation of the project otherwise

Expected Qualifications:

- Fluent in English and the national languages of the host country
- Demonstrated experience and success of work in a similar position
- Good administration and interpersonal skills
- Ability to work effectively under pressure
- Good computer skills

International Project Adviser(s) (part time)

Duties and Responsibilities:

Support UNDP and the project management to monitor the progress of the project and its different subcomponents, and, as needed, build the capacity of the local experts working for the project to successfully implement the project activities ensuring that they comply with the agreed benchmarks and success indicators of the project as well as international best practices and lessons learnt.

The specific responsibilities include, among others to:

- support the local project team in organising the implementation of the different sub-components of the project at the inception phase and after that, including support to the project manager in the preparation of the project inception report and the annual work plans, drafting of Terms of Reference for the national and, as needed, additional international experts and subcontractors, required tender documents etc;
- support the project manager in supervising the work of the contracted individual experts and companies, including review of the feasibility studies and the technical design, financing and implementation arrangements of the planned pilot projects;
- support the project manager in arranging co-operation with the current project partners and, as applicable, in establishing new, additional national and/or international partnerships to support the project goals and objectives;
- support the local project team in monitoring and evaluating the performance and outcome of the SWH installations supported by the project;

- monitor the progress of the project and participate in developing periodic progress reviews and, as applicable, the annual Project Implementation Reviews;
- train personally or, as needed, organize other training for the local stakeholders to successfully implement the project and to meet its capacity building objectives; and
- provide advice on the required institutional, legal and regulatory changes to support the reaching of the stated outcomes of the project and provide other required advice on the successful implementation of the specific project subcomponents and activities by drawing from the international lessons learnt and best practices.

Expected Qualifications:

- A university degree in the area the project is dealing with;
- Demonstrated experience and success in supporting similar projects (or its subcomponents) in other GEF programme countries;
- Good knowledge of the international experiences, state of the art approaches and best practices in the specific areas the project and its subcomponents are dealing with;
- Good analytical skills and effective communication and training skills and competence in handling external relations at all levels;
- Ability to work in a team and to motivate other team members and counterparts;
- Good knowledge of the working languages of the local team in addition to English, including the ability to review, draft and edit required project documentation
- Familiarity with the specific UNDP and GEF requirements is considered as an asset.