PROJECT IDENTIFICATION FORM (PIF) [1]

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Promoting industrial energy efficiency through energy management standard, system optimizaton and technology incubation		
Country(ies):	India	GEF Project ID:[2]	4893
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	
Other Executing Partner(s):	Bureau for Energy Efficiency (BEE); Ministry of Micro, Small and Medium Enterprise and Bureau of Indian Standards (BIS)	Submission Date: Resubmission Date:	03/13/2012 04/10/2012
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Name of parent program (if applicable): • For SFM/REDD+ ☐		Agency Fee ($):	446,545

A. FOCAL AREA STRATEGY FRAMEWORK[3]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
CCM-1 (select)	1.1 Technologies successfully demonstrated, deployed and transferred	1.1 Regional technical centers established as incubators to undertake research and innovation for technologies. 25 manufacturers assisted on innovative and energy efficient industrial pump manufacturing	GEFTF	600,000	1,100,000
CCM-1 (select)	1.2 Enabling policy environment and mechanisms created for technology tranfer	1.2 Technology benchmarking report produced for key cross-cutting low carbon technologies	GEFTF	250,000	500,000
CCM-2 (select)	2.1 Appropriate policy, legal and regulatory frameworks adopted and enforced	2.1 Capacity enhancement of government institution BIS and certification agencies on ISO 50001 energy management standards Local capacity developed on implementation of ISO 50001 and system optimization in industries	GEFTF	1,152,815	2,100,000
CCM-2 (select)	2.2 Sustainable financing and delivery mechanisms established and operational	2.2 80 energy management systems and 75 system optimization projects implemented in industries for achievement of estimated 1.271 million tonnes of CO2 savings	GEFTF	2,250,000	22,500,000
(select) (select)	Others		(select)		

[1] It is very important to consult the PIF preparation guidelines when completing this template.
[2] Project ID number will be assigned by GEFSEC.
[3] Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

Sub-Total		4,252,815	26,200,000
Project Management Cost[4]	GEFTF	212,640	1,160,000
Total Project Cost		4,465,455	27,360,000

B. PROJECT FRAMEWORK

Project Objective: The project will serve a dual objective of (i) promoting energy efficiency by introducing the ISO energy management standard 50001 and integrating system optimization practices in industry; and (ii) facilitating formation of technology incubators to catalyze innovation and technology transfer for cross-cutting technologies

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Cofinancing ($)
1. National program to build capacity and awareness on the ISO Energy Management Standard 50001 and system optimization	TA	The energy management standard recognized and promoted. A pool of professionals created from industries, national consultants and suppliers to provide services on energy management systems and system optimization	Enhancing institutional capacity of BIS for promotion of ISO 50001 National awareness campaigns on ISO 50001 and high level management officials from 1000 industrial enterprises sensitized on usage and benefits of the ISO 50001 Capacity development of certification agencies for awarding ISO 50001 standard National energy auditor and manager training cirriculam is strengthened 100 national experts trained to implement ISO 50001 and 100 national experts trained on system optimization in steam, compressed air and pumping systems Training of 800 industrial technical personnel on energy management systems and 600 industrial technical personnel on system optimization. Suppliers of energy efficient products and services are also trained on system optimization	GEFTF	1,152,815	2,100,000
2. Implementation of energy	Inv	Enhanced adoption of energy management	80 industrial plants assisted to implement and comply	GEFTF	1,900,000	21,500,000

[4] GEF will finance management cost that is solely linked to GEF financing of the project.

management system and system optimization projects		standards Increase in system optimization projects by the industries resulting from demonstration projects in participating industries	with the energy management standard Plant assessments conducted and system optimization implemented in 75 industries Peer to peer network established and results of demonstration projects disseminated			
3.Benchmarking study of technologies and establishment of incubators for facilitating technology transfer and innovation	TA	An analysis of existing technologies against internationally best available technologies/practices conducted and technology centers are created to tap the energy improvement potential	Technology benchmarking report produced for key cross-cutting technologies Regional technical centers established as incubators Capacity building for adoption of designs by 25 manufacturers	GEFTF	850,000	1,600,000
4. Financial capacity development to support energy efficiency projects in industry	TA	Increased availability of financial and institutional support for industrial energy efficiency initiatives	Capacity of government/private financial institutions and banks enhanced to promote and invest in industrial EE projects Industrial enterprises apprised of the existing financial schemes and trained in preparation of bankable energy efficiency project proposals A tailored portfolio of financial incentives facilitated to participating enterprises for investments in energy efficiency projects	GEFTF	350,000	1,000,000
			Sub-Total		4,252,815	26,200,000
			Project Management Cost[5]	GEFTF	212,640	1,160,000
			Total Project Costs		4,465,455	27,360,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, ($)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount ($)
National Government	Bureau of Energy Efficiency (BEE)	In-kind	2,200,000
National Government	Ministry of Micro, Small and Medium Enterprises (MoMSME)	[6]In-kind/in-cash	11,000,000

[5] Same as footnote #3.

[6] Contribution will cover both in-kind and government schemes (in cash) to support energy efficiency projects as in the GEF 4 project.

National Government	Bureau of Indian Standards (BIS)	In-kind	500,000
Others	Small Industries Development Bank of India (SIDBI) and other banks	Soft Loan	13,000,000
Others	Small Industries Development Bank of India (SIDBI)	In-kind	200,000
GEF Agency	UNIDO	In-kind	360,000
GEF Agency	UNIDO	Cash	100,000
(select)		(select)	
(select)		(select)	
(select)		(select)	
Total Cofinancing			27,360,000

D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
UNIDO	GEF TF	Climate Change	India	4,465,455	446,545	4,912,000
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				4,465,455	446,545	4,912,000

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

[2] Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 the GEF focal area/LDCF/SCCF strategies:

The project is in line with the GEF 5 climate change mitigation goal to support developing countries and economies in transition towards a low-carbon development path. The project supports objective 1 of promoting the demonstration, deployment, and transfer of advanced low-carbon technologies, objective 2 of promoting market transformation for energy efficiency in industry.

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities: N.A

A.2. national strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

India recognizes issues of energy security and climate change mitigation as priority areas for policy action. The Government of India introduced the Energy Conservation Act in the year 2001 which provides the legal framework, institutional arrangements and regulatory mechanisms at the Central and State Government levels to upscale energy efficiency adoption in the country. The Bureau of Energy Efficiency (BEE) was established as a component of the act with the primary objective of reducing energy intensity of the Indian economy through active involvement of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

Furthermore, the Government of India released the 'National Action Plan on Climate Change' (NAPCC) in the year 2008 to address both development and climate-related objectives. The action plan is being implemented through eight National Missions, one of which is the 'National Mission for Enhanced Energy Efficiency (NMEEE)'. The NMEEE aims to create innovative mechanisms that will help finance demand side management programmes (Energy Efficiency Financing Platform- EEFP), and fiscal instruments to promote energy efficiency (Framework for Energy Efficient Economic Development-FEEED). The NMEEE will target saving about 5 % of the annual energy consumption by 2015, and nearly 100 million tons of carbon dioxide every year. Furthermore, the Twelfth Five year plan (2012-2017) of the Government of India estimates that emissions intensity of India's GDP could go down by 23 to 33 per cent over 2005 levels by 2020, depending upon the intensity of the mitigation effort, while achieving the target 9 per cent GDP growth[7].

The proposed project is in line with national strategy of the Indian government and aims to improve energy efficiency through increased capacity building, investments and technology innovation.

[7] Planning Commission (2011): Approach to the Twelfth Five Year Plan (Draft)

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

Baseline project

The Indian economy has rebounded robustly from the global financial crisis and is now growing steadily at a rate of around 8% in real terms. The industrial sector has been a consistent driver of this growth, accounting for about 28% of GDP in the last three years. However, this rapid growth has led to a concomitant increase in energy demand and consumption. Commercial energy consumption in India has rose from 217 million tonnes of oil equivalent (MTOE) in 2005/06 to 272 MTOE in 2007/08. The industrial sector has consistently remained the largest contributor to this consumption accounting for about 56% of the total commercial energy consumption (as fuel and feedstock) during 2007/08 (153 MTOE)[8]. This has placed India as the fourth largest global industrial energy consumer behind China, the US and Russia.

It is predicted that the Indian industrial energy consumption can increase from 3.5 to 4.2 times between years 2007 and 2050[9] to reach unsustainable levels threatening energy security in the long run. The composition of industrial energy requirement in India led by coal (33%) followed by oil (23%), biomass and waste (19%), electricity (15%) and natural gas (10%) further contributes to the problem. The increasing industrial energy demand and increasing greenhouse gas emissions arising from fossil fuel and power consumption, concerns the Government of India about inefficiencies with the way industry currently uses fuel and power. At the same time there is increasing international pressure for the country to stem its growing carbon dioxide emissions. It is also being realized that energy savings contribute to the profitability of businesses and also enhance their competitiveness. Given this scenario, industrial energy efficiency through energy management and technology enhancement is seen as a solution that can significantly reduce energy consumption and CO2 emissions in India's industrial sector, while enabling the Indian economy to alleviate energy poverty and maintain steady growth.

- Large industries

Understanding this need for energy efficiency, the government of India has recognized 477 Designated Consumers (DC) from large scale industries across eight key energy intensive sectors. The sectors include Thermal Power plants, Iron & Steel, Cement, Fertilizer, Aluminium, Textile, Pulp & Paper and Chlor-alkali. The DCs account for about 231 MTOE (million tons of oil equivalent) of energy consumption annually (2007-08 data, BEE). Considering the quantum of energy consumption, the energy intensity, large bandwidth in energy usage pattern, the above 8 sectors have been selected in the 1st cycle of Perform Achieve and Trade (PAT) scheme. The PAT scheme is a market-based mechanism to enhance energy efficiency in large energy-intensive industries and facilities through certifications of energy savings (ESCerts) that could be traded. The scheme aims to achieve in the first commitment period of 3 years (ending in 2015), about 6.6 MTOE (5.5% collective SEC reduction).

- MSME sector

The MSME (micro, small and medium enterprises) sector also plays a vital role in the Indian economy. It contributes around 45% of manufacturing output, 40% of exports, and employs more than 69 million people. Most of the small-scale units are concentrated in around 400 geographical clusters across the country. Out of these, there are a large number of energy-intensive MSME clusters in the manufacturing

[8] TERI (2010): TERI Energy Data Directory Yearbook
[9] International Energy Agency (2011): Energy transition for industry: India and the global context

sector (around 178 cluster manufacturing about 15 product categories) which require urgent energy efficiency measures for economic and environmental sustainability. Realizing the importance of this segment of industry, the NAPCC and the recent five year plans of the Indian government have marked energy efficiency improvement among MSMEs has a high priority agenda. The government, through BEE and Ministry of MSME has launched programs/schemes to promote energy efficiency among MSMEs. Lately, energy efficiency improvement among MSMEs is also gaining attention of multilateral organizations. GEF has initiated projects focusing on the MSME sector through UNIDO and World Bank.

The strong policy infrastructure in India has provided an enabling environment for improving energy efficiency of the industrial sector. For example, the ISO 50001 energy management standard which was launched recently in India has received immediate recognition and incorporation by the Bureau of Indian Standards (BIS) into its framework and an Indian version (IS/ISO/50001) of the standard has already been released. Infact, four large industries have already implemented the standard at their plants. Similarly, several initiatives for training of energy professionals are also being undertaken to develop local capacities for facilitating energy efficiency in industry including a few by BIS recently. The BEE has taken responsibility of developing cirriculam and conducting examinations for certifying energy auditors and energy managers in the country.

Challenges and barriers

Despite Government of India's active involvement through various interventions towards increasing penetration of energy efficiency measures in India, the challenge to translate government policies into actual action at the ground levels still remains. Presence of an active institutional framework facilitating technology innovation and transfer is essential to accelerate industrial energy efficiency. Technology platforms constitute a policy instrument that has been widely used in developed countries. Technology developers, supply industries and users cooperate to develop conducive frameworks, exchange ideas and develop suitable technologies. In the current scenario, there are very few initiatives that are focusing on technology innovation and the few that exist, are functioning at a small level or on ad-hoc basis. Benchmarking is also an important tool to assess and compare present status of performance, technologies and processes in selected industrial sectors with that of best technologies and practices world-wide. Currently there are no benchmarking studies on cross-cutting technologies and operating practices in India. The PAT scheme has set targets/benchmarks for DC to reduce their energy consumption but no such targets are available for MSMEs and other industries consuming below the mandated threshold. Hence there is urgent requirement to benchmark technologies and practices in order to guide industries in reducing their energy consumption levels.

As in other countries, both markets and policy makers in India tend to focus more on individual components despite of larger energy savings potential in system optimization approach especially for steam, pumping and compressed air systems. For example, in pumping systems, issues of pump selection, installation and operation can have significant impacts on the system efficiency and are often overlooked by policy makers, suppliers and industries. In addition, energy efficiency programs have not delivered comprehensive capacity building focused on the industrial sector. There is not only lack of sensitization regarding energy management at the entrepreneurial level, but also a dearth of trained experts to implement management standards and practices. Hence, whilst BIS is actively promoting the ISO 50001 standard in the country, there is additional effort needed to support the entire campaign. Similarly, awareness and availability of financing mechanisms tailored to promote energy efficiency investments is still insufficient.

Hence, there is limited implementation of energy efficiency projects by the industrial enterprises leading to limited penetration of energy efficiency measures, technologies and systems. Overall, the six key barriers hindering energy efficiency adoption in the Indian industry which the project aims to address are summarized as follows.

1. Key national bodies promoting industrial energy efficiency and standards in the country require institutional capacity building and policy guidance to accelerate their ongoing efforts
2. Industry management emphasizes more on production and energy efficiency is not a core mission for them
3. There is lack of trained experts for energy efficiency standard implementation and system optimization
4. There are few demonstrable projects showcasing the benefits of industrial energy efficiency in India
5. There is lack of information about technology options, best practices, and benchmarks within enterprises and linkages between research institutes and industry remain weak
6. There is limited awareness of financial schemes, requirements and procedures to access financing for energy efficiency investment projects and limited government financial incentives to support industrial enterprises on the uptake of industrial energy efficient options

While barriers 1-6 are applicable to all industries, barriers 4-6 are of specifically important in the MSME context.

B. 2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

Integration of ISO 50001 into the Indian standards framework is a recent intervention by the BIS. Though the standard has been integrated, at present there is limited capacity, awareness and technical knowhow amongst stakeholders for promotion, adoption and implementation of the standard. Similarly, since most ongoing national and international programs on energy efficiency improvement are primarily cluster level interventions in SMEs, efforts to promote systems optimization are minimal. UNIDO has been involved in improving energy efficiency across various energy intensive SME sectors in India over the past several years. However, the focus has been on promoting component efficiency and not a system based approach. Hence it can be said that under the baseline situation, adoption and promotion of ISO 50001 and system optimization in India (specifically in SMEs) is at a relatively low level.

In the absence of GEF intervention, most industries would function in a business as usual scenario focusing mainly on production maximization. They would monitor their production irregularly and few industries will integrate energy efficiency as part of their management cycle. In addition, focus is likely to remain on component efficiency rather than on systems approach. Furthermore, linkages between industry and research institutes will remain weak and innovation will be

confined to in-house R&D efforts which are almost non-existing in the MSME sector, and reverse engineering practices.

By promoting the energy management standard, the GEF project will stimulate top management involvement towards energy efficiency. Embedding the ISO management standard in the energy auditor training programs of BEE will ensure that ISO 50001 penetration becomes self-sustainable. Since Indian industries are growing and expanding production/plants at a rapid rate, this intervention of the project will become even more crucial for the long run. Promotion of system approach through demonstration projects, financial linkages and capacity building will result in higher energy saving opportunities through system efficiency improvements. Linkages with research and technical bodies will provide collective benefits to industry through improvements in technology efficiencies and benchmarking studies. Overall, the GEF project will accelerate penetration of energy management practices across different Indian industries and thereby contribute to CO_2 emission reductions and added global environmental benefits. The project will consequently increase competitiveness of the Indian industrial sector and improve its positioning at the international level.

The proposed project

The proposed project intends to address the given barriers by promoting energy efficiency through energy management, energy efficiency and technology innovation using the tools of training and capacity building; demonstration projects; knowledge dissemination and networking; and financial linkage development. The project will build upon the ongoing efforts of the Indian government and strengthen areas requiring external support for barrier removal and compliment and build on the activities undertaken in the GEF 4 projects in India.

Since energy management standard and system optimization are cross-cutting and applicable to all sectors, the project will target industries from the eight energy intensive sectors identified under the first phase of the PAT scheme. The efforts of BIS to promote the energy management standard have started materializing as a few large industries have already adopted the standard. Given the importance of the small scale industry in terms of energy consumption, the project will not only continue to support BIS efforts and build upon the numbers in the large industry, but also go beyond the DC and extend its reach to medium and smaller enterprises. Similarly, system optimization will also be promoted within large enterprises as well as SMEs.

The project will implement four components with each targeting specific barriers. The components of the project and their expected outputs are elaborated below.

Component 1: National program to build capacity and awareness on the ISO Energy Management Standard 50001 and system optimization

This component will concentrate on promoting large-scale adoption of the standard as a tool to enchance profitability, market access and industrial competitiveness. The component will guide national policymakers, develop necessary technical capacities and create industrial awareness on energy efficiency. The component will conduct capacity building programs to create a pool of professionals for "Training of Trainers (TOT)". The BIS has expressed interest to conduct training of ISO 50001 consultants and the project will make efforts to institutionalize such a program with the BIS. The project can train experts at the regional levels and these trainers can

further train experts at the industry level using the BIS local office support and infrastructure.

Large industrial enterprises generally comprise of a group of industrial units/plants. The project will also train industrial professionals from selected enterprises and encourage the enterprise management to replicate the training at their other units. This approach will not only ensure sustainability of training programs post project life, but also assist in maximizing the outreach of capacity building efforts of the project. In this process, the component will address barriers 1,2, 3 and 5 through capacity building.

Outcomes of the component:

- *The energy management standard recognized and promoted for large-scale adoption*
- *A pool of professionals created from industries, national consultants and suppliers to provide services on energy management systems and system optimization*

Outputs of the component:

- *Enhancing institutional capacity of BIS for promotion of ISO 50001*

The project will strengthen the institutional capacity of BIS for promoting the ISO 50001 standard. Training programs will be conducted for BIS officials to develop an approach and strategy that enables large scale dissemination of the standard.

- *National awareness campaigns on ISO 50001 and high level management officials from 1000 industrial enterprises sensitized on usage and benefits of the ISO 50001*

The national awareness programme will aim at convincing industries to shift from existing operational practices to energy management practices by adopting ISO 50001. The campaign will be performed through awareness workshops using promotional literature, press releases, and presentations. It will also involve participation and consultation with local industrial associations.

- *Capacity development of certification agencies for awarding ISO 50001 standard*

The project will develop capacities of local certificiation bodies that are recognized by BIS to award ISO certificates. The capacity building will focus on certification of the ISO 50001 energy management standard.

- *National energy auditor and manager training cirriculam is strengthened*

BEE holds annual examinations for certifying energy auditors and managers based on their recognized cirriculam/syllabus. The project will dialogue with BEE for incorporating training on implementation of the ISO 50001 standard as an additional module into their cirriculam. This will automatically ensure that future batches of energy auditors and managers are equipped with ISO 50001 implementation skills.

- *100 national experts trained to implement ISO 50001 and 100 national experts trained on system optimization in steam, compressed air and pumping systems*

UNIDO will engage international experts as well trainers from BIS to impart training of trainers to 100 national experts on energy management standard and 100 national experts on system optimization. The national experts will receive both classroom and onsite training involving participating industrial facilities. While the system optimization training will include supply, distribution, usage and recovery of energy across the system, training on ISO 50001 will cover technicalities regarding implementation of an energy management system in conformance with ISO 50001, including information on internal auditing techniques.

- *Training of 800 industrial technical personnel on energy management systems and 600 industrial technical personnel on system optimization. Suppliers of energy efficient products*

and services are also trained on system optimization

Training will be provided on energy management standard to 800 industrial technical personnel. Further training on system optimization will cover an additional 600 industrial technical personnel. The participants will be tought extensively through the various training material developed under the project. Training on ISO 50001 will guide managers and engineers through the Plan-Do-Check-Act cycle and instructions will be provided on establishing an effective energy policy, setting improvement targets and objectives, establishing performance indicators, and identifying significant energy uses and opportunities for improvement. System optimization training will guide industrial technical personnel on efficient management of steam, compressed air and pumping systems.

Suppliers and vendors play an important role in ensuring that optimal technology designs are provided and installed in an efficient manner considering the entire system that is in place. Key suppliers of compressed air, steam and pumping systems will be trained to identify energy savings opportunities and justify system efficiency projects to industries.

Component 2: Implementation of energy management system and system optimization projects

The project will promote the benefits of system optimization and energy management implementation by facilitating demonstration of investment projects with support from participating industrial entreprises. Plant assessments will be carried out and trained experts will be engaged to implement the energy efficiency practices. Based on plant assessment recommendations, the industrial enterprises will invest in both hard and soft interventions. While hard interventions will include investments in best available technologies, soft interventions will involve adoption of best operational and energy management practices. The majority of co-financing identified under the project will be leveraged for such investments. The savings and benefits will be captured and disseminated for wider adoption at the national level. The pool of demonstrable projects created through this component will assist in addressing barrier 4 and 2.

Outcomes of the component:

- *Enhanced adoption of energy management standards*
- *Increase in system optimization projects by the industries resulting from demonstration projects in participating industries*

Outputs of the component:

- *80 industrial plants assisted to implement and comply with the energy management standard*

It is expected that about 80 industries out of the total industries sensitized will implement the energy management standard in their industrial facilities and conduct operational improvements. The national experts developed under the project will support these industries to implement the energy management standard including internal auditing and review.

- *Plant assessments conducted and system optimization projectsimplemented in 75 industries*

The project will conduct plant assessment and system audits to analyze scope for optimization of steam, pumping and and compressed air systems. The project will then support about 75 industries to develop investment projects for implementing the reccommendations from the

assessments such as improvement in steam, compressed air and pumping systems.

- *Peer to peer network established and results of demonstration projects disseminated*

The results achieved through the system optimization projects implemented will be captured and several will be documented as case studies. Similarly, the results observed and reported by industries complying with the energy management standard will also be documented into reports. The final outputs will be disseminated to relevant stakeholders from industry, government, financing institutions, and technology and research centers through the peer to peer network that will be established under the project.

Due to cross cutting nature of energy management systems and system optimization, industrial sub-sectors are not defined. Industrial enterprises will include both large and medium sized types for implementation of energy management systems and system optimization projects. These enterprises will be selected based on their energy characteristics and green house gas emission potential and will be from those industrial sub-sectors which contribute to national economy as well as employment.

Component 3: Benchmarking study of technologies and establishment of incubators for facilitating technology transfer and innovation

The project will conduct a benchmarking study for key cross-cutting technologies and outline the technical and economic parameters of the best available technology alternatives. Simultaneously, the project will link 2-3 technical institutes across India with industry to establish incubators for undertaking research and innovation on one selected technology. Meanwhile, industry will be sensitzed regarding this initiative to seek their buy-in and involvement. This component will strengthen research-industry linkages and thereby address barrier 5.

Outcomes of the component:

- *An analysis of existing technologies against internationally best available technologies/practices conducted and technology centers are created to tap the energy improvement potential*

Outputs of the component:

- *Technology benchmarking report is produced for key cross-cutting technologies*

The project will perform a benchmarking study on the best available technologies operational internationally, focusing on key cross-cutting areas such as pumps, boilers and compressors. The outputs from the study will highlight potential areas for improvement through technology innovation and transfer.

- *Regional technical centers established as incubators*

Incubators are cells within technical institutes/centers that can work on making technologies suitable for local application and help industrial companies to overcome technical efficiency barriers. The project will identify 2-3 technical institutes/centers and sign agreements for collaboration with them. The incubators will be anchored within the existing infrastructure of these centers. The incubators will undertake research and innovation for one selected cross cutting technologies. Industrial pumps, both small and medium sized are large energy consumers and could be the selected technology for improvement. The cells will be provided technical assistance to conduct research on the design, material and manufacturing process of pump models commonly used in industry and come out with energy efficient designs matching international standards.

- *Capacity building for adoption of designs by 25 manufacturers*

The improved designs will be developed into prototypes and demonstrated to both users as well the manufacturers of the technology. The project will conduct regional workshops for dissemination of the results and assist about 25 manufacturers to incorporate the designs into their standard product list. This will allow entrepreneurs to obtain five stars BEE rating for their products and assist in greater market penetration having indirect energy saving benefits. The capacity building will also sensitize industry on the benefits of the research facility and thereby ensure commercial sustainability of the incubators post project life.

Component 4: Financial capacity development to support energy efficiency projects in industry

This component will focus on building capacities of financial institutes, banks and governments on the potential of energy efficiency financing; and of industries on the various procedures and due diligence requirements necessary for obtaining financial assistance. The component will also facilitate preparation of incentives for industry to promote investments in energy efficiency projects. The component will address barrier 6

Outcomes of the component:

- *Availability of financial and institutional support for industrial energy efficiency initiatives*

Outputs of the component:

- *Capacity of government/ private financial institutions and banks enhanced to promote and invest in industrial EE projects*

The workshops intend to raise the institutional capacities of banks and financial institutions for evaluating energy efficiency investment proposals through credit risk analysis, management of credit and portfolio, and assessment of energy saving potential. The programs would broadly focus on these topics, while case-studies of energy saving options will also be presented. The classroom trainings will be followed by site visits to a few progressive entrepreneurs to provide hands on understanding of the technologies in use across different segments.

- *Industrial enterprises apprised of the existing financial schemes and trained in preparation of bankable energy efficiency project proposals*

The training and capacity building will include presentations from banks regarding the various schemes that are available and the procedures, documentation necessary for availing them. Thereafter, a detailed list of all available schemes will be presented to industry for reference. In addition, industries will be trained on proper book keeping and due diligence practices required prior to application for funding. The workshops will also engage local chartered accountants who are the main service providers for loan application, especially in the medium and small scale sectors.

- *A tailored portfolio of financial incentives is facilitated to participating enterprises for investments in energy efficiency projects*

This output will be useful for facilitating component 2 of the project. Participating industries will be assisted with incentivized financing options in order to promote energy management implementation and system optimization for their plants and factories. The project will facilitate the necessary dialogue and interaction between financing institutes and industries for creating mutually beneficial incentives.

Component 5: Project management

The abovementioned four components will be implemented under the project management component.

BIS and BEE will be closely involved in PPG development and implementation phases of the project. Some of the participating industries will be identified during the PPG phase while others during implementation stage in dialogue with industrial associations. Technical institutes/centers will be identified during the PPG phase.

With the assistance of the project, India will move towards a less carbon intensive path. The project is expected to directly reduce approximately 210,122 tonnes of CO_2 during the project implementation period. These savings are expected to start in year 2 of the project and last for a total of 10 years. The project also envisages indirect savings resulting from replications by new enterprises each year post-project implementation period. It is estimated that indirect savings of about 1,061,527 tCO_2 are achievable in the 7 years after the project completion. The total GHG emissions reductions are estimated to be around 1,271,649 tCO_2.

Direct CO2 emission reduction during project implementation	1. Energy management systems implementation	90,234
	2. System optimization implementation	82,980
	3. Adoption of efficient design by industries	20,160
	4. Operational improvements	16,748
	Total direct CO2 emission reduction	***210,122***
CO2 emission reduction post project period	1. Energy management systems implementation	453,486
	2. System optimization implementation	402,134
	3. Adoption of efficient design by industries	139,569
	4. Operational improvements	66,338
	Total CO2 emission reduction post project period	*1,061,527*
TOTAL CO2 emission reduction		**1,271,649**

Bottom-up approach is undertaken to estimate the GHG emission reduction. This methodology has been utilized in the previous GEF 4 projects for the South East Asian countries. Different assumptions are made for energy savings, operational hours, and rating of industrial energy equipment etc. The GHG emission reduction is calculated by summing up the GHG emission reductions from implementation of energy management system and system optimization, adoption of efficient design (through incubators) by industries and operational improvements through trainings for both project duration and post project periods.

The different savings are assumed for large enterprises and SMEs on implementation of energy management systems. For system optimization projects, savings have been estimated assuming energy saving potential of alternative technology options; their capacities and usage. For example, while 5% savings have been assumed from small boilers of 10 tonnes/hour capacities, 1% savings have been taken for 50 tonnes/hour capacity boilers. Energy savings from ISO 50001 adoption for SMEs are assumed at 5% energy saving from the total energy consumption of a typical SME unit while energy savings for DC are estimated assuming 10% energy saving from the total energy saving potential of a typical DC plant as mentioned under PAT.

Indirect savings have been estimated assuming that further replications of ISO 50001 and system optimization projects will continue to occur in an incremental manner post project implementation (year 6 onwards). Direct and indirect savings have been aggregated to estimate the total carbon reduction from the project.

B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF). As a background information, read Mainstreaming Gender at the GEF."

In addition to global environmental benefits through direct energy savings and consequent CO_2 reductions, the project is also expected to achieve various socioeconomic benefits. Employment generation (both direct and indirect) is expected to improve through the interventions on capacity building and investment projects. Business of energy professionals is expected to grow beyond the duration of the project once implementation of energy management expands across all segments of Indian industry. Furthermore, the project will promote participation of women during the training and capacity building programs. Women participation in research based activities associated with technology incubators will also be encouraged.

B.4 Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:

The institutional, technical, sustainability and financial risks that are associated with the intended outputs from the project are generally low. The project does not envision any climate change risks. The risk and their mitigation measures are elaborated as follows:

Risk	Rating	Mitigation measure
Institutional risk: Changes in government priorities resulting in reduced support for the project, delays in activities and overall ineffectiveness of the interventions.	Low	The possibility of withdrawn support is highly unlikely for the Indian scenario. Policies on energy efficiency are strong as indicated from the various provisions under NMEEE and from the energy management standard that has been recognized by BIS. Since efforts to generate awareness regarding the standard have already commenced, it is unlikely that the government will withdraw support.

Technical risk: Lack of energy savings from energy management systems and system optimization approach	Low	Since energy management system and system optimization techniques systems have produced beneficial results across other countries and projects, there is very little technical risk. In addition, UNIDO will ensure that training of suppliers and national experts is comprehensive and performed through experts with proven ability.
Sustainability risk: The risks envisaged here include inability of up scaling energy management practices post implementation and lack of financial contribution towards project interventions by participating companies.	Low	The project will streamline energy management techniques into energy auditor training and thereby ensure that energy management builds into the regular energy audit process. The combination of standards with tools and training will allow enterprises to embed industrial EE projects/investments into management structures that provide documentation, independent verification, and continuous improvement.
Financial risk: Facilities might not be willing to invest in implementing energy management standards and system optimization recommendations despite them having high energy savings potential.	Medium	Participating industries will be assisted to obtain incentivized financing options through discussions with financing institutions. UNIDO will provide training to industry's for building their capacity on the long term financial benefits of investing on energy management and system optimization. Capacity building of financial institutions will be done to enhance their perception regarding industrial energy efficiency investment potential. Furthermore, recent approval of the PAT scheme will motivate industries to make energy efficiency investments and the project will be a timely intervention in this context.

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

The project will involve various stakeholders from both government and private sector. The Bureau for Energy Efficiency, the Ministry of MSME and the Bureau for India Standards will be the host government counterparts for the project and will play an advisory role in project design and implementation. SIDBI will be the key local bank providing financial assistance for energy efficiency investments. The private sector will include DC identified under the PAT scheme along with entrepreneurs, managers and engineers from large medium and small industrial enterprises in key energy intensive sectors. These stakeholders will be the major beneficiaries of the project and will be involved in capacity building and developing investment projects. Industrial Associations present in MSME clusters across the country will play a key role in outreach, networking and dissemination efforts of the project. Other stakeholders in the project will include national experts, consultants, vendors, suppliers, business development service (BDS) providers, local banks and financing institutions who will be part of the training programmes and capacity building workshops (either as faculty or as recipients). Furthermore, research institutes, technical universities and academic professionals will also play an important role in the project, especially during establishment of technology incubators and conduct of research on cross-cutting technologies.

B.6. Outline the coordination with other related initiatives:

The project will complement various other initiatives targeting the improvement of industrial energy efficiency in India. The key domestic initiatives are the NMEEE of BEE and the BIS scheme for promoting IS/ISO 50001.

- The NMEEE implementation plan covers the Perform Achieve and Trade (PAT) scheme which is targeting 477 DC. The project will concentrate on these DC and thereby support the PAT scheme and contribute towards its mitigation targets.
- The BIS has recognized the ISO 50001 amongst DC in industry. The project will support BIS promotional efforts and also extend its outreach towards medium and small enterprises.

Various multilateral agencies under the support of GEF have been working actively towards promoting energy efficiency, especially in the MSME sector. The World Bank GEF project is working on financing energy efficiency and the UNIDO GEF project is promoting energy efficiency and renewable energy for industrial applications in the MSME sector. Similarly, UNDP is working on GEF projects promoting energy efficiency in specific sectors including steel re-rolling, brick and tea. IFC has been actively supporting clean technology investments in India using innovative financing instruments including cleaner production lending facility, Esco financing, risk sharing facility and carbon market products.

In addition, there are other international agencies that are working with similar objectives. The Swiss Agency for Development and Cooperation (SDC) has been working over the past two decades on energy efficiency technology development and dissemination in MSME sectors. The Japanese government is supporting a project on transferring energy efficient Japanese technologies to Indian SMEs through promotion of private sector partnerships. The GIZ/BEE led Indo-German energy programme aims to achieve greater energy efficiency in the generation and use of electricity, oil, gas, coal, and renewable energy in all sectors, contributing to sustainable energy management and climate protection. Similarly, USAID, through the Partnership to Advance Clean Energy (PACE) program, aims to accelerate deployment of clean energy technologies, systems and solutions in demand-side management and end-use energy efficiency. The Ministry of Economy, Trade and Industry (METI), Japan has conducted several feasibility studies for GHG reduction projects focusing on energy efficient technologies and processes in the Indian steel sector. Recently, Swedish International Development Cooperation Agency (SIDA) has initiated a programme on introducing clean technologies for the pulp and paper sector.

This project will complement and synergize with these various initiatives. In addition, the project will undertake unique interventions to address challenges that still require more attention. National level promotion of the ISO 50001 standard and development of suitable capacities for its implementation will be a major value added from the project. While several projects have focused on energy efficient technologies, few have targeted system optimization of cross-cutting technologies like steam, compressed air and pumping systems. Similarly, technology incubation has not been facilitated in a concerted manner and can be strengthened further. The project, in fact, is truly unique compared to other Indian energy efficiency projects due to interventions relating to the ISO 50001 and system optimization approaches and will add value to the government initiatives in promoting energy efficiency to the industry . The project team will liaise closely with other project teams especially from the World Bank and the IFC to enhance industry confidence and build on the works to create more value to propagate investment on energy efficiency projects of industries.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

UNIDO has been recognized by the Global Environment Facility (GEF) as having comparative advantages in the development and implementation of Industrial Energy Efficiency (IEE) projects. With its mandate to promote sustainable industrial development, UNIDO has positioned itself as one of the most relevant player to assist industries of both developing countries and economies in transition. UNIDO has long-standing sector-wide experience with technical, policy and financing aspects of efficiency improvement in manufacturing and process industries. In India, UNIDO has long experience in cooperation with different government agencies in development of policies and institutional framework to support entrepreneurs' development. UNIDO has also a strong partnership with various industrial associations and enterprises association. Such strong partnerships will facilitate the successful implementation of the project.

C.1 Indicate the co-financing amount the GEF agency is bringing to the project:

UNIDO will provide $460,000 in cash and in-kind as co-financing to the project out of which $100,000 will be cash and $360,000 in-kind during the project implementation phase.

C.2 How does the project fit into the GEF agency's program (reflected in documents such as UNDAF, CAS, etc.), and staff capacity in the country to follow up project implementation:

The expected outcomes of the project as mentioned above will contribute to achieving UNIDO's direct contributions to the UNDAF outcomes including; UNDAF Outcome 1- Inclusive growth and Outcome 3 – Sustainable Development.

Under outcome 1, the project will contribute to promoting employment, skills and livelihoods – The project will focus on improving the competitiveness of industries and contribute to private sector development (including MSMEs) through improvements in skill building, access to finance and improved technologies.

Under outcome 6, the project will demonstrate the viability of energy-efficient technologies and in collaboration with the Ministry of Power (BEE), endeavor to assist in the adoption of energy management standards. Through the projects continued support to industry associations and technology centers the knowledge base towards a low-carbon economy will be harnessed and the best available technologies and practices will be made widely accessible for adoption and deployment by the productive sector, particularly MSMEs.

To ensure the success of project implementation, the UNIDO team will involve various stakeholders and co-financing partners during the formulation and implementation of the project through consultation meetings, technical workshops, and contractual agreements. In addition, project implementation will be overseen by the UNIDO Team consisting of UNIDO Representative in India and Energy and Climate Change Branch of UNIDO.

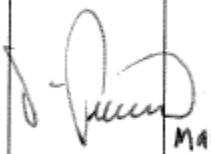
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Hem Pande	Joint Secretary, GEF Focal Point	MINISTRY OF ENVIRONMENT AND FORESTS	**03/16/2012**

B. GEF AGENCY(IES) CERTIFICATION

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

Agency Coordinator, Agency name	Signature	DATE *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email Address
Mr. Dmitri Piskounov, Managing Director PTC, UNIDO GEF Focal Point		March 16 2012	Sanjaya Shrestha	+431260263730	s.shrestha@unido.org