

# Environmental Assessment and Review Framework

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## India: Demand Side Energy Efficiency Investment Project

Prepared by the Energy Efficiency Services Limited for the Asian Development Bank.



## CURRENCY EQUIVALENTS

(as of 31 May 2016)

Currency unit	–	Indian Rupee (INR Rs)
Rs1.00	=	\$0.01599
\$1.00	=	Rs 62.54

## ABBREVIATIONS

ADB	-	Asian Development Bank
AgDSM	-	Agricultural Demand Side Management
CDM	-	Clean Development Mechanism
CPCB	-	Central Pollution Control Board
DELP	-	Domestic Efficient LED Lamp
DSM	-	Demand Side Management
EA	-	Executing Agency
EARF	-	Environmental Assessment and Review Framework
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
ESCOs	-	Energy Service Companies
IEE	-	Initial Environmental Examination
LED	-	Light-emitting Diode
MoEFCC	-	Ministry of Environment, Forests and Climate Change
MuDSM	-	Municipal Demand Side Management
NAPCC	-	National Action Plan on Climate Change
NMEEE	-	National Mission for Enhanced Energy Efficiency
PMU	-	Project Management Unit
SDA	-	State Designated Agency
SPCB	-	State Pollution Control Board
SPS	-	Safeguard Policy Statement

## NOTE

- (i) In this report, "\$" refers to US dollars.

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## 1.0 INTRODUCTION

1. On 30 June 2008, the Prime Minister of India released the National Action Plan on Climate Change (NAPCC) which recognizes the need to reduce vulnerability to the impacts of climate change while maintaining a high growth rate to increase the people's standard of living.<sup>1</sup> The core of NAPCC is the eight national missions to achieve key goals. One of this is the National Mission for Enhanced Energy Efficiency (NMEEE) which outlines four new initiatives to enhance energy efficiency in addition to the programmes being pursued by the Ministry of Power (MoP) and the Bureau of Energy Efficiency (BEE). With these initiatives, the NMEE aims to tap the market for energy efficiency estimated to be about \$12 billion, reduce greenhouse gas emissions, and avoid the additional power generation capacity.

2. The mandate to implement energy efficiency measures stems from the Energy Conservation Act of 2001. The MoP and BEE were tasked to prepare the implementation plan for NMEEE and part of the institutional arrangements is the creation in December 2009 of a Joint Venture corporate entity, the Energy Efficiency Services Ltd. (EESL). EESL functions as the implementing arm for energy efficiency (EE) that will have close coordination with BEE and must work under the overall regulatory, administrative and policy guidance of MoP and BEE.<sup>2</sup> As an implementing arm for EE, the EESL also works as a government-owned energy services company (ESCO), consulting organization for clean development mechanism (CDM), and resource centre for capacity building of state designated agencies (SDAs), utilities, financial institutions, etc. In December 2015, EESL has developed their business plan for 2015-2020 outlining the approach to scale up their institutional, technological and financial capacity.

3. As an ESCO, the high-priority areas of EESL include: (i) the use of more efficient light-emitting diode (LED) by municipalities for street lighting which are equipped with remote operating technology; (ii) the use of more efficient LED bulbs and electric fans by households; and (iii) the promotion of more energy efficient agricultural water pumps.<sup>3</sup>

4. To achieve the goals of NMEE and implement its new initiatives, the Government of India (GoI) through the EESL requested the Asian Development Bank (ADB) to provide financing for its three high-priority areas.

### 1.1 Overview of the Sector Loan

5. The Project will be funded through the sector loan modality of the ADB of about \$200M to support the demand side energy efficiency investments in several states of India. The initial target states will include Maharashtra, Rajasthan, Goa, Telangana, Karnataka, Andhra Pradesh, and Uttar Pradesh. Project components will cover the high-priority areas of EESL as follows:

- (i) Municipal street lighting efficiency;
- (ii) Efficient domestic lighting and appliance programme; and,
- (iii) Agricultural demand side management (AgDSM).

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<sup>1</sup> Government of India. Prime Minister's Council on Climate Change. National Action Plan on Climate Change. <http://www.moef.nic.in/downloads/home/Pg01-52.pdf>. (Accessed 26 May 2016)

<sup>2</sup> National Mission for Enhanced Energy Efficiency. <http://www.indiaenvironmentportal.org.in/files/NMEEE.pdf>. (Accessed 26 May 2016)

<sup>3</sup> ADB provided project preparatory technical assistance. ADB. 2016. IND: Demand-Side Energy Efficiency Investment Project (TA 9081). <http://www.adb.org/projects/documents/ind-demand-side-energy-efficiency-investment-project-pptar>. (Accessed 20 May 2016)

6. These components are expected to have the following outputs:
- (i) More efficient LED municipal street lighting equipped with remote operating system in one or more municipalities in the states of Rajasthan, Maharashtra, Goa, Telangana - 1.5 million units
  - (ii) Household electric bulbs and fan efficiency in the utility service areas in Rajasthan, Maharashtra, Andhra Pradesh, Uttar Pradesh - 42 million units
    - (a) Domestic efficient LED lamps (DELP) to replace incandescent lamps- 37 million units
    - (b) Efficient ceiling fans - 1.2 million units (to be financed by EESL)
    - (c) Efficient Tube Lights - 3.8 million units (to be financed by EESL)
  - (iii) More energy-efficient agricultural water pumps in utility service areas of Rajasthan, Andhra Pradesh, Karnataka - 225,000 units
7. **Table 1.1** presents the project details and **Table 1.2** shows the proposed investment plan.

**Table 1.1: Project Details**

No.	Component	Quantity (units)				Total
		2017-2018	2018-2019	2019-2020	2020-2021	
1	Street lighting	314,170	471,250	471,250	314,170	1,570,840
2	Domestic					
	DELP (bulbs)	7,460,820	11,191,240	11,191,240	7,460,820	37,304,120
	Ceiling Fan	251,400	377,100	377,100	251,400	1,257,000
	Tube light	768,570	1,152,860	1,152,860	768,570	3,842,860
3	AgDSM	48,910	73,360	73,360	48,910	244,540

**Table 1.2: Proposed Investment Plan (\$ million)**

Item	Amount <sup>a</sup>
<b>A. Investment Costs<sup>b</sup></b>	
1. Efficient municipal streetlights	139.3
2. Efficient household appliances	81.1
3. Efficient agricultural pumps	145.5
<b>Subtotal (A)</b>	<b>365.9</b>
<b>Contingencies<sup>c</sup></b>	
1. Physical	7.0
2. Price	18.6
<b>Subtotal (B)</b>	<b>25.6</b>
<b>C. Financing Charges During Implementation<sup>d</sup></b>	
1. Interest during implementation	7.9
2. Commitment charges	0.7
<b>Subtotal (C)</b>	<b>8.5</b>
<b>Total Cost (A+B+C)</b>	<b>400.0</b>

<sup>a</sup> Includes taxes and duties of \$57.9 million to be financed by EESL

<sup>b</sup> In Q2 2016 prices.

<sup>c</sup> Physical contingencies computed at 2.0% of equipment costs. Price contingencies computed at an average of 5.5% on local currency costs and 1.5% on foreign currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

<sup>d</sup> Includes interest and commitment charges. Interest during construction for ADB loan(s) has been computed at the 5-year fixed London Interbank Offered Rate plus a spread of 0.5%. Commitment charges are 0.15% per year on the undisbursed loan amount.

Source: Asian Development Bank estimates.

## 1.2 Implementation Arrangements

8. The project will be implemented by the Energy Efficiency Services Limited (EESL) starting from December 2016 until December 2020. EESL also operates as a government-owned ESCO in order to facilitate energy efficiency investments including work designing, implementing, monitoring and investing in energy-efficiency projects.

9. EESL will set up a Project Management Unit (PMU) to administer, coordinate, monitor, and report on the progress of project implementation to ADB and the Government. Oversight functions will be done by the EESL Board of Directors. The PMU will consist of technical, financial, and procurement staff. Safeguards support staff will be hired, as and when needed, to ensure compliance to the requirements of ADB's Safeguard Policy Statement (SPS) 2009. The SPS 2009 is applicable to all ADB-financed projects. The central and regional offices of EESL will serve as implementing units. ADB will conduct regular project review and will facilitate the project implementation.

## 1.3 Purpose of the Environmental Assessment and Review Framework

10. For sector lending, an environmental assessment and review framework (EARF) is required according to SPS 2009.<sup>4</sup> The EARF aims to ensure that the subprojects or project components implemented under the sector loan comply with ADB safeguard objectives, principles and requirements (Section C, Appendix 4, SPS 2009, p66). The EARF provides guidance on environmental screening and categorization, assessment, planning, institutional arrangements, and procedures to be followed during the implementation of the sector loan. This EARF is prepared consistent with SPS 2009 and the applicable laws, policies, and regulations of Gol.

## 2.0 ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

### 2.1 National Environmental Requirements

11. Replacement of streetlights, DELP bulbs and ceiling fans, and agricultural pumps with energy-efficient units is not expected to cause significant adverse environmental impacts and thus, not within the purview of the Environmental Impact Assessment (EIA) Notification 2006, but the solid wastes that may be generated by these components will be subject to environmental regulations.

#### 2.1.1 Environmental Agency

12. The Ministry of Environment, Forest and Climate Change (MoEFCC) is mandated by the Central Government to plan, promote, coordinate and oversee the implementation of India's environmental and forestry policies and programmes while its Climate Change Division is specifically tasked to coordinate the implementation of the NAPCC.

13. The Central Pollution Control Board (CPCB) is a statutory organization under the MoEF created through the Water (Prevention and Control of Pollution) Act 1974 with functions and powers set forth by the Air (Prevention and Control of Pollution) Act 1981. CPCB advises the Central Government on issues about prevention and control of water and air pollution, and in the improvement of air quality. CPCB plans and executes nationwide programs to prevent, control or abate air and water pollution. State Pollution Control Boards

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<sup>4</sup>ADB. Safeguard Policy Statement. <http://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>. (Accessed 2 November 2015)



(SPCBs) are statutory authorities entrusted to implement environmental laws and regulations within the states and ensure compliance to the environmental requirements. CPCB coordinates the activities of SPCBs, resolve disputes among them, and provides technical assistance and guidance on air and water pollution abatement and control.

### 2.1.2 Environmental Regulations

14. **Table 2.1** presents the relevant environmental regulations that may be referred to during the project implementation.

**Table 2.1: Summary of Relevant Environmental Regulations**

Regulation	Brief Description	Implementing Agency
Environment (Protection) Act 1986 and Rules 1986	Provides for the regulations to protect and improve the environment.	MoEFCC
E-Waste (Management and Handling) Rules 2010	Provides for the collection, dismantling, recycling, transport, disposal, and overall handling of e-Waste.  E-waste means waste electrical and electronic equipment, whole or in part, or rejects from manufacturing and repair process which are intended to be discarded.	MoEFCC, CPCB, SPCBs
Environmental Impact Assessment (EIA) Notification, 2006 and latest amendments	Provides guidance on environmental clearance requirements and clarification on related specific technical issues.	MoEFCC
Water (Prevention and Control of Pollution) Act 1974 and amendments thereof	Sets the requirements to prevent, control and abate water pollution, and for the establishment of Boards to carry out these purposes.	CPCB, SPCBs
Air (Prevention and Control of Pollution) Act 1981 and amendments thereof	Provides for the prevention, control and abatement of air pollution, and for the establishment of Boards to carry out these purposes.	CPCB, SPCBs
Solid Waste Management Rules 2016	Applies to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.	CPCB, SPCBs
Hazardous Waste (Management and Handling) Rules, 2008 and amendments thereof	To protect health of general public and the environment against the adverse impacts of improper handling, storage and disposal of hazardous wastes. Aims to (i) reduction of hazardous waste generation, promotion of environmentally-sound management; (ii) restriction of transboundary movements; and (iii) a regulatory system for transboundary movements.	CPCB, SPCBs
The Batteries (Management & Handling) Rules, 2001	Provides for the proper management and handling of lead acid batteries to avoid, mitigate, minimize adverse impacts on environment and human health	CPCB, SPCBs

Source: ADB PPTA Consultant, May 2016.

15. The MoEFCC, through the CPCB, issued the guidelines on the Implementation of E-Waste Rules 2011, which among others, put the main responsibility of e-waste management

on the producers of the electrical and electronic equipment by introducing the concept of “extended producer responsibility”.

16. Aside from the relevant environmental regulations, most of the states, where project components will be implemented, have existing facility to manage solid wastes including hazardous wastes that may be generated. **Table 2.2** presents a summary of the existing waste treatment, storage and disposal facility (TSDf). While Goa has no existing TSDf, it is bounded in the north by Maharashtra and in the south by Karnataka where both states have TSDf that can accommodate any potential hazardous waste that may be generated in Goa under this project.

**Table 2.2: Summary of waste management facility**

Name of State	Type of Waste Management Facility		
	Integrated TSDf (with both secured landfill and incinerator)	TSDfS with only common incinerators	TSDfS with only common secured landfill
Rajasthan	---	1	2
Maharashtra	3	---	1
Goa	---	---	---
Telangana	1	---	---
Karnataka	---	5	1
Andhra Pradesh	1	---	---
Uttar Pradesh	2	1	1

Source: MoEFCC.

### 2.1.3 Relevant International Environmental Agreements

17. **Table 2.3** presents the international environmental agreements where India is a party. These international environmental agreements will be considered by EESL to provide guidance, as appropriate, in the screening and final selection of project components, and in the selection of contractors, suppliers and/or handlers who will be responsible to manage the solid wastes that may be generated by the project components. EESL will ensure that their contractors, suppliers/vendors, and/or wastes handlers understand the requirements and commitment to compliance to these international environmental agreements.

**Table 2.3: India Relevant International Environmental Agreements**

International Environmental Agreement	Description	Date Ratified
Vienna Convention for the Protection of the Ozone Layer	Signed on 22 March 1985 by 28 signatories, this convention sets the framework for efforts to protect the globe’s ozone layer by means of systematic observations, research and information exchange on the effects of human activities on the ozone layer and to adopt legislative or administrative measures against activities likely to have adverse effects on the ozone layer.	18 March 1991
Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer)	This international treaty was entered into force on 1 January 1989 and is designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. This treaty also requires controlling emissions of substances that deplete ozone.	19 June 1992

<b>International Environmental Agreement</b>	<b>Description</b>	<b>Date Ratified</b>
UNFCCC (1992)	This framework came into force on 21 March 1994 and aims to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level low enough to prevent dangerous anthropogenic interference with the climate system.	1 November 1993
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)	This convention came into force on 22 September 1992 which aims to reduce the amount of waste produced by signatories and regulates the international traffic in hazardous wastes.	24 June 1992
Stockholm Convention on Persistent Organic Pollutants (POPs)	Treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.	13 January 2006
Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade	To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons.	24 May 2006 (accession)
UNEP Minamata Convention on Mercury	Adopted on 10 October 2013, this global treaty aims to protect human health and the environment from the adverse effects of mercury.	30 September 2014 (signed)
SAICM (Strategic Approach to International Chemicals Management)	Voluntary initiative to help countries manage chemicals within their borders to reduce the harmful impact of chemicals on human health and the environment.	February 2006

Source: ADB PPTA Consultant, May 2016.

## **2.2 National Health and Safety Requirements**

18. The Constitution imposes the duty on the State to provide and implement policies promoting safety and health of workers in the workplaces. Regulating workers occupational safety and health (OSH) exist in four different sectors: manufacturing, mining, ports, and construction. The Ministry of Labour and Employment, and the State Labour Departments are responsible for workers OSH. Most relevant to the project are the Municipal Solid Waste (Management and Handling) Rules 2000 notified under the Environment (Protection) Act 1986, and The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989. In February 2009, the National Policy on Safety, Health and Environment at Work Place was declared by the Ministry of Labour and Employment. EESL will ensure that their implementing partners under this project will comply with these statutes.

## **2.3 ADB's Environmental Requirements**

19. SPS 2009 provides for the environmental requirements and review procedures of ADB and applies to all projects and grants they finance. SPS 2009 comprises three key safeguard areas: environment, involuntary resettlement, and indigenous peoples; and aims

to avoid adverse project impacts to both the environment and the affected people; minimize, mitigate and/or compensate for adverse project impacts; and help Borrowers to strengthen their safeguard systems and to develop their capacity in managing the environmental and social risks.

20. At the project identification phase, ADB uses a categorization system to indicate the significance of potential environmental impacts and is determined by the category of its most environmentally-sensitive component, including direct, indirect, cumulative, and induced impacts within the project's area of influence. The project categorization system is described in **Table 2.4**.

**Table 2.4: Environmental Classification According to SPS 2009**

Category	Definition	Assessment Requirement
A	Likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented, and may affect an area larger than the sites or facilities subject to physical works.	Environmental impact assessment (EIA)
B	Likely to have adverse environmental impacts that are less adverse than those of Category A. Impacts are site-specific, few if any of them irreversible, and in most cases mitigation measures can be designed more readily than Category A.	Initial Environmental Examination (IEE)
C	Likely to have minimal or no adverse environmental impacts.	No environmental assessment is required but the environmental implications of the project will be reviewed.
FI	Project involves investment of ADB funds to or through a financial intermediary (FI).	FIs will be required to establish an environmental and social management commensurate with the nature and risks of the FI's likely future portfolio to be maintained as part of the FI's overall management system.

Source: ADB. Safeguard Policy Statement 2009, p. 19. <http://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf>.

### 2.3.1 Disclosure Requirements of Public Communications Policy 2011

21. Aside from SPS 2009, the Public Communications Policy (PCP) 2011 provides for the requirements for project information disclosure funded by ADB. Consistent with SPS 2009, PCP 2011 requires the disclosure of documents submitted by the borrower and/or client:

- (i) a draft EIA report for category A project, at least 120 days before Board consideration;
- (ii) a draft EARF, where applicable, before appraisal;<sup>5</sup>
- (iii) the final EIA or IEE, upon receipt by ADB;
- (iv) a new or updated EIA or IEE, and a corrective action plan, if any, prepared during project implementation, upon receipt by ADB; and,
- (v) the environmental monitoring reports, upon receipt by ADB.

<sup>5</sup> If no further mission for appraisal is required, the document will be posted before the management review meeting or the first staff review meeting for sovereign projects, or before the final investment committee meeting for nonsovereign projects, as applicable (ADB procedures).

## 2.4 Institutional capacity to comply with environmental requirements

### 2.4.1 Existing Organizational Structure

22. This sector loan will be the first project for EESL that will involve financing from ADB. Currently, EESL has no unit or staff responsible in dealing with environmental concerns and/or compliance to environmental requirements of multilateral banks such as ADB.

23. Relevant to the project components, EESL has units for streetlight project implementation; DELP Planning and Coordination/Other Appliances and International Cooperation; and AgDSM and Municipal DSM (MuDSM).

24. As the Executing Agency (EA), EESL will be responsible for appraising, processing and implementing the respective projects under the sector loan. EESL will be responsible for preparing the technical reports which may include feasibility studies, preliminary design reports, detailed design reports, and special conditions on environmental compliance in the bid documents.

25. Given this responsibility, capacity building on ADB's environmental requirements and SPS 2009 will help EESL in the effective implementation of the sector loan. The capacity building can extend to other key project stakeholders.

### 2.4.2 Project Due Diligence

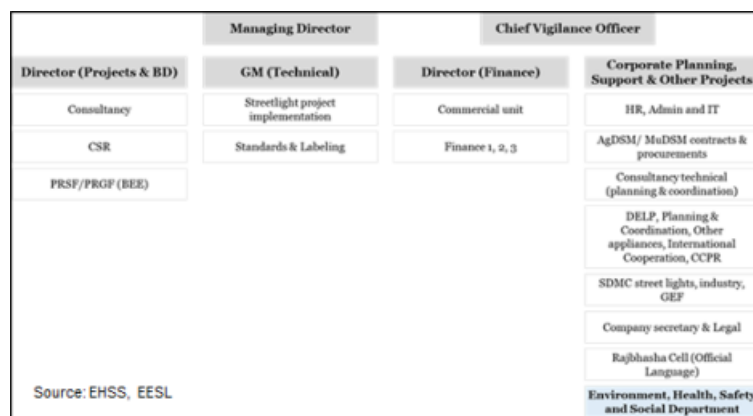
26. Recognizing the need to mainstream environmental considerations in their operations, EESL is in the process of institutionalizing their environmental health and safety, and social (EHSS) management system. The EHSS manual will outline the vision, objectives, management system and governance controls to guide the operations and projects implementation of EESL. The EHSS manual will be divided into standard operating procedures, and documentation for records management (see below).

<b>Standard Operating Procedure (SOP)</b>	
SOP 01	EHSS Risk Management
SOP 02	Waste Management
SOP 03	Fire and emergency procedures
SOP 04	Electrical safety
SOP 05	Work at height and fall prevention
SOP 06	Portable tools and equipment
SOP 07	Traffic safety
SOP 08	Personal protective equipment
SOP 09	Work permit system
SOP 10	Safe lifting operations
SOP 11	Safety audit procedure
SOP 12	Criteria for selection of warehouse
<b>Documentation Formats (DF)</b>	
DF 01	Legal checklist
DF 02	Accident/Incident Reporting
DF 03	EHSS Risk mitigation plan
DF 04	Sample project report

27. Currently, SOP 02 on waste management is being followed by project managers of EESL including their vendors and sub-contractors. Full implementation of the EHSS management system will require the creation of the Environmental, Health, Safety and

Social (EHSS) Department under the Corporate Planning, Support and Other Projects (see **Figure 2.1**). The EHSS Department will be responsible for monitoring the progress on risk identification, evaluation, mitigation and impact evaluation of EHSS issues. The Managing Director of EESL will ensure the successful implementation of the EHSS management system.

**Figure 2.1: EHSS Governance Structure**



### 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS

28. Based on the available information, EESL conducted due diligence of sample core subprojects in Rajasthan for municipal streetlights and agriculture pump and in Maharashtra for household lightings. Potential subprojects have also been identified in Andhra Pradesh, Goa, Uttar Pradesh, and Karnataka.

#### Component 1 Street Lighting

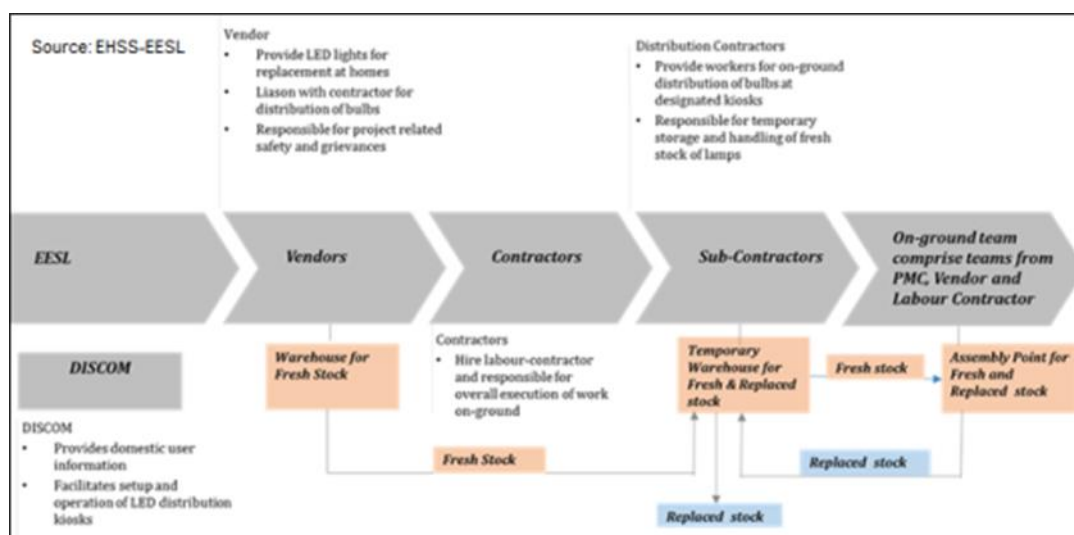
29. This will involve the replacement of streetlights in selected urban areas with the more efficient LED lights. EESL will implement the program in partnership with urban local bodies (ULBs) and local electricity boards or power distribution companies (DISCOMs). EESL will appoint a lighting vendor for end-to-end replacement of existing street lights with LED lights. The dismantled bulb lights will be either deposited to the ULBs for disposal following the regulations set forth by SPCBs or will be purchased back by the lighting vendors through the buy-back agreements. Contract between EESL and the ULBs or the DISCOMs will include the requirement of compliance to the EHSS and relevant environmental laws. **Figure 3.1** shows the structure of the street lighting program while the potential impacts are given in **Table 3.1**.

**Table 3.1: Potential Environmental Impacts of Component 1**

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
Streetlighting • replacement of light bulbs with LED	<ul style="list-style-type: none"> <li>• accumulation of used bulbs and disposal</li> <li>• improper handling of replaced bulbs resulting to their breakage and posing health risks to workers</li> <li>• improper work practices and unsafe working conditions</li> </ul>	<ul style="list-style-type: none"> <li>• prepare overall health and safety (H&amp;S) plan for street lighting component to minimize risks to workers</li> <li>• provide workers with personal protective equipment, install clear and visible warning signs, and dispose replaced bulbs following</li> </ul>	PMU-EESL, DISCOMs, ULBs, suppliers/vendors	EESL, SPCBs, ADB

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
	which may cause accidents or death <ul style="list-style-type: none"> <li>• traffic accidents due to inadequate warning signs</li> <li>• complaints from affected people or community</li> </ul>	the requirements of SPCB or through buy-back agreement <ul style="list-style-type: none"> <li>• require submission of applicable government permits and chain-of-custody forms for supply chain of light bulbs</li> <li>• contracts will include compliance to EHSS of EESL (SOP 02 –waste management)</li> <li>• verify the record and/or declaration regarding waste disposal based on applicable laws and regulations</li> <li>• vendor to provide a complaints call centre</li> </ul>		

**Figure 3.1 Project Structure of the Street Lighting Program**



**Component 2 DSM-Based Efficient Lighting Program (DELP) and Ceiling Fans**

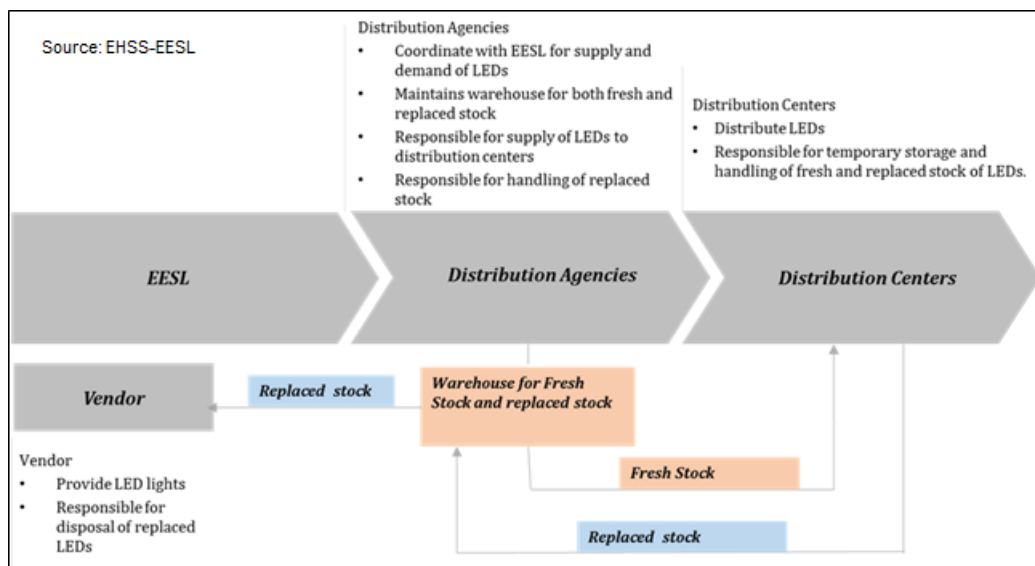
30. In this component, incandescent bulbs (ICLs) will be replaced with more efficient LEDs for domestic and/or commercial consumers. DELP will be implemented in partnership with the DISCOMs. EESL appoints a vendor for distribution of LEDs to households in the participating states. **Figure 3.2** presents the structure of DELP while the potential impacts are given in **Table 3.2**.

**Table 3.2: Potential Environmental Impacts of Component 2**

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
DSM-based Efficient Lighting Program (DELP) and ceiling fans	<ul style="list-style-type: none"> <li>• accumulation of used ICLs and ceiling fans and their disposal</li> </ul>	<ul style="list-style-type: none"> <li>• prepare overall health and safety (H&amp;S) plan for DELP component to minimize risks to</li> </ul>	PMU-EESL, DISCOMs, Vendors and/or suppliers	EESL, ADB, SPCBs

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
	<ul style="list-style-type: none"> <li>improper handling of replaced bulbs resulting to their breakage and posing health risks to workers</li> <li>improper work practices and unsafe working conditions which may cause accidents or death</li> <li>complaints from domestic users</li> </ul>	<p>workers</p> <ul style="list-style-type: none"> <li>provide workers with safety gloves, safety clothes, etc.</li> <li>conduct awareness raising program on ICL disposal and ceiling fans to customers (e.g. flyers, marketing)</li> <li>to submit environmental permits for warehouse and disposal including the chain-of-custody forms for supply chain</li> <li>contracts will include compliance to applicable sections of EESL-EHSS</li> <li>verify the record and/or declaration regarding waste disposal based on applicable laws and regulations Vendors to set-up complaints call centre</li> </ul>		

**Figure 3.2 Project Structure of DELP**

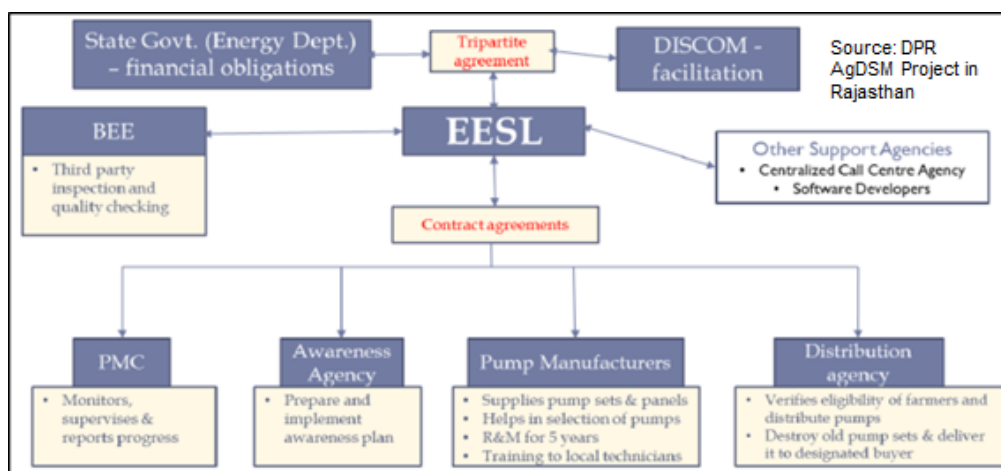


**Component 3 Agricultural DSM**

31. This component will involve the replacement of the old and inefficient agricultural pumps with BEE 5 star rated energy efficient pumps to farmers. Implementation will not cause additional costs to farmers. **Figure 3.3** shows the project flow of AgDSM while **Table 3.3** presents the potential impacts.



**Figure 3.3: AgDSM Project Flow and Contractual Arrangement**



32. EESL or its implementing partner shall provide a written assurance to DISCOMs describing the manner of disposal of the old pumps. A hole will be made to the old pumps to ensure that it will not be reused for the same purpose. Only licensed or authorized metal recyclers will dispose of the old pumps. DISCOM shall have the right to audit or hire a third-party auditor to confirm the appropriate disposal of all old pumps. Potential environmental impacts of AgDSM are given in **Table 3.3**.

**Table 3.3 Potential Environmental Impacts of Component 3**

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
AgDSM • Replacement of inefficient agricultural pumps	• Collection of replaced pumps	<ul style="list-style-type: none"> <li>prepare overall health and safety (H&amp;S) plan for AgDSM component to minimize risks to worker</li> <li>Set guidelines and/or procedures to be followed in collecting and in temporary storage of the agricultural pumps</li> <li>Set-up collection centres and/or identify potential collection centres</li> <li>A hole will be made to the old pump to avoid reuse for the same purpose</li> </ul>	PMU-EESL, Vendors/suppliers and/or Contractor	EESL, ADB
	• Transport of replaced pumps	<ul style="list-style-type: none"> <li>Transporters of collected agricultural pumps will have the required applicable permits/ license, if needed</li> <li>Handling of replaced agricultural pumps collected will be transported following the applicable State</li> </ul>		

Component	Potential Environmental Impacts	Mitigation Measures	Responsible Implementing Unit	Supervising Unit
		environmental regulations, and EESL-EHSS Guidelines		
	<ul style="list-style-type: none"> <li>• Destruction and disposal of replaced pumps</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain a procedures manual for the final disposal of replaced agricultural pumps following the requirements of the applicable laws</li> <li>• Only authorized and/or licensed recyclers will be allowed to recycle the pumps or recover the metals per government regulations</li> </ul>		

#### 4.0 ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

##### 4.1 Criteria for Subproject Selection

33. Aside from Rajasthan, Maharashtra, Andhra Pradesh, Goa, Uttar Pradesh, and Karnataka, additional states may be included during Project implementation subject to further due diligence and acceptance by ADB in accordance with its eligibility requirements. EESL will ensure that all subprojects are appraised, selected and approved in compliance with the requirements of ADB.

34. To be considered in the investment project, each candidate subproject will need to have the following:

- (i) Detailed Project Report completed in a format and to a level of detail acceptable to ADB;
- (ii) All necessary counterpart arrangements agreed including the implementation schedule and repayment terms;
- (iii) Scheduled to be completed no later than December 2020;
- (iv) Yield a financial internal rate of return exceeding its weighted average cost of capital, and an economic internal rate of return of at least 12%;
- (v) Meet category C on environment according to SPS 2009; and,
- (vi) Use no funds from other bilateral and multilateral sources to co-finance the projects allocated to ADB unless complementary arrangements will clearly be agreed beforehand and avoid duplication and double counting.

35. Environment-related criteria will be as follows:

- (i) Design and selection of subprojects will consider the input from public consultations (if any);
- (ii) Subprojects will have minimal or no adverse environmental impacts (i.e. Category C based on SPS 2009). No subproject will be located in an environmentally-sensitive area such as wildlife sanctuary, national park, or statutory protected area for biodiversity or ecological functions, or the buffer zone of such environmentally-sensitive area, or in critical or sensitive areas identified as cultural, archaeological or heritage sites and monuments by relevant authorities or the buffer zone of such a site or monument;
- (iii) Environmental screening of the subprojects will be done using the applicable rapid environmental assessment (REA) checklist (see **Appendix 1**);

- (iv) Only state with existing treatment, storage, and disposal facility for solid waste (which may include hazardous waste) will be considered for funding unless an alternative waste management arrangement is identified; and,
- (v) All necessary national and local government approvals and/or clearance (if required) will have been obtained for the subproject prior to implementation.

36. No subproject that may potentially incur adverse environmental impacts prior to the adoption of mitigation measures (i.e., Category B or Category A based on SPS 2009) will be considered in the investment project. Along with these criteria, the subproject must not be listed in ADB's prohibited investment activities list given in Appendix 5 of SPS 2009 (see **Appendix 2**).

## 4.2 Environmental Assessment Procedures

### 4.2.1 Screening and Categorization

37. PMU-EESL (or their consultant) will complete the REA checklist to determine the environment category (refer to **Table 2.4**). Only category C subproject will be considered for funding. The REA checklist is an integral part of the environment categorization process.

### 4.2.2 Review of Environmental Implications

38. Aside from category, REA checklist will be used also to review the environmental implications of a subproject. Given that no subproject will be considered if it will cause adverse environmental impacts prior to the adoption of mitigation measures (i.e., Category B and Category A), the environment category of all subprojects will be "C." A brief due diligence report (DDR) will be prepared outlining the rationale for category C. The EHSS manual will be referred to aside from the SPS 2009 in preparing the DDR. PMU-EESL will engage a consultant with relevant work experience, if needed to ensure that EHSS manual will be followed.

### 4.2.3 Monitoring of Waste Management

39. The amount of waste generated and/or disposed of will be monitored and included in the project's quarterly progress reports (QPR) submitted to ADB. Designated staff on environmental issues (or a Consultant) at PMU-EESL guided by the EHSS Department will prepare the monitoring summary on waste management. **Table 4.1** presents the proposed format of the monitoring summary. The method of final waste disposal will be included in the summary.

**Table 4.1: Proposed Format of Waste Management Monitoring Summary**

Contract No.	Implementing Partner	Date	Type of Subproject	Location of Subproject	Amount of LED				Amount of ICLs			Number of Agri Pumps Replaced
					D	C	T	Disp	C	T	Disp	

Note: D – distributed; C – collected; T – transported; Disp – Disposed; Implementing partner could be DISCOMs, ULBs or vendors/suppliers

## 4.3 EESL's General Process of Selecting the Subprojects

40. EESL follows a standard process for each subproject that will be considered under the sector loan. The process includes detailed energy audits, assessment of technology requirements, and a demonstration in the project area to assess performance and to calculate energy savings.

41. Subprojects will be selected based on implementation readiness which includes initial assessments of energy efficiency savings potential, stakeholder consultations, and

advanced discussions on contract parameters with the relevant municipalities and distribution utilities. The following tables describe the process for each component.

**Table 4.2: DSM-Based Efficient Lighting Program (DELP)**

Item	Description	Responsible Agency
Memorandum of Undertaking (MoU)	MoU signed between EESL and distribution utility	
Sample Survey	<ul style="list-style-type: none"> <li>Define boundaries for program and supply list of eligible consumers</li> </ul>	Distribution utility (or DISCOMs)
	<ul style="list-style-type: none"> <li>Conduct sample survey to set baseline of prevalence of incandescent bulbs and average usage</li> </ul>	EESL and EE consultant support
Technology Selection	<ul style="list-style-type: none"> <li>Finalize LED specifications, including Wattage and technical specifications</li> </ul>	EESL and EE consultant
	<ul style="list-style-type: none"> <li>Estimate annual energy savings per LED and target coverage under the program</li> </ul>	EESL, EE consulting support, and distribution utility
Contractual Agreement	Contract between EESL and distribution utility for the collection of instalment payments from consumers and transfer terms drafted and signed	EESL and distribution utility
Payment Security	Payment security mechanism finalized, such as bank guarantee, state government guarantee, trust and retention account, or escrow account	EESL and distribution utility
Implementation	<ul style="list-style-type: none"> <li>EESL procures the LEDs through competitive process with requirements for technology specifications and replacement guarantees</li> </ul>	EESL
	<ul style="list-style-type: none"> <li>LEDs are distributed at distribution kiosks</li> </ul>	EESL and distribution agency
	<ul style="list-style-type: none"> <li>LEDs fitted with a unique number and/or marked to avoid resale; replacement guarantee covers project life</li> </ul>	Technology provider and EESL
	<ul style="list-style-type: none"> <li>Consumers informed of ways to maximize efficiency gains</li> </ul>	EESL and media agency
Monitoring and Verification	Database developed and maintained containing records of each participating consumer, the LEDs purchased, the wattage, and the date of purchase.	EESL
	Database verified by an independent Monitoring & Verification (M & V) agency.	M & V agency
	Survey conducted on random sample to ensure proper operation of LEDs.	M & V agency
	Remote monitoring devices installed on a small sample basis to verify continued operation and savings.	EESL

**Table 4.3: Municipal DSM (MuDSM) Street Lighting Program**

Item	Description	Responsible Agency
Memorandum of Undertaking (MoU)	MoU signed between EESL and municipality	
Detailed Project Report developed or validated	<ul style="list-style-type: none"> <li>Detailed energy audit of existing street lighting system and joint verification</li> </ul>	EESL, EE consulting support, and municipality
Technology selection and demonstration	<ul style="list-style-type: none"> <li>Finalize LED specifications, including required lighting need and compatibility with existing system features</li> </ul>	EESL, EE consultant support, and municipality
	<ul style="list-style-type: none"> <li>Install selected technology and measure consumption of the new LED fixtures and consumption of the old features</li> </ul>	EESL, EE consulting support, and municipality

Item	Description	Responsible Agency
	<ul style="list-style-type: none"> <li>• Energy savings is estimated as the measured difference in consumption between the existing and new, LED fixtures from the demonstration. Total energy savings from the program are calculated by scaling the measured per-light savings to the number of lights to be replaced.</li> </ul>	EESL, EE consulting support, and municipality
	<ul style="list-style-type: none"> <li>• Determine annuity payment based on cost recovery (equipment and operations and maintenance (O&amp;M) for EESL, returns on equity and debt servicing costs, savings to the municipality from reduced energy bills and reduced maintenance, and a project management fee</li> </ul>	EESL and municipality
Contractual agreement	Contract between EESL and municipality drafted and agreed that covers the service and equipment specifications and the payment schedule	EESL and municipality
Payment security	Payment security mechanism finalized, such as bank guarantee, state government guarantee, and escrow arrangements	EESL and municipality
Implementation	<ul style="list-style-type: none"> <li>• EESL procures LEDs through competitive process with requirements for technology specifications and replacement guarantees</li> </ul>	EESL
	<ul style="list-style-type: none"> <li>• Equipment supplied and installed (EESL, equipment provider, and municipality)</li> </ul>	EESL, equipment provider, and municipality
	<ul style="list-style-type: none"> <li>• Warranty and O&amp;M coverage</li> </ul>	EESL and equipment provider
Monitoring & verification	<ul style="list-style-type: none"> <li>• Completion certificates issued to municipality.</li> </ul>	EESL
	<ul style="list-style-type: none"> <li>• EESL supplies 1% of total light quantity to municipality to allow rapid replacement in the event of defects or other issues (EESL)</li> </ul>	EESL
	<ul style="list-style-type: none"> <li>• EESL installs centralized monitoring and control equipment to optimize operation</li> </ul>	EESL

**Table 4.4: Agricultural DSM Program**

Item	Description	Responsible Agency
Memorandum of Undertaking (MoU)	MoU signed between EESL and local government	
DPR developed or validated	<ul style="list-style-type: none"> <li>• General survey of all pump sets to be covered under the program</li> </ul>	EESL, EE consulting support, and local government
Technology selection and demonstration	<ul style="list-style-type: none"> <li>• Pump models with Bureau of Energy Efficiency star ratings selected as potential replacements based on power supply parameters and pumping needs</li> </ul>	EESL, EE consultant support
	<ul style="list-style-type: none"> <li>• Demonstration of more efficient pumps (~10) and confirm appropriateness to meet needs</li> </ul>	EESL, EE consulting support
	<ul style="list-style-type: none"> <li>• Energy consumption measured from demonstration of pumps selected for distribution under the program</li> </ul>	EESL, EE consulting support
	<ul style="list-style-type: none"> <li>• Power savings from the program calculated by subtracting consumption from efficient pumps from baseline estimates and scaled to the number of pumps to be distributed under the program and estimated hours of operation</li> </ul>	EESL, EE consultant support, and local government
	<ul style="list-style-type: none"> <li>• Annuity payment calculated based on program costs and energy previously</li> </ul>	EESL, EE consultant support, and local

Item	Description	Responsible Agency
	delivered to farmers that can be sold to other customers, according to calculated energy savings	government
Contractual agreement	Contract between EESL and local government drafted and agreed that covers the service and equipment specifications and the payment schedule	EESL and local government
Payment security	Payment security mechanism finalized, such as bank guarantee, state government guarantee, and escrow arrangements	EESL and local government
Implementation	• EESL procures pumps through a competitive process as per technology specifications and performance guarantees	EESL
	• Pumps distributed to farmers	EESL, equipment provider
	• Warranty and O&M coverage	EESL and equipment provider
Monitoring & verification	• On Deemed saving Model	EESL, EE consultant support
	• EESL may install remote monitoring and optimization equipment	EESL

#### 4.4 Roles and Responsibilities

##### 4.4.1 EESL

42. PMU-EESL will be responsible for implementing and coordinating the daily project activities. PMU-EESL will also ensure that management of wastes generated by the subprojects are done according to the requirements of CPCB and SPCB. Selection and implementation of subprojects will comply with the procedures outlined in the EARF. This includes screening and environment categorization of identified components, reviewing the environmental implications, and drafting of brief due diligence report for Category C projects. Consultations with stakeholders will be conducted consistent with SPS 2009.

##### 4.4.2 Implementing Partners

43. DISCOMs, ULBs, vendors/suppliers and contractors as implementing partners of EESL will ensure that their operations comply with applicable national and state regulations, and have the required and valid permits/licenses.

##### 4.4.3 ADB

44. ADB will conduct regular project review and will facilitate the project implementation.

#### 5.0 CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

##### 5.1 Public Consultation and Participation

45. The project components require intensive consultations to engage stakeholders to buy-into energy efficiency projects. A media consultant will be recruited to manage communications strategies to promote DSM-EE projects. Consultations will continue until the end of the project. PMU-EESL will ensure that the communications strategies and consultations plan will consider the following:

- Disclosure of relevant information that is understandable and accessible to affected people;
- Consultation undertaken in an atmosphere free of intimidation or coercion; and,
- Process of consultation that is gender inclusive and responsive, fit to the needs of disadvantaged and vulnerability groups.

46. PMU-EESL will ensure that the media consultant will make a list of the participants of the consultation process including the summary of the concerns/issues they raised and suggestions on project design, mitigation measures and monitoring, employment opportunities, and other relevant issues on implementation. Participation of women, if any, will be highlighted as well as the date and location of consultations.

47. Public consultations were conducted on 20-21 May 2016 in Rajasthan, one of the target states. Key stakeholders consisting of government officials, consumers/users, farmers, and women's groups were informed about the streetlighting, domestic lighting, and AgDSM highlighting their benefits and the potential participation of women during implementation.

## **5.2 Arrangements for Information Disclosure**

48. Project briefs will be posted in the EESL website. These project briefs will be translated in Hindi and other predominant dialects in India or in the State, and will be made available at the office of PMU-EESL and the regional offices of EESL. This EARF will be publicly disclosed in the ADB website as required by SPS 2009 and PCP 2011.

49. Success stories achieved by the DSM-EE project in reducing the contribution to the greenhouse gas emissions will be prepared by the media consultant and compiled by PMU-EESL for publication and knowledge sharing.

## **5.3 Grievance Redress Mechanism**

50. EESL will ensure that the public, particularly those directly affected by the project components will have the chance to express their legitimate grievance or to file a complaint about the project by setting up a mechanism to address the issues raised. Vendors/suppliers and DISCOMs will be required to set-up a grievance redress mechanism. Bidders will be required to describe the grievance redress mechanism that will be implemented for the subproject.

51. For the DELP program, consumer complaint handling is done in two levels: (i) distribution kiosks while distribution is ongoing, and (ii) customer care service centre, a computerized complaint system facilitated by the LED bulb suppliers of EESL.

## **52. Information Dissemination on Complaint Handling**

- (i) A city-wide awareness campaign is being implemented by EESL to inform the consumers on how, where, and when to avail of the complaint handling scheme including the number of the customer care service centre. Flyers are placed in DISCOM's bill counters to inform consumers.
- (ii) In each bulb package, the customer care service number is displayed in plain and legible language. A general FAQ on the scheme is also included in the bulb packaging.
- (iii) Intermediary campaigns are run to inform the beneficiaries on the retail outlets where fused bulb replacements can be availed of.

- (iv) Relevant information on the scheme is provided by EESL to DISCOMs regularly to deal with complaints received at their call centres.

### 53. Modes of Complaint Handling

#### *Distribution Kiosks*

- (i) A consumer approaches the kiosk run by EESL with a complaint
- (ii) If the complaint is on fused LED, the kiosk supervisor will test the bulb, checks/notes the consumer number in the software, and hands consumer the bulb replacement.
- (iii) If the complaint is about not receiving the bulb, the kiosk supervisor will take the consumer number and supplementary documents, verifies eligibility, checks the software then updates the consumer.

#### *Retail Outlets*

- (i) Supplier shall nominate retail outlets within the project area to facilitate the replacement.
- (ii) Wide awareness campaigns will be conducted to disseminate information about the retail outlets.

54. Handling of complaints will be reviewed periodically to determine if the scheme/system is effective in resolving complaints.

## 6.0 INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

### 6.1 Implementation Arrangements

55. The project will be implemented by EESL starting from December 2016 until December 2020. EESL also operates as a government-owned ESCO in order to facilitate energy efficiency investments including work designing, implementing, monitoring and investing in energy-efficiency projects. EESL has completed several projects on street lighting, DELP, and AgDSM.

56. EESL will set up a PMU to administer, coordinate, monitor, and report on the progress of project implementation to ADB and the GOI. Oversight functions will be done by the EESL Board of Directors. The PMU will consist of technical, financial, and procurement staff. Safeguards support staff will be hired, as and when needed, to ensure compliance to the requirements of ADB's SPS 2009 until the EHSS Department has been established. ADB will conduct regular project review and facilitate the project implementation

### 6.2 Responsibilities During Implementation

57. During implementation, PMU-EESL will be responsible for ensuring that the Implementing Partners specifically those dealing with waste management comply with applicable regulations of the MoEFCC, CPCB, and the SPCBs.

58. Staff of EHSS Department will provide the technical support to the PMU-EESL on environmental issues. They will ensure that the waste management monitoring summary is prepared and incorporated in the project's Progress Report submitted to ADB.

59. ADB will review the REA checklist and waste management monitoring summary submitted by PMU-EESL. **Table 6.1** presents a summary of responsibilities during implementation.



**Table 6.1: Summary of Responsibilities During Implementation**

<b>Project Stage</b>	<b>PMU-EESL</b>	<b>ADB</b>
Site selection for the three components	<ul style="list-style-type: none"> <li>• Screen and review subprojects based on this EARF and EHSS-EESL</li> <li>• Ensure that subprojects also refer to relevant national requirements/regulations</li> </ul>	---
	<ul style="list-style-type: none"> <li>• Complete the REA checklist to ensure that only Category C will be included</li> </ul>	<ul style="list-style-type: none"> <li>• Review the REA checklist submitted by PMU-EESL</li> <li>• Inform the PMU-EESL on the no objection for funding of the subproject</li> </ul>
	<ul style="list-style-type: none"> <li>• Review the environmental implications of subproject</li> <li>• Prepare the short DDR (not exceeding 3 pages) on rationale for the subproject as Category C.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide guidance to PMU-EESL in selecting target states, if needed.</li> </ul>
Identification/finalization of target state or location	<ul style="list-style-type: none"> <li>• Supervise consultation process by the media consultant</li> <li>• Include the provision in the bid documents (or RfP) that collection, transport, and disposal of waste be done following the requirements of SPCBs</li> <li>• Require the submission of government permits/license of implementing partners such as vendors/suppliers, etc. as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Review bid documents/evaluation</li> </ul>
Implementation of subprojects	<ul style="list-style-type: none"> <li>• Ensure that complaints call centres work properly</li> <li>• Verify/monitor implementing partners on their valid government permits/licences</li> <li>• Prepare the waste management monitoring summary as part of project's QPR submitted to ADB</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor progress of implementation during Review Missions</li> <li>• Verify that implementing partners have valid government permits/license</li> </ul>

### 6.3 Capacity-building Needs

60. The following areas for capacity building will be included to ensure that PMU-EESL, ULBs, DISCOMs, and vendors/suppliers are aware of and understand the requirements of ADB:

- (i) Familiarization of and compliance requirements to SPS 2009 and on how to incorporate environmental and social safeguards consideration in project development and implementation (PMU-EESL, ULBs, Discoms, and vendors/suppliers);
- (ii) Development of public information material on energy efficiency and environmental benefits (PMU-EESL); and,
- (iii) Training on the implementation of the corporate EHSS management system (PMU-EESL).

## **7.0 MONITORING AND REPORTING**

61. At the project level, PMU-EESL will be responsible for monitoring the compliance of the Implementing Partners particularly those responsible for the collection, transport, and disposal of replaced street lights, domestic lights and agricultural pumps. PMU-EESL will regularly check that their government permits/licenses to manage wastes are valid.

62. A semi-annual summary report on the waste collected and temporarily stored, transported and disposed by state, and by subproject. Method of disposal will be included in the report. These waste summary reports will be part of the Progress Reports submitted to ADB.

## Appendix 1

### Rapid Environmental Assessment (REA) Checklist

**Instructions:**

- (i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

**Country/Project Title:**

**Sector Division:**


Screening Questions	Yes	No	Remarks
<b>A. Project Siting</b> Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site			
▪ Legally protected Area (core zone or buffer zone)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Special area for protecting biodiversity			
<b>B. Potential Environmental Impacts</b> Will the Project cause...			
▪ impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?			
▪ disturbance to precious ecology (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>▪ increased air pollution due to project construction and operation?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ noise and vibration due to project construction or operation?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ involuntary resettlement of people? (physical displacement and/or economic displacement)</li> </ul>			
<ul style="list-style-type: none"> <li>▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ social conflicts if workers from other regions or countries are hired?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ generation of solid waste and/or hazardous waste?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ use of chemicals?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ generation of wastewater during construction or operation?</li> </ul>			

## A Checklist for Preliminary Climate Risk Screening

**Country/Project Title:**

**Sector:**

**Subsector:**

**Division/Department:**

Screening Questions		Score	Remarks <sup>6</sup>
<b>Location and Design of project</b>	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?		
<b>Materials and Maintenance</b>	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?		
<b>Performance of project outputs</b>	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

**Result of Initial Screening (Low, Medium, High):** \_\_\_\_\_

**Other**

**Comments:** \_\_\_\_\_

\_\_\_\_\_

**Prepared by:** \_\_\_\_\_

<sup>6</sup> If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.



## Appendix 2<sup>7</sup>

### Prohibited Investment Activities List

The following do not qualify for Asian Development Bank financing:

- (i) production or activities involving harmful or exploitative forms of forced labor<sup>8</sup> or child labor;<sup>9</sup>
- (ii) production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phase-out or bans, such as (a) pharmaceuticals,<sup>10</sup> pesticides, and herbicides,<sup>11</sup> (b) ozone-depleting substances,<sup>12</sup> (c) polychlorinated biphenyls<sup>13</sup> and other hazardous chemicals,<sup>14</sup> (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora,<sup>15</sup> and (e) transboundary trade in waste or waste products;<sup>16</sup>
- (iii) production of or trade in weapons and munitions, including paramilitary materials;
- (iv) production of or trade in alcoholic beverages, excluding beer and wine;<sup>17</sup>
- (v) production of or trade in tobacco;<sup>10</sup>
- (vi) gambling, casinos, and equivalent enterprises;<sup>10</sup>
- (vii) production of or trade in radioactive materials,<sup>18</sup> including nuclear reactors and components thereof;
- (viii) production of, trade in, or use of unbonded asbestos fibers;<sup>19</sup>
- (ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
- (x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

<sup>7</sup> ADB SPS 2009, Appendix 5, p76.

<sup>8</sup> Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.

<sup>9</sup> Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" ([www.ilo.org](http://www.ilo.org)).

<sup>10</sup> A list of pharmaceutical products subject to phaseouts or bans is available at <http://www.who.int>.

<sup>11</sup> A list of pesticides and herbicides subject to phase-out or bans is available at <http://www.pic.int>.

<sup>12</sup> A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phase-out dates. Information is available at <http://www.unep.org/ozone/montreal.shtml>.

<sup>13</sup> A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

<sup>14</sup> A list of hazardous chemicals is available at <http://www.pic.int>.

<sup>15</sup> A list is available at <http://www.cites.org>.

<sup>16</sup> As defined by the Basel Convention; see <http://www.basel.int>.

<sup>17</sup> This does not apply to project sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a project sponsor's primary operations.

<sup>18</sup> This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shielded.

<sup>19</sup> This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.