PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Medium-sized Project
THE GEF TRUST FUND

Submission Date: December 12 2009

PART I: PROJECT IDENTIFICATION

GEF PROJECT ID[1]: **PROJECT DURATION: 54** months
GEF AGENCY PROJECT ID:
COUNTRY(IES): Republic of Yemen
PROJECT TITLE: Removing Barriers to Energy Efficiency Improvements in the Republic of Yemen
GEF AGENCY(IES): World Bank, (select), (select)
OTHER EXECUTING PARTNER(S): Ministry of Electricity and Energy (MOEE)
GEF FOCAL AREA (S)[2]: Climate Change
GEF-4 STRATEGIC PROGRAM(s): CC-SPI-Building EE, CC-SP2-Industrial EE (see preparation guidelines section on exactly what to write)
NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable**):**

INDICATIVE CALENDAR*	
Milestones	**Expected Dates mm/dd/yyyy**
Work Program (for FSP)	03/04/2010
CEO Endorsement/Approval	10/10/2010
Agency Approval Date	1/16/2011
Implementation Start	03/20/2011
Mid-term Evaluation (if planned)	08/30/2013
Project Closing Date	09/31/2015

* See guidelines for definition of milestones.

A. PROJECT FRAMEWORK

Project Objective: The overall objective of this activity is to reduce greenhouse gas (GHG) emissions in the household, government, commercial sectors and some selected industrial sub-sectors. The GHG reduction will be achieved through the adoption of energy efficient technologies and electric appliances in these sectors, enabled by the market-based mechanisms, regulatory tools and institutional capacity developed under the project activities.

Project Components	**Indicate whether Investment, TA, or STA[b]**	**Expected Outcomes**	**Expected Outputs**	**Indicative GEF Financing[a]**		**Indicative Co-Financing[a]**		**Total ($)** c =a + b
				($) a	%	($) b	%	
1. Institutional framework development and capacity building	STA	Institutional framework and capacity developed to implement EE measures and promote EE investments	(i)EE department established within MOEE with clear mandate to promote EE (ii)Dedicated unit in PEC established to make EE investments (iii) Energy audit agency and capacity created and functional (iv) Appliance testing facilities developed and operational (v) EE service companies developed to identify EE opportunities and conduct	330,000	18	1470,000	82	1,800,000

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

			cost-benefit analysis					
2. Policy framework and incentive measures to promote EE	STA	Barriers and disincentives to EE investment removed, and new policy framework, incentive measures and implementation mechanisms to promote EE adopted and implemented	(i) Policy barriers and disincentives to EE in Yemen identified and assessed (ii) Best international experiences and practices (both marketed based mechanisms and regulatory tools) reviewed and their relevance in the Yemen's context assessed (iii) Policy framework, incentive measures and regulatory tools, conducive to EE, adapted to the Yemen conditions recommended and adopted	210,000	64	120,000	36	330,000
3. EE investment demonstration projects	Investment, STA	Cost effective EE opportunities identified, energy saved and GHG emissions reduced	(I)Detailed technical assessment and cost benefit analysis carried out for selected potential EE investments in household, government, commercial and industrial sectors. (ii) Cost effective EE investment activities demonstrated and implemented in household (CFL, water heater), government (Linear fluorescent lighting system, electronic ballasts), commercial (AC, CFL, Linear fluorescent) and industry (motors	160,000	1	10,690,000	99	10,850,000

			&drives, pumps, lighting).					
4. Public awareness raising and training	TA	Public awareness on the need for and benefits of EE raised, management and staff capacity and capability in government agencies, service delivery agencies to promote and implement EE enhanced	(i)Awareness brochures on EE in household, commercial, government and industry sectors developed and widely disseminated, (ii) Stakeholder meetings, workshops and seminars conducted (iii) Training facilities upgraded and extended (iv) A wide range of training programs carried out, including class room training, on-site training, twining arrangement with counterparts in other countries	150,000	13	1050,000	87	1,200,000
5. Project management				50,000	15	270,000	85	320,000
Total project costs				A900,000		B13,600,000		14,500,000

[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**
Project Government Contribution	Grant	2,690,000
GEF Agency(ies)	Credit/Grant	10,000,000
Bilateral Aid Agency(ies)	Grant	910,000
Multilateral Agency(ies)	Grant	
Private Sector	(select)	
NGO	(select)	
Others	(select)	
Total Co-financing		B13,600,000

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

	Previous Project Preparation Amount (a)[3]	Project (b)	Total c = a + b	Agency Fee
GEF financing		A900,000	900,000	90,000
Co-financing		B13,600,000	13,600,000	
Total		14,500,000	14,500,000	90,000

D N/A

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED: Yemen has one of the lowest per capita incomes in the Middle East and North Africa region. Further, the population is growing rapidly at an average rate of more than 3% per annum with only about 40% of the population having access to electricity. Rural areas are particularly disadvantaged, with only 20 percent of the population having access to electricity as compared with 85% percent of urban population that has access. The urban areas having access suffer from frequent rolling blackouts, sometime more than 8 hours a day. The absence of a reliable and a continuous supply of electricity and low access to electricity in rural areas have been recognized by the Government of Yemen (GOY) as a severe constraint on the economic growth of Yemen. In its Power Sector Development Strategy Note of 1997, updated in 2006, the GOY committed to a nationwide rural electrification program. The Poverty Reduction Strategy Paper also proposed expansion of rural electricification coverage. On the other hand, Yemen's energy intensity per unit of Gross Domestic Product (GDP) is 50% higher than the region's average, which is much higher than world average. The country's electricity intensity was four times higher than the Organization of Economic Cooperation and Development's (OECD) average. This indicates inefficient use of energy but substantial scope of energy savings. Data from the Public Electricity Corporation (PEC) indicates that the technical losses of power transmission and distribution are about 15%, more than twice that of world average. A large part of electricity is consumed inefficiently by few sectors such as the household sector (58%), small commercial (11%) and the government installations (9%). The average urban household uses three 100 W incandescent bulbs, which could be replaced by 14 W Compact Fluorescent Lights (CFL). An energy audit carried out by EnergySolve International Ltd, financed by the Bank, on several commercial, industrial and government establishments in early 2009 shows that more than 30% of energy saving can be achieved by technical rehabilitation and management practice improvement. EnergySolve International Ltd also identified the key barriers to energy efficiency in Yemen. The key barriers include: (i) the lack of policy and incentive framework to support energy efficiency; (ii) the lack of institutional framework and capacity to promote energy efficiency; (iii) the lack of technical capacity to identify energy efficiency opportunities and develop energy efficiency standards; (iv) the lack of professional energy efficiency service business; and (iv) the poor awareness of EE opportunities and benefits by key stakeholders and the public. The proposed project is designed to offer a systematic approach for removing these barriers and for promoting and implementing energy efficiency with the aim of substantially increasing investment in energy efficiency improvement so as to save fuel and reduce greenhouse gas emissions. The proposed project would support the following four components: (i) Institutional framework and implmentation capacity development, including energy audit capacity, energy efficiency service provision capacity, energy efficiency testing facilities and enhanced institutional and technical capabilities at government ministries and public utilities; (ii) Development and implementation of policy framework and incentive mechanisms to promote energy efficiency. This component will assist the GOY to review its current policies and disincentives related to EE, including pricing, identify gaps by comparing with policies and practices in developed countries and other developing countries specifically from the region, and propose and develop new policy framework and incentives adapted to the local conditions of Yemen; (iii) Energy efficiency demonstration projects in government, industrial, commercial and residential sectors. The potential

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

areas include: CFL program in residential, commercial and government establishments, water heaters in both commercial and residential segments, power system and air conditioning system in hotels, boilers and motors in industries, and low voltage network improvement in power sector. International Development Association (IDA) credit for energy efficiency demonstration project is expected to be prepared in 2011-2012 to support energy efficiency investment by utilities, commercial and industrial establishments. The targeted sub-projects would assist in the introduction of new technologies to improve the overall efficiency of some key sectors through accelerated retirement of most inefficient appliances, equipment, and production and processing capacity; and (iv) Public awareness raising and training programs. This component will develop and widely distribute awareness brochures on EE in the various sectors. Stakeholder meetings and workshops will be conducted to present and discuss key findings and recommendations, and to build consensus and seek public support. Existing training facilities will be upgraded and extended. A wide range of training programs will be implemented to build capacity and capability within government ministries, service delivery agencies and academics to promote and implement EE activities and programs. The GEF support would significantly enhance the policy framework and institutional capacity, which would ensure and accelerate the implementation of the government's energy saving strategy and targets. It is envisaged that the proposed GEF program will directly mobilize at least US$ 13 million from IDA, public/private companies, and other financial institutions for energy efficiency investment in the next four to five years. Based on the analysis by EnergySolve International Ltd on investment activities in selected sectors, such an investment would on average result in GHG reduction of about 50,0000 tons annually. If the average life span of a typical energy efficiency project is 15 years, then the total emission reduction directly associated with this project would be around 750,000 tons of CO2 equivalent. In addition, the proposed project will lead to a significant amount reduction of other pollutants such as SO2 and TSP. The policy framework and institutional capacity developed under the project will accelerate and sustain energy efficiency improvement over the long-term.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS: Yemen's electricity shortage is one of the major constraints on economic growth - limiting industrial production and other economic activities and depressing standards of living. The Government of Yemen recognizes the importance of energy efficiency as means to provide clean, reliable and secure energy supply for economic development and poverty reduction, improve fuel security, enhance the competiveness of the national economy, protect the local environment as well as contribute to international efforts to combat climate change. Consequently, the GOY developed and approved a long-term National Strategy for Renewable Energy and Energy Efficiency in June 2009. The Strategy has specific target aiming to increase the energy efficiency by 2020 (compared with 2007) in the power sector (transformation, distribution and usage) by 15% as a baseline scenario and 20% as a high market penetration scenario. In order to achieve the energy efficiency targets, the strategy calls for the development and implementation of EE policy framework, the promotion of EE standards, the creation of institutional framework and capacity for energy efficiency policy implementation, energy efficiency opportunity identification and screening as well as other energy efficiency service delivery. In the short term, the GOY is committed to substantially reduce the technical losses in the electricity distribution segment. The project will address these barrier issues through a combination of technical assistance, analytical assessment, capacity building and demonstration investment. Building on relevant international experience the project will in-cooperate a technical and policy assistance program, a specifically designed capacity building program and marketing advice that leads to fostering public and private investments in energy efficiency activities. On June 12, 1992 Yemen signed the Framework Convention of UNFCCC which was ratified 4 years later, on February 21, 1996. The Republic of Yemen was the first of the oil exporting countries of the Arabian Peninsula to ratify the Kyoto Protocol (September 15, 2004).

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS: The proposed project is fully consistent with the GEF 4 Climate Change Focal Area Strategic Objectives to promote energy efficient technologies and practices in industrial processes; and Strategic Objective 1 to promote energy efficiency technologies and practices in appliances.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES: The proposed project seeks US$ 1 million from the GEF resources to co-finance the incremental costs associated with putting in place the

institutional and policy framework to promote energy efficiency. The GEF resources will be used to support capacity building, institution and policy development and some pre-feasibility studies to demonstrate the technical feasibility and financial viability of energy efficiency investments. They are costs associated with the hiring of international consultants and experts. They will not be used to directly finance the capital expenditures of the energy efficiency projects, which will be financed by other resources from public and private sectors. The GEF resource is considered adequate at this stage to initiate and develop the required institutional capacity and policy framework to promote energy efficiency in Yemen.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES: In 2005, the UNDP with cooperation with PEC executed an energy efficiency study for selected commercial and industrial sectors. The study confirmed the large potential to improve energy efficiency in these sectors and assessed the cost effectiveness of energy efficiency investment. Since 2006, PEC with the support of MOEE has attempted to establish a training facility for energy efficiency and renewable energy, but with limited progress due to a shortage of funding and qualified trainers. In 2009, the World Bank funded a study "Yemen: Energy Efficiency Institutional Framework and Energy Efficiency Action Plan" to assess the energy efficiency potential in the power sector (distribution and consumption segment) which could be harnessed in the next few years and to propose the institutional and policy framework which needs to be put into place in order to fully exploit these potentials. The proposed activity builds on these initiatives and uses their findings and recommendations as the starting point. This proposed project seeks to remove the barriers identified previously by supporting the development of a comprehensive policy framework and the creation of conducive institutional mechanisms and adequate staff capacity to promote energy efficiency investment, and to carry out pre-investment activities to reduce risks so as to catalyze investment activities.

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING : Although the GOY has formulated a long term energy efficiency strategy and developed specific energy efficiency improvement target, little progress has been made so far. The key reasons are the lack of policy framework and specific measures as well as the lack of institutional framework and capacity to promote and implement energy efficiency activities and investments. Without GEF support, it is assumed that the energy efficiency activities will not kick start anytime soon. Due to many factors such as the lack of institutional capacity, policy framework and financial resources, it would be many years before the comprehensive energy efficiency strategy can be implemented. GEF involvement will provide the necessary support to develop and implement the needed policy framework and specific measures, and to create the required institutional framework and capacity to promote energy efficiency activities and investments, thus to remove the barriers preventing energy efficiency activities. This would lead to increased and accelerated energy efficiency investment and improve the cost effectiveness of energy efficiency activities. The key value-added of GEF involvement will be to bring global knowledge of cutting-edge technologies as well well-tested policy, institutional mechanisms and practices to substantially improve energy efficiency. The institutional capacity developed and policy framework instituted through the GEF project would be available to further energy efficiency improvement well beyond the project period. The lessons learnt and experiences gained could be used as a blueprint for dissemination and replication in other low income countries.

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: The key risks include: (i) the policies and institutional mechanisms recommended will not be implemented. The risk will be mitigated through a participatory approach involving all stakeholders during the preparation and development process. The existing shortcomings and barriers will be carefully analyzed and different options evaluated. The possible downside of the recommended options will be assessed and mitigation measures adapted to the country conditions will be designed; (ii) the institutional framework and capacity created will not be sustained over the post project period. The risk will be mitigated by creating the institutional framework through legal instrument and ensuring its funding through sustainable mechanism; and (iii) the expected financing and investment for energy efficiency activities will not materialize. The risk will be mitigated through the implementation of well-selected cost-effective demonstration projects and carefully designed stakeholder meetings, workshops, and public awareness campaign.

H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT: The total project cost is estimated to be US$14.5 million. When all components of the project are implemented, the expected CO2 reduction is more than 50,000 tons annually. With the average life span of 15 years for energy efficiency projects, the total CO2 reduction created by the project is estimated at about 750,000 tons. This does not include the emission reduction

generated by other increased investment activities as a result of the implementation of a conducive policy framework and the operation of an institutional framework. The direct post project and indirect GHG emission reduction created by the project will be calculated during project implementation. Depending on the types of energy efficiency investments, initial cost benefit analysis indicates that the economic rate of return ranges from 13% to 60%. Detailed cost benefit analysis will be carried out for different investment activities during project preparation and presented together with project documents for CEO endorsement.

I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY: Since mid-1990s, the World Bank has forged a close partnership with the energy sector in Yemen. The World Bank has supported the physical expansion of the power system, the development of power sector reform strategy, gas-to-power strategy, the power loss reduction program, the rural electrification program, and the renewable energy strategy and action plan through both investment projects and technical assistance programs. The World Bank is uniquely positioned to provide the GOY with its support, given its close working relationship with the country's energy sector in the last decade, successful experiences in integrating technical assistance and lending operations aligned with the government's strategy and agenda, and its global energy policy knowledge and experiences in supporting energy efficiency improvement in many countries.

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

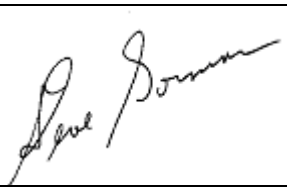
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE *(Month, day, year)*
Mohmoud Shidiwah	Chairman	**ENVIRONMENTAL PROTECTION AUTHORITY**	**NOVEMBER 29, 2009**

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
Steve Gorman		January 8, 2010	Kanta Kumari Rigaud	202-473-4269	kkumari@worldbank.org