Template effective 8 March 2007 (vw)

PROJECT INITIATION PLAN
FOR A GEF PROJECT PREPARATION GRANT

Country: India

UNDAF Outcome(s)/Indicator(s):
By 2012, the most vulnerable people, including women and girls, and government at all levels have enhanced abilities to prepare, respond, and adapt/recover from sudden and slow onset of disaster and environmental changes.
(Link to UNDAF outcome., If no UNDAF, leave blank)

Expected Outcome(s)/Indicator (s):
Communities are aware of their vulnerabilities, and adequately prepared to manage (and reduce) disaster and environment related risks.
(CP outcomes linked t the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s):
National development efforts with co-benefits of mitigating climate change supported.
(CP outcomes linked t the SRF/MYFF goal and service line)

Programme Period: 2008-2012
Programme Component: Energy and Environment
Project Title: Market Development and Promotion of Solar Concentrators Based Process Heat Applications in India
Award ID: 00058269
Project Duration: 12 Months (May 2010 to April 2011)
Management Arrangement: NEX

Total budget:	US$ 200,000
Allocated resources:	
• Government (MNRE)	US$ 100,000
• GEF	US$ 100,000

MNRE - Ministry of New & Renewable Energy

AGREED BY UNDP RESIDENT REPRESENTATIVE / UNDP DIRECTOR:

(Enter Name, Position)	*Signature*	Date: *(Month, day, year)*
Pieter Bult, Deputy Country Director (Programs)		10 May 2010

Brief Description of Initiation Plan

The initiation plan is for the design and preparation of the GEF-funded project on "Market Development and Promotion of Solar Concentrators Based Process Heat Applications in India". The expertise will be pooled from individual and institutions of Small & Medium sector process heat applications, solar concentrator technologies, government, institutional, and training capacities to develop the Full Scale Proposal (FSP). Expertise will be sought from both national and international consultants.

In order to develop the FSP, consultations will be held with (i) officials in the Ministry of New & Renewable Energy (MNRE), (ii) academicians/faculty associated with Solar Energy (specialization in solar concentrator technologies), (iii) Industry experts in Process Heat Applications in the 5 identified areas of the Small & Medium sector, (iv) Industry experts on solar concentrator technologies, and (v) vocational training institutions.

The outputs of the plan will be the FSP submitted to GEF for approval. The FSP includes two documents, (i) UNDP prodoc and (ii) CEO endorsement document as per the prescribed formats.

GEF PPG approved grant document and TBWP (Enclosed)

REQUEST FOR PROJECT PREPARATION GRANT (PPG)

PROJECT TYPE: Full-sized Project
THE GEF TRUST FUND

Submission date: 03/24/2010

GEF PROJECT ID[1]: 4134
GEF AGENCY PROJECT ID: 4284
COUNTRY(IES): India
PROJECT TITLE: Market Development and Promotion of Solar Concentrators Based Process Heat Applications in India
GEF AGENCY(IES): UNDP, (select), (select)
OTHER EXECUTING PARTNER(S): Solar Energy Centre, Ministry of New and Renewable Energy, Government of India
GEF FOCAL AREA(S): Climate Change
GEF-4 STRATEGIC PROGRAM(S): Sp 3 – Promoting Market Approaches for Renewable Energy
(see preparation guidelines section on exactly what to write)
NAME OF PARENT/PROGRAM/UMBRELLA PROJECT (if applicable): **NA**

A. PROJECT PREPARATION TIMEFRAME

Start date of PPG	05/01/2010
Completion date of PPG	02/28/2011

B. PAST PROJECT PREPARATION ACTIVITIES ($)

N. A.

C. PROPOSED PROJECT PREPARATION ACTIVITIES ($)

Describe the PPG activities and justifications: The PPG will focus exclusively on activities that are necessary to prepare the full-size project document and CEO Endorsement Request

List of Proposed Project Preparation Activities	Output of the PPG Activities	Project Preparation Amount (a)	Co-financing (b)	Total c = a + b
1. Evaluation of 4 solar concentrator technology packages and their applicability in 5 identified sectors	Completed report on the assessment of selected 4 solar concentrator technologies including applications in 5 potential sectors, applicable system configurations, existing applications and system standardization, system up-scalability, and future prospects.	20,000	20,000	40,000
2. Identification, evaluation and selection of demonstrations	Completed report on the evaluation of potential demonstrations with specifications on the	15,000	20,000	35,000

[1] Project ID number will be assigned by GEFSEC. If PIF has already been submitted, please use the same ID number as PIF.

	technologies that will be showcased, as well as the requirements and implementation arrangements for the demonstrations.			
3. Assessment of the barriers to the widespread production and application of solar concentrators	Detailed assessment report on the problems/issues/concerns regarding the general understanding about the applications of solar concentrators; financing of the manufacturing and application of solar concentrators; and technical capacity in the manufacturing, installation, operation, repair and maintenance of solar concentrators; and policies & regulations that are supportive to the widespread application of solar collector technology elsewhere in the world or in India based on the experiences from similar renewable energy technologies. The report shall also include the proposed activities to address the problems/issues/concerns.	15,000	20,000	35,000
4. Conduct of Logical Framework Analysis (LFA) with the project stakeholders	Agreed logical framework or project planning matrix defining the project goal and objective, outcomes and outputs, with the relevant indicators (with baseline & target values), means of verification and critical assumptions.	25,000	10,000	35,000
5. Detailed Design of Project Components & Activities	Detailed design of the project activities based on the project log frame.	21,000	15,000	36,000
6. Coordination Mechanisms and Other Institutional Work	Completed agreements on the project implementation arrangements, co-financed baseline activities, and commitments for co-financing	4,000	5,000	9,000
7. Drafting of the Project Document	Draft ProDoc and responses to comments (if any)	0	5,000	5,000
8. Finalization and	Final ProDoc & CEO	0	5,000	5,000

Submission of the ProDoc and CEO Endorsement Request	Endorsement Request Letter of Commitment for Co-financing			
Total Project Preparation Financing		100,000	100,000	200,000

D. FINANCING PLAN SUMMARY FOR PROJECT PREPARATION GRANT: ($)

	Project Preparation	Agency Fee
GEF financing	100,000	10,000
Co-financing	100,000	
Total	200,000	10,000

E. PPG REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)[1]

N. A.

F. PPG BUDGET REQUEST

Cost Items	Total Estimated Person Weeks for GEF Grant (PW)	GEF ($)	Co-financing ($)	Total ($)
Local consultants *	55	41,250	100,000	141,250
International consultants*	13	35,750		35,750
Travel		20,000		20,000
Miscellaneous		3,000		3,000
Total PPG Budget		100,000	100,000	200,000

* Annex A for Consultant cost details should be prepared first before completing this table. See notes on Annex A for the required detailed information. This table is the sum of all local and international consultants presented in Annex A.

G. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
John Hough UNDP-GEF Dep. Executive Coordinator		03/24/2010	Martin Krause, UNDP RCB, Bangkok	+66-2288-2722	martin.krause@undp.org

Annex A

Consultants Financed by the Project Preparation Grant (PPG)

Position / Titles	$/ Person Week	Estimated PWs	Tasks to be performed
Local Consultants[2]			
1. Solar Concentrators Technology Specialist	750	25	- Design, collect information/ data to evaluate 4 solar concentrator technology packages - Study their applicability in each identified sectors - Arrive at system configuration for solar concentrator based systems for identified sectors - Establish criteria for selection of sample project sites in each sector. -Create a list of potential sites for setting up demonstration sites -Map the solar insolation data in the potential sites
2. Small and Medium Enterprises Sector Energy Specialist	750	20	-Conduct survey and collate distribution of units based on system capacities, sector-wise - List the industry clusters/associations, sector-wise in the potential sites - Conduct a study to identify barriers (technical, manufacturing, capacities) to promote solar concentrator technology in India and activities to overcome it - Facilitate energy audits, sector wise of sample units limiting to 3 in each
3. Financial Specialist	750	5	- Conduct survey of sample units, sector-wise to understand financial feasibility, affordability and willingness to participate in technology intervention - Review present financial schemes, national packages by central government, FIs and others in India on similar renewable energy technologies. - Review global support schemes for solar concentrators based on desk review - Analyze the gaps in finance required to promote solar concentrators in India - Recommend financial modalities for demonstration projects
4. Capacity Development Specialist	750	5	- Consult with governmental agencies, state nodal agencies, manufacturers, users, academic institutions, policy makers etc through one to one meet, workshops to develop customized approach to activities for awareness and capacity building programs and design the awareness and capacity

[2] Solar Concentrator Tech. Specialist will have overall responsibility to collate inputs and liaise with international consultant. All local consultants shall: (a) Support proposal writing; (b) Provide subject related components/outcomes in ProDoc/CEO endorsement format with supporting analysis and related documents; (c) Address comments/queries presented by UNDP CO/Bangkok; and, (d) Assist in answering GEF queries.

			building programmes.
International Consultants			
Process Heat Demand Specialist[3]	2,750	4	- Assess the industrial processes using medium heat in the five identified sectors. - Assess the capacity of the process heat demand and tentative system configurations through modelling and simulation of the system.
CC Project Development and Management Expert	2,750	9	- Assess the existing solar concentrator facilities and status of development for medium heat applications abroad (among the four technologies of interest) and their applicability to Indian conditions -Preparation of project proposal document which includes: *Discuss outline activities with national team *Participate in stakeholder workshops *Prepare draft UNDP ProDoc and CEO endorsement doc based on inputs from national team *Finalize the docs based on feedback from UNDP CO/Bangkok, liaising with national consultants for required inputs/clarification *Assist with clarifications on queries from GEF

[3] It is expected that Process heat demand specialist will work in close coordination with Small and Medium Enterprises Sector Energy Specialist.

PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project
THE GEF TRUST FUND

Submission Date:

PART I: PROJECT IDENTIFICATION

GEF PROJECT ID[1]: **PROJECT DURATION: 5** years
GEF AGENCY PROJECT ID:
COUNTRY(IES): India
PROJECT TITLE: Market Development and Promotion of Solar Concentrators based Process Heat Applications in India
GEF AGENCY(IES): UNDP, (select), (select)
OTHER EXECUTING PARTNER(S): Solar Energy Centre, Ministry of New and Renewable Energy, Government of India
GEF FOCAL AREA (S)[2]: Climate Change
GEF-4 STRATEGIC PROGRAM(s): SP 3 – Promoting Market Approaches for Renewable Energy
NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable):

N A

INDICATIVE CALENDAR*	
Milestones	**Expected Dates mm/dd/yyyy**
Work Program (for FSP)	Nov 2009
CEO Endorsement/Approval	May 2010
Agency Approval Date	July 2010
Implementation Start	August 2010
Mid-term Evaluation (if planned)	January 2012
Project Closing Date	August 2015

* See guidelines for definition of milestones.

A. PROJECT FRAMEWORK

Project Objective: Removal of barriers for the development and promotion of solar concetrators for high temperature process heat applications in India.

Project Components	Indicate whether Investment, TA, or STA[b]	Expected Outcomes	Expected Outputs	Indicative GEF Financing ($) a	Indicative GEF Financing %	Indicative Co-Financing ($) b	Indicative Co-Financing %	Total ($) c =a + b
1. Technology package development and standardisation	STA	a) Technology packages developed b) Standardisation and certification facility developed	a i) Four technology packages developed at SEC for process heat applications. These are Fresnel, Scheffler, ARUN Solar, and Concentrator Trough. a ii) The process integration requirements for 5 sectors identified and system configuration established b i) Developing test protocols for solar concentrators for different applications (for four technologies and five sectors). b ii) Developing performance guidelines for the solar concentrator packages for identified sectors. b iii) Developing Standards for solar concentrator technology	900,000	20.4	500,000	2.5	1,400,000

[1] Project ID number will be assigned by GEFSEC.
[2] Select only those focal areas from which GEF financing is requested.

			packages b iv) Establishing the national certification facility at SEC.					
2. Awareness and Capacity Building	TA	Awareness and technical capacity of the concerned stakeholders developed and strengthened to plan, design, develop, use and manage solar concentrators for industrial/ institutional process heat applications in India.	a) Capacity of manufacturers (producers of solar concentrators) developed/strengthened. At least 10 (existing or new) b) Capacity development to assist as interface between manufacturers and users. About 500 industry specific consultants will be trained. c) Technical capacity building: Promoting industry academic partnership. This will be done through promoting research programmes to build future capacities for replication and expanding to other sectors. (15 fellowships programmes will be supported) d) Developing the technical capacity of the staff at the Solar Energy Centre. e) Awareness programmes for policy makers, academicians, industries, financial institutions, etc. to facilitate replications. f) Capacity building of professionals (50 nos) to develop Detailed Project Report (DPR) g) media campaign to promote solar concentrators h) Documentation and dissemination of good practices and lessons learnt to ensure larger replication.	1,050,000	23.8	500,000	2.5	1,550,000
3.Planning and Operationalizing Demonstration projects	STA	30 demonstration projects in 5 sectors developed	a) Identification of demonstration sites/ units b) 30 Detailed Project Report (DPRs) for the identified units developed and approved c) The system package installed and commissioned in 30 units.	1,770,000	40.2	18,000,000	93.0	19,700,000

			d) performance analysis carried out, database established and lessons learnt documented and disseminated					
4.Identification and removal of financial barriers in the adoption of solar concentrators technology in India	STA	New and viable financial mechanisms to promote solar concentrators technology at a mass scale developed.	a) Study present promotional mechanisms and identify financial gaps and constraints and develop financial mechanisms. b) Regional and national level consultations for finalization of the financial strategy for adoption by Government of India.	250,000	5.68	100,000	0.5	350,000
5. Project management				430,000	9.77	250,000	1.29	750,000
Total project costs				A4,400,000	100	B19,350,000	100	23,750,000

[a] List the $ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.
[b] TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and by NAME (in parenthesis) if available, ($)

Sources of Co-financing	Type of Co-financing	Project
Ministry of New and Renewable Energy Sources, Government of India	Grant subsidy In kind	6,000,000 1,350,000
Industries	In Cash	6,000,000
Financial Institutions	In Cash	6,000,000
Total Co-financing		B19,350,000

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	Previous Project Preparation Amount (a)[3]	Project (b)	Total c = a + b	Agency Fee
GEF financing	100,000	A4,400,000	4,500,000	500,000
Co-financing	100,000 (in kind)	B19,350,000	19,450,000	
Total	200000	23,750,000	23,950,000	

D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)[1] NA

PART II: PROJECT JUSTIFICATION

STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED: It is estimated that 15 to 20% of the total fuels used in India are consumed by industries for low and medium temperature thermal application ranging from 60 to 250 °C. Energy is required to heat water, generate steam or hot air for various industrial/institutional applications. Around 22 such industrial sectors can be identified (including, dairy processing, food processing, textiles, hotels, edible oil, chemical, marine chemicals, bulk drug, breweris, and distilleries), where boilers supply process heat either in the form of steam or hot air upto a temperature of

[3] Include project preparation funds that were previously approved but exclude PPGs that are awaiting for approval.

150 °C. In addition, there is a large market for space cooling and cold storages using vapour absorption refrigeration and air conditioning systems which also require medium temperature thermal energy for operation.

India has over 15 million unorganised units (National Sample Survey Organization NSSO, 1998 – the most recent census on the unorganized sector) of which 40 % use energy for their processes. Similarly, of 4 million organised (those registered under Small Industries Development Organisation) SME (Small and Medium Enterprises defined as thos with investment of maximum of 2.00 million USD) units 70 % make use of energy. NSSO reports that there are about 2.34 million textile, 1.5 million chemical processing, 4.19 food processing, 1.42 beaverages, distillaries units (industries) in India. Another estimate indictes that there are about 5,000 dairy units and about 18,000 hotels (institutions). Dairy or milk-processing industry is one of the largest user of process heat. It requires thermal energy in a variety of forms and grades for a wide range of applications: from washing milk cans to pasteurization. Another example is, Textile processing that includes a variety of process heat applications such as sizing (stiffening of thread by starching), rope washing (washing fabric in rope form), cloth mercerizing (treating fabric with sodium hydroxide for lustre and dye effect), yarn mercerizing, dyeing, bleaching, starch padding (starching the finished material), etc. Currently this heat requirement is met by coal, furnace oil, natural gas, electricity etc. A typical textile mill processing 10 tons of cloth (about 100,000 metres) per day requires about 20 MT (Metric Tonnes) of oil or 50 MT of coal per day. Assuming even 1% of these units are potential units for uptake of product like solar concentrator the total number could be about 85,000 units.

The sectors chosen for the intervention of solar concentrators tentatively are, dairy, textiles processing, hosptials, chemical processing, steam requirements in institutions. These are chosen since (i) they require process heat at high temperature (temperature in the range of 90 to 250° C), and (ii) these sectors constitute significant share of small scale enterprises. Solar concentrators can replace/reduce use of the conventional fuels used in these sectors. This results in considerable amount of green house gas (GHG) emissions, which can be reduced by switiching to renewable energy sources such as solar.

Scope for Solar Technology

i. India is largely located in the equatorial sun belt of the earth, thereby receiving abundant radiant energy from the sun. The country receives about 5,000 trillion kWh/year equivalent energy through solar radiation. In most parts of the country, clear sunny weather is experienced for 250 to 300 days a year. This annual global radiation is about 2200 kWh/m^2, which is typical of the tropical and sub-tropical regions. The average solar insolation incidence over India is about 5.5 kWh/m^2 per day. Just 1 % of India's land area can meet India's entire electricity requiremnet till 2030. Solar based power technologies are an extremely clean form of heat generation with practically no form of emissions at the point of generation. They would lead to energy security through displacement of coal and petroleum (National Action Plan on Climate Change, 2008: Pg 18).
ii. The National Action Plan on Climate Change (NAPCC) released by the Prime Minister Council on Climate Change in 2008 identifies 8 missions to address the climate change challenge in India. One of these 8 missions is 'National Solar Mission' to promote the use of solar energy for power generation and other applications. The mission aims at installing 20,000 MW of electricity generation capacity through solar by 2020. This includes both solar photovoltaic and solar thermal. The Union Ministry of New and Renewable Energy (MNRE) is the nodal Ministry to develop an action plan and implement the targets of this national mission. Besides, under the 11th Five Year Plan, MNRE plans to cover 250,000 m^2 of solar thermal units for high temperature by 2012.

Experience and Learnings of installing solar concetrators

Solar concentrators systems typically made of metal or glass are used to converge solar radiation. The increased intensity of the radiation so obtained provides high tempratures as required in thermal process for industrial/ institutional applications. Concentrated solar power (CSP) is a proven technology which has been widely implemented for power generation in developed countries like the USA and many Eurpean countries. CSP has the potential and can substitute conventional energy sources supplying high temperature steam for industrial process heat applications in most of the industries demand thermal energy.

At present, four technologies of solar concentrators are available namely (i) Parabolic trough: a trough shaped parabolic reflector is used to concentrate sunligh on an insulated tube containing fluid (also called a receiver, absorber or collector) running the length of the trough, above reflectors. The fluid containaing heat is transported for process heat requirement are sent to boiler for generation of steam for process heat applications. The temperature range achieved in this type of

concentrators are 180 to 250 C. (ii) Sheffler (Solar parabolic dish with fixed focus): In this type, each pair of scheffler concentrator (dishes), the sleeping dish and standing dish are placed with focus on receivers (heat exchangers). Above the receiver is an insulated header pipe filled half with water. The colod water enters the receiver through inner pipe, gets heated due to the high temperautre of the concentrated rays and the heated water goes up. The cold water again enters through inner pipe and the cylce continues till steam is generated. Temperature of about 160 C can be achieved with this type of solar concentrator. (iii) Fresnel reflectors: fresnel reflector consists of a series of narrow, shallow curvature mirrors to focus light onto one or more receivers positioned above the mirrors. Temperature range of 180 to 230 C are achieved in this type of collectors. (iv) ARUN solar thermal concentrator system: it consists of a curved paraboloid support structure fixed with small mirrors or reflecting surfaces to form the paraboloid reflector. These have been developed by consulting engineers of Clique Developments Private Limited with research support from IIT Mumbai. The procees heat generated was about 200 C. These systmes are known to last for over 15 years.

About 30 solar concentrators have been installed till now cumulating to about 10,000 m^2 of collector area in the country. The capacities these systems ranged from 70 to 1,000 m^2. Nearly 22 manufacturers/suppliers are in the field of solar concentrators. About 15 solar concentrators are installed for institutional cooking, 8 systems for steam generation in hospitals, 3 systems for steam generation in dairy farms in last 8 years. The more popular applications that are being met are, steam for cooking, and pasteurisation of milk in dairy industries. M/s Arun solar and M/s Gadhia Solar Energy Systems are currently the leading manufacturers. Solar steam generating system for cooking at Tirumala Tirupathi Devasthanam (TTD), at Tirumala, Andhra Pradesh, is one of the biggest installed in India. Installed in 2002, it can generate steam of 400 kg per day at 180 °C and 10 kg/cm^2 pressure. The steam thus generated is used to prepare food for about 15,000 people every day. The concentrator units is of modular in nature and consists of 106 automatic tracked parabolic concentrators arranged in series and parallel combination; each of 9.2 m^2 reflector area. This cumulates to about 975 m^2. Feasibility studies carried out show that the typical pay-back periods for the solar concentrator systems replacing furnace oil using units varies between 3.5 to 9 years depending on the performance of the solar concentrator and the cost of furnace oil (which has varied from Rs 35 Rs per liter in April 2008 to Rs 10 per liter in April 2009). Solar concentrators offer advantages of higher efficiency as well as due to tracking of the sun are able to collect larger quantities of solar energy. Currently, around 1000 to 2000 m^2 area of solar concentrators are being installed every year. This is very small when compared to the estimated market size. The total potential for solar collector area is projected at 140 million m^2 (MNRE Annual Report 2007-2008).

ARUN Solar has installed solar concentrators of varying sizes upto 400 m^2 capacity. ARUN 160 has been installed at Latur for milk pasteurisation in June 2005. This has resulted in saving of 16 to 24 kilo liter of furnace oil annually. Twelve more systems (ranging 160 to 400 m^2 capacity) are under implementation by ARUN solar.

However, given the vast potential, the numbers installed till now are miniscule. The large-scale application and commercialisation of solar concentrators faces several barriers and some of these barriers are proposed to be addressed as part of this GEF project. These barriers are as follows:

(A) Technology barrier:

a. Lack of know how on system integration: Many industrial processes envisaging replacement of conventional energy systems require customisation. The know-how of system integration for different sectors is readily not available. So far, only few engineering organizations and research institutes have experience with high temperature solar thermal installations. Planning guidelines and tools for typical industrial process heat applications using solar energy still need to be established.
b. Lack of expertise: Only few professionals have developed expertise to offer solutions to potential industries. Integration of solar heat into industrial process is a challenge to both process engineer and solar expert because of time dependency of solar heat, demand of the industry and find tuning between demand and supply.

(B) Awareness and capacity barriers:

a. Limited awareness and capacity: The number of solar thermal installations for industrial processes is very small. Most decision makers in relevant industries have never heard of, or even seen, a low and medium temperature solar system. Whole chain of stakeholders, users, financial institutions, industrial consultants, manufacturers, decision makers are not aware of solar concentrator technology and its potential to meet process heat. This is a key barrier to wide-spread adoption.
b. Limited confidence in technology: Most process heat applications (including the sectors proposed under the project) make use of conventional energy sources and devices. The managers, workers are used to

these conventional methods and it requires considerable efforts to instil confidence in them to change to something like solar technologies. Especially when critical heating processes are concerned, they almost always choose conventional, long-term proven technology. Any potential break or interruption due to a new technology is riskier to them.

(C) Market barriers:

a. Lack of demonstration units: Most of the solar concentrators installed are to generate steam for cooking and in dairies. There are no sample units in industrial sectors such as textiles, chemical processing. The number of units till now are dispersed and concerted efforts to create awareness to users were absent.
b. Lack of data and information on functional units: The data relating to performance, comparative advantages are not available to the users.
c. Lack of supply chain: There are only very limited number of manufacturers who are active in the business of producing solar concentrators. There are at present no service providers to market and provide technical back up support. At present manufacturers who are also limited in number themselves carry out the these operations.

(D) Financial barriers:

a. Varying and unattractive paybacks: Low Solar energy for low and medium heat applications, such as water heating have proved to be economically feasible option in India and world over. However, the payback on the initial investments at present in India range from 3 to 5 years. Financial payback period on a solar concentrator are often beyond commercial acceptance levels. The payback on investment depends primarily on, capital cost, effective replacement of fuel (performance of solar thermal unit) and cost fuel envisaged to be replaced . A typical investment in a 160 m^2 solar thermal unit for steam generation is USD 73,000 that can replace 80 to 100 liters of furnace oil per day. The best case of payback of 3.43 years is achieved when 100 liters of FO is replaced per day and the furnace oil price is Rs 35 per liter which was the case in April 2008. However, the payback is as low as 9.5 years if the solar thermal unit replaces 80 liters of FO daily and the cost of FO fell to Rs 19 per liter as in April 2009.However, the payback on solar concentrators is in the range of 3.5 to 9 years as explained eariler makes it an unlucractive option for the industrial/institutional sector. Higher System cost: Solar thermal systems have typically higher investment costs though running cost is low. The costs are varying from 450 USD per m^2 to 300 per m^2. The experts estimate that these costs could be brought down to about 200 USD per m^2 with mass production.

To overcome, the above barriers the following activities are being proposed under this project:

i) Technology package development and standardisation: Four different models of technology namely Concentrator Trough, Sheffler, Fresnel, and Arun will be developed/ up-scaled for five identified sectors namely, dairy, textile processing, hospitals, chemicals processing, institutional cooking. Technology package, test protocols, performance guidelines will be developed which will help in replications. National testing facility will be established at the Solar Energy Centre and certification procedures developed. The facility at SEC will also be used as centre for training and capacity building of technicians, professionals, Trainers, academicians, industry-academic interface, to carry out research projects by researchers that are relevant to industry etc.

ii) Awareness and capacity building: To strengthen the awareness of different stakeholders a variety of programmes are proposed. These include, awareness programmes for policy makers, users, industries, manufacturers, financial institutions, etc. These programmes help creating awareness on solar concentrators and their potential for process heat applications to different sectors. Capacity building programmes will enable stakeholders to strengthen the supply chain. This include strengthening the manufacturing capabilities, help creating new manufacturing units to take up producing solar concentrators. Develop capabilities of designers by strengthening the industry-academic interface by supporting higher level researchers to be involved in the designing of technology packages and also develop skills of system configuration and integration. These actions will help building 'future capacities' to up-scale/replicate the solar concentrators in the country and outside as well. Media campaign, database building, documentation and dissemination of good practices will also be part of the promotional approach to popularise solar concentrators.

iii) Demonstration projects: Though the potential in India is huge and number of sectors are many for any alternative technology meeting the process heat, a modest number of 30 demonstration units in five different sectors is being proposed. This will help in providing the much needed confidence in technology ('seeing is

believing'). The sectors chosen have a large replication potential, relate very closely to many other sectors and form a representative sample. These actions along with other components help in removing the market barrier.

iv) Identification & removal of financial barriers: As can be seen from the information available the penetration of solar concentrators in India has been extremely limited. The reasons can be attributed to high capital costs USD 300 to 400 per m^2 (delivering about 3000 kcal of energy per day) vis-à-vis less than 100 USD on a conventional system to generate the same amount of energy consequently low payback of as high as nine years; varying fuel especially the petroleum fuels (furnace oil mainly) prices which have an impact on payback period, etc. The concentrator systems world over also seem to face similar issues and hence, it is reported (in potential for solar heat in industrial processes. Eds Claudia Vannoni et. Al. 2008 published in CIEMAT. IEA SHC Task 33 SolarPACES Task IV: Solar Heat for Industrial Processes) that the economic incentives aiming at reducing payback periods, could be provided by different schemes (example low interest loans, tax reductions, direct financial support, third party financing, etc.). A study will be undertaken to understand the financial incentives provided for solar concentrators currently in India and other countries. Consultations with stakeholders in different sectors and different regions will be carried out in India. A roadmap of financial incentives will be developed that will help large scale replications/ up-scaling (win-win for user, manufacturer) the dissemination of solar concentrators for process heat applications.

However, large-scale deployment of the technology would require a systematic programme for removal of awareness, technical, financial barriers and market development barriers. A GEF-UNDP-MNRE supported programme will have the overall objective to introduce solar concentrators for different medium temperature process heat applications in industries and institutions to reduce greenhouse gases produced due to use of fossil fuels such as furnace oil. Providing interest subsidy to buyers of solar concentrator systems, assisting manufacturers and suppliers in market development, providing technical support for new industrial applications, increasing awareness will be the activities to achieve the objective. The programme will focus on certain industries having large potential, e.g. dairy processing, textile, hospital, chemical processing, institutional cooking. Over a period of 5 years, it can aim at increasing the market of solar concentrators in India by a factor of 10 to 20 i.e. increasing deployment of solar concentrators from current levels of 1000-2000 m^2 to 10,000 to 20000 m^2 per year. The programme could focus on states having high potential of solar insolation namely, Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh, etc.

MNRE is also the involved in the National Solar Mission under the National Action Plan on Climate Change that is being governed by Prime Ministers Council. The experience of solar thermal units for process heat would provide very useful lessons and inputs to this ambitious programme.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS: Government of India has accorded priority to renewable energy promotion in the country which is manifested in Integrated Energy Policy - 2006 and in 11th Five Year Plan. There are clear targets of achieving minimum of 10% share of renewables during the current FYP. Further, as response to climate change, Government of India has come out with National Action Plan on Climate Change (NAPCC) in June 2008. This is strategically located within the Prime Minister's Council so that greater coordination can be leveraged between the Ministries and Departments. The NAPCC has eight national missions one of which is 'National Solar Mission'. The National Solar Mission would promote the use of solar energy for power generation and other applications. The MNRE has been promoting a range of renewable energy technologies including solar energy technologies in the country for a number of years (since 80's). It was earlier a department as Department of Non Conventional Energy Sources and later beacme a Ministry. Solar water heating systems for domestic and related use are now being deployed at an accelerated pace through various promotional incentives. A total collector area of 2.45 million square meter (as on 30 September 2008) has already been installed in the country (for low temperature thermal applications). Increasing deployment of solar thermal technologies to meet the heat requirement in all sectors of the economy of the country is in the priority plan of the Ministry. This project is proposed to accelerate the market development through interaction with technologies and experts from various countries, utilising the experiences of projects undertaken in other parts of the world, making available the developments taken place in various laboratories and industries and making the technologies familiar to the targeted sections (industries, consultants, financing organisations, policy makers, technical institutions, etc.) through systematic set of activities under the project.

C.DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS: The project is line with SP 3 which is to "promote market applications for renewable energy".

D.JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES: The financing support provided by GEF will be used to create enabling environment for the promotion of Solar concentrators for process heat applications. The GEF funds will be used for awareness, capacity building of concerned stakeholders, strengthening of supply and demand chain and support discounting the interest rate (interest subsidy by about 10%) in the demonstration units. It is aimed that the renewable energy investments supported by this project will be economically viable in their own right. The expected outcome of the project will help the growth in markets for renewable heat power in India. The project will reduce consumption of petroleum fuels (India depends on import of petroleum fuels to a very large extent) with co-benefits of in tons of CO_{2e} avoided. India with significant renewable energy generation potential may make this strategic program a high priority.

E.OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES: MNRE has a Solar Energy Centre (SEC) established in 1982. The campus spreads over 200 acres. It has test facilities for testing solar flat plate collectors, meeting and auditorium to accommodate 15 to 125 persons, residential facility, etc. MNRE has promoted Solar Water Heating over last two to three decades. Subsidy was provided by MNRE till 1993 on Solar Water Heaters. In 1997, fiscal incentives were reintroduced at a rate of 2% on domestic, 3% on institutional and 5% on commercial solar water heaters. The penetration of solar water heaters is about 400,000 square meters annually and till now, about 2.5 million square meters of collector area has been covered. But the potential for solar water heating in India is 140 million square meter. Global Solar Water Heater Project is supported by GEF/UNEP/UNDP is being implemented by MNRE in India to accelerate the penetration of solar water heaters. Other countries which are involved are, Albania, Algeria, Chile, Lebanon, and Mexico. The project envisages to accelerate and sustain the solar water heating market growth in India and to use experiences and lessons learned in promoting a similar growth in other countries. It envisages to leverage a total of 10 million square meter of new installation by 2012. This project is also being implemented by same agency, MNRE. Thus helps in leveraging the experiences from here to the present proposal. MNRE is also involved in promoting industrial process heat applications and solar thermal power generation. UNIDO is developing a Full Scale Proposal titled, "Promoting energy efficiency and renewable energy in selected micro SME clusters in India". This project is aimed at the following MSME (Micro Small and Medium Enterprises) sectors namely, Iron casting, ceramics, brass, hand tools, and dairy processing. Large focus of the project is on energy efficiency and renewables. Among the renewable the focus is on biomass gasifiers, solar flat plate collectors (can give temperature of 50 to 70 C) and to a limited extent solar concentrators. The proposed project is on solar concentrators use in industrial sectors and institutions that have medium scale temperature requirements. The project compliments the efforts of UNIDO in helping the solar concentrator technology packages available for SME clusters.

F.DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING : In the absence of the project, the exploitation of solar concentrators would remain limited to the current rate of penetration of just 1000 to 2000 m^2 per year whereas with a focused programme it is possible to achieve 10,000 to 20,000 m^2 per year of solar concentrators, while the overall potential remains much more. The potential industries for interventions would be both small and medium industries. Some sectors that may benefit are, (i) Dairy, (ii) Textile, (iii) institutional cooking, etc. For reduction of GHG emissions, it is required to expand this technology though appropriate market development. Market development of this technology has high potential because the solar heating collectors for medium temperature applications have been developed in many countries of the world, the solar thermal applications are becoming cost effective with increasing prices of conventional fuels and advancement of technologies apart from the fact that these technologies are evnrionemtnally benign. The project will help in creation of basic infrastructure and human resource development for accelerative market penetration of solar thermal energy for process heat application in Indian industries.

G.INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:

RISK	DEGREE	RISK MITIGATION STRATEGY
Lack of participation by industries	Medium	The project attempts to provide viable financial incentives while developing and strengthening the supply and demand chain for the promotion of solar concentrators in the industrial sector.
Lack of demand for solar concentrator	Medium	The project aims at driving the demand through a number of awareness and caapcity building activities.
FIs may not be forthright in funding SMEs on solar concentrators	Medium	Preparation of bankable DPRs is being supported under this project for 30 demonstration units as well as developing the capacity of local consultants to act as interface between industry and the other stakeholders. Further, the proposed fianncial incentives are targeted to reduce the payback period.

H.DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT: The project will reduce GHG emission through market development of solar assisted industrial process heat technologies. Approximately 110,000 tons of CO2 emission per year will be mitigated. A typical solar concentrator considered for intervention is 2,000 m^2 of collector area. This can replace about 568 kg of furnance oil (FO) daily and about 170 tons of FO annually. This translates to a reduction of 639 tons of CO_2 annually. Thus, 30 demonstration units under this project can reduce FO consumption by 93,995 tons in 20 years period translating to 352,480 tons reduction of CO_2 emissions. This translates to cost of Co_2 reduction (through GEF grants) is 14.19 USD per ton. These estimates are tentative and accurate figures will be arrived during the PPG stage.

I.Justify the COMPARATIVE ADVANTAGE of GEF agency: Environment and Sustainable Development remains one of the four core goals of UNDP's Strategic Plan for 2008-2011. UNDP activities in Environment and Sustainable Development for 2008-2011 emphasize mainstreaming of environment and energy concerns into national development frameworks and environmental finance to enable markets to create effective solutions for sustainable development, which is also the main focus of this proposed GEF project. Furthermore, this project will help in directly achieving the MDG goals 7 (Ensure environmental sustainability) and 8 (Develop a global partnership for development). UNDP and other UN agencies are actively supporting the Government of India in its efforts to achieve MDGs by supporting capacity building measures.

Part III: approval/endorsement by gef operational focal point(s) and GEF agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):
(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE *(Month, day, year)*

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address

	Revised CO2 calculations for solar concentrator	
	Calculations on per unit basis	
1	Concentrator area of average solar concentrator (m2)	2000
2	Average solar energy available (kWh/day)	5.5
3	Collector efficiency (60%)	0.6
4	Energy conversion from kWh to kcal (1 kWh = 860 kcal)	860
5	Energy generation (kcal/day)	5676000
6	Calorific Value of Furnace Oil (kcal/kg)	10000
7	Equivalent furnace oil consumed (kg/day)	568
8	Number of operational days per year (nos.)	300
9	Quantity of furnace oil consumed per year (kg/year)	170280
10	Quantity of furnace oil consumed per year (ton/year)	170.28
11	Conversion factor (1 kg of Furnace oil generates 3.75 kg CO2)	3.75
12	Annual generation of CO2 (kg)	638550
13	Annual generation of CO2 (ton)	638.6

Yearly installation of Solar concentrators		
Year no	Year	No. of units
1	2012	4
2	2013	10
3	2014	10
4	2015	6
	Total	30

	CO2 calculations for replacing Furnace oil by Solar Concentrator					
SN	Year	Installations	Cumulative installations	Furnace oil consumed	Furnace oil	CO2 generated
		no.	no.	kg/year	Ton/year	ton/year
1	2012	4	4	681120	681	2554
2	2013	10	14	2383920	2384	8940
3	2014	10	24	4086720	4087	15325
4	2015	6	30	5108400	5108	19157
5	2016		30	5108400	5108	19157
6	2017		30	5108400	5108	19157
7	2018		30	5108400	5108	19157
8	2019		30	5108400	5108	19157
9	2020		30	5108400	5108	19157
10	2021		30	5108400	5108	19157
11	2022		30	5108400	5108	19157
12	2023		30	5108400	5108	19157
13	2024		30	5108400	5108	19157
14	2025		30	5108400	5108	19157
15	2026		30	5108400	5108	19157
16	2027		30	5108400	5108	19157
17	2028		30	5108400	5108	19157
18	2029		30	5108400	5108	19157
19	2030		30	5108400	5108	19157
20	2031		30	5108400	5108	19157
		30		93994560	93995	352480
	Furnace oil consumed in a typical unit (ton/year)	170280				
	CO2 conversion factor (1 kg of oil generates 3.75 kg CO2)	3.75				

GEF project grants	5000000
USD per ton	14.18522

Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: 04th February 2010 Screener: Lev Neretin

Panel member validation by: N.H. Ravindranath

I. PIF Information

GEF PROJECT ID: **4134**
COUNTRY(IES): **INDIA**
PROJECT TITLE: **MARKET DEVELOPMENT AND PROMOTION OF SOLAR CONCENTRATORS BASED PROCESS HEAT APPLICATIONS IN INDIA**
GEF AGENCY(IES): **UNDP**
OTHER EXECUTING PARTNER(S): **SOLAR ENERGY CENTRE, MINISTRY OF NEW AND RENEWABLE ENERGY, GOVERNMENT OF INDIA**
GEF FOCAL AREA (S): **Climate Change**
GEF-4 STRATEGIC PROGRAM(S): **SP 3 – PROMOTING MARKET APPROACHES FOR RENEWABLE ENERGY**
NAME OF PARENT PROGRAM/UMBRELLA PROJECT (IF APPLICABLE): **N A**

II. STAP Advisory Response *(see table below for explanation)*

1. Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Consent**

III. Further guidance from STAP

1. STAP expresses its consent to the project aimed at the increased use of solar concentrators for high temperature process heat applications in India. The proposed project will contribute to the implementation of India's national action plan on climate change. There is a large potential for CSP technology for process heat applications in SMEs. The project aims to develop a technology package, demonstration in the field, build capacity, identify and overcome the barriers for a large-scale technology spread. The following issues should be addressed at the CEO endorsement stage.

2. **Technology package**: Concentrated solar power (CSP) is a known technology, but its large-scale adoption for small-scale process heat applications in small and medium enterprises (SMEs) or large scale power generation is still emerging, due to various factors including technology costs. Four types of CSP systems are being considered. Will all the four types be demonstrated or the performance of different CSP systems is known? STAP recommends exploring whether all the four designs sufficiently developed for large-scale demonstration and application?

3. **Baseline scenario**: The key recipient industries (dairies, textile processing, etc) have been identified. What is the baseline status of these industries in terms of their energy consumption, GHG emissions and energy efficiency? The baseline analysis is required to assess needs for CSP and potential GHG emission reductions to be achieved by the project.

4. **Financial barrier**: The financial barrier is identified and how it will be mitigated needs careful consideration since this barrier is a major factor in the decision of industries to shift to CSP. The proposed activities may not lead to the reduced costs of the CSP systems. The usual incentives such as low interest loans and subsidies may not be adequate. This problem will remain unless a major technological breakthrough occurs and is accompanied by a large-scale production capacity.

5. **Year-round process heat supply**: The process industries considered would require year round supply of process heat. What are the backup options for days when solar based process heat is not available? If, for example, diary industry has to have an energy backup, what are the alternative sources of energy and cost implications?

6. **Barriers**: Awareness and capacity building activities do not adequately address the barriers of high cost of the technology and the technology performance related issues. A systematic analysis of barriers may be necessary to identify and rank the barriers to enable focused activities.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. **Consent**	STAP acknowledges that on scientific/technical grounds the concept has merit. However, STAP may state its views on the concept emphasising any issues that could be improved and the proponent is invited to approach STAP for advice at any time during the development of the project brief prior to submission for CEO endorsement.
2. **Minor revision required.**	STAP has identified specific scientific/technical suggestions or opportunities that should be discussed with the proponent as early as possible during development of the project brief. One or more options that remain open to STAP include: (i) Opening a dialogue between STAP and the proponent to clarify issues (ii) Setting a review point during early stage project development and agreeing terms of reference for an independent expert to be appointed to conduct this review The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.
3. **Major revision required**	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical omissions in the concept. If STAP provides this advisory response, a full explanation would also be provided. Normally, a STAP approved review will be mandatory prior to submission of the project brief for CEO endorsement. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.

N°34: CC-4134; India: Market Development and Promotion of Solar Concentrators based Process Heat Application in India; (UNDP); GEF cost: 4.4 million USD; total project cost: 19.35 million USD

Overall Commentaries

The proposal is good and complete. The main barriers are identified and strategies to overcome them are already being developed. The potential for developing CSP technology in India is tremendous though it remains difficult to assess whether the technology will be able to penetrate the market until and unless oil prices reach their peak or a technological break-through is observed.

Questions, Concerns and Challenges for further Project Preparation

- The main question relates to the Indian authorities' readiness to set up the necessary structural measures that will guarantee a successful market penetration of the CSP technology. For this infant industry to become a long-lasting commercial success, financial incentives, such as tax reductions, etc., are required at the initial stage.

- With the exception of the list of the policy decisions taken at the National level, there is no mention of the role, involvement and responsibility of the local/state authorities. The responsibility of implementing, adjusting and, in certain cases, encouraging additional measures lie in the local authorities' hands. Their role is of the utmost importance.

- According to the project document, a study seeking to address the first matter of concern will be undertaken in the course of the project progress. One would recommend the study to take stock of the role, involvement and responsibility of the local/state authorities. If this study had been conducted prior to the beginning of the project, the conclusions of the study would have given valuable indications on the prospect of CSP technology in India.

- The concerns raised by the STAP as regards energy shortage and requirement of energy backup is well understood and shared. This question is not discussed in the document. For the CSP technology process to function all year-round (dairy industry), additional back-up energy devices may be put in place.

- In addition, the absence of a baseline scenario is surprising and the STAP's requirement for a baseline analysis is thus supported.

- On the technology front, the CSP technology - though well known by few - is still at its development stage. One would recommend an intensive collaboration with outsiders (experts from India and abroad) whose expertise would help to optimise the technology. There is no list of enterprises or national institutes with which collaboration is foreseen. In addition, the fact that the CSP technology is largely in the hands of the private sector may complicate the information sharing and constitute a barrier as such.

Conclusions and Recommendations

In spite of the above remarks, the project is strongly recommended for approval.

32. Colombia: Catalytic Investments for Geothermal Power – GEF Climate Change Focal Area (IADB)

- The United States believes that this is a promising project that seeks to address the main challenges to developing the first geothermal power project in Colombia.
- Geothermal power production is economically feasible and commercial in many countries and this project should help to spur development in Colombia.
- However, we agree with the STAP review's second comment that a preliminary cost effectiveness study during project preparation should be recommended to provide a guide to potential feasibility in later stages.
- A critical stage of the project will be Component III (Exploration Drilling). Without drilling, no geothermal resources will be confirmed.
    - No GEF cost share is requested for this part of the project. How does the project plan to finance exploration drilling, since it is usually financed with equity funding?

34. India: Market Development and Promotion of Solar Concentrators based Process Heat Applications in India – GEF Climate Change Focal Area (UNDP)

- The United States believes that the proposal would have been strengthened by a more thorough implementation plan including a discussion of the strengths and capabilities of the implementers regarding their ability to achieve the goals of the proposal. However, the significant cost share from industry ($6m) and the financial community ($6m) indicates that they will be sufficiently involved to ensure success of the project.
- We recommend that coordination with ongoing bilateral efforts, including the Clean Energy Research and Deployment Initiative established between the Government of India and the U.S. Government, would complement the goals of this project.

42. Morocco: Energy Efficiency in the Industrial Sector – GEF Climate Change Focal Area (AfDB)

- The United States is supportive of audit programs that identify energy/carbon savings and then provide a financing/implementation mechanism because they have good chances of success and have excellent potential to reduce greenhouse gases per dollar invested. We believe that this project appears to provide a good option for instituting this kind of energy and carbon savings program.
- However, we suggest changes which would improve the chances of success for the 150 SMEs in this program and could improve replication of results:
    - Broaden the work with SMEs by taking an energy management approach. While an audit is a key component in energy management, creating a framework of management responsibility and decision making, identifying energy policies and plans, involving plant people in the process, baselining energy use, measuring results, etc., can improve the chances for implementation and also create an environment which fosters continuous improvement. The cost of individual audits is quite high. So a more robust set of activities and training on energy management is certainly feasible within the current scope.

GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Monique Barbut
Chief Executive Officer
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May 04, 2010

Mr. Yannick Glemarec
GEF Executive Coordinator
United Nations Development Programme
One United Nations Plaza
304 East 45th St.
FF Bldg., 10th floor
New York, NY 10017

Dear Mr. Glemarec:

I am pleased to approve your request for $100,000 as a project preparation grant (PPG) for the full-sized project proposal ***India: Market Development and Promotion of Solar Concentrators based Process Heat Applications in India*** to be funded under the GEF Trust Fund (GEFTF). I am also approving the Agency fee of $10,000 for project cycle management services associated with the PPG.

This approval is based on the following understandings and milestones:

(i) During preparation of the full-sized project proposal, the comments of the GEF Council, the GEF Secretariat, the STAP, the GEF Agencies and the relevant Convention Secretariat, will be taken into account;

(ii) A final full-sized document will be submitted for CEO endorsement no later than May 2011; and

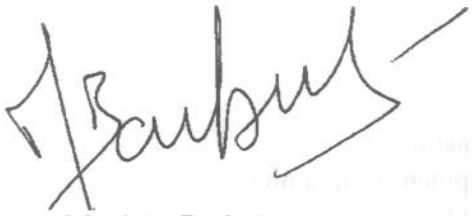
(iii) A report on the use of the GEF project preparation grant will be submitted to the GEF Secretariat when submitting the final project document for CEO endorsement.

If any of these understandings or milestones is not achieved, you are requested to inform me as early as possible so that I may consult with the beneficiary country and your agency. Thereafter, I may agree to revised milestones or take a decision to cancel the project proposal from the GEF pipeline and to recommend to the agency that the associated project preparation grant be cancelled.

Please ensure that your grant agreements continue to fully reflect these understandings.

I am attaching a copy of the project tracking sheet for your records.

Sincerely



Monique Barbut
CEO and Chairperson
Global Environment Facility

Attachment: GEF Project Tracking Sheet
GEFSEC Review Sheet

Copy to: Country Operational Focal Point
GEF Agencies
STAP
Trustee

Climate Change

OP: Oper Program

PMIS Project ID: 4134

UNDP

GEF Project Tracking System
Project Clearance/Approval

India: Market Development and Promotion of Solar Concentrators based Process Heat Applications in India

Authority	GEF Contribution (US$)	Total Cost (US$)	Requested Action	Signature	Date
PIF Clearance	**$4,400,000**	**$23,750,000**			
Program Manager			Recommendation	Josef Buchinger	21.1.10
Team Leader			Clearance	Robert K Dixon	
CEO			Approval	e-Signed on Monique Barbut	2.1.10
PPG Approval	$100,000	$200,000			
	PPG Fees $10,000				
Program Manager			Recommendation	Josef Buchinger	May 4, 2010
Team Leader			Clearance	Robert K Dixon	
CEO			Approval	e-Signed on Monique Barbut	4 May 2010
Work Program Inclusion	**$4,400,000**	**$23,750,000**	**CEO Clearance/Council Circulation**		
Agency Fee (at WPI)	**$440,000**				
Council Approval					
Endorsement w/o PPG					
Agency Fee (at CEO Endorsement)					
Program Manager			Recommendation	Josef Buchinger	
Team Leader			Clearance	Robert K Dixon	
CEO			Council Notification		
CEO			Approval	Monique Barbut	