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Partial Risk Sharing Facility for Energy Efficiency (PRSF)

Environmental Risk Management Framework

Volume I

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SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA (SIDBI)

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(BASELINE ANALYSIS)

ABBREVIATIONS

AAQ	–	Ambient Air Quality
AERB	–	Atomic Energy Regulatory Board
BAT	–	Best Available Technologies
BEE	–	Bureau of Energy Efficiency
BOP	–	Best Operating Practices
CCD	–	Climate Change and Development
CCT	–	Cross-Cutting Technologies
CEPI	–	Comprehensive Environmental Pollution Index
CII	–	Confederation of Indian Industry
CPCB	–	Central Pollution Control Board
CREP	–	Corporate Responsibility for Environmental Protection
CSE	–	Centre for Science and Environment
CTF	–	Clean Technology Fund
DCs	–	Designated Consumers
EC	–	Energy Conservation
ECBC	–	Energy Conservation Building Code
EE	–	Energy Efficiency
EESL	–	Energy Efficiency Services Limited
EHS	–	Environmental, Health and Safety
EIA	–	Environment Impact Assessment
EPI	–	Energy Performance Index
ERMF	–	Environmental Risk Management Framework
ESDD	–	Environmental Safeguards Due Diligence
ESCO	–	Energy Service Companies
GEF	–	Global Environment Facility
GIIP	–	Good International Industry Practice
GRP	–	Green Rating Program
GoI /GOI	–	Government of India
HVAC	–	Heating Ventilation and Air-Conditioning
LCA	–	Life Cycle Analysis
LSP	–	Local Service Providers
MoEF	–	Ministry of Environment & Forests
MoP	–	Ministry of Power
MSME	–	Micro, Small and Medium Enterprises
NAPCC	–	National Action Plan on Climate Change
NMEEE	–	National Mission on Enhanced Energy Efficiency
OM	–	Operations Manual
PAT	–	Perform Achieve and Trade
PDO	–	Project Development Objective

PEA	–	Project Execution Agency
PFIs	–	Participating Financial Institutions
PRGF	–	Partial Risk Guarantee Fund
PRSF	–	Partial Risk Sharing Facility
PRGF-PP	–	Partial Risk Guarantee Fund- Portfolio of Projects
SC	–	Supervisory Committee
SEC	–	Specific Energy Consumption
SIDBI	–	Small Industries Development Bank of India
SME	–	Small & Medium Enterprises
SPCB	–	State Pollution Control Board
SST	–	Sector-Specific Technologies
TA	–	Technical Assistance
TERI	–	The Energy & Resources Institute
USEPA	–	United States Environmental Protection Agency
WBG	–	World Bank Group

Executive Summary – Environmental Risk Management Framework for PRSF

I Partial Risk Sharing Facility-PRSF

In line with the Government of India's (GoI) request, the World Bank is facilitating support from the Clean Technology Fund (CTF) and Global Environment Facility (GEF) for a Partial Risk Sharing Facility (PRSF) aimed at kick- starting the Performance Sharing Contracting market for Energy Efficiency projects in large scale private sector industries including PAT sector, Micro, Small and Medium Enterprises (MSMEs) and commercial buildings in India.

The PRSF's Project Development Objective (PDO) is to achieve energy savings by catalyzing the market for energy efficiency projects intended to be implemented through energy service companies (ESCOs) in India. The project will accomplish this by (a) leveraging project funds to encourage private sector investment in low-risk ESCO projects and (b) providing complementary TA to players in India's energy efficiency ecosystem.

The specific objective and program component of PRSF are to

i. Address the credit risk and barriers faced by the Financial Institutions (FIs) to finance energy efficiency(EE) projects through setting up a Guarantee Fund
ii. Engage the FIs and build their capacity to finance EE projects on a commercially–sustainable basis by providing Technical Assistance(TA) to all stakeholders (project executing agency(PEA), Participating FIs and energy service companies(ESCOs)
iii. Structure the transactions by standardizing appraisal, performance contract, M&V protocol agreements and other project supporting document procedures etc.

The PRSF comprises of a risk-sharing fund corpus of US$35 million implemented by SIDBI, the Project Execution Agency (PEA) and funded from the CTF contribution of US$25 million and a GEF contribution of US$10 million (Component 1) and a TA and capacity building component from a GEF component of US$8 million, with US$6 million implemented by SIDBI & US$2 million implemented by EESL (Component 2).

The PRSF is proposed to be implemented through Small Industries Development Bank of India (SIDBI), a financial intermediary, playing the role of the Project Executing Agency (PEA) along with a Technical Assistance (TA) component implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL).

The PRSF is proposed to be implemented through two models namely 'Guaranteed Savings Model' & 'Shared Savings Model'.

II PRSF Target Sectors

The PRSF will be set up within the SIDBI to provide partial guarantee to PFIs in lending for implementing energy efficiency projects on a performance sharing contract approach for following target sectors

- Large Scale Industries including PAT Sector
- Micro, Small and Medium Enterprises (MSMEs)
- Commercial Buildings
- Municipal Energy Efficiency Projects including Street Lighting component

Among the above, PRSF is initially set to take on MSMEs and municipal EE Projects, mainly the street light component and possibly a few large scale PAT sector industries.

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PAT Sector Industries under PRSF: Apart from the high energy intensive large scale private sector industries, the PRSF will also cover 334 PAT sector industries, which are provided with mandatory Specific Energy Consumption (SEC) targets to be achieved within a specified time frame of three years (2012-15 - PAT Cycle I) and notified by the Ministry of Power (MoP), GoI under the PAT initiative (Perform, Achieve and Trade).

The list of PAT sectors and industries covered under PRSF and the expected energy savings is given hereunder:

Table: PAT Sector Industries covered under PRSF

S. No.	PAT Sectors	DCs in PAT Cycle-1	Energy Savings Targets under PAT Cycle-1 (million toe)
1	Aluminium	10	0.456
2	Cement	85	0.816
3	Chlor Alkali	22	0.054
4	Fertilizer	29	0.478
5	Iron & Steel	67	1.486
6	Pulp & Paper	31	0.119
7	Textile	90	0.066
Total		**334**	**3.475**

Note: Under Energy Conservation (EC) Act, 2001, Ministry of Power (MoP), GoI has notified energy intensive industries as Designated Consumers (DCs) and listed them in the Schedule to the Act.

MSMEs under PRSF: The 'Micro, Small and Medium Enterprises' (MSME) sector plays a vital role in the Indian economy, contributing to about 45% of manufacturing output and 40% of country's exports. Despite such significant contribution to country's economy, MSMEs, often tend to use inefficient technologies and practices.

One of the important MSME development programs under the Government of India was the 'BEE-SME program' initiated during the 11th Five Year Plan period (2007–2012), implemented by the Bureau of Energy Efficiency (BEE).

The BEE-SME program, which conducted 1250 comprehensive energy audits and facilitated implementation of more than 500 energy efficient technologies in 4362 MSME units in 25 SME clusters across India has estimated the energy saving potential in such 25 SME clusters alone as 15% of the total energy consumption worth Rs 1400 crores per year. The estimated investment requirement for implementation of energy efficiency measures in these SME clusters was Rs 3388 crores, with a simple payback period of 2.4 years.

It is utmost important to recognize the fact that there are a large number of MSME clusters scattered across India and the data for a number of manufacturing sub sectors and /or SME clusters are not readily available and therefore the total energy consumption as well as the potential for energy savings for the entire MSME sector will be significantly even higher.

Commercial Buildings under PRSF: All commercial buildings or building complexes, which have a connected load of 500 KW or greater or a contract demand of 600 KVA or higher, fall under the purview of the Energy Conservation Building Code (ECBC). Generally, buildings or complexes having a conditioned area of 1000 sqm or more will be covered by the ECBC. The energy performance index (EPI) for an ECBC compliant building is set at 110 kwh / sqm / year, whereas as EPI for a normal building is considered as 180 kwh / sqm / year.

Case Studies carried out by TERI & sponsored by BEE has indicated scope up to 50% energy savings potential after making existing building ECBC compliant. Other estimates have shown that new buildings can reduce energy consumption on an average between 20-50% or even more by incorporating appropriate design interventions in the building envelope, heating ventilation and air-conditioning (HVAC, 20-60%), lighting (20-50%), water heating (20-70%), refrigeration (20-70%) and electronics and other (e.g. office equipments and intelligent controls – 10-20%).

The building sector represents about 33% of electricity consumption in India, with commercial sector and residential sectors accounting for 8% and 25% respectively. Though energy efficiency measures for buildings, the energy consumption in a building can be reduced while maintaining or improving the level of comfort in the building.

As per the energy awareness program carried out by BEE in most commercial buildings have energy performance index (EPI) of 200 to 400 kWh/sqm/year as compared to similar buildings in North America and Europe have EPI of less than

150 kWh/sqm/year. Energy-conscious building design has a potential to reduce EPI to 100 to 150 kWh/sqm/year in India depending upon climate zone. However, at present development of such energy efficient buildings is largely restricted to environmentally-sensitive corporate. Construction of large scale energy-efficient buildings is limited due to split incentives – builders fear that they would bear the costs, while buyers / tenants would enjoy the benefits.

Municipal EE Projects – including Street Lighting component) under PRSF: The ULB across India, every year spend significant quantum of their revenue on energy costs for providing civic services such as street lighting, water pumping & distribution, sewage pumping, treatment & disposal systems and lighting of municipal buildings/complexes.

Through energy efficiency projects, ULBs can benefit from reduced energy costs at least 25 to 40% at a minimum and improved delivery services. Typically, the energy consumption requirement for street lighting systems alone is about 20 to 30% of the total energy consumption and through energy efficient street lighting systems, savings ranging between 40-70% can be achieved. Similar energy savings have been documented for other municipal energy efficiency project components such as water pumping and distribution, sewage pumping, treatment & disposal and municipal buildings/complexes.

To facilitate transformation and replication of Municipal Energy Efficiency Projects on a large scale in India, BEE has endorsed a Manual for the Development of Municipal Energy Efficiency Projects for use by all stakeholders, including Municipalities. This Manual, prepared by IFC, member of the World Bank Group, Bureau of Energy Efficiency (BEE), and Alliance to Save Energy is a standard reference document for ULBs and other stakeholders to implement Municipal Energy Efficiency Projects in street lighting, water supply systems, sewerage systems, and municipal buildings.

The municipal energy efficiency projects are environmentally beneficial resulting in optimized energy use, improved delivery of services, reducing GHG emissions and more importantly with no perceived environmental issues/risks.

III Environmental Risks and Management Approach

The PRSF target large scale industries, MSMEs & Commercial Buildings, although primarily aim to meet energy efficiency, concurrently also lead to environmental co-benefits in most cases through emission reduction per unit of production, improvement in occupational health and safety, etc. among other benefits.

While the environmental co-benefits would be significant, the status of current environmental performance of PRSF target sector industries, especially PAT sectors will be important from the credit risk perspective. The issues could be relating to

regulatory compliance(s), or environmental legacy issues, or negative environmental impacts resulting from technology upgrades due to EE project proposals. These issues, if not ascertained by PFIs during loan appraisal could potentially lead to credit, environmental, regulatory as well as reputational risks.

Considering the fact that large scale industries (as compared to MSMEs and commercial buildings), are more susceptible to environmental risks a locational sensitivity analysis, green rating (for PAT sectors), general EHS practices and accreditations (such as ISO 14000, OSHAS 18001 etc.), applicable National regulatory requirements, as well as WBG-EHS guidelines for PAT sector industries, clean technology initiatives by Govt. of India, CREP[1] charter for PAT sector industries have been assessed.

The environmental issues or risks would be of significance in case of PRSF target sector industries, moderate in case of MSMEs; and limited for commercial buildings. These issues/risks are not amenable for upfront identification to design a particular environmental management plan to fit all. Given this context, a risk based environmental due diligence and management approach has been considered as a prudent means to address the environmental issues/risks of PRSF target sectors. On the contrary all municipal EE projects including street lighting component are environmentally beneficial in terms of reduced GHG emissions with no perceived environmental issues/risks

IV Environmental Risk Management Framework (ERMF)

In line with the risk based environmental due diligence and management approach, environmental risk management frame work (ERMF) has been prepared for PRSF. The ERMF defines the roles and responsibilities of all stakeholders under PRSF to address issues such as current environmental performance relating to regulatory compliance, or environmental legacy issues, or negative environmental impacts resulting from technology upgrades due to EE measures, if any. The ERMF also define the environmental safeguard due diligence requirements to be followed during the preparation of EE projects as well as during the appraisal process and identify environmental risk profile of each transaction to ensure safeguard risk mitigated disbursement mechanisms. For large scale PAT sector industries located in critically polluted or environmentally sensitive areas, ESCOs will have to seek in ‘principle go ahead’ for preparation of EE proposals by submitting a sensitivity analysis report on the associated risks, which will be scrutinized by PFIs. Random third party checks on appraisal procedures to ensure the fiduciary and environmental safeguard management framework are also included under ERMF.

[1] The MoEF has launched a charter on "Corporate Responsibility for Environmental Protection (CREP)" in March 2003 with an objective to go beyond the compliance of regulatory norms for prevention & control of pollution through various measures including waste minimization, in-plant process control & adoption of cleaner technologies. The Charter, at present is voluntary and has set targets concerning conservation of water, energy, recovery of chemicals, reduction in pollution, elimination of toxic pollutants, process & management of residues that are required to be disposed off in an environmentally sound manner

Given the environmental benefits in terms of reduced GHG emissions and none of other perceived environmental risks/issues, ERMF provisions are not ordinarily applicable for the street lighting EE proposals, whereas it is applicable for other components of the Municipal EE projects apart from PRSF target sectors like large scale industries (including PAT sector), MSMEs and Commercial Complexes.

V Institutional Requirements

Given the typical organizational background and mandate of ESCOs, Host entities and other stake holders like PFI(s)/PEA, it is very unlikely that these stake holders will have complete in house expertise to address the environmental issues/risks and undertake the environmental due diligence as per the environmental risk management framework under PRSF.

Therefore, the stake holders may have to engage external consultants, atleast in the initial stages of the PRSF to carryout respective roles and responsibilities during the EE proposal preparation, appraisal and implementation stage as per ERMF. Further, the PFI(s) and PEA may have to engage external consultants to undertake periodic check and verify the progress achieved on ground during the loan tenure and independently document the environmental benefits as an outcome of EE measures. The roles and responsibilities of all stake holders as required for ensuring implementation of ERMF is given in Exhibit 5 and described under sub section 3.

The institutional strengthening requirements and capacity building of all the stake holders under PRSF will be addressed through a US$8 million technical assistance (TA) program, which will be implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL).

VI Consultations

The provisions of ERMF have been evolved through stakeholder consultations on 16th of April 2013 followed by second consultation meeting on 4th September 2013. The consultation meetings were organized by Alliance for an Energy Efficient Economy (AEEE), a member-driven industry association providing a common platform for energy efficiency (EE) stakeholders to collaborate and address barriers to energy efficiency in India, through policy research, facilitating market transformation, fostering technology innovations, capacity building of energy professionals and stimulating financial investments.

The consultation meetings were attended largely by ESCOs, PFI(s). Comprehensive presentations were made by the AEEE, PFI(s) and BEE, represented by Govt. of India in the presence of concerned World Bank staff. The list of attendees / participants, proceedings and photographs taken during the consultation meeting are given in **attachment 12 in Appendix to ERMF (Volume II)**.

The main concerns pertaining to the environmental due diligence and safeguards requirements under PRSF raised / discussed during these consultation meetings were:

a) ESCOs are primarily energy specialists with a mandate for preparation and implementation of EE proposals. Ensuring Environmental Safeguards due diligence and document the industry compliant to regulatory norms will essentially divert the focus of EEs, with additional added time and costs and beyond the in-house capabilities.

b) Industry / host entities are independently responsible for regulatory compliance and environmental management. Therefore, linking such matters to the EE Proposal preparation is neither necessary not warranted.

c) ESCOs / Host entities do not have requisite in-house capability to address the required environmental safeguards matters.

d) Environmental safeguards compliance made as pre-requisite for EE proposal preparation appraisal or implementation is seen as a barrier by both ESCOs and Host Entities.

While there was an initial reluctance for considering the environmental due diligence and ERMF as a pre-requisite (as summarized under (a) to (d) above) for EE proposal appraisal and implementation, the credit risk perspective for managing environmental risks was concurred all stakeholders at the meeting. However, the stakeholders felt that capacity building efforts are required for adhering to the ERMF as part of EE project implementation under PRSF.

The provisions of ERMF have been evolved through a series of stakeholder consultations with host entities, ESCOs and PFIs. Although, there was an initial reluctance for implementing the environmental due diligence and ERMF, the credit risk perspective for managing environmental risks was concurred. The stakeholders have also felt that capacity building efforts are required for adhering to the ERMF as part of EE project implementation under PRSF.

VII PRSF – Operations Manual

The Operations Manual (OM) of PRSF will include the include provisions of ERMF, which defines the parameters, roles and responsibilities of all stake holders for undertaking the environmental safeguards due diligence, identifying the environmental risk profile of each transaction and ensure risk mitigated disbursement mechanisms.

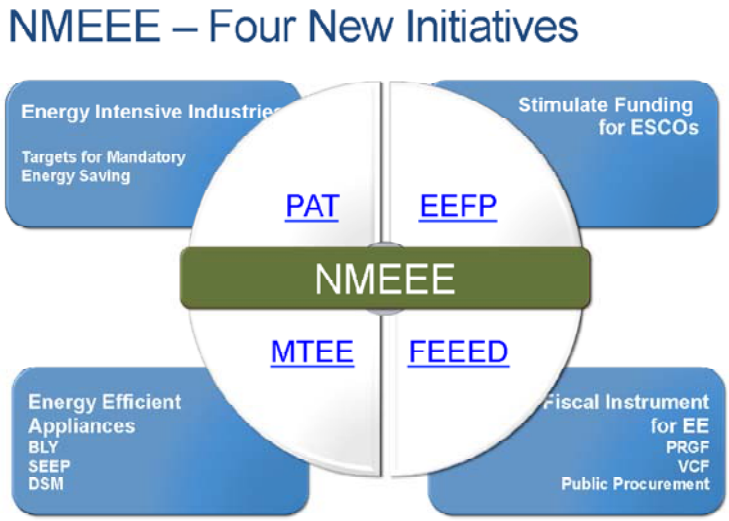
The OM includes procedures for random third party checks on appraisal procedures to ensure the fiduciary and environmental safeguard management framework are applied for EE projects under PRSF.

ENVIRONMENTAL RISK MANAGEMENT FRAMEWORK

(Volume I)

1.0 Introduction

The Government of India (GoI) has launched the National Action Plan on Climate Change (NAPCC) in June 2008 as part of its efforts to tackle, mitigate and adapt to climate change. The NAPCC outlined eight missions, one of them being the National Mission on Enhanced Energy Efficiency (NMEEE). The NMEEE has four initiatives and operates under the Bureau of Energy Efficiency (BEE), a statutory body constituted under Ministry of Power (MoP), Government of India.



One of the four initiatives under NMFEE, Perform Achieve and Trade (PAT) is a market based mechanism to enhance cost effectiveness of improvements in energy efficiency in energy-intensive large industries and facilities through certification of energy savings that could be traded. The genesis of the PAT mechanism flows out of the provision of the Energy Conservation(EC) Act, 2001 and the section 14 (e) of the Act empowers the Ministry of Power (MoP), Government of India to notify energy intensive industries (as listed in the Schedule to the Act), as Designated Consumers (DCs). Accordingly, MoP has notified 685 energy intensive industries consuming energy more than sectoral power consumption bandwidth as DCs in 9 sectors namely, Thermal Power, Fertilizer, Cement, Pulp and Paper, Textiles, Chlor-Alkali, Iron & Steel, Aluminum and Railways.

Under the Section 14(g) of the EC Act, 2001, the energy-intensive and large scale industries notified as DCs have been provided with mandatory energy saving targets to be achieved through reducing their Specific Energy Consumption (SEC) within specified period of three years, pursued on rolling basis, starting with immediate target years 2012-2015 under PAT Cycle – I.

1.1 Partial Risk Guarantee Fund-PRGF

In order to facilitate PAT sector DCs to meet the SEC targets, BEE has set up a Partial Risk Guarantee Fund (PRGF) with an objective to directly support financing of

energy efficiency (EE) projects to standalone projects in Urban Local Bodies and Government Buildings through:

- Addressing Participating Financial Institutions (PFIs) perceived credit risk and barriers and structure the transactions involved in financing energy efficiency projects
- Engaging Participating Financial Institutions(PFIs) and building their capacity to finance energy efficiency projects on a commercially sustainable format
- Structuring the transactions by standardizing appraisal and other operational procedures and documentation

1.2 Partial Risk Sharing Facility-PRSF

In line with the GoI's request to extend PRGF to private sectors, the World Bank is facilitating support from the Clean Technology Fund (CTF) and Global Environment Facility (GEF) for a Partial Risk Sharing Facility (PRSF) aimed at kick- starting the Energy Service Performance Contracting market for Energy Efficiency projects in large scale industries including PAT sector, Micro, Small and Medium Enterprises (MSMEs), commercial buildings in India and Municipal Energy Efficiency Projects including street lighting component

The PRSF's Project Development Objective (PDO) is to achieve energy savings by catalyzing the market for ESCO-implemented energy efficiency projects in India. The project will accomplish this by (a) leveraging project funds to encourage private sector investment in ESCO projects and (b) providing complementary TA to players in India's energy efficiency ecosystem.

The specific objectives and program components of PRSF is given in **Table 1**.

Table 1 PRSF Objectives & Program Components

S. No.	Objective(s)	Program Components
1	Addressing the credit risk and barriers faced by the FIs to finance EE projects	By setting up the Guarantee Fund
2	Engaging Financial Institutions and building their capacity to finance energy efficiency projects on a commercially – sustainable basis	By providing Technical Assistance to PEA, PFIs and ESCOs
3	Structuring the transactions by standardizing appraisal and other supporting documents	By standardizing performance contract, M&V protocols agreements, etc.

The PRSF comprises of a risk-sharing fund corpus of US$35 million implemented by SIDBI, the Project Execution Agency (PEA) and funded from the CTF contribution of US$25 million and a GEF contribution of US$10 million (Component 1) and a TA and

capacity building component from a GEF component of US$8 million, with US$6 million implemented by SIDBI & US$2 million implemented by EESL (Component 2).

The PRSF is proposed to be implemented through Small Industries Development Bank of India (SIDBI), a financial intermediary, playing the role of the Project Executing Agency (PEA) along with a Technical Assistance (TA) component implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL).

1.3 PRSF Executing Structure

The PRSF for the EE projects in private sector is proposed to be implemented through two models namely 'Guaranteed Savings Model' & 'Shared Savings Model'.

The PRSF executing structures for these two models are given in **Exhibit 1 & 2**. The fund flow diagram – combined for both models are given in **Exhibit 3**.

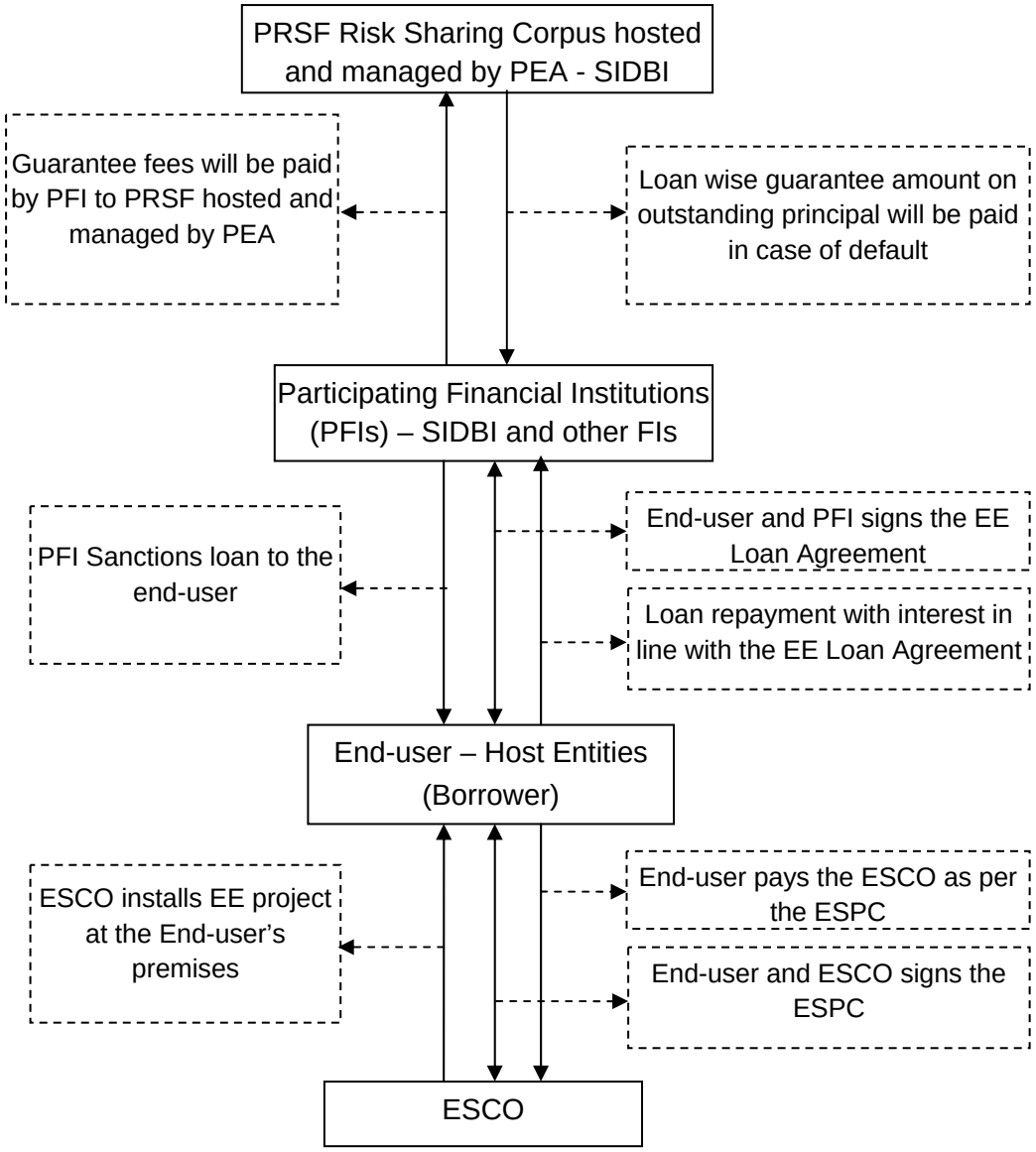


Exhibit 1: PRSF Executing Structure for 'Guaranteed Savings Model'

(Note: Host Entities (Borrower) referred above is equivalent of Designated Consumers (DCs) under Energy Conservation, Act 2001)

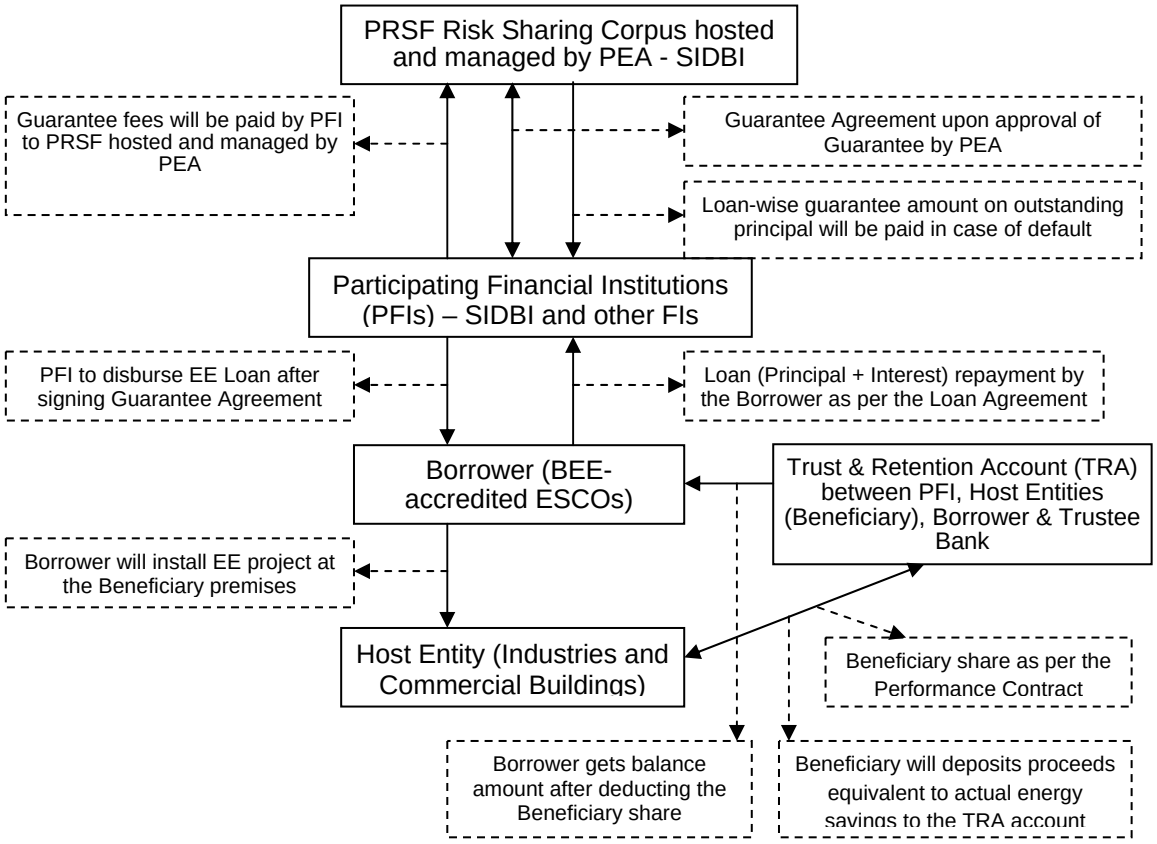


Exhibit 2: PRSF Executing Structure for 'Shared Savings Model'

(Note: Host Entities (Borrower) referred above is equivalent of Designated Consumers (DCs) under Energy Conservation, Act 2001)

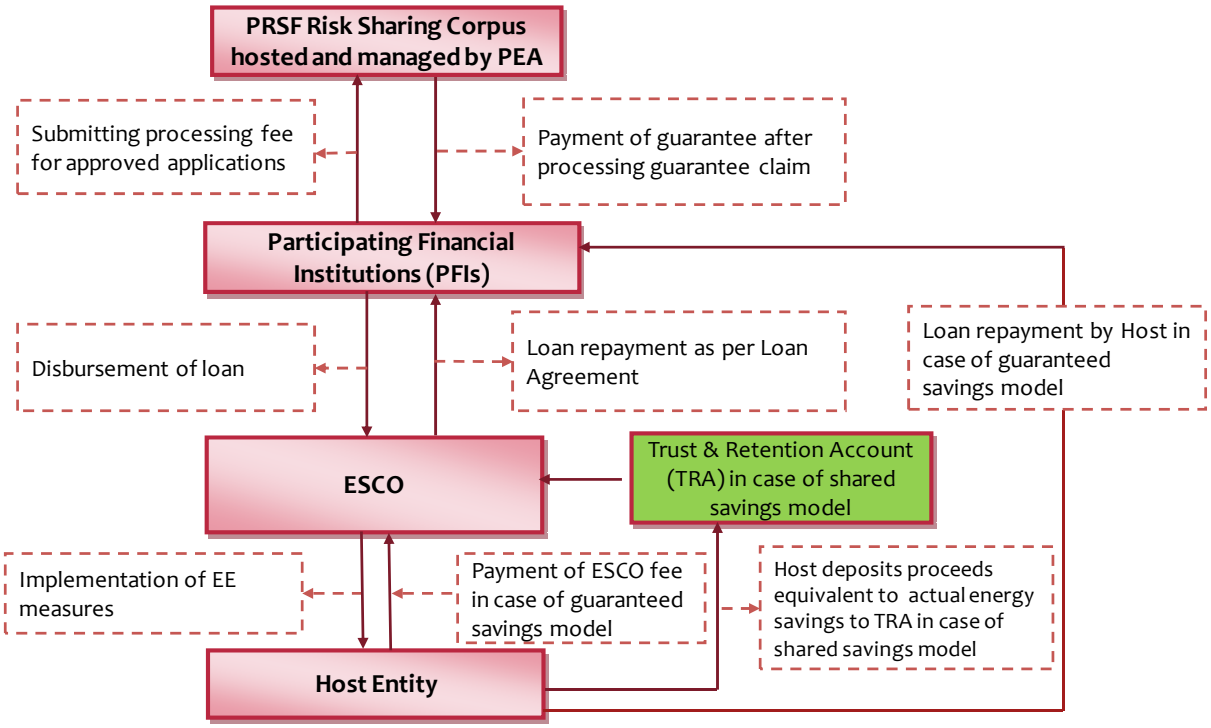


Exhibit 3: Fund Flow Diagram for both 'Guaranteed Savings Model' and 'Shared Savings Model' (Combined)

(Note: Host Entities (Borrower) referred above is equivalent of Designated Consumers (DCs) under Energy Conservation, Act 2001)

1.4 PRSF Target Sectors

The PRSF will be set up within the SIDBI and will have the same objectives as that of PRGF to provide partial guarantee to PFIs in lending for implementing energy efficiency projects on a energy service performance contract approach for following target sectors,.

- Large Industries including PAT Sector
- Micro, Small and Medium Enterprises (MSMEs)
- Commercial Buildings
- Municipal Energy Efficiency Projects including Street Lighting component

Among the above, PRSF is initially set to take on MSMEs and municipal EE Projects, mainly the street light component and possibly a few large scale PAT sector industries.

1.4.1 PAT Sector Industries under PRSF

Under the PAT initiative, MoP has notified 685 energy intensive industries across 9 sectors and are provided with mandatory SEC targets to be achieved within a specified time frame of three years (2012-15 - PAT Cycle I). The PRSF will cover 7 of the notified sectors, excluding Thermal Power and Railways. Thus, PRSF will support partial guarantee of lending by PFIs for EE projects in 334 DCs under seven PAT sectors. The list of PAT sectors covered under PRSF and the expected energy savings is given in **Table 2**.

Table 2 PAT Sectors and Mandated SEC under NMEEE

S. No.	PAT Sectors	DCs in PAT Cycle-1	Energy Savings Targets under PAT Cycle-1 (million toe)
1	Aluminium	10	0.456
2	Cement	85	0.816
3	Chlor Alkali	22	0.054
4	Fertilizer	29	0.478
5	Iron & Steel	67	1.486
6	Pulp & Paper	31	0.119
7	Textile	90	0.066
Total		**334**	**3.475**

1.4.2 MSMEs under PRSF

The 'Micro, Small and Medium Enterprises' (MSME) sector plays a vital role in the Indian economy, contributing to about 45% of manufacturing output and 40% of country's exports. Despite such significant contribution to country's economy, MSMEs, often tend to use inefficient technologies and practices. One of the important MSME development programs under the Government of India was the 'BEE-SME program' initiated during the 11th Five Year Plan period (2007–2012), implemented by the Bureau of Energy Efficiency (BEE).

The objective of the BEE-SME program was to

- Reduce energy intensity of the Indian economy by undertaking actions in the MSME sector
- Accelerate the adoption of EE technologies and practices in chosen clusters/sectors in the MSME sector through knowledge sharing, capacity building and development of innovative financing mechanisms.

1.4.2.1 Energy Consumption and EE Potential in MSMEs

Under the BEE-SME program, 4362 MSME units were covered in 25 SME clusters spread across India. The BEE-SME program conducted 1250 comprehensive energy audits and facilitated implementation of more than 500 energy efficient technologies in these 25 SME clusters. The total energy consumption in these clusters were estimated to be about 5.6 Mtoe (million tonnes of oil equivalent) and the estimated energy saving potential in 25 SME clusters was 0.82 MTOE, which is 15% of the total energy consumption worth Rs 1400 crores per year. The estimated investment requirement for implementation of energy efficiency measures in these SME clusters was Rs 3388 crores, with a simple payback period of 2.4 years.

A study[2] conducted for benchmarking and mapping of energy consumption by MSMEs in India covered 19 manufacturing sub-sectors in 36 SME clusters spread India. The objective of the study was to benchmark the 'specific energy consumption' (SEC) in each of the 36 SME clusters, and initiate the construction of the 'overall picture' of energy consumption for the MSME sector.

The estimated total energy consumption covered in these 36 SME clusters was estimated to be 19.9 Mtoe and the total energy saving potential assessed at 1.14 Mtoe, which is about 16% of the total energy consumption of the clusters covered, consistent with the findings of the BEE-SME program.

It is utmost important to recognize the fact that there are a large number of MSME clusters scattered across India and the data for a number of manufacturing sub sectors and /or SME clusters are not readily available and therefore the total energy consumption as well as the potential for energy savings for the entire MSME sector will be significantly even higher.

World Bank-GEF Project: SIDBI along-with Bureau of Energy Efficiency (BEE) is implementing a World Bank GEF funded project on "Financing Energy Efficiency at MSMEs" in five targeted MSME clusters in India. The objective of the project is to increase demand for energy efficiency investments in targeted MSME clusters and to build their capacity to access commercial finance. The project has received a total

[2] Study conducted by Agence Francaise de Development(AFD), Bureau of Energy Efficiency(BEE), French Environment and Energy Management Agency(ADEME) and The Energy and Resources Institute(TERI)

grant of US$ 11.30 million from Global Environment Facility (GEF) to support various activities envisaged under the project. The duration of the project is till December 2014. The five targeted clusters under the project are: (i) Ankleshwar Chemicals, (ii) Faridabad Mixed, (iii) Kolhapur Foundry, (iv) Pune Forging and (v) Thirunelveli Limekilns.

The main components of the project are as under:

- **Capacity Building and awareness on energy efficiency**
  - Marketing and outreach efforts among clusters; capacity building of MSMEs/ industry associations on energy efficiency, environmental and social aspects; measurement & verification (M&V) on the EE measures implemented
  - Training of energy auditors/energy professionals
  - Specialized support to financial intermediaries
  - Unit-level support to MSMEs in accessing finance
  - Vendor outreach (enlistment and support) activities, and engagement of a Regional Energy Efficiency Centre of Excellence for specialized technical capacity building activities in the area of furnace optimization

- **Increasing investment in energy efficiency**
  - Conducting Walk-through Audits (WTAs), Detailed Energy Audits, Preparation of Investment Grade Detailed Project Reports (IGDPRs) for MSMEs in the five targeted clusters.
  - The Project will ensure implementation of Energy Efficiency measures in atleast 500 MSME units.
  - Performance-linked grant for demonstration of EE technologies to the early adopters participating in the project.

- **Knowledge management and sharing**
  - This component consists of broad programmatic EE knowledge management efforts, which include monitoring and evaluation, identification and dissemination of best operating practices, and policy development functions with the goal of ensuring effective implementation and replications. The knowledge management element will provide key cross-cutting inputs to assist policy making by the government, and implementation of the entire GEF programmatic effort on improving EE in India.

1.4.3 Commercial Buildings under PRSF

The commercial buildings fall under the purview of the Energy Conservation Building Code (ECBC). The code is applicable for all buildings or building complexes that have a corrected load of 500 KW or greater or a contract demand of 600 KVA or higher. Generally, buildings or complexes having a conditioned area of 1000 sqm or more will be covered by the ECBC.

The building sector represents about 33% of electricity consumption in India, with commercial sector and residential sectors accounting for 8% and 25% respectively.

The energy performance index (EPI) for a ECBC compliant building is set at 110 kwh / sqm / year, whereas as EPI for a normal building is considered as 180 kwh / sqm / year.

Table 3 depicts the summary of the case studies carried out by TERI & sponsored by BEE in order to show the scope of energy savings after making existing building ECBC complexes.

Table 3: Summary of Case Studies depicting Energy Savings in a ECBC Compliant Building

S. No.	Commercial Complex / Institutional Building	Energy Performance Index (EPI) (kwh / sqm / annum)	
		Existing Building	ECBC Compliant Building
1	CESE, IIT Kanpur	240	98
2	Fortis Hospital, Delhi	605	312
3	Triburg Office, Gurgaon	186	86
Source: TERI and BEE			

Estimates have shown that new buildings can reduce energy consumption on an average between 20-50% or even more by incorporating appropriate design interventions in the building envelope, heating ventilation and air-conditioning (HVAC, 20-60%), lighting (20-50%), water heating (20-70%), refrigeration (20-70%) and electronics and other (e.g. office equipments and intelligent controls – 10-20%).

Though energy efficiency measures for buildings, the energy consumption in a building can be reduced while maintaining or improving the level of comfort in the building. They can typically be categorized into:

- **Reducing heating demand;**
  - Limiting the area exposed to outdoors to a minimum (more complex design, more exposed surface area)
  - Improving air tightness (e.g. caulking holes and cracks) and the insulation of the building.

- **Reducing ventilation losses;**
  - Selecting efficient heating systems with effective controls.

- **Reducing cooling demand (need for air conditioning);**
  - Controlling solar gains by avoiding excessive glazing, use of shading and blinds, glazing with lowest solar heat gains factor
  - Selecting office equipment with reduced heat output
  - Making use of thermal mass materials and night ventilation to reduce peak temperatures

- **Reducing lighting loads and installing effective lighting controls**

- **Reducing the energy requirements for ventilation;**
  - A building design that maximizes natural ventilation (air passing from one side to the other side of the building)
  - Effective window design
  - Using energy efficient mechanical ventilation systems

- **Reducing energy use for lighting**
  - Appropriate window design and glass to make maximum use of daylight while avoiding excessive solar gain
  - Energy efficient lighting systems (e.g. using task lighting to avoid excessive background luminance levels
  - Selecting lamps with high efficacy; providing effective controls that prevent lights being left on unnecessarily

- **Reducing energy used for heating water**
  - Proper insulation of pipes
  - Installing time controls and setting hot water thermostats to the appropriate temperature
  - Switching of electric heating elements when hot water is available

- **Reducing electricity consumption of office equipment and appliances**
  - Use energy-efficient appliances (computers, monitors, printers, faxes, copiers, etc.), taking advantage of labeling schemes
  - Employ ‘switching off – power down’ modes in equipments

- **Good housekeeping measures**
  - Implement an energy conservation plan, involving staff, setting targets, conducting walk around

As per the energy awareness program carried out by BEE in most commercial buildings have energy performance index (EPI) of 200 to 400 kWh/sqm/year as compared to similar buildings in North America and Europe have EPI of less than 150 kWh/sqm/year. Energy-conscious building design has a potential to reduce EPI

to 100 to 150 kWh/sqm/year in India depending upon climate zone. However, at present development of such energy efficient buildings is largely restricted to environmentally-sensitive corporate. Construction of large scale energy-efficient buildings is limited due to split incentives – builders fear that they would bear the costs, while buyers / tenants would enjoy the benefits.

1.4.4 Municipal EE Projects – including Street Lighting component) under PRSF

The ULB across India, every year spend significant quantum of their revenue on energy costs for providing civic services such as street lighting, sewage pumping, treatment & disposal systems and lighting of municipal buildings/complexes. Through energy efficiency projects, ULBs can benefit from energy as well as monetary savings of at least 25 to 40% at a minimum.

Typically, the energy consumption requirement for street lighting systems alone is about 20 to 30% of the total energy consumption and through energy efficient street lighting systems, savings ranging between 40-70% can be achieved. The investment grade energy audit reports prepared by EESL for Ludhiana Municipal Corporation (LMC) have indicated savings potential up to 77% in street lighting systems with a payback period of 5-6 years. Similar investment grade energy audit reports prepared for BEE by accredited ESCO has indicated energy savings potential up to 50%. Similar energy savings have been documented for other municipal energy efficiency project components such as water pumping and distribution, sewage pumping and disposal and municipal buildings/complexes.

To facilitate market transformation and replication of Municipal Energy Efficiency Projects on a large scale in India, IFC, a member of the World Bank Group, the Bureau of Energy Efficiency, and Alliance to Save Energy have jointly developed a Manual for the Development of Municipal Energy Efficiency Projects for use by all stakeholders, including Municipalities, Energy Service Companies (ESCOs), Energy Equipment Suppliers, and Financial Institutions. The Bureau of Energy Efficiency has endorsed this Manual as a standard reference document for ULBs and other stakeholders to implement Municipal Energy Efficiency Programs in street lighting, water supply systems, sewerage systems, and municipal buildings. The Manual meets the need for knowledge on initiating and implementing Municipal Energy Efficiency Projects, providing guidelines and templates for municipalities to use in navigating the project development process.

The goals of energy efficiency projects could include energy bill reduction by optimizing energy use, improving delivery of services, reducing GHG emissions.

2.0 Environmental Risks and Management Approach

The PRSF target sector industries MSMEs & Commercial Buildings, although primarily aim to meet the SEC targets through EE project proposals, concurrently

also lead to environmental co-benefits in most cases through emission reduction per unit of production, improvement in occupational health and safety, etc. among other benefits. While the environmental co-benefits would be significant, the status of current environmental performance of PRSF target sector industries, especially PAT sectors will be important from the credit risk perspective. The issues could be relating to regulatory compliance(s), or environmental legacy issues, or negative environmental impacts resulting from technology upgrades due to EE project proposals. These issues, if not ascertained by PFIs during loan appraisal could potentially lead to credit, environmental, regulatory as well as reputational risks.

The environmental issues or risks would be of significance in case of PRSF target sector industries, moderate in case of MSMEs; limited for commercial buildings and on the contrary all municipal EE projects including street lighting component are environmentally beneficial in terms of reduced GHG emissions with no perceived environmental issues/risks. These issues/risks are not amenable for upfront identification to design a particular environmental management plan to fit all. Also, there could be practical limitations (in some sectors) in retrofitting the improved environmental performance complying with the EHS guidelines of the World Bank Group (WBG), especially in case of industrial sector investments as: (a) the PRSF facility supports marginal investments only, in the context of overall size and turnover of PRSF target sector industries and hence limited leverage; (b) the industrial units expected to be covered under PRSF are pre existing and any environmental retrofits, in case if required, would be time consuming and may not be practical vis-à-vis industrial operations; and (c) also on account of the foregoing effort to enforce environmental management measures beyond the scope of national regulatory standards would hinder achieving the primary objective of PRSF, in promoting EE through energy savings performance contracting approach, which also is expected to generate environmental co-benefits. However, on the other hand, by not enforcing a mechanism for addressing environmental issues, some of the PRSF operations, with exception of municipal energy efficiency projects including street lighting systems could result in environmental, regulatory and /or reputational risks particularly in PAT sector industries as compared to MSMEs and commercial buildings.

Given this context, the prudent means to address the environmental issues would be a risk based environmental due diligence and management approach. The outcome of such an approach will be integrated into the operations manual as an Environmental Risk Management Framework (ERMF), which would define the requirements to be followed by the ESCOs or host entities (borrowers). While preparing the EE project proposals, ERMF define the parameters of the appraisal process by PFIs in undertaking the due diligence, identifying the environmental risk profile of each transaction and ensure risk mitigated disbursement mechanisms. The ERMF will also define roles and responsibilities for third party checks on appraisal procedures to ensure fiduciary and application of ERMF for EE projects under PRSF.

Considering the fact that large scale industries (as compared to MSMEs and commercial buildings), are more susceptible to environmental risks. Given this, a locational sensitivity analysis, green rating (for PAT sectors), general EHS practices and accreditations (such as ISO 14000, OSHAS 18001 etc.), applicable National regulatory requirements, as well as WBG-EHS guidelines for PAT sector industries, clean technology initiatives by Govt. of India, CREP[3] charter for PAT sector industries have been assessed as part preparation of environmental risk management framework and summarized in **attachment 6 in Appendix to ERMF (Volume II)**.

3.0 Environmental Risk Management Framework (ERMF)

In line with the environmental risk management approach and the baseline analysis presented in **Volume II,** an ERMF has been prepared for PRSF, which follows a risk based environmental due diligence and management approach. Given the environmental benefits in terms of reduced GHG emissions and none of other perceived environmental risks/issues, ERMF provisions are not ordinarily applicable for the street lighting EE proposals, whereas it is applicable for other components of the Municipal EE projects apart from PRSF target sectors like large scale industries (including PAT sector), MSMEs and Commercial Complexes.

The ERMF defines the roles and responsibilities of all stakeholders under PRSF to address issues such as current environmental performance relating to regulatory compliance, or environmental legacy issues, or negative environmental impacts resulting from technology upgrades due to EE measures, if any. The ERMF also define the environmental safeguard requirements to be followed while preparing the EE projects, to enable due diligence during appraisal process and identify environmental risk profile of each transaction to ensure safeguard risk mitigated disbursement mechanisms. Random third party checks on appraisal procedures to ensure the fiduciary and environmental safeguard management framework are also included under ERMF.

The role and requirements to be followed by all the stakeholders under PRSF comprising host entities, ESCOs, PFIs and PEA are given in **Exhibit 4** and further summarized hereunder.

[3] The MoEF has launched a charter on "Corporate Responsibility for Environmental Protection (CREP)" in March 2003 with an objective to go beyond the compliance of regulatory norms for prevention & control of pollution through various measures including waste minimization, in-plant process control & adoption of cleaner technologies. The Charter, at present is voluntary and has set targets concerning conservation of water, energy, recovery of chemicals, reduction in pollution, elimination of toxic pollutants, process & management of residues that are required to be disposed off in an environmentally sound manner

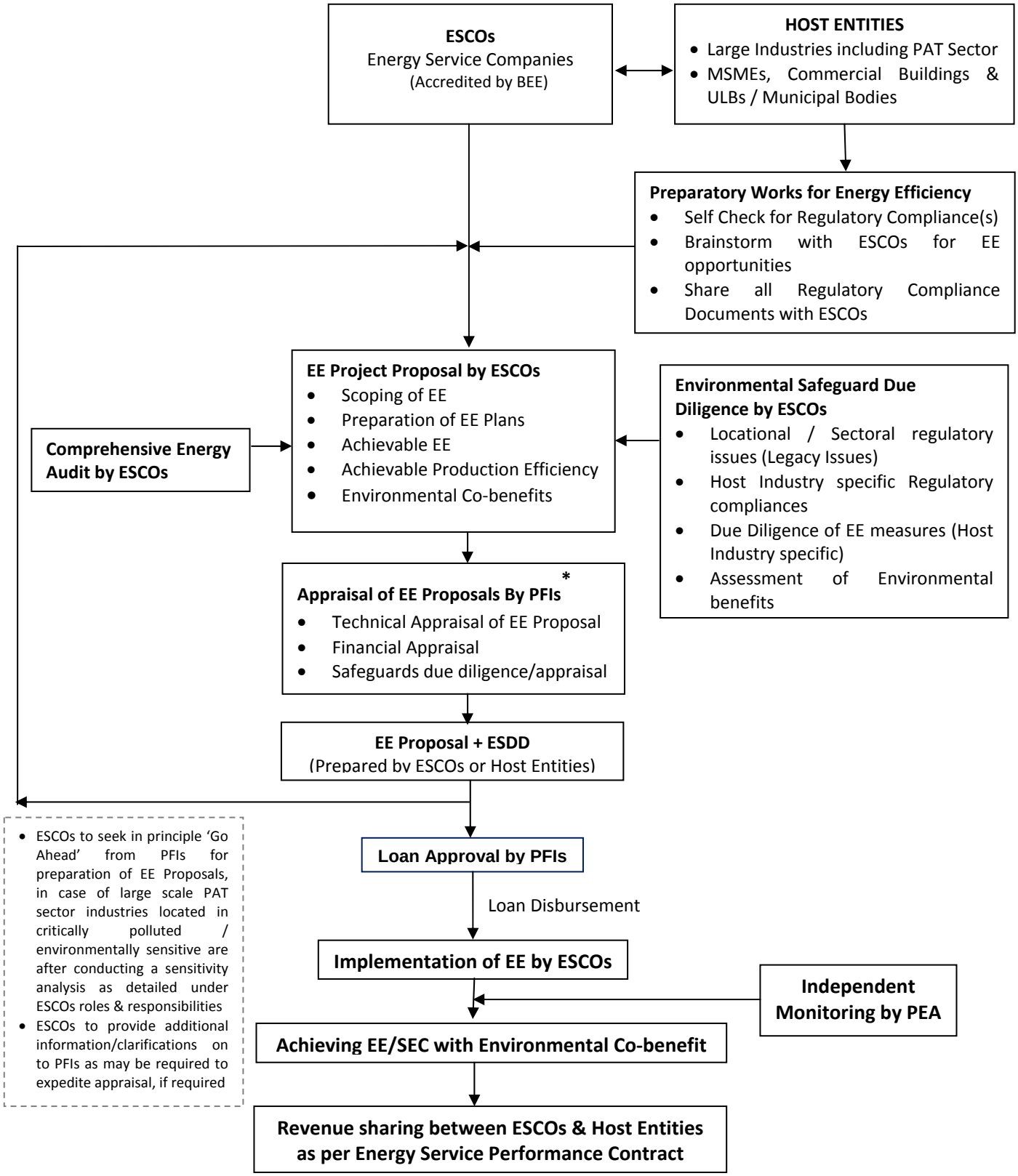


Exhibit 4 : Activity Flow Chart for ERMF Implementation and EE Appraisal

Note: *Roles and Responsibilities of Host Entities, ESCOs, PFIs & PEA are defined under environmental risk management framework (ERMF)

3.1 Roles and Responsibilities of ESCOs

1. ESCOs will require to carry out Environmental Safeguards Due Diligence (ESDD) of host entities (DCs) as part of the Project Preparation for energy efficiency improvement measures. The ESDD shall essentially include the following:

   a) Ascertain host entities current regulatory compliance in terms of having valid consent to operate, issued by the concerned State Pollution Control Board supported with documentary evidence.

   b) ESCOs as a first step towards risk mitigation, determine any regulatory non-compliance and highlight the nature of risk in terms of going ahead with the EE proposals.

   c) List outstanding issues/show cause notices, if any issued by SPCB with respect to violation of norms and remedial actions initiated by Host Entities, including requirement for implementation of any specific emission reduction or pollution prevention measure(s) as a consequence being issued the notices by the State or Central Pollution Control Board.

   d) Seek and include latest copy of the periodic environmental monitoring reports with respect to ambient air, stack emissions and effluent treatment plants as submitted by Host Entities to SPCB or MOEF in the ESDD report.

   e) Ascertain and document best environmental practices of host entities like adopting zero effluent initiatives or extent of reuse and recycling, cleaner technologies for better operational efficiencies with concurrent emission reductions, voluntary initiatives to achieve better emission standards than regulatory norms through innovative (conventional or non-conventional) measures, among others

   f) Ascertain and document the awards /recognition of the host entities with respect to statutory compliances, environment friendly technologies, innovative and environmentally sustainable operations of Host Entities as may be applicable in the ESDD report.

   Further, ESDD shall cover the following additional issues / risks in case of large scale PAT sector industries

   g) To carryout sensitivity analysis of the industries in terms of its location, if located in critically polluted and / or environmentally sensitive areas along with applicable / imposed moratoriums by the Govt. of India, if any (Ref. Appendix for Baseline Information and Analysis).

   h) Shall identify environmental and / or regulatory risks involved in preparing / implementing EE proposals as a consequence of moratoriums / restrictions imposed on the specific industry wise, located in the critically polluted / environmentally sensitive areas or otherwise.

   i) Shall rule out environmental / regulatory risks involved, and seek **'in principle go ahead'** from PFI's / PEA for preparing EE proposals. At this stage, the

ESDD shall identify and bring out at major gaps, if any between the GOI regulatory requirements and WBG EHS Guidelines on industry specific emissions, as may be applicable.

j) ESDD shall compile and include applicable Green rating (for PAT sector industries), accreditations like ISO 14000, OSHAS 18001, initiatives like clean technology, effluent reuse / recycle and / or zero effluent, applicable / adopted CREP charter by the specific industry, among others (Ref. Appendix for Baseline Information and Analysis).

The ready reference checklist template for preparing the ESDD for all PRSF target sectors along with additional reference checklist template applicable for only large scale PAT sector industries is given in **attachment 8 & 9 of Appendix to ERMF (Volume II)**. A typical content of a desirable ESDD Report is given as **attachment 10 in Appendix to ERMF (Volume II).**

2. The ESDD shall mandatorily to be submitted as part of the EE proposals under a separate section titled 'Regulatory Compliances and Environmental Co-benefits' or as a separate volume to the EE proposal for the appraisal by PFI's / PEA.

3. ESCOs shall explore and include EE measures, which can lead to clean technologies, emission reduction and improvement in operational efficiencies, thus transform into an environmental co-benefit. List of measures recommended by MOEF, GOI and WBG, for each of the PRSF target sector industries, MSMEs & commercial buildings, which can transform into emission reductions & environmental co benefits are given in **attachment 7 in Appendix to ERMF (Volume II)**.

4. ESCOs are encouraged (although it's not mandatory) to include the process or operations areas, which are potential sources of emissions, pollution control equipments and effluent treatment plants within the entire complex of host entities under EE project proposals. The EE proposals shall state the extent of achievable improvements and operational efficiency, which can lead to reduced emissions as an environmental co-benefit.

5. ESCOs shall ensure and confirm that all technological interventions as part of EE proposals shall NOT lead to violation/non-conformance to regulatory norms or result in increased emissions than the previously known or recorded levels.

6. ESCOs shall determine re-validation requirements of consent, if any required from SPCB, in view of proposed technological improvements as part of EE project proposals and accordingly advise host entities to initiate revalidation of consent at an appropriate time.

7. EE proposals planned and implemented by ESCOs shall comply with industry specific occupational health and safety standards

3.2 Roles and Responsibilities of Host Entities[4]

1. Host entities are expected to be fully compliant to all the National and State Pollution Regulatory requirements, hold valid consent to operate and comply with all consent conditions including implementation of any specific emission reduction or pollution prevention measure(s) as a consequence of industry or commercial buildings being located in critically polluted areas conditions, if any stipulated by the State or Central Pollution Control Board. The compliance requirement shall include applicable provisions of the CREP charter for large scale units only.

2. Host entities shall conduct a self-check for regulatory compliance(s) as per the stipulated regulatory norms and rectify the lapses, in case of any outstanding non-compliance(s), all such information shall be shared with ESCOs as a pre-cursor to the preparation of the EE proposals. Host Entities shall further determine added risks considering the location of their industry (such as critically polluted areas, CEPI, etc. as analyzed in Appendix), which will enable ESCOs to rule out any risks, before going ahead with EE proposals.

3. The desirable results of self-checks, listed under 1 and 2 above, are best obtained through comprehensive environmental compliance audit through commission of independent third party agencies, which the host entities shall follow it by an Action Taken Report on the suggested Corrective Action Plan, culminated by the audit findings. A typical content for an Environmental Safeguards Compliance Audit Report is given in **attachment 11 of Appendix to ERMF (Volume II)**.

4. Although, primary objective of EE project proposals is to meet SEC targets, the environmental co-benefits through emission reduction per unit of production, improvement in occupational health and safety etc. among others are inherent to EE measures and *vice versa*. Therefore host entities are encouraged to exercise prudence and ensure to include all energy intensive units within the industrial complex including the pollution control equipments and effluent treatment plants under the EE proposals.

5. Host entities shall provide hindrance free complete access and independence for ESCOs to include any or all units of industry or commercial building under the EE project proposals and shall not ordinarily impose restrictions for being selective in choosing areas/units of the industry.

[4] Host entities include large scale industrial units; Micro, Small, and Medium Enterprises (MSMEs); and Commercial buildings. The provisions under this section are applicable to respective Host Entities to the extent they are applicable for respective categories

6. Host entities shall encourage ESCOs to explore and include EE measures, which can lead to clean technologies, emission reduction and improvement in operational efficiencies, thus transforming EEs initiative into an environmental co-benefit. List of EE measures recommended by MOEF, GoI and WBG, for each of the PRSF target sector industries, MSMEs and commercial buildings, which can transform into emission reductions and environmental co-benefits are given in attachment 7 of Appendix.

7. Host entities shall share all regulatory compliance documentation, periodical compliance reports being submitted to SPCB and independent 3rd party audit reports, EHS practices, occupational health and safety records, women workforce representation, working conditions and facilities provided with ESCOs. Inclusion of such safeguards and related information in the EE project proposals will enable a speedier appraisal, loan approval and disbursement process

8. Host entities shall provide hindrance free access to authorized 3rd party agencies appointed by PFIs and/or PEA to undertake random checks, in order to verify the EE proposals either during the appraisal process or during implementation phase of EE project proposals.

9. Host entities shall comply with any of the additional requirements for e.g. revalidation of consents or regulatory compliances indicated to them as a result of EE projects, if any in order to make them fully compliant to safeguards requirement, as may be required during the tenure of the PRSF.

3.3 Roles and Responsibilities of PFIs (SIDBI and other FIs)

The PFIs (SIDBI and other FIs), responsible for technical and financial appraisal of the EE project proposals prepared by the ESCOs, will also be required to undertake environmental safeguards appraisal comprising the following

1. PFIs shall ensure that EE project reports submitted by ESCOs confirm status of regulatory compliance of respective Host Entities with documentary evidence like valid consent to operate. PFIs shall ensure the EE project proposals submitted by ESCOs fully responds to the requirements of the environmental safeguard due diligence as spelt under the roles and responsibilities for the ESCOs, as part of project preparation of EE project proposals under a dedicated section titled ‘Regulatory Compliances and Environmental Co-benefits’ or as a separate volume, appended to the EE proposals.

2. PFIs shall seek additional information from ESCOs, wherever required in order to ensure EE project proposals submitted by ESCOs fully respond to the environmental safeguard due diligence requirements under PRSF especially the large scale private sector industries (including PAT sector) in order to negate

credit, environmental, regulatory as well as reputational risks to PFI, PEA and WBG. The PFIs shall conduct their own due diligence and expedite in assessing and providing 'in principle go ahead' for preparation of EE proposals in case of large scale PAT sector industries, after assessing the associated risks.

3. PFIs shall seek periodic (bi-annual / annual) progress reports from ESCOs, which shall include a dedicated section for indicating the environmental regulatory compliance status and environmental co-benefits.

4. PFIs may engage external consultants, if in-house expertise is inadequate or unavailable to undertake environmental safeguards due diligence of the EE proposals received from ESCOs during project appraisal and loan approval stage. Similarly, during implementation stage, PFI may engage external consultants to undertake periodic check and verify the progress achieved on ground during the loan tenure and independently document the environmental benefits as an outcome of EE measures.

5. The environmental safeguards scrutiny along side of technical and financial scrutiny of EE project proposals and periodical monitoring during implementation stage by the PFIs is a mandatory requirement of PRSF.

3.4 Roles and Responsibilities of PEA (SIDBI)

The PEA[5], mandated to facilitate implementation of PRSF, will also a instill a check on the environmental safeguards requirements of the EE proposals under PRSF as hereunder:

1. Conduct random check on safeguards appraisal procedures, representing all PRSF target sectors, carried out by PFIs, in addition to the checks on technical and financial appraisal procedures

2. Commission independent 3rd party checks at DCs / host industries / institutions, in order to verify EE project proposals representing all PRSF target sectors either during the appraisal process or during implementation phase of EE project proposals with specific objective of meeting ERMF requirements

3. Commission independent 3rd party agencies to independently monitor and document the environmental co-benefits as an outcome of implementation of EE project proposals either periodically or on a need basis.

The roles and responsibilities of all stakeholders are summarized in **Exhibit 5**.

[5] Project Execution Agency **(PEA)** is the agency where the guarantee fund corpus is housed and which is managing the functioning of the PRSF scheme.

Exhibit 5: Roles & Responsibilities of Stake Holders for Implementation of Environmental Risk Management Framework (ERMF) under PRSF

S. No.	Host Entities	ESCOs	PFIs (SIDBI and other FIs)	PEA (SIDBI)
1.	• To fully comply with all Central and State or local regulatory requirements, including CREP Charter provisions • To have mandatorily valid Consent to Operate and fully comply with all consent conditions/requirements • To conduct self-check for regulatory compliance(s) and rectify the lapses prior to the preparation of EE proposal by ESCOs and to provide available statutory environmental audit reports.The desirable results of self-checks,are best obtained through comprehensive environmental compliance audit through commission of independent third party agencies, which the host entities shall follow it by an Action Taken Report on the suggested Corrective Action Plan, culminated by the audit findings • Encourage to exercise prudence to include all energy intensive units within the industrial complex including pollution control equipments, ETPs under EE proposal. • To encourage ESCOs to explore and include EE measures leading to clean technologies, GHG emissions reductions, improvement in operational efficiencies, etc.	• To carry out Environmental Safeguards Due Diligence (ESDD) of Host entities as part of EE project preparation, comprising – To ascertain host entities current regulatory compliance in terms of having valid consent to operate supported with documentary evidence – To determine any reported non-compliance and/or pending public liability cases on Host Entities as a first step towards risk mitigation and highlight the nature of risk in terms of going ahead with the EE proposals – To further determine added risks considering the location of Host Entities (such as critically polluted areas, CEPI, etc. Refer Appendix to ERMF for Baseline Analysis). ESCOs shall rule out any risks, before going ahead with EE proposals at this stage itself. – To list outstanding issues, show cause notices issued by SPCB with respect to violation of norms and remedial actions initiated by host entities thereof. Such information shall include requirement for implementation of any specific emission reduction or pollution prevention measure(s) as a consequence of host entity being located in critically polluted areas conditions, if any stipulated by the State or Central Pollution Control Board. – To seek and include latest copies of periodic environmental monitoring reports with respect to ambient air, stack emissions and effluent treatment plants submitted by Host Entities to SPCB or MOEF in the EE project proposals – To ascertain and document best environmental practices of host entities like adopting zero effluent initiatives or extent of reuse and recycling, cleaner technologies for better operational efficiencies with concurrent emission reductions, voluntary initiatives to achieve better emission standards than	• To be responsible for environmental safeguards appraisal in addition to the technical and financial appraisal of the EE project proposals prepared by the ESCOs • To ensure EE project reports submitted by ESCOs confirm status of regulatory compliance of respective host entities with documentary evidence like valid consent to operate and fully responds to all the requirements of the environmental safeguard due diligence as spelt under the roles and responsibilities for the ESCOs, as part preparation of EE proposals • PFIs shall seek additional information from ESCOs, wherever required in order to ensure EE project proposals submitted by ESCOs fully respond to the environmental safeguard due diligence requirements under PRSF especially the large scale private sector industries (including PAT sector) in order to negate credit, environmental, regulatory as well as reputational risks to PFI, PEA and WBG. The PFIs shall conduct their own due diligence and expedite in	• To conduct random check on safeguards due diligence procedures carried out by PFIs, in addition to checks on technical and financial appraisal procedures • To arrange for Independent 3rd party random check at Host Entities, ESCOs to monitor and document the environmental co-benefits as an outcome of implementation of EE proposal (periodically /on need basis) • PEA may engage external consultants, if in-house expertise is inadequate or unavailable to undertake environmental safeguards due diligence of the EE proposals at any stage of the EE proposal appraisal, implementation and or monitoring/evaluation stage

Exhibit 5: Roles & Responsibilities of Stake Holders for Implementation of Environmental Risk Management Framework (ERMF) under PRSF

S. No.	Host Entities	ESCOs	PFIs (SIDBI and other FIs)	PEA (SIDBI)
	• To share with ESCOs all regulatory compliance documents, periodic compliance reports submitted to SPCB, independent 3rd party audit report(s), outstanding issues/show cause notices issued by SPCB with respect to violation of norms and remedial actions initiated thereof, including requirement for implementation of any specific emission reduction or pollution prevention measure(s) as a consequence of industry being located in critically polluted areas conditions, if any stipulated by the State or Central Pollution Control Board etc. • To provide hindrance free access to 3rd party agencies appointed by PFIs and / or PEA to verify the EE proposals during the appraisal or pre / post-implementation. • To share with ESCOs best environmental practices of host entities like adopting zero effluent initiatives or extent of reuse and recycling, cleaner technologies for better operational efficiencies with concurrent emission reductions, voluntary initiatives to achieve better emission standards than regulatory norms through	regulatory norms through innovative (conventional or non-conventional) measures, among others – To ascertain and include awards /recognition of the host entities with respect to statutory compliances, environment friendly technologies, innovative and environmentally sustainable operations of DC/host institutions as may be applicable • To include sensitivity analysis of the industries in terms of its location in critically polluted and / or environmentally sensitive areas along with applicable / imposed moratoriums by the Govt. of India, if any (Ref. Appendix for Baseline Information and Analysis). • Shall identify environmental and / or regulatory risks involved in preparing / implementing EE proposals as a consequence of moratoriums / restrictions imposed on the specific industry wise, located in the critically polluted / environmentally sensitive areas or otherwise • Shall rule out environmental / regulatory risks involved, and seek 'in principle go ahead' from PFI's / PEA for preparing EE proposals. At this stage, the ESDD shall identify and bring out at major gaps, if any between the GOI regulatory requirements and WBG EHS Guidelines on industry specific emissions, as may be applicable • ESDD shall compile and include applicable Green rating (for PAT sector industries), accreditations like ISO 14000, OSHAS 18001, clean technology initiatives, measures like effluent reuse / recycle and / or zero effluent initiatives, applicable / adopted CREP charter by the specific industry, among others (Ref. Appendix for Baseline Information and Analysis) • To explore and include EE measures, which can lead to clean technologies, emission reduction and improvement in operational efficiencies, thus transform into an environmental co-benefit. List of measures recommended by MOEF, GOI and WBG, for each of the PRSF target sector industries, MSMEs and	assessing and providing 'in principle go ahead' for preparation of EE proposals in case of large scale PAT sector industries, after assessing the associated risks. • To seek periodic (bi-annual / annual) progress reports from ESCOs, which shall include a dedicated section for indicating the environmental regulatory compliance status and environmental co-benefits. • To engage external consultants, if in-house expertise is inadequate or unavailable to undertake environmental safeguards due diligence of the EE proposals received from ESCOs during project appraisal and loan approval stage. Similarly, during implementation stage, PFI may engage external consultants to undertake periodic check and verify the progress achieved on ground during the loan tenure and independently document the environmental benefits as an outcome of EE measures.	

Exhibit 5: Roles & Responsibilities of Stake Holders for Implementation of Environmental Risk Management Framework (ERMF) under PRSF				
S. No.	**Host Entities**	**ESCOs**	**PFIs (SIDBI and other FIs)**	**PEA (SIDBI)**
	innovative (conventional or non-conventional) measures, among others • To share information with ESCOs about awards /recognition with respect to statutory compliances, environment friendly technologies, innovative and environmentally sustainable operations as may be applicable • To comply with any other additional requirements as a result of EE proposal related to revalidation of consent to operate or regulatory compliance so as to be fully compliant at all times through PRSF tenure.	commercial buildings, which can transform into emission reductions and environmental co benefits are given in attachment 7 to Appendix. • To explore and include the process or operations areas, which are potential sources of emissions, pollution control equipments and effluent treatment plants within the entire complex of host entities under EE project proposals. The EE proposals shall state the extent of achievable improvements and operational efficiency, which can lead to reduced emissions as an environmental co-benefit. • To ensure and confirm that all technological interventions as part of EE proposals shall NOT lead to violation/non-conformance to regulatory norms or result in increased emissions than the previously known or recorded levels. In case of occurrence of violations, a credible and implementable mitigation plan, complying with regulatory requirement shall be costed and included in EE proposals. • To determine re-validation requirements of consent, if any required from SPCB, in view of proposed technological improvements as part of EE project proposals and accordingly advise host entities to initiate revalidation of consent at an appropriate time. • To ensure that EE proposals planned and implemented comply with industry specific occupational health and safety standards		

4.0 Institutional Requirements

Given the typical organizational background and mandate of ESCOs, Host entities and other stake holders like PFI(s)/PEA, it is very unlikely that these stake holders will have complete in house expertise to address the environmental issues/risks and undertake the environmental due diligence as per the environmental risk management framework under PRSF.

Therefore, the stake holders may have to engage external consultants, atleast in the initial stages of the PRSF to carryout respective roles and responsibilities during the EE proposal preparation, appraisal and implementation stage as per ERMF. Further, the PFI(s) and PEA may have to engage external consultants to undertake periodic check and verify the progress achieved on ground during the loan tenure and independently document the environmental benefits as an outcome of EE measures

The roles and responsibilities of all stake holders as required for ensuring implementation of ERMF is given in Exihibit 5 and described under sub section 3. The institutional requirements for environmental risk management under PRSF is given in **Exhibit 6**.

The mandatorily required institutional arrangements for ensuring the environmental risk management under PRSF is given hereunder:

1. The ESCOs should maintain in-house expertise or shall hire the services of experts for addressing the roles and requirements of ERMF – Mandatory requirement.

2. The Host entities should maintain in-house expertise or shall hire the services of experts for addressing the roles and requirements of ERMF – Mandatory requirement.

3. The PFIs should maintain in-house expertise or shall hire the services of experts for addressing the roles and requirements of ERMF – Mandatory requirement.

4. The PEA should maintain in-house expertise or shall hire the services of experts for addressing the roles and requirements of ERMF – Mandatory requirement.

The institutional strengthening and capacity building of all the stake holders under PRSF will be addressed through a US$8 million technical assistance (TA) program, which will be implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL).

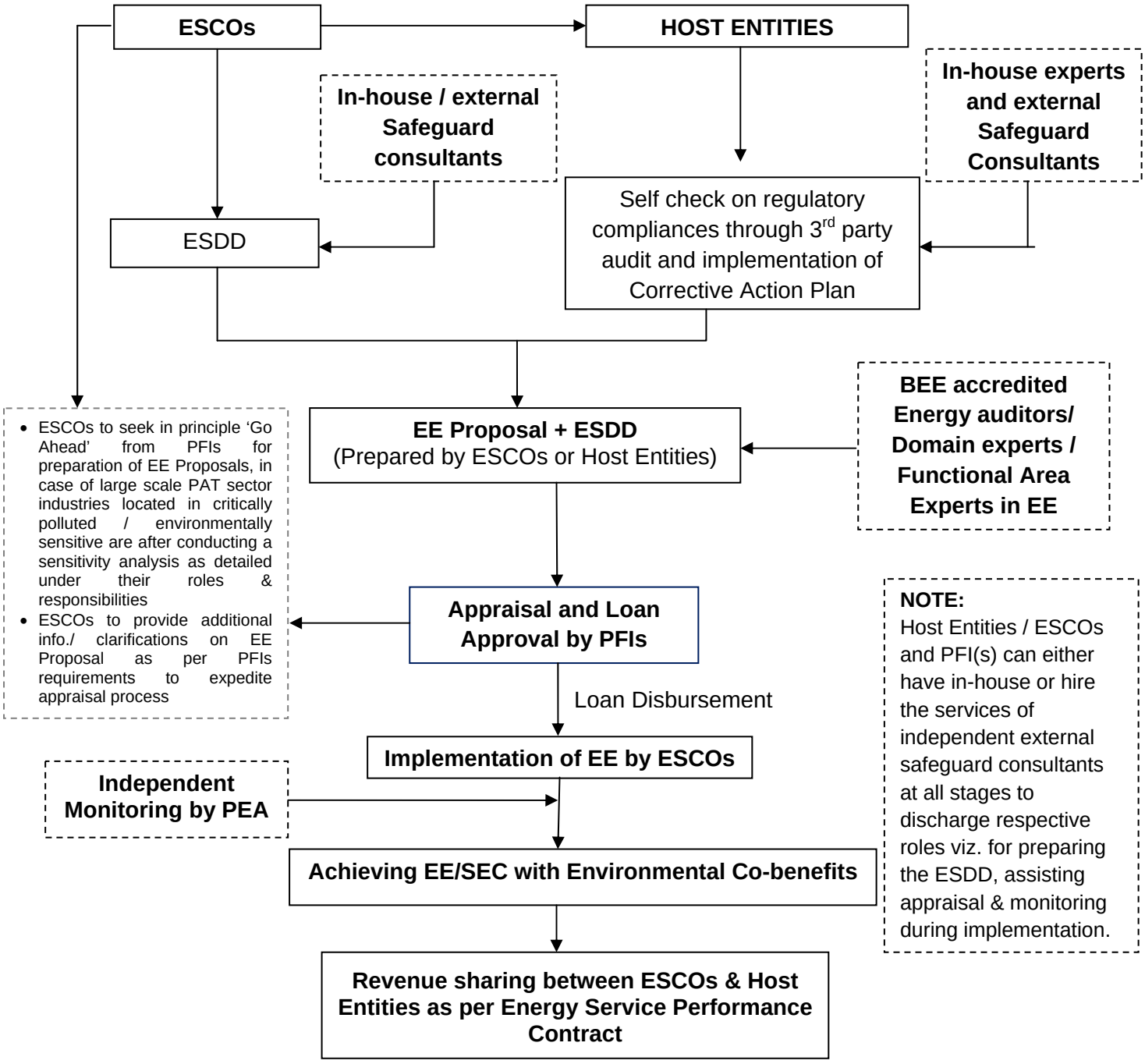


Exhibit: 6 Institutional Requirements for Environmental Risk Management under PRSF

5.0 Consultations

The provisions of ERMF have been evolved through stakeholder consultations on 16th of April 2013 followed by second consultation meeting on 4th September 2013. The consultation meetings were organized by Alliance for an Energy Efficient Economy (AEEE), a member-driven industry association providing a common platform for energy efficiency (EE) stakeholders to collaborate and address barriers to energy efficiency in India, through policy research, facilitating market transformation, fostering technology innovations, capacity building of energy professionals and stimulating financial investments.

The consultation meetings were attended largely by ESCOs, PFI(s). Comprehensive presentations were made by the AEEE, PFI(s) and BEE, represented by Govt. of India in the presence of concerned World Bank staff. The list of attendees / participants, proceedings and photographs taken during the consultation meeting are given in **attachment 12 of Appendix to ERMF (Volume II)**.

The main concerns pertaining to the environmental due diligence and safeguards requirements under PRSF raised / discussed during these consultation meetings are summarized hereunder:

a) ESCOs are primarily energy specialists with a mandate for preparation and implementation of EE proposals. Ensuring Environmental Safeguards due diligence and document the industry compliant to regulatory norms will essentially divert the focus of EEs, with additional added time and costs and beyond the in-house capabilities.

b) Industry / host entities are independently responsible for regulatory compliance and environmental management. Therefore, linking such matters to the EE Proposal preparation is neither necessary not warranted.

c) ESCOs / Host entities do not have requisite in-house capability to address the required environmental safeguards matters.

d) Environmental safeguards compliance made as pre-requisite for EE proposal preparation, appraisal or implementation is seen as a barrier by both ESCOs and Host Entities.

While there was an initial reluctance for considering the environmental due diligence and ERMF as a pre-requisite (as summarized under (a) to (d) above) for EE proposal appraisal and implementation, the credit risk perspective for managing environmental risks was concurred all stakeholders at the meeting. However, the stakeholders felt that capacity building efforts are required for adhering to the ERMF as part of EE project implementation under PRSF.

6.0 PRSF – Operations Manual

The PRSF has an Operations Manual (OM), which will include the provisions of ERMF, which defines the parameters, roles and relationships between the host entities (equivalent to DCs), ESCOs, PFIs, and the PEA (SIDBI) along with respective responsibilities, procedures required for loan appraisal by the participating commercial banks, reporting structures, tripartite agreement between the PFIs, ESCOs and DCs, monitoring and validation (M&V) protocols and MIS reporting formats under the program.

The OM includes procedures for random third party checks on appraisal procedures to ensure the fiduciary and environmental safeguard management framework are applied for EE projects under PRSF.