No. 3/1/2010-11/GSWH
Government of India
Ministry of New and Renewable Energy
UNDP /GEF Global Solar Water Heating Project
(Project Management Unit)
Block –14, CGO Complex, Lodi Road,
New Delhi-110003

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GLOBAL SOLAR WATER HEATING MARKET TRANSFORMATION AND STRENGTHENING INITIATIVE: INDIA COUNTRY PROGRAM

PROJECT ID: 00061121
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Subject: Invitation from National Consulting Firms / Institutions/ NGOs to register interest for participating in the UNDP/GEF Global Solar Water Heating Project

The Ministry of New and Renewable Energy is implementing a National Programme on Solar Water Heating aimed at peak shaving, conservation of electricity and fossil fuels and providing a clean, non-polluting solution for water heating in housing, institutional, commercial and industrial sectors. About 4 million sqm. of collector area has so far been installed in the country. A target of 5 million sqm. of collector area has been set for the 11th Five Year Plan (2007-12). The web-site of the Ministry www.mnre.gov.in may be visited for information about the National Solar Water Heating Programme and the Guidelines for Off-Grid and Decentralized Solar Applications under the Jawaharlal Nehru National Solar Mission (JNNSM).

As a part of the UNDP/UNEP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiative, and under the Country Program of India, UNDP/GEF are supporting a Project aimed at accelerating the market for solar water heating and achievement of the target set for the 11th Five Year Plan. The project will contribute partially to the target through installation of two million sqm. of collector area which will also result in GHG Emission Reductions of 11 million tonnes of CO2 over 15 years life of the equipment. Project activities will be undertaken pertaining to following Outcomes:

- an enabling legal and regulatory framework;
- enhanced awareness, demand assessment and SWH project development;
- attractive financing mechanisms and delivery models;
- certification and quality control and enhanced capacity of supply chain for quality products and services; and,
- documentation and dissemination, experiences and lessons learned.

The Project Goal, Objective & Outcomes are given in the **Annexure.**

Expression of Interest is invited from qualified and experienced consulting firms/ institutions/ NGOs working in the field of solar energy, particularly in the area of solar water heating, having sufficient experience and background in the field, and wishing to be considered for consultancy assignments/contractual services under the UNDP/GEF Project.

Consulting firms/Institutions/NGOs interested for being considered for assignments/ contracts under the UNDP/GEF Project during 2011 are invited to register their interest for participating in the Project by forwarding the following information:

1. Name and address with e-mail, telephone and fax numbers
2. Name and short CVs of experts/ professionals
3. Ownership and organizational structure
4. Financial statement for the last three years
5. List of assignments completed in recent years in the area of renewable energy, solar energy, with special emphasis on solar water heating

Information in support of experience and capability for carrying out the consultancy assignments, as well as on adequacy and availability of resources to carry out the respective assignments should also be furnished. Depending upon the available resources, maximum of two assignments can be considered for an applicant.

Expression of Interest, with accompanying information, including a current Statement of the financial position, should be submitted **by February 2, 2011**, at the address given below. Documents received thereafter, or without complete information as indicated above, will not be accepted.

Please note that this is not a Request for Proposals. After a review of the Expression of Interest, the short-listed firm/institution/NGO will be invited to submit a detailed proposal through a specific Letter of Invitation pertaining to different assignments.

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Annexure

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

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Project Goal, Objective & Outcomes

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Project Goal and Objective

The goal of this national component of the global UNDPIUNEP 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 m^2 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 m^2 of new solar thermal panels would be installed in India by 2020. Under the Alternative scenario, new solar thermal installations of 10 million m^2 are expected by 2012, to which the GEF project is expected to contribute to at least 2 million m^2. Even more importantly, however, the support provided by the GEF project is expected to facilitate sustainable grown 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 C02 over 15 years lifetime for the GEF increment of 2 million m^2 and over 50 million tons for 10 million m^2. Since the subsidies on energy as well as SWH will decrease, UNEPIUNF 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.

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.

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

- Introducing a system for certification, labelling or branding based on revised BIS standards;

- Introducing a system of recognition of professional installers/ plumber~ 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 factory may also differ.

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 harmonized 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 market 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 type of enterprises that assemble systems do not have facility for sputtering of low emissivity coatings nor manufacture 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 cooperation 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 cooperate 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 capitalization 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. UNEP will provide technical assistance and knowledge sharing across regions while local consultants would be jointly supervised by UNEP and UNDP to support financial program design.

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 pad 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 production, 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 flat plate collectors. Imported components of evacuated tube collectors are considered for acceptance by review of international testing by MNRE.

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 lIT, 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 organizations 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 handed by certified installers that are trained to a set of guidelines and their respective manufacturers requirements. The collector testing costs only USD 300 or so and is waived for imported goods that can show independent test results and certification.

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 re-circulation of hot water in a loop and hot water metering to individual apartments. The relevant engineering practices (ASHRAE, CIBSE) will be drawn on to develop appropriate design options for India.

The well developed ED/Committee of Europe for normalization 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 product 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 recognized as a "Solar Trained Installer". The materials to be made available through the knowledge management component of the Global SWH project, including the ED 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 about 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, 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 in 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 prioritized 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.

Stakeholder Involvement

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 for local policy and legislation
- The Bureau of Energy Efficiency is responsible for national energy efficiency programs for buildings and will include solar water heating in their programs most notably in the Energy Conservation Building Code

MNRE has engaged 30 banks in the revised Solar Water Heating program and these will be an important group to consult. IRED A will organize 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 advocacy on 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.

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