

# Environmental Assessment and Review Framework

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February 2014

Sri Lanka: Green Power Development and Energy  
Efficiency Improvement Investment Program

Prepared by Ceylon Electricity Board, Ministry of Power and Energy, Democratic  
Socialist Republic of Sri Lanka for the Asian Development Bank.

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## ABBREVIATIONS

ADB	–	Asian Development Bank
CCD	–	Coast Conservation Department
CEA	–	Central Environment Authority, Government of Sri Lanka
CEB	–	Ceylon Electricity Board
DC or D/C	–	Double Circuit
DPR	–	Detailed Project Report
EA	–	Executing Agency
EARF	–	Environmental Assessment and Review Framework
EIA	–	Environmental Impact Assessment
EMoP	–	Environmental Monitoring Plan
EMP	–	Environmental Management Plan
EHV	–	Extra High Voltage
GHG	–	Green House Gas
GN	–	Gram Niladhari
GoSL	–	Government of Sri Lanka
GRC	–	Grievance Redress Committee
GRM	–	Grievance Redress Mechanism
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
LILo	–	Line – in- Line- out
MFF	–	Multi-tranche Financing Facility
MOPE	–	Ministry of Power and Energy, Government of Sri Lanka
PAA	–	Project Approving Authority
PCB	–	Poly Chlorinated Biphenyl
PMU	–	Project Management Unit
REA	–	Rapid Environment Assessment
ROW	–	Right of Way
RP	–	Resettlement Plan
SC or S/C	–	Single Circuit
SF <sub>6</sub>	–	Sulphur Hexafluoride
SPS	–	Safeguard Policy Statement

## WEIGHTS AND MEASURES

ha (hectare)	–	Unit of area
km (kilometer)	–	1,000 meters
kV	–	kilovolt (1,000 volts)
kW	–	kilowatt (1,000 watts)
MW	–	Mega Watt

## NOTE{S}

In this report, "\$" refers to US dollars.  
"SLRs" refers to Sri Lankan rupees

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## A. Introduction

1. The Sri Lanka Green Power Development and Energy Efficiency Improvement Investment Program (the Investment Program) is intended to finance a series of investments via a \$400 million Multi-tranche Financing Facility (MFF) in Sri Lanka. It includes generation capacity enhancement, transmission capacity addition and distribution system strengthening installation energy efficiency measures. The Investment Program will also finance a number of “softer” activities, including operational capacity building and implementation supervision. The objective of the investment will be to achieve increased adequacy and efficiency of power system, including renewable energy in Sri Lanka.

2. The MFF will combine finance to support physical and nonphysical investments, including energy efficiency and capacity building. Funding will be structured into two tranches<sup>1</sup>. The Investment Program will be implemented during 2014 – 2021.

### Investment and Financing Plans

3. The long term investment program is estimated at \$4 billion for the 10-year period. The shorter term slice of this requirement runs into US\$ 460 million (2014–2018). The government requests ADB to help finance a share of the short term slice of the investment program and to do so through the MFF. The MFF will have two tranches of \$120 million each. The first tranche (2014) will include construction of the hydropower plant, transmission facilities, and MV sub-projects, as well as the non-physical components. The second tranche (2016) will focus on energy efficiency component, and transmission and MV network sub-projects. The cost of the investment program is estimated at US\$ 460 million, including physical and price contingencies, financing charges during implementation, and taxes and duties.

4. The investment plan is summarized in **Table 1**.

**Table 1: Program Investment Plan**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Construction of Moragolla Hydropower Plant	115.05
2. Transmission Infrastructure Development and Distribution Network Efficiency Improvement	244.62
3. Energy Efficiency Pilot Projects	14.04
4. Project Management and Capacity Building <sup>c</sup>	12.31
<b>Subtotal (A)</b>	<b>386.02</b>
<b>B. Contingencies<sup>d</sup></b>	<b>64.10</b>
<b>C. Financing Charges During Implementation<sup>e</sup></b>	<b>9.88</b>
<b>Total (A+B+C)</b>	<b>460.00</b>

<sup>a</sup> Includes taxes and duties of \$22.48 million and incremental (e.g., land, environmental and social mitigation) cost of \$3.54 million to be financed from Government resources.

<sup>b</sup> In the first quarter 2014 prices.

<sup>c</sup> Includes overhead costs associated with project management, implementation, and monitoring.

<sup>d</sup> Physical contingencies computed at 5% of base cost. Price contingencies computed using ADB's forecasts of international and domestic inflation. Price contingencies computed at 1.8% on foreign exchange costs and 6.5% on local currency costs.

<sup>e</sup> For ADB financing, the interest during implementation has been computed at the 6-month forward London interbank offered rate plus an effective contractual spread of 50 basis points for ordinary capital resources (OCR) loan components and at a base rate of 2.0% for Asian Development Fund loan components. Commitment charges for an OCR loan have been computed at 0.15% per year to be charged on the undisbursed loan amount.

<sup>1</sup> In comparison with the MFF financing modality, policy-based lending helps with policy reforms, but does not finance investments. Sector development program loans combine policy reforms with financing for generally smaller projects. A sector loan provides financing for a series of repetitive small investment projects spread over a shorter period. The subprojects financed by a sector loan are generally “anticipated” or profiled in advance, based on a study of sample subprojects. Tranches of the MFF will finance slices of the Investment Program, but each tranche is substantial and clearly identified at the outset.

Source: Ceylon Electricity Board and Asian Development Bank estimates.

5. The investment program's financing plan is provided in **Table 2**.

**Table 2: Financing Plan**  
(\$ million)

Source	Project 1	Project 2	Project 1 to 2	Share of Total (%)
<b>Asian Development Bank</b>				
OCR loan	121.00	95.00	216.00	46.96
ADF loan	29.00	55.00	84.00	18.26
Subtotal	150.00	150.00	300.00	65.22
<b>Co-financing</b>				
AFD loan <sup>a</sup>	30.00	30.00	60.00	13.04
<b>Government</b>	<b>52.00</b>	<b>48.00</b>	<b>100.00</b>	<b>21.74</b>
<b>Total</b>	<b>232.00</b>	<b>228.00</b>	<b>460.00</b>	<b>100.00</b>

ADF = Asian Development Fund, AFD = Agence Francaise Developpement, OCR = ordinary capital resources.

<sup>a</sup> AFD confirmed that it will co-finance Project 1 and expressed interest in co-financing Project 2 subject to their Management decision at the later stage.

Source: Asian Development Bank estimates.

6. **Table 3** provides a list of ADB funded sub-projects for both Tranches.

**Table 3: Investment Sub-projects funded under Investment Program**

Item	Type	Province	Project Name	Cost (in \$ million)
<b>Tranche I Projects</b>				
1	Generation	Central	Moragolla Hydro Project	103.48
2	Transmission	Western	Kerewalapitiya GSS	8.24
3	Transmission	Eastern	Construction of Kappalturai GSS	12.48
4	Transmission	North Central	Augmentation of Old Anuradhapura GSS	10.34
5	Transmission	Western	Construction of Kalutara GSS	8.78
6	Transmission	Western	Construction of Kesbewa GSS and associated transmission lines	10.52
7	Transmission	Western	Augmentation of Katunayaka GSS	2.52
8	Distribution	R3	33kV Lynx D/C Pole line from Wellampitiya to Ambathale Gantry (5.3 km)	0.38
9	Distribution	R1	Lynx D/C Tower line from Madampe GSS to Bowatte and SBB Gantry at Bowatte	2.41
10	Distribution	R2	Lynx D/C Tower line from Vavunathivuv GSS to Urani and DBB Gantry at Urani	0.54
11	Distribution	R2	Lynx D/C Tower line from Vavunathivuv GSS to Kaluwanchikudy and DBB gantry at Kaluwanchikudy	2.13
12	Distribution	R2	Lynx D/C Tower line from Vavunathivuv GSS to Karadiyanaru and DBB Gantry at Karadiyanaru	1.06
13	Distribution	R2	Lynx D/C Tower line from Vavunathivuv GSS to Thalankuda and DBB Gantry at Thalankuda	1.67
14	Energy Efficiency		DSM Pilot Project	3.14
15	Consulting Services		Project Management and Capacity Development	12.31
<b>Tranche II Projects</b>				
1	Transmission	Northern	Construction of Mannar-Nadukuda TL and Nadukuda GSS	26.10
2	Transmission	Southern	Construction of New Polpitiya-Hambantota (Via Embilipitiya) Transmission line with Hambantota GSS 220kV development	76.98
3	Transmission	Western	Augmentation of grid substations - (Kotugoda, Biyagama, Kolonnawa)	8.45
4	Transmission	Northern	Construction of Chemmuni GSS	10.21
5	Transmission	Western	Augmentation of Kukule GS	2.50
6	Transmission	Northern, North Central	Vavunia GSS 220kV Development	13.53
7	Transmission	Uva	Construction of Samanalawewa-Embilipitiya 132kV TL & Rehabilitation of Embilipitiya GSS	10.48
8	Transmission	Western	Augmentation of Madampe GSS	2.50
9	Transmission	Southern	Construction of Thissamaharama GSS	13.00
10	Distribution	R3	33kV Lynx S/C steel Pole line from Maharagama PSS to Nawinna PSS	0.28
11	Distribution	R3/R2	DC Lynx 33kV Tower Line From Kegalle GSS to Kotiyakumbura via Moronthota	3.47
12	Distribution	R3	Construction of New Gantry at Kotiyakumbura	0.19
13	Distribution	R3	Construction of New Gantry at Choicy, Tawalantenna	0.19
14	Distribution	R1	Lynx D/C Tower Line From Polonnaruwa to Medirigiriya	2.50
15	Distribution	R1	SBB Gantry with 02 incoming & 03 outgoing feeders, Medirigiriya	0.17
16	Distribution	R1	Lynx D/C Tower Line, From Kegalle GSS to Polgahawela	1.25
17	Distribution	R1	Gantry, SBB with 02 incoming & 02 outgoing feeders, Polgahawela	0.17
18	Distribution	R4	Lynx S/C Tower Line From Suriyawewa GS to Mattala airport	0.98

Item	Type	Province	Project Name	Cost (in \$ million)
19	Distribution	R4	Lynx S/C pole line from Panadura GSS to Pallimulla PSS	0.13
20	Distribution	R4	Lynx S/C Pole Line From Pannipitiya GSS to Kesbewa	0.20
21	Distribution	R4	Lynx D/C Tower line from Tissa Gantry to Kataragama	2.01
22	Distribution	R4	DBB Gantry with 02 incoming & 03 outgoing feeders, Kataragama	0.19
23	Distribution	R1	33kV Capacitor Banks	0.02
24	Distribution	R2	33kV Capacitor Banks	0.23
25	Distribution	R3	33kV Capacitor Banks	0.99
26	Distribution	R4	33kV Capacitor Banks	1.26
27	Distribution	R2	Lynx D/C Tower line from Pallekelle GSS to Thalathuoya gantry	0.35
28	Distribution	R2	SBB Gantry at Thalathuoya	0.07

7. Based on **Table 3** above, the type of infrastructure components for the above sub-projects under the 2 tranches of proposed MFF is presented in **Table 4**.

**Table 4: Type of sub-projects and their components**

Type of Sub-projects	Main Components	Infrastructure
1. 33/132/220 kV Transmission lines, substations	Electrical and Mechanical Equipment	Generators, Control Room Panels, Turbines, Switchyard equipment, Transformers.
2. 30 MW Hydropower project	Steel/Concrete structures	Transmission towers, water conductor, Powerhouse, conductors, oil, and power – transmission and distribution lines, water pipelines and amenities.
3. Facilities, buildings		
4. Roads, water pipelines	Civil Works	Barrage, water diversion structures, Buildings- power house, control rooms, storage for water and new and used oil, other equipment housing facilities, muck dumping, roads, river canals, channels, housing and resettlement colonies, labour camps.
5. Energy Efficiency		
6. Capacity Building		

### Impact, Outcome and Outputs

8. The impact of the investment program will be increased access to clean, reliable, and affordable power supply. This will contribute to sustainable economic growth. The outcome will be enhanced clean power generation, system efficiency and reliability. The outputs of the investment program are:

- (i) Hydropower generation developed and connected to the grid in the Central Province - this includes a 30 MW, run-of-river hydropower station at Moragolla in the Central Province<sup>2</sup> including a 132 kV associated transmission infrastructure to connect the station to the grid that will increase clean and low cost base load power generation.
- (ii) Transmission infrastructure capacity for absorbing increase in power demand and future renewable energy generation enhancement - this comprises of construction and augmentation of 220/132 kV and 132/33 kV grid substations and associated facilities in Eastern, Northern, North Central, North Western, and Western provinces that will absorb increase in power demand and ensure system's stable operation with addition of intermittent wind and solar generation.
- (iii) Efficiency of medium voltage network improved - this involves the construction of 33 kV lines and reactive power management through installation of switched capacitor banks in the MV network to address overloading of conductors, voltage drop in MV lines and poor power factor.
- (iv) Demand-side management for energy efficiency improved - demand-side management (DSM) interventions will be introduced, resulting to energy savings (e.g. use of smart grid technologies, smart buildings, cold thermal storage).
- (v) Capacity development support provided - the investments will be reinforced through financing for non-physical capacity development components including:
  - (a) institutional capacity for power sector development and energy efficiency improvement,
  - (b) project management including implementation supervision and preparation of new projects for the second tranche.

<sup>2</sup> The detailed engineering design of this hydropower station, including safeguard assessments and preparation of relevant bidding documents, was completed under Loans 2733/2734(SF)-SRI: Sustainable Power Sector Support Project.

9. Consistent with ADB's Safeguard Policy Statement (SPS 2009), this Environmental Assessment and Review Framework (EARF) covers the MFF as a whole and it provides guidance to be followed for the following tranche, sub-projects and/or components that are prepared after MFF approval. The purpose of this Environmental Assessment and Review Framework (EARF) is to guide the project proponent to comply with all national environmental laws and regulations and ADB Safeguard Policy Statement 2009 for tranche 2 under the program.

10. This EARF has been developed and agreed with CEB to ensure that the Program complies with the provisions of ADB's SPS 2009 and Sri Lankan laws (described in section B below). Tranche 2 cannot be assessed prior to MFF approval as the scope of the subprojects/components to be funded are yet to be finalized. The EARF provisions shall guide CEB in the selection, screening and categorization, environmental assessment, and preparation and implementation of safeguard plans (such as an environmental management plan or EMP) of Tranche 2 sub-projects. Since the environmental assessment reports and environmental management plans to be prepared for subsequent tranches are the borrower's documents, these documents shall be officially endorsed by CEB and will be submitted to ADB.



## **B. Assessment of Legal Framework and Institutional Capacity**

11. GoSL and ADB environment policies and procedures apply to all projects/sub-projects. Power transmission projects are normally classified by ADB as Category B, and distribution projects are normally classified as Category B or C. Category A may apply to hydropower project or transmission/distribution projects located in environmentally sensitive areas.<sup>3</sup> For each major investment component an initial environmental examination (IEE)/or environment impact assessment (EIA) will be prepared following ADB's Environment Policy, 2002 and Environmental Assessment Guidelines, 2003 and the new Safeguard Policy 2010 and guidelines which is approved by ADB's Board of Directors and National<sup>4</sup> environmental assessment regulations and guidelines. Based on these IEE/EIA reports, an IEE/EIA with environmental management plan (EMP) and budget will be prepared for each sub-project.

12. **Annexure 1** provides the key National Environmental Policies and procedures applicable to all projects in Sri Lanka.

### **Environmental Regulatory and Policy Framework for Subproject Selection**

13. Some of the relevant **Government of Sri Lanka Regulations and Acts** are as follows:

- (i) National Environmental Act No. 47 of 1980 and amended Act No. 56 of 1988; Government Gazette No. 772/22 of 24 June 1993 and No. 859/14 of 23 February 1995.
- (ii) Coast Conservation Act No. 57 of 1981.
- (iii) Municipal Councils Ordinance No. 29 (1947) and Urban Councils Ordinance No. 61 (1939).
- (iv) Felling of Trees (Control) Act No 9 (1951).
- (v) Fauna and Flora Protection Ordinance No. 2 (1937 as amended).
- (vi) Forests Ordinance No. 16 (1907 as amended).
- (vii) Fisheries and Aquatic Resources Act No. 2 (1996).
- (viii) Antiquities Ordinance No. 9 (1940 as amended).
- (ix) Wildlife Protection Society Act 1968.

14. Some of the relevant **International Treaties / Conventions / Declarations** to which Government of Sri Lanka is a signatory are as follows:

- (i) International Union for the Conservation of Nature (IUCN)<sup>5</sup>
- (ii) Convention on Migratory Species or Wild Animals (CMS).
- (iii) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- (iv) The Ramsar Convention on Wetlands.
- (v) United Nations Educational, Scientific, and Cultural Organisation (UNESCO) World Heritage Convention.
- (vi) The Basel Convention on the Control of Transboundary Movement of Hazardous

<sup>3</sup> Environmentally-sensitive areas include National Parks, Wildlife Sanctuaries, Bio-reserve zones, nature reserves, or wetlands as declared by GOSL and areas declared as heritage sites. CEA's regulatory approval is required for right-of-way and sites located in reserved forests, wildlife preserves, national parks, and other designated sensitive areas

<sup>4</sup> Section 23 BB of the National Environmental Act requires EIA and IEEs for environmentally sensitive projects. The following acts, laws, rules and guidelines may be applicable to the investment program: (i) National Environmental Act No.47 of 1980, amendment N° 56 of 1988, and other amendments (ii) National Environmental (Protection & Quality) Regulations, N° 01 1990 (iii) National Environmental (Ambient Air Quality) Regulations, 1994 (iv) Soil Conservation Act (Chapter 450 -NEA) (v) Fisheries and Aquatic Resources Act 1996 (vi) Irrigation Act 1973 (vii) Agrarian Services Act, 1979 (viii) Environment Protection Liaison (EPL) (ix) Electricity Act 2009 (x) Forest Act (Amendment Act N°: 01 of 2000 Act to amend felling of trees control) (xi) Coast Conservation Act N° 57 of 1981 (xii) Electricity Act 2009 (xiii) Land Acquisition Act, 1989 (xiv) National Involuntary Resettlement Policy (xv) Ceylon Electricity Board Act, 1969 and (xvi) Antiques Ordinance, 1960 (xvii) IS Codes and CEA Guidelines for monitoring and analysis of air, water, soil, etc.

<sup>5</sup> The 2007 National Red List of Threatened Fauna and Flora of Sri Lanka has been jointly prepared by the International Union for the Conservation of Nature (IUCN) in Sri Lanka and the Ministry of Environment and Natural Resources. The publication can be downloaded from [www.nationalredlist.org/App\\_Files\\_Uploaded/Sri%20Lanka%20Red%20List%202007.pdf](http://www.nationalredlist.org/App_Files_Uploaded/Sri%20Lanka%20Red%20List%202007.pdf). According to the 2007 National Red List Table 15 (Distribution of threatened fauna and flora in the administrative districts of Sri Lanka), the following are the identified threatened species in Colombo District: 3 butterflies, 10 fresh water fishes, 2 amphibians, 3 reptiles, 5 birds, 8 mammals, and 22 flora

Wastes and their Disposal.

- (vii) The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals & Pesticides in International Trade.
- (viii) The Stockholm Convention on Persistent Organic Pollutants (POPs).

### **B.1 National Government Environment Classification**

15. Some of the relevant GoSL regulations and acts include: the National Environment Act N° 47 of 1980 (NEA) and its 1988 amendments that is the national charter for protection and management of the Environment; the Coast Conservation Act N° 57 of 1981; and, the standard Environment Impact Assessment (EIA) procedure. The National Environmental Act, N° 47 of 1980 and its corresponding amendments, sets out the requirements for environmental assessment studies<sup>6</sup>. The Notification states that Environmental Clearances (ECs) are required for specified activities/projects, and must be obtained before any construction work or land preparation (except land acquisition) may commence. The regulations specify activities for which environmental assessment is mandatory, and those which could occur within project are as follows:

- (i) projects that fall within 100 m from the boundaries of or within any area declared under (a) the National Heritage Wilderness Act No. 3 (1988); (b) the Forest Ordinance (Chapter 451);
- (ii) whether or not such areas are wholly or partly within the coastal zone as defined in the Coast Conservation Act No. 57 (1981); and
- (ii) projects that fall within sensitive areas.

16. Sensitive areas are defined in the EIA Regulations as:

- (i) any erodable area declared under the Soil Conservation Act (1951, 1953);
- (ii) any flood area declared under the Flood Protection Ordinance (1924, 1955);
- (iii) any flood protection area declared under the Land Reclamation and Development Corporation Act (1968, 1982);
- (iv) any reservation beyond the full supply level of a reservoir;
- (v) any archaeological reserve, ancient, or protected monument as defined or declared under the Antiquities Ordinance (1965);
- (vi) any area declared under the Botanic Gardens Ordinance (1928, 1973);
- (vii) areas within or less than 100 m from the boundaries of any area declared under the Forest Ordinance and National Heritage and Wilderness Act (1988);
- (viii) areas within or less than 100 m from the boundaries of any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (1937);
- (ix) areas within or less than 100 m from the high flood level contour of a public lake, as defined by the Crown Lands Ordinance (1947, 1949, 1956), including those declared under Section 71 of the ordinance;
- (x) areas 60 m or less from the bank of a public stream as defined in the Crown Lands Ordinance, with a width of more than 25 m at any point; and
- (xi) areas declared under the Urban Development Authority Act No. 41 (1978) and Act No 4 (1982) Section 29 (this indicates in its definition that laws are valid to the areas of the local authorities).

17. The EIA process in Sri Lanka is managed and monitored by the Central Environmental Authority (CEA) and implemented through a number of State Agencies designated by CEA as Project Approving Agencies (PAA). In Sri Lanka, after scoping, a two stage process is adopted where the sub-projects are categorized as “Prescribed” or “Unprescribed”. Following approval, a project monitoring committee is formed to monitor the project implementation. The Project is categorized as “Unprescribed” projects which required Initial Environmental Examination (IEE) or “Prescribed” which required Environmental Impact

<sup>6</sup> The EIA procedures applicable today are based on the Gazette (Extra -ordinary) N°: 772/22 dated 24 June 1993; N° 859/14 dated 23 February 1995; N° 1104/22 dated 06 November 1999; N° 1108/1 dated 29 November 1999 and N° 1159/22 dated 22 November 2000 of the Democratic Socialist Republic of Sri Lanka.

Assessment (EIA) depending on the scale of the project and the nature of its impacts after evaluating Preliminary Information (PI) requests.

18. The requirement for EIA and the level of study required are determined by the Central Environment Authority (CEA) after submission by the proponent of a project information document (PID), plus supporting information if relevant. There are two possible outcomes:

(i) Categorical exclusion: The activity is not on the list of prescribed projects in the EIA regulations, is not in or near a sensitive area, has not been the subject of public protest, and it is clear from the PID and supporting information that the project will have no significant environmental impacts. Environmental clearance is granted (with or without conditions) and the project may proceed; and

(ii) all other projects require environmental assessment, and the CEA establishes a scoping committee to decide on the level of study (EIA or IEE) and prepare terms of reference (TOR). Alternatively, if the project lies wholly within the jurisdiction of a single government agency, CEA may refer the project to this authority (as the project approving agency) to administer the EIA process. A technical review committee reviews the completed EIA or IEE report and recommends whether environmental clearance shall be granted; the final decision is made by CEA.

19. The IEE/EIA process in coastal areas is covered by the Coast Conservation Act (CCA) of 1981. CCA does not specify when an EIA is required for a particular project, but generally the Coast Conservation Department (the regulatory agency for the CCA) interprets this provision as that “an EIA is required when the impacts are likely to be significant”. An exception is made for ‘environmentally sensitive areas’ (ESA) in the coastal zone; projects in ESAs are subject to regulations as determined by the National Environmental Act N° 56 of 1988. Projects outside the coastal zone and in ESAs are to be cleared according to procedures determined by the NEA (1988) where the Ministry of Environment in 1993 had determined that IEE/EIA are to be conducted only for a prescribed list of 31 (types of) projects. IEE/EIAs are to be cleared by Project Approving Agencies (PAAs), of which 14 are designated in an order published by the Ministry of Environment in 1993. Appendix 1 illustrates the process of obtaining environmental clearance and a CCD permit.

20. No development or encroachment of any kind is permitted in archaeological reserves declared under the Antiquities Ordinance No. 9 (1940) as amended (Section 34). The Director General of Archaeology is empowered to conduct an archaeological impact assessment of areas that may be affected by development or other projects proposed by the government or any person.

21. No construction activities are permitted in national reserves<sup>7</sup> and forest reserves<sup>8</sup>. Sanctuaries, also declared under the Fauna and Flora Protection Ordinance, may include privately held land. Clearance from the Department of Wildlife Conservation is required if construction is proposed in sanctuaries. Construction within a 1-mile (1.6 km) radius of a national reserve, sanctuary, or buffer zone needs permission from the Department of Wildlife Conservation. Any construction taking place in close proximity to a forest reserve must be approved and cleared by the Forest Department. Any development activity within a fishery reserve<sup>9</sup> requires the permission and approval of the Director of Fisheries and Aquatic Resources.

## **B.2 ADB Policy**

22. The objective of ADB’s due diligence for the MFF is that EA ensures the environmental soundness and sustainability of projects and to support the integration of

<sup>7</sup> National reserves are under the jurisdiction of the Department of Wildlife Conservation as per Fauna and Flora Protection Ordinance No. 2 of 1937 as amended.

<sup>8</sup> Forest reserves are under the jurisdiction of the Forest Department per Forest Ordinance of 1907 as amended.

<sup>9</sup> Certain areas adjoining earmarked reservoirs and water bodies can be declared as a fishery reserve with the concurrence of the Minister of Wild Life and Natural Resources.

environmental considerations into the project decision-making process. Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

23. The *SPS Requirements (SR1): Environment* are based on the following policy principles:

- Use screening process for each proposed project to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.
- Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.
- Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.
- Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.
- Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.
- Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.
- Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.
- Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development and management of renewable natural resources.
- Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the *World Bank Group's Environmental, Health and Safety Guidelines, 2007*. Adopt

cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.

- Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.
- Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of “chance find” procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

### **Screening and Categorization**

24. ADB will carry out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. Screening and categorization is undertaken to (i) reflect the significance of potential impacts or risks that a project might present; (ii) identify the level of assessment and institutional resources required for the safeguard measures; and (iii) determine disclosure requirements.

### **Environment Categorization**

25. ADB uses a classification system to reflect the significance of a project’s potential environmental impacts. A project’s category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project’s area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

- (i) Category A - A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required. Category A may apply to projects located in environmentally sensitive areas<sup>10</sup>.
- (ii) Category B - A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- (iii) Category C - A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- (iv) Category FI (Financial Intermediary) - A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI.

### **B.3 Equivalence of ADB SPS 2009 with Government of Sri Lanka laws, regulations**

26. **Table 6** provides a brief write up on the equivalence of the current GoSL Environmental Rules and Regulations and ADB Safeguard Policy Statement 2009

<sup>10</sup> Environmentally-sensitive areas include National Parks, Wildlife Sanctuaries, Bio-reserve zones, Eco-sensitive Zones, or wetlands as declared by GoSL and areas declared as heritage sites. Environment and wildlife Department’s approval is required for right-of-way and sites located in reserved forests, wildlife preserves, national parks, and other designated sensitive areas.

**Table 6: Equivalence of the GoSL Environmental Rules and Regulations and ADB Safeguards Policy 2009**

Policy Statement	Sri Lanka	ADB	Comments
1. Commensurate Environmental impacts and risks	✓	✓	National Environmental Act N° 47 of 1980, amendment N° 56 of 1988, and other amendments  National Environmental (Protection & Quality) Regulations, N° 01 1990  National Environmental (Ambient Air Quality) Regulations, 1994 TOR releases by the CEA
2. Asses potential impacts and risks to physical, biological, socioeconomic and physical cultural resources of the project affected area	✓	✓	
3. Examine alternatives for project's location, design, technology and potential environmental impacts	✓	✓	In accordance with the comments of CEA
4. Preparation of Environmental Management Plan		✓	National Environmental Act
5. Carrying out Public Consultations and concerns	✓	✓	National Environmental Act
6. Establish a grievance redress mechanism to receive and facilitate resolution to the affected people's concerns and grievances regarding the project's environmental performance	✓	✓	PUCSL and LARC to facilitate resolution of affected people's concerns. Component of IEE report grievance redress mechanism - addressed in accordance with the ADB requirement.
7. Disclose a draft Environmental Assessment: then disclose the final Environmental Assessment.		✓	Comments From CEA review committee
8. Implementation of monitoring effectiveness	✓	✓	ADB requires Environmental Monitoring Plan monitoring of mitigation of environmental impacts. CEA releases guidelines and recommendations for the mitigating environmental impacts
9. Application of pollution prevention and control technologies	✓	✓	ADB requires Environmental Monitoring Plan monitoring and mitigation of environmental impacts and risks. National Environmental Act, N° 47 of 1980 National Environmental (Protection & Quality) Regulations, N° 01 1990  Environmental Standards published by CEA - 1988  CEA releases specific guidelines and recommendations for the mitigation of environmental impacts relevant to each sub project
10. Provision of workers safety and health		✓	Electricity Act 2009 (Chapter 537) Appropriate extent of workers safety and the health discussed under the EMP
11. Conserve physical cultural resources and avoid destroying or damaging them	✓	✓	The Ancient Monuments and Archaeological Sites and remains Act, 1958. Act N° 24 of 1958 Antiques Ordinance, 1960

#### **B.4. Institutional Capacity**

27. CEB will be the Executing agency (EA) and the Implementing Agency (IA) for

generation projects (Tranches 1 and 2). A functional Project Management Unit<sup>11</sup> headed by a Deputy General Manager, who reports to the General Manager of CEB, has appropriate staffing to represent the EA since the time of previous loans. CEB will establish separate Project Implementation Units (PIUs) as required comprising of dedicated senior staff who would be responsible to deal with (a) project preparatory activities including providing information and overseeing the development of bid documents; (b) financial matters including agreeing with ADB on financial covenants; (c) supervision and implementation of the environmental and social safeguards requirements, as well as any corporate social responsibility plans.

28. CEB through the PIUs is responsible for the design and environmental assessment of sub-projects and monitoring their environmental management during construction and operation. CEB staff expertise will be complemented by qualified consultants who may be utilized to assist in preparing the pipeline of sub-projects as required, including sub-project feasibility studies, safeguard assessments, environmental management plans (EMPs) and monitoring reports. Most technical and human resources required for design and construction for the subprojects will be hired through EPC contracts and monitored by CEB staff.

29. Since CEB has been working as the implementing agency for other ADB loans over a number of years, it has developed a strong in-house capacity to identify, appraise, supervise installation, monitor operation and report on the types of sub-projects that will be funded under the MFF. Appropriate capacity development interventions such as supervision, project monitoring, environment and social assessment and monitoring shall be developed through the ADB funded project.

30. This will ensure that CEB will follow a well-established procedure for feasibility analysis, sub-project design, and environmental and social impact assessment, including procedures for implementation. It should be ensured that staff are recruited and trained by both agencies so that the environmental and social safeguards management is carried out in full compliance with the ADB's Safeguards Policy Statement, 2009 and applicable regulations of the Sri Lankan government.

### **C. Anticipated Environmental Impacts**

31. **Table 7** below illustrates anticipated impacts on the environmental resources for proposed MFF program subprojects in the project affected area. The impacts for transmission and distribution (**Table 7.I**) and hydropower development (**Table 7.II**) are listed separately.

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<sup>11</sup> PMU provides Institutional support for financial management and institutional capacity development to all PIUs.

**Table 7: Summary of Potential Environmental Impacts****TABLE 7.I. Transmission and Distribution**

Sl. N°	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
<b>A. Physical Resources</b>								
1.	Topography	Change in the surface features and present aesthetics due to the construction of the project.	Direct/Local/irreversible		X		The surface soil will be restored to normal slope after tower erection. If there is any excess soil, it shall be disposed off at suitable location. Any loss of vegetation will be attended by CEB as per existing GoSL norms. Within the substation, the excess soil will be disposed off in consultation with CEB as per EMP. The compensatory afforestation of equivalent area of forestland in RoW will be undertaken by the Forest Department to compensate for the loss on CEB expenses to minimise the impact of loss of vegetation as per existing norms under the Forest (Conservation) Act 2002.	During construction activity
2.	Climate	No impact on the climatic conditions	Direct/Local/irreversible	X			No impact on the climatic conditions, hence no mitigation is required	During construction and operation
		Monitoring of SF <sub>6</sub> gas from Electrical Substations	Direct/Local/irreversible		X		Proper record of all SF <sub>6</sub> leakages in substations shall be kept for record	
<b>B. Environmental Resources</b>								
1.	Air Quality	Project will have marginal impact on air quality during the construction period due to increase in the dust emission.	Direct/Local/reversible	X			Water sprinkling at construction site, limited bare soils, maintenance of vehicles.	During construction activity
2.	Noise	Noise due to general construction activities.	Direct/Local/reversible	X			Restriction of noise generating activities at night and use of personal protective equipment like ear plugs, mufflers etc.	During construction activity
		Noise arising from corona noise from conductors	Direct/Local/reversible		X		Monitoring of possible corona noise to identify and correct problems.	During operational phase
3.	Surface and Ground Water quality	Runoff from the construction site	Direct/Local/reversible	X			Careful siting of towers, and access roads.	Before and during construction activity
		Domestic wastewater from construction sites	Direct/Local/reversible		X		For transmission line, domestic wastewater treatment may be done by digging small ditches for waste water and then covering it	During construction and operation



SI. N°	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
							with top soil once the construction team moves to next location. For substation site, the contractor shall provide soak pits for construction workers at the site.	
4.	Soils and Geology	Soil erosion due to tower erecting and clearing of vegetation in the RoW and access roads.	Direct/Local/reversible		X		Avoiding sites, which are prone to soil erosion. Levelling of tower construction sites. Use of few access roads. Rehabilitation and stabilisation of disturbed land at the substations.	During and after the construction activity
		Damage due to seismic activity	Direct/regional / reversible	X			Site selection and proper tower foundation design considering the geological conditions and seismicity of the area.	Before the construction activity.
<b>C. Ecological Resources</b>								
1.	Terrestrial Ecology	Loss of vegetation	Direct/Local/irreversible		X		Location of towers on non-cultivable land area. Selection of few access roads. Compensation for crop and trees (including plantation and home gardens) to villagers. The tree planting for forest land diverted to non-forest and trees felled will be done by the forest department and paid by CEB.	Before the construction phase
2.	Terrestrial Fauna	Disturbance to the local fauna during construction	Direct/Local/reversible	X			Wildlife routes and their habitats have been avoided as far as possible during the route selection. Minimise encroachments, and indirect impacts.	Before and during construction phase
	Avifauna	Disturbance to the local fauna during operation	Direct/Local/reversible	X			Monitoring of transmission line especially for bird strikes during the operation and use of deflectors if required.	During operation phase
3.	Aquatic Ecology	No significant impacts envisaged	Direct/Local/reversible	X			Disposal of construction waste and other waste to avoid polluting the river and streams	Before and during construction phase
<b>D. Human Environment</b>								
1		Fires, explosion and other accidents at the route alignment of transmission line.	Direct/Local	X			Use of personal protective equipment during construction. By lopping and chopping of trees fire hazards will be minimised during maintenance period. Regular inspection of lines for faults prone to accidents.	During construction and operation phase
2.	Health and Safety	Exposure to electromagnetic fields	Direct/Local/continuous	X			Alignment route away from the settlement. No houses in the immediate vicinity will be allowed in the RoW of the alignment. No further mitigation required.	Before and after the construction phase.
3.	Agriculture	Permanent and temporary	Direct/Local/	X			Avoid prime agriculture/plantation land and	Before and during

SI. N°	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
		loss of agriculture land due to tower erection and due to access routes.	reversible				home gardens. Assessment of land required and compensation. Construction activity after crop harvesting and selection of few access routes.	construction phase.
4.	Socio-economics	Beneficial impacts job opportunities during construction phase	Direct/regional		X		Unskilled labour and indirect benefits. Overall economic growth of the region.	During operational phase
5.	Resettlement	Resettlement of any house falling along the RoW.	Direct/Local/reversible	X			Route alignment is selected in such a way that there is no resettlement issue.	Before the construction phase.
6.	Cultural sites	No archaeological, historical or cultural important sites are affected by the construction of the lines.	Direct/Local/reversible	X			No archaeological, historical or cultural important sites are affected.	--
7.	Traffic and Transportation	Traffic congestion due to movement of construction vehicles	Direct/Local/reversible	X			Proper traffic signs at the construction site, ensuring availability and maintenance of proper access roads	During construction phase
8.	Solid Waste Generation	Probability of Surface and ground water pollution	indirect/Local/reversible	X			Minimisation, reuse and recycle whenever possible. Final wastes to be collected and disposed off in compliance with applicable regulations and rules.	During operation phase

TABLE 7.II. Hydropower Project

Sr. No	Environmental attribute	Potential impacts	Nature of Impact	Magnitude of Impacts			Management Plan	Sub-Project Phase
				Low	Medium	High		
<b>A. Physical Resources</b>								
1.	Topography	Change in the surface features and present aesthetics due to the construction at various sub-project sites	Direct/Local/irreversible	X			Plantation surrounding the power house area to improve aesthetics. No other mitigation required	Operation phase
2.	Climate	Impacts on the climatic conditions unknown as removal of trees along alignment and HEPs to be done	Direct/Local/irreversible	X	--	--	Compensatory afforestation	Construction and Operation
3	Hydrology	Operation of headworks	Direct/Local/irreversible	X			Construction of barrage and coffer dam	Operation
		Ground water table	Indirect/Local/re	X			Better water table in the area	Operation

Sr. No	Environmental attribute	Potential impacts	Nature of Impact	Magnitude of Impacts			Management Plan	Sub-Project Phase
				Low	Medium	High		
			versible					
		Dewatered river bed (during lean period) due to stream diversion	Direct/Local/irreversible	X			Since rivers are fed by rain, even during lean period flow would be optimum. Only one turbine operation during lean period	Operation
		Change in flow regime (during lean period) due to stream diversion	Direct/Local/irreversible	X			Since rivers are fed by rain, even during lean period flow would be optimum. Only one turbine operation during lean period	Operation
		Flow disruption (during lean period) due to ponding at diversion	Direct/Local/irreversible	X			Since rivers are rainfed, even during lean period flow would be optimum	Operation
		Change in land use by submergence of land due to ponding at diversion	Direct/Local/irreversible		X		Land to be submerged quite is medium in size	Operation
		Sedimentation	No impact	X			Volume of sedimentation reduces the water in reservoir	Operation
		River morphology	Direct/Local/irreversible	X			Blocks/boulders get dumped in river bed due to change of gradient	Operation
		Pests & Weeds	Indirect/Local/reversible	X			Grown in the reservoir area	Operation
<b>B. Environmental Resources</b>								
1.	Air Quality	Project will have marginal impact on air quality during the construction period due to dust emission.	Direct/Local/reversible	X			Watering at construction site, limited bare soils, maintenance of project vehicles etc.	Construction
2.	Noise	Noise due to general construction activities	Direct/Local/reversible	X			Restriction of noise generating activities at night and use of personal protective equipment like ear plugs, mufflers etc.	Construction
		Noise arising from switch yard operation and corona noise from conductors.	Direct/Local/permanent	X			Locate transformers away from the settlement area. Monitoring of possible corona noise to identify and correct problems. Proper maintenance of equipment/ machineries so the ambient noise standard is met.	Operation
3.	Surface and Ground Water quality	Runoff from the construction site leading to increase in COD, BOD, oil & grease, etc.	Direct/Local/reversible	X			Careful siting of access roads. Sedimentation ponds.	Before construction activity
		Domestic wastewater from construction sites and during operation leading to increase in COD, BOD, oil & grease,	Direct/Local/reversible	X			Domestic waste treatment by providing septic tank.	During construction and operation

Sr. No	Environmental attribute	Potential impacts	Nature of Impact	Magnitude of Impacts			Management Plan	Sub-Project Phase
				Low	Medium	High		
		etc.						
		Oil spillage	Indirect/Local/reversible	X			Containment structures, oil water separation, adopting good practices for oil handling and maintenance works.	During construction and operation
		Oil contamination during maintenance	Indirect/Local/reversible		X		Oil trap installation for separation of oil from water.	During operation
4.	Soils and Geology	Soil erosion due to clearing of vegetation in access roads	Direct/Local/reversible	X			Avoiding sites, which are prone to the soil erosion. Leveling of construction sites. Use of few access roads/power evacuation lines. Rehabilitation and stabilization of disturbed land.	During and after the construction activity
		Soil erosion due to tunnel excavation and clearing of vegetation in the powerhouse and power evacuation line and access roads	Direct/Local/reversible	X			Avoiding sites, which are prone to the soil erosion. Leveling of powerhouse construction sites. Use of few access roads. Rehabilitation and stabilization of disturbed land.	During and after the construction activity
		Improper Debris removal/accumulation	Direct/local/reversible		X		Proper planning for debris removal from tunnel, powerhouse to be stored temporarily/used for site reclamation	Pre-construction and construction
		Damage due to seismic activity	Direct/regional/reversible		X		Site selection and design considering the geological conditions and seismicity.	Before the construction activity
<b>C. Ecological Resources</b>								
1.	Terrestrial Ecology	Loss of vegetation	Direct/Local/Irreversible		X		Minimum corridor width for power evacuation line, access roads. Location of power house at the thinly vegetated area and waste lands which will minimize tree loss. Compensatory afforestation.	Before the construction Phase
2.	Terrestrial Fauna	Disturbance to the local fauna during construction	Indirect/Local/reversible		X		Some wildlife species are reported in the watershed and studies have been done.	During construction phase
		Disturbance to the local fauna during operation	Indirect/Local/reversible	X			Monitoring of power evacuation lines especially for bird strikes during the operation and deflectors will be added if required.	During operation phase
3.	Aquatic Ecology	Disturbance to fish during construction of barrage and impact on downstream fish	Indirect/Local/irreversible	X			Mitigation required in the area between barrage and tail race, and beyond tailrace to maintain fish during minimum flow period and therefore aquatic ecology will have small impact.	During construction/operation phase
<b>D. Human Environment</b>								
1.	Health and Safety	Exposure to electromagnetic fields	Direct/Local/continuous	X			Alignment route away from the settlement. No houses will be allowed near power houses	Before and after the construction phase.
		Fires, explosion and other	Direct/Local	X			Use of personal protective equipment during	During operation

Sr. No	Environmental attribute	Potential impacts	Nature of Impact	Magnitude of Impacts			Management Plan	Sub-Project Phase
				Low	Medium	High		
.		accidents at the substations/power house.					construction and maintenance. Prepare and implement safety and emergency manual at substation. Regular inspection of lines for faults prone to accidents.	phase
2.	Agriculture	Permanent and temporary loss of agriculture land due to powerhouse and due to access routes	Direct/Local/reversible	X			Avoid prime agriculture land. Assessment of land required and compensation. Construction activity after crop harvesting and selection of few access routes.	Before construction phase
3.	Socio-economics	Beneficial impacts from rural and urban electrification. Job opportunities during construction phase	Direct/regional			X	Overall industrial and economic growth of the region.	During operational phase
4.	Resettlement	Resettlement of the house falling in project area.	Direct/Local/reversible	X			Resettlement issues and mitigation measures are separately discussed in the Social Assessment Report.	Before the construction phase
5.	Cultural sites	No archaeological, historical or cultural important sites are affected by the construction of the sub-project.	--	--	--	--	No mitigation required	--
6	Traffic and Transportation	Traffic congestion due to movement of construction vehicles	Direct/Local/Reversible	X			Avoid high density areas, proper traffic signs at the construction site, ensuring proper access roads	During construction Phase
7	Solid Waste Generation	Probability of surface and ground water pollution	Indirect/Local/reversible	X			The oil sludge should be separately stored in the containers. Used oil to be collected and reclaimed by contractors through the Office of Stores and Purchase. Separated oily waste and scrap will be collected and disposed of in compliance with the National Environmental Act, 1980 (incorporating 1988 amendments), and applicable regulations and rules.	During operation phase

## **D. Environmental Assessment for Subprojects and/or Components**

### **D.I Screening and Classification**

#### **D.I.1 Selection Criteria**

32. Subprojects that involve any one of the ten activities in the ADB Prohibited Investment Activities List (*Appendix 5 of the Safeguard Policy Statement, 2009*) shall be excluded.

33. Additional subprojects proposed under the MFF will be screened for compliance with selection criteria listed below prior to additional analysis. Sub-projects that will be planned and implemented shall meet the following specific environmental criteria:

- a. Not located within national parks, wildlife sanctuaries and nature reserves, or wetlands, unless unavoidable for technical reasons.
- b. Any monument of cultural or historical importance is not affected by the subproject.
- c. Does not create any threat to the survival of any community with special reference to tribal community.
- d. Minimises impacts to large habitations, densely populated areas, crossings of national highways, railway lines, and airport areas, other EHV lines, hydrocarbon pipelines etc. to the extent possible.
- e. Requires minimal clearing of any existing forest resources in the project affected area – wherever it is unavoidable, can be minimized and compensated as per regulatory criteria.
- f. Any community utility services like playgrounds, schools, cemetery etc. and any other similar establishments etc. will not be adversely affected.

#### **D.I.2 Biodiversity**

34. As per ADB SPS requirements<sup>12</sup> CEB will assess the significance of project impacts and risks on biodiversity<sup>13</sup> and natural resources as an integral part of the environmental assessment process. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of invasive alien species, and on the use of natural resources in an unsustainable manner. CEB will need to identify measures to avoid, minimize, or mitigate potentially adverse impacts and risks, propose compensatory measures, such as biodiversity offsets, to achieve “no net loss or a net gain” of the affected biodiversity. The topics of concern are modified habitats, natural habitats, critical habitats, legally protected areas, invasive alien species, and management/use of renewable natural resources. CEB will screen the sub-projects for exclusion from environmentally sensitive areas as described below:

##### **a. Modified Habitats**

35. In areas of modified habitat, where the natural habitat has apparently been altered, often through the introduction of alien species of plants and animals, such as in agricultural areas, CEB will exercise care to minimize any further conversion or degradation of such habitat, and will, depending on the nature and scale of the project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of project operations.

##### **b. Natural Habitats**

36. In areas of natural habitat,<sup>14</sup> the project will not significantly convert or degrade<sup>15</sup>

<sup>12</sup> Appendix 1 of SPS 2009 (Sections 8-11)

<sup>13</sup> The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

<sup>14</sup> Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions.

<sup>15</sup> Significant conversion or degradation is (i) the elimination or severe diminution of the integrity of a habitat caused by a major, long-term change in land or water use; or (ii) the modification of a habitat that substantially reduces the habitat's ability to maintain viable populations of its native species. Significant conversion may include, for example, land clearing; replacement of natural vegetation (for example, by crops or tree plantations); permanent flooding (by a reservoir for instance); drainage, dredging, filling, or canalization of wetlands; or surface mining.

such habitat, unless the following conditions are met:

- No alternatives are available.
- A comprehensive analysis demonstrates that the overall benefits from the project will substantially outweigh the project costs, including environmental costs.
- Any conversion or degradation is appropriately mitigated.

37. Mitigation measures will be designed to achieve at least no net loss of biodiversity. They may include a combination of actions, such as post project restoration of habitats, offset of losses through the creation or effective conservation of ecologically comparable areas that are managed for biodiversity while respecting the on-going use of such biodiversity by Indigenous Peoples or traditional communities, and compensation to direct users of biodiversity.

**c. Critical Habitats**

38. No project activity will be implemented in areas of critical habitat<sup>16</sup> unless the following requirements are met:

- There are no measurable adverse impacts, or likelihood of such, on the critical habitat which could impair its high biodiversity value or the ability to function.
- The project is not anticipated to lead to a reduction in the population of any recognized endangered or critically endangered species<sup>17</sup> or a loss in area of the habitat concerned such that the persistence of a viable and representative host ecosystem be compromised.
- Any lesser impacts are mitigated in accordance with para. 30.

39. When the project involves activities in a critical habitat, the borrower/client will retain qualified and experienced external experts to assist in conducting the assessment.

**d. Legally Protected Areas**

40. In circumstances where some project activities are located within a legally protected area, in addition to the requirement specified in para. 31, CEB will meet the following requirements:

- Act in a manner consistent with defined protected area management plans.
- Consult protected area sponsors and managers, local communities, and other key stakeholders on the proposed project.
- Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area.

**e. Invasive Alien Species**

41. CEB will not intentionally introduce any new alien species (that is, species not currently established in the country or region of the project) unless carried out in accordance with the existing regulatory framework for such introduction, if such a framework is present, or unless the introduction is subject to a risk assessment (as part of the environmental assessment) to determine the potential for invasive behaviour. Under no circumstances must species known to be invasive be introduced into new environments. The borrower/client will undertake assessment of the possibility of accidental or unintended introduction of such invasive alien species and identify measures to minimize the potential for release.

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<sup>16</sup> Critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregatory species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities. Critical habitats include those areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's world natural heritage sites

<sup>17</sup> As defined by the World Conservation Union's Red List of Threatened Species or as defined in any national legislation

#### f. Management and Use of Renewable Natural Resources

42. Renewable natural resources will be managed in a sustainable manner. Sustainable resource management is management of the use, development, and protection of resources in a way, or at a rate, that enables people and communities, including Indigenous Peoples, to provide for their current social, economic, and cultural well-being while also sustaining the potential of those resources to meet the reasonably foreseeable needs of future generations. This includes safeguarding the life-supporting capacity of air, water, and soil ecosystems. Where possible, the borrower/client will demonstrate the sustainable management of resources through an appropriate system of independent certification.

43. CEB will assess the following safeguards as a standard practice for the sub-project design, construction and operation stages:

- **Pollution Prevention and Abatement.** During the design, construction, and operation of the subproject, CEB will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the *World Bank Group's Environment, Health and Safety Guidelines*.<sup>18</sup> CEB/ADPCL, while designing the sub-projects shall endeavor to ensure pollution prevention, resource conservation, energy efficiency, reduce all types of wastes generation, avoid use of hazardous materials, pesticides and reduce greenhouse gas emissions.
- **Health and Safety.** CEB will apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the *World Bank Group's Environment, Health and Safety Guidelines* for occupational health and safety and community health and safety concerns. H
- **Physical Cultural Resources.** The borrower/client is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources.<sup>19</sup> Such resources likely to be affected by the subproject will be identified, and qualified and experienced experts will assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. The subproject will not remove any physical cultural resources unless the following conditions are met: P
  - No alternatives to removal are available.
  - The overall benefits of the subproject substantially outweigh the anticipated cultural heritage loss from removal.
  - Any removal is conducted in accordance with relevant provisions of national and/or local laws, regulations, and protected area management plans and national obligations under international laws, and employs the best available techniques.

#### D.I.3 Screening Categorisation

44. As soon as sufficient information on subprojects is available, CEB will screen them to determine the environmental category by completing ADB's rapid environmental assessment (REA) checklist in **Annexure 2** (for hydro power sub-projects) and **Annexure 3** (for power transmission/distribution sub-projects) for and submitting this to the ADB for review. The category for each tranche will be established based on the category of the most environmentally sensitive sub-project/component including the direct, indirect, cumulative, and induced impacts within the sub-project's area of influence.

<sup>18</sup> World Bank Group, 2007. *Environmental, Health, and Safety General Guidelines*. Washington, DC

<sup>19</sup> Defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings and may be above or below ground or under water. Their cultural interest may be at the local, provincial, national, or international level.



45. Environmental categories will be assigned using the rapid environmental assessment checklist (as described in ADB Environmental Assessment Guidelines 2003) and adhering to the ADB Safeguard Policy Statement (SPS) 2009<sup>20</sup>. Sub-projects that do not conform to the above criteria shall be dropped or design changes will be suggested as required by ADB and /or GoSL.

## **II. Preparation of environmental assessments and environmental management plans**

### **D.II.1 Preparation of IEEs and EIAs**

46. After categorization, IEE (or full EIA for category A projects) including an EMP with implementation budget will be prepared<sup>21</sup> according to both ADB and CEA guidelines. IEE and EIA should be prepared in accordance with Safeguard Requirements 1 (SR 1) in Appendix 1 of the SPS 2009. The outline for preparation of an EIA is attached as **Annexure 4** (the IEE may have narrower scope depending on nature of sub-project). IEEs and EIAs report the assessment of impacts based on studies conducted to identify the potential environmental impacts.

47. At least one public consultation will be conducted with local community and potentially affected people during IEE preparation, and two public consultations will be conducted during EIA preparation. IEE and EIAs will be reviewed and approved by ADB and GOSL before commencement of detailed design while IEE results will be communicated to the local community before commencement of construction.

48. IEEs/EIAs will need to be prepared and disclosed in accordance with ADB's Public Communication Policy 2011. For Category A subprojects, the EIA shall be made available to general public (in English and local language) and the ADB Board of Directors at least 120 days before the subproject approval by ADB. For Category B subprojects, the IEE need to be disclosed on the ADB, CEB websites.

49. Based on the environmental assessment of the subproject activities, an Environment Management Plan (EMP) will be developed for the subproject to mitigate the adverse environmental impacts. The EMP will set out the mitigation measures, mitigation cost, monitoring requirements and responsible authorities for implementation in order to ensure that adverse effects are minimized or avoided.

### **D.II.2 Responsibilities/Authorities of various agencies**

#### **a. Responsibility of CEB**

50. CEB will be responsible for the implementation of the environmental assessment and review procedures for their respective components as laid down by Government of Sri Lanka as well as this EARF document. This includes, among others, ensuring that the selection criteria are adhered to, the preparation of IEEs/EIAs be done in a timely and adequate manner, environmental monitoring and institutional requirements be fully met while public consultations be carried out satisfactorily. The CEB will submit the Rapid Environmental Assessment (REA) Checklists, EIAs/IEEs for each tranche and submit monitoring reports of each subprojects every six monthly to ADB for review. CEB will also be responsible for obtaining regulatory approval of the environmental protection agencies, if required as per GoSL environmental regulations.

51. CEB will be responsible for preparing the required environmental assessments and obtaining ADB concurrence prior to implementation. CEB shall ensure that

<sup>20</sup>ADB's Safeguards Policy Statement-2009 includes safeguard requirements for environment, involuntary resettlement and indigenous people. Softcopy available at <http://www.adb.org/documents/safeguard-policy-statement>

<sup>21</sup> In the case of Category C, an environmental review is required.

implementation of environmental/mitigation measures as per EMP and their periodic/specific accountability/monitoring and reporting requirements are managed effectively. Also, CEB will ensure all Corporate Social Responsibility (CSR) actions for all sub-projects are monitored in compliance with corporate policy as well as adhere to any regulatory pre-requisite for approvals to any sub-project.

**b. Responsibility of ADB**

52. ADB will be responsible for regular review and timely approval of checklists, IEEs and/or EIAs. Technical guidance will be provided by ADB to CEB as needed. ADB will also be responsible for reviewing regular monitoring reports and officially disclosing the IEEs and/or EIAs on its website.

**D.II.3 Preparation of detailed design**

53. Detailed design work for each additional subproject will follow the recommendations of the IEE/EIA. CEB will review detailed designs before contracts are finalized and modifications will be incorporated if considered necessary. During the detailed design, the CEB will update the EMP as deemed necessary. Certification to ADB that the detailed designs will comply with IEE/EIA (including EMP) recommendations will be required before contracts can be made effective.

**D.II.4 Preparation of Construction Contracts**

54. Construction contracts will incorporate the Environmental Management Plan (EMP) for environmental safeguards compliance. CEB shall prepare bidding documents that take into account the relevant provisions in the EMP to ensure contract documents reflect the relevant provisions of the EMP. All applicable mandatory regulatory approvals including from forest department must be in place prior to finalization of contracts and commencement of works.

**D.II.5 Environmental Management Plan**

55. An environmental management plan (EMP) will be developed for each sub-project<sup>22</sup>. The mitigation measures for subsequent sub-projects will be developed in the spirit of the principles agreed upon in this EARF framework. If any unanticipated consequences/impacts are identified during project implementation for the sub-project, they will be documented and the EIA/IEE (including EMP) will need to be updated to reflect the mitigation measures needed to address them. **Table 8** provides the Minimum Provisions for implementing mitigation measures as per the Environmental Management Plan (EMP).

**D.II.6 Environmental Monitoring Plan**

56. Environmental monitoring plan will need to be developed for the specific sub-project, type of mitigation, monitoring and frequency of monitoring will depend on the impacts predicted. Environmental monitoring will consist of routine systematic checking that the environmental management measures have been implemented effectively during each stage of the subproject.

57. Monitoring contractor's implementation of the EMP mitigation measures as stipulated in the works contracts will be the responsibility of CEB. Monitoring will be sufficient to confirm that construction activities meet contractual requirements, determine that the environmental resources are not impacted negatively, and to determine the effectiveness of mitigation measures.

58. If monitoring identifies a problem during implementation, CEB shall develop a corrective action plan. Report to ADB and the relevant environmental agencies on specified intervals (e.g. on a six monthly basis for Category B subproject) will be provided by CEB. These monitoring reports will be disclosed on ADB and CEB websites.

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<sup>22</sup>EMP could vary from project to project due to variation in terms of environmental attributes and sensitivity on account of change in location.



**Table 8: Minimum Provisions for implementing mitigation measures for Environmental Management Plan (EMP)<sup>23</sup>**

Project Stage	Mitigation Measures	Monitoring Scope	Location	Measurements	Frequency	Responsibility	Cost
Pre- construction	Site survey to define alternative subproject sites/alignments.	Any encroachment on reserved forests or sanctuary, populated areas.	Hydro power generation station/substation/selected locations along lines.	Field mapping with Global Positioning System (GPS) equipment.	One time survey to finalize design.	CEB's field office through contractor.	Included in construction contract.
	Dust, equipment emissions, erosion, and noise control. Waste management.	Incorporation of appropriate clauses in construction contracts.	All construction contracts for all subproject sites.	Field inspection to ensure that appropriate measures are implemented and facilities are installed.	Once in 3 months.	CEB to include in bidding documents, monitor through field office.  ADB to verify through review of bidding documents. <sup>24</sup>	Included in construction contract.
Construction	Dust, equipment emissions, and erosion control. Waste management.	Suspended particulate matter (SPM) Noise Water: pH, dissolved oxygen (DO), biochemical oxygen demand (BOD), total suspended solids (TSS), Solid waste generation and disposal.	Hydro power generation station/substation/selected locations along lines.	Field mapping with Global Positioning System (GPS) equipment.	Every 6 months, beginning with initial activity, for the length of subproject.	Contractors to implement, field office to provide oversight via regular field inspections.	Included in construction contract
	Noise, Heat, GHG related Emissions. Equipment emissions.	SF <sub>6</sub> gas leakage, oil leakages.			Monitoring will be extended if necessary.	ADB to review during review missions.	
	Waste Water management.	Disposal of all types of waste water.				CEB to have responsibility for waste management.	
Operations and Maintenance	GHG related equipment emissions, and erosion control, Waste management.	Same parameters as during construction period.	Hydro power generation station/substation/selected locations along lines.	Field mapping with Global Positioning System (GPS) equipment.	As necessary based on inspections and complaints <sup>25</sup> .	CEB through field office.	Included in construction contracts.
	Monitoring of excessive Noise, Heat, Oil leakage, SF <sub>6</sub> leakage.				Standard O&M schedules of CEB for SF <sub>6</sub> , oil, water, and noise.	ADB to verify during review missions.	Thereafter in O&M schedules and standard operating procedures
	Waste Water management.						

ADB = Asian Development Bank, BOD = biochemical oxygen demand, DO = dissolved oxygen, SPM = suspended particulate matter, TSS = total suspended solids, SF<sub>6</sub> – Sulphur Hexafluoride gas, a highly non-toxic GHG gas

<sup>23</sup> For issues related to compensation of landowners for land acquisition will be included in the resettlement plan.

<sup>24</sup> ADB will review documents and provide “no objection” at each stage of bidding, contract evaluation, and contract award.

<sup>25</sup> Parameters should be monitored if warranted based on visual observations or complaints.

59. **Table 9** presents the summary environmental monitoring plan for sub-projects to be funded under the MFF.

**Table 9: Summary Environmental Monitoring Plan**

<b>Environmental Monitoring Tasks<sup>26</sup></b>	<b>Implementation Responsibility</b>	<b>Implementation Schedule</b>
<b><u>Pre-Construction Phase</u></b>		
Verify subproject bidding documents to ensure EMP is included.	PMU, CEB	Prior to issue of bidding documents
Monitor contractor's detailed survey to ensure relevant environmental mitigation measures in EMP have been included.	PMU, CEB	Prior to CEB approval of Contractor's detailed alignment survey.
Verify detailed design of facilities to ensure standard environmental safeguards/mitigation measures (as identified in EMP) have been included.	PMU, CEB	Prior to CEB approval of contractor's detailed designs.
Approvals from GoSL/ agencies such as forest department, wild life, roads, railways etc. as required before finalization.	CEB	Prior to CEB approval of contractor's detailed designs.
Ensure all Corporate Social Responsibility related activities are incorporated in the design	CEB	Prior to issue of bidding documents
<b><u>Construction Phase</u></b>		
Regular monitoring and reporting of contractor's compliance with contractual environmental mitigation measures.	PMU/PIU through field office/EPC*	Continuous throughout the construction period.
Ensure all types of waste materials generated during construction is disposed of as per mandatory GoSL/ADB norms.	PIUs through EPC	Continuous throughout the construction period.
Ensure that all types of pollution caused due to construction is minimized and kept within regulatory norms of the GoSL.	PIUs through EPC	Continuous throughout the construction period.
<b><u>Operation and Maintenance</u></b>		
Observations during routine maintenance inspections which will include monitoring implementation status of mitigation measures specified in EMP.	PIUs	As per CEB inspection schedules
Handling of waste oil/sludge from transformers/others to be handled by certified agencies.	PIUs/PMU	Inspection schedule and reporting as per GoSL/ statutory requirements
Monitoring of Noise, air and water pollution levels at sites	PIUs/PMU	Inspection schedule and reporting as per GoSL/ statutory requirements
Monitoring SF <sub>6</sub> leakages in switchgear equipment.	PIUs/PMU	Inspection schedule and reporting as per GoSL/ statutory requirements

EPC - Engineering, Procurement and Construction Contractor, PMU- Project Management Unit; PIU – Project Implementing Unit

<sup>26</sup> Monitoring of issues related to compensation of landowners for land acquisition and loss of production, etc. are addressed in the Resettlement Plan.

## **E. Consultation, Information Disclosure and Grievance Redress Mechanism**

### **E.1 Information Disclosure**

60. CEB will submit to ADB the following documents for disclosure on ADB's website:

- (i) a draft full EIA (including the draft EMP) at least 120 days prior to ADB Board consideration, and/or environmental assessment and review frameworks before subproject appraisal, where applicable;
- (ii) the final EIA/IEE;
- (iii) a new or updated EIA/IEE and corrective action plan prepared during subproject implementation, if any; and
- (iv) the environmental monitoring reports.

61. CEB will provide relevant environmental information, including information from the above documents in a timely manner, in an accessible place and in a form and local language(s) understandable to affected people and other stakeholders in accordance with the *ADB Public Communications Policy 2011*. For illiterate people, other suitable communication methods will be used.

62. IEE/EIA results will also be communicated to the local community before commencement of construction through their posting on the website of CEB as well as providing a mechanism for the receipt of comments.

### **E.2 Consultation and Participation**

63. CEB will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. Consultation process undertaken under the directions of the EED (i) will begin in the subproject preparation stage and will be carried out on an on-going basis throughout the subproject cycle<sup>27</sup>; (ii) will provide timely disclosure of relevant information that is understandable and readily accessible to groups and individuals, and specially women; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) will be gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) shall enable the incorporation of all relevant views of affected people and other stakeholders into decision making, such as subproject design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues. Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results will be documented and reflected in the environmental assessment report.

64. The CEB may also hold public hearings<sup>28</sup> as per the GoSL environmental clearance norms to determine or investigate any matter that it considers necessary in the public interest conducted prior to construction regarding the scope of the subproject, procedure of construction activities, utility of resources, identified impacts and mitigation measures..

### **E.3 Grievance Redress Mechanism (GRM)**

65. CEB does not have any specific Environment or Social Safeguards Policy regarding generation/transmission/distribution subprojects currently. ADB procedures require CEB to establish a Grievance Redress Mechanism (GRM) having suitable grievance redress procedure to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the subproject's environmental performance. The GRM will aim to provide

<sup>27</sup> For environment category A projects, such consultations will necessarily include consultations at the early stage of EIA field work and when the draft EIA report is available during project preparation, and before project appraisal by ADB.

<sup>28</sup> A public hearing is a public investigation or inquiry which is held in a public forum and in which those who are affected by the matter(s) being heard or investigated.

a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. A common GRM will be in place for social, environmental or any other grievances related to the project. The GRM will provide an accessible and trusted platform for receiving and facilitating resolution of affected persons' grievances related to the project. The GRM procedure for the project is outlined below, which follows a time-bound schedule, with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required.

66. The grievance mechanism will be scaled to the risks and adverse impacts on environment due the subproject type, size, type of area (sensitive area) and impacts. It should address affected people's concerns and complaints promptly, using a transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no costs and without retribution. This GRM would consist of a Grievance Redress Committee (GRC) headed by the Project Head. The committee would consist of the following constitution as listed in **Table 10**.

**Table 10: Constitution of Grievance Redress Committee**

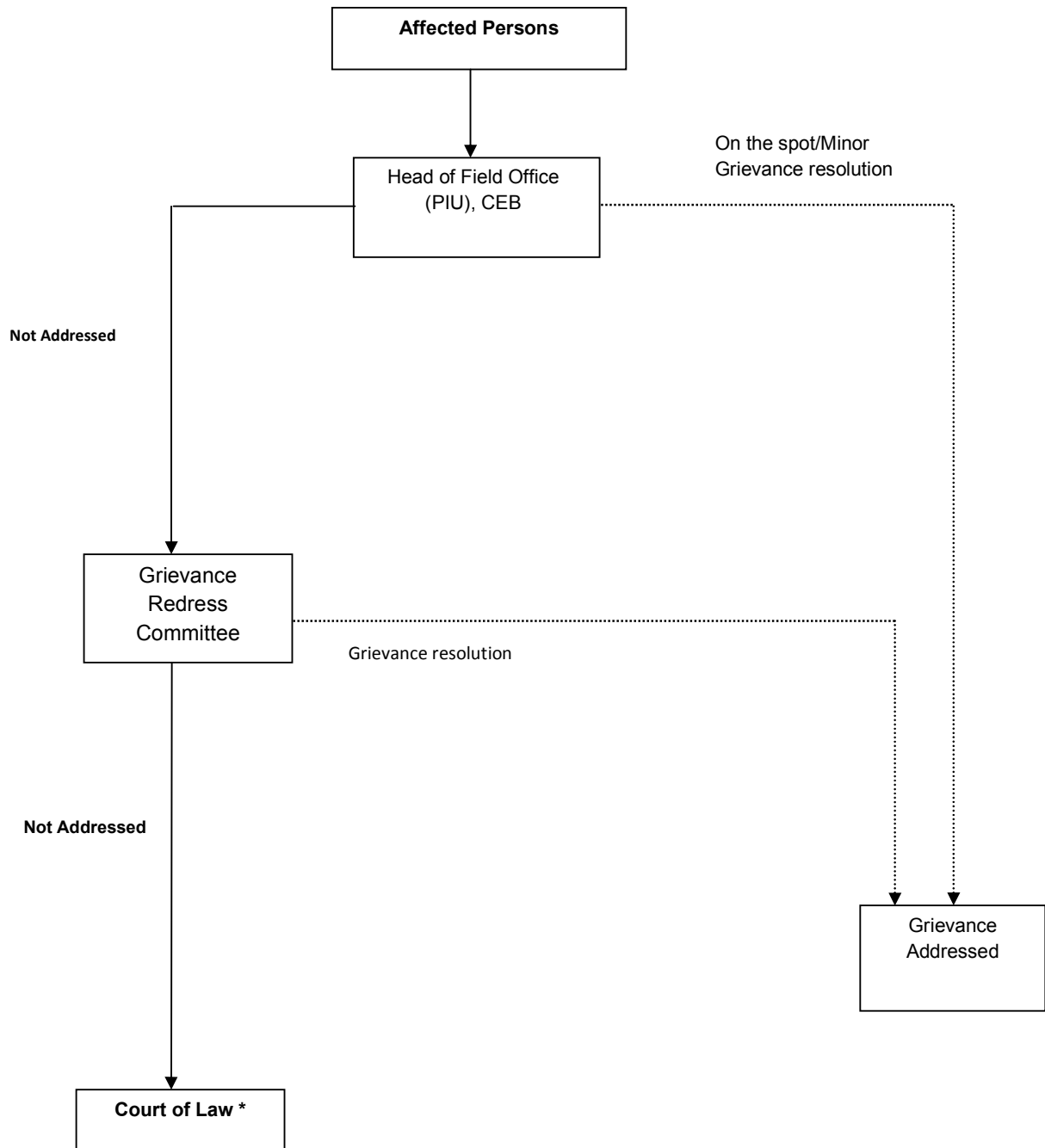
1	Project Head, CEB
2	Division Secretary or their nominee
3	Representative of Gram Niladhari/Council
4	Women representative of village/council
5	Representative of EPC* contractor
6	Environment Officer at PMU or nominee

\* (EPC) - Engineering, Procurement and Construction Contractor

67. This Grievance Redress Mechanism (GRM) would provide an effective approach for resolution of complaints and issues of the affected person/community. Project Management Unit (PMU) shall formulate procedures for implementing the GRM, while the PIUs shall undertake GRM's initiatives that include procedures of taking/recording complaints, handling of on-the-spot resolution of minor problems, taking care of complainants and provisions of responses to distressed stakeholders etc. paying particular attention to the impacts on vulnerable groups.

68. Grievances of affected persons (APs) will first be brought to the attention of the Project head of the PIU. Grievances not redressed by the PIU will be brought to the Grievance Redress Committee (GRC) set up to monitor subproject Implementation for each subproject affected area. The GRC will determine the merit of each grievance, and resolve grievances within an outer time limit of three months of receiving the complaint. The proposed mechanism does not impede access to the country's judicial or administrative remedies. The AP has the right to refer the grievances to an appropriate courts of law if not satisfied with the redress at any stage of the process.

69. The PIU will keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome. The flow chart showing Grievance Redress Mechanism is presented in **Figure 1**.

**Figure: 1: Flow chart showing Grievance Redress Mechanism**

( \* ) Affected Persons can approach the court of law at time during the Grievance redress process.



## **F. Institutional Arrangement and Responsibilities**

70. Government of Sri Lanka's (GoSL) Ministry of Power and Energy (MoPE) is the Executing Agency (EA) for overall coordination, whereas Ceylon Electricity Board (CEB) is also the EA and Implementing Agency (IA) for the hydro, transmission and distribution components. According to the National Environmental Act (NEA), there exists a mandatory requirement to obtain the environmental clearance from the Central Environmental Authority or a Project Approving Agency (PAA) which is authorised under the NEA for any kind of power plants and Transmission lines over 33 kV. The Ministry of Environment designates the Ministry of Power and Energy as PAA as per the NEA. Therefore, MoPE has established an environment cell in the Planning Division to implement the requirements of NEA.

71. CEB has set up an Energy and Environment Division (EED) for dealing with environment and issues at the corporate level to monitor and implement environmental and social good practices. The environmental assessment and review process for sub-projects would be completed by the PMU at CEB and associated PIUs as described below.

### **F.1 Project Monitoring Unit (PMU)**

72. The PMU will be responsible for overseeing sub-project compliance with environmental and social safeguard requirements based on the EARF provisions that include: (i) sub-project selection taking into account environmental screening criteria; (ii) sub-project environmental assessments prepared in accordance with the requirements set out in this EARF; (iii) appropriate public consultations and disclosures; (iv) effective management of the grievance redress mechanism; and (v) EARF compliance reported in the environmental monitoring report. The PMU structure is shown in **Figure 2**. The PMU head will be responsible for coordinating all external functions with ADB, MoPE GOSL as well as coordinates the internal functions for coordination of Environment and Social/R&R reporting, Legal, Finance and Accounts, PIU monitoring and reporting, Procurement and Contracts, and other functions within CEB.

73. PMU has designated Environment Officer of Energy and Environment Division (EED) who has oversight responsibilities for monitoring for all sub-projects in areas such as Environment, R&R and Social safeguards. To assist EED in these specialist functions, CEB will hire appropriate Environment and Social Consultants at PMU level, as deemed necessary or as stipulated by CEA's environmental clearance to assist EED in day-to-day coordination and reporting for various subproject activities.

74. The duties of the EED will include at a minimum: (i) oversight of field offices and construction contractors for monitoring and implementing mitigation measures; (ii) liaising with the field offices and contractors and seeking their help to solve the environment-related issues of subproject implementation; and (iii) preparation of environmental management reports every 6 months (as required by ADB). EED must coordinate with PIUs for monitoring as well as designing appropriate mitigation measures to address environmental and social issues<sup>29</sup>. PMU may also be assisted in project implementation supervision and monitoring through hiring of an international project management consultant (PMC).

### **F.2 Project Implementation Unit (PIU)**

75. The PMU shall implement the ADB loan at the corporate level and the PMU will be supported for implementation activities through the CEB field offices/ Project Implementing

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<sup>29</sup> ADB advises that all EAs develop in-house capability for environmental, health, and safety (EHS) program consistent with international best practices. The EHS program should include accounting for environmental benefits resulting from investment projects within three months of loan approval. The monitoring agency shall report on semi-annual basis directly to ADB and determine whether sound environmental management practices have been achieved, and suggest suitable recommendations and remedial measures for midterm correction and improvement.

Units (PIUs). Separate PIUs will be created for hydro, transmission and distribution components. The PIU/field offices of CEB will assume primary responsibility for the environmental assessment as well as implementation of EMPs through contractors or third party consultants in consultation with EED. The PIU/Project Head will be assisted by the EED.

76. Project Implementation Units (PIUs) will include experienced staff and headed by senior officers will undertake day-to-day project planning and implementation activities and manage the site activities – for example, the PIU or its appointed technical consultants will conduct routine visual inspections of construction activities, including site pegging, vegetation clearance, earthworks, etc.. Full-time project managers with qualified staff will be appointed to supervise sub-projects under each component. The PIUs will be responsible for overall project planning and implementation, including procurement, accounting, quality assurance, social and environmental issues and coordination with concerned agencies. For management of EMPs, PIU will conduct overall coordination, preparation, planning, implementation, and financing of all field level activities.

77. To enhance the planning implementation, environment and social safeguard skills at the PIU level, PIU staff shall be sent for capacity building training programs periodically by ADB and others in consultation with EED. These trainings will be identified by PMU in consultation with ADB.

#### Consultants, Construction Contractors, Equipment Suppliers, and Other Service Providers

78. CEB will ensure that contractors engaged for each sub-project are engaged in regular EMP monitoring and implementation. Consultants will be contracted by CEB to assist in the preparation of the pipeline of sub-projects. This will include consulting services to complete IEEs and/or EIAs for individual sub-projects. The construction contractor will have primary responsibility for environmental and social management, and worker health and safety at sub-project construction sites under their control. They will be required to adhere to all national and state level environmental, health, and safety (EHS) guidelines and implement relevant sub-project environmental and social management measures prior to and during construction.

### **F.3 Asian Development Bank**

79. ADB will (i) review the EARF and its subsequent update as necessary; (ii) review the subproject IEE prior to ADB Board consideration; (iii) periodically review sample sub-project IEEs and desktop environmental assessments; (iv) review Project monitoring reports; and (v) officially disclose environmental safeguards documents on its web site in accordance with the ADB *Public Communications Policy* (2011). ADB will also review REA Checklists for proposed sub-projects to enable it to provide guidance to CEB on SPS (2009) requirements.

80. Further details on agencies responsible for EMP implementation activities are shown in **Table 11**.

**Table 11: Institutional Roles and Responsibilities for EMP Implementation Activities**

<b>Activity</b>	<b>Responsible Agency</b>
<b><u>Sub-project Initiation Stage</u></b>	
Adding EED staff	PIU
Finalisation of sites for sub-projects	CEB/PMU/PIU
Disclosure of project EMP details by issuing Public Notice	PIU/EED
Updating of EMP mitigation measures on start-up	
Conducting surveys of all APs	PIU/EED/Provincial Administration
Conducting discussions/meetings/workshops with APs and other stakeholders	PIU/EED
Incorporating the changes if any, in the EMP	PIU/EED
<b><u>EMP Implementation Stage</u></b>	
Implementation of proposed EMP mitigation measures	PIU/EED
Consultations with APs during EMP mitigation measures implementation	PIU/EED
Grievances redress	PIU/EED/NGO/PUCSL
Internal monitoring	PIU/EED
External monitoring	External Agency

ADB-Asian Development Bank, AP-affected person, EA-Executing Agency, EED-Energy and Environment Division, EMP - Environmental Management Plan, PUCSL-Public Utilities Commission of Sri Lanka, CEB- Ceylon Electricity Board, PIU- Project Implementation Unit.

\*Note –External monitoring only required when projects are noticed to have significant adverse environmental impacts.

#### **F.4 Staffing Requirements and Budget**

81. Costs required for operating the Environmental Assessment and Review Framework should cover the following –

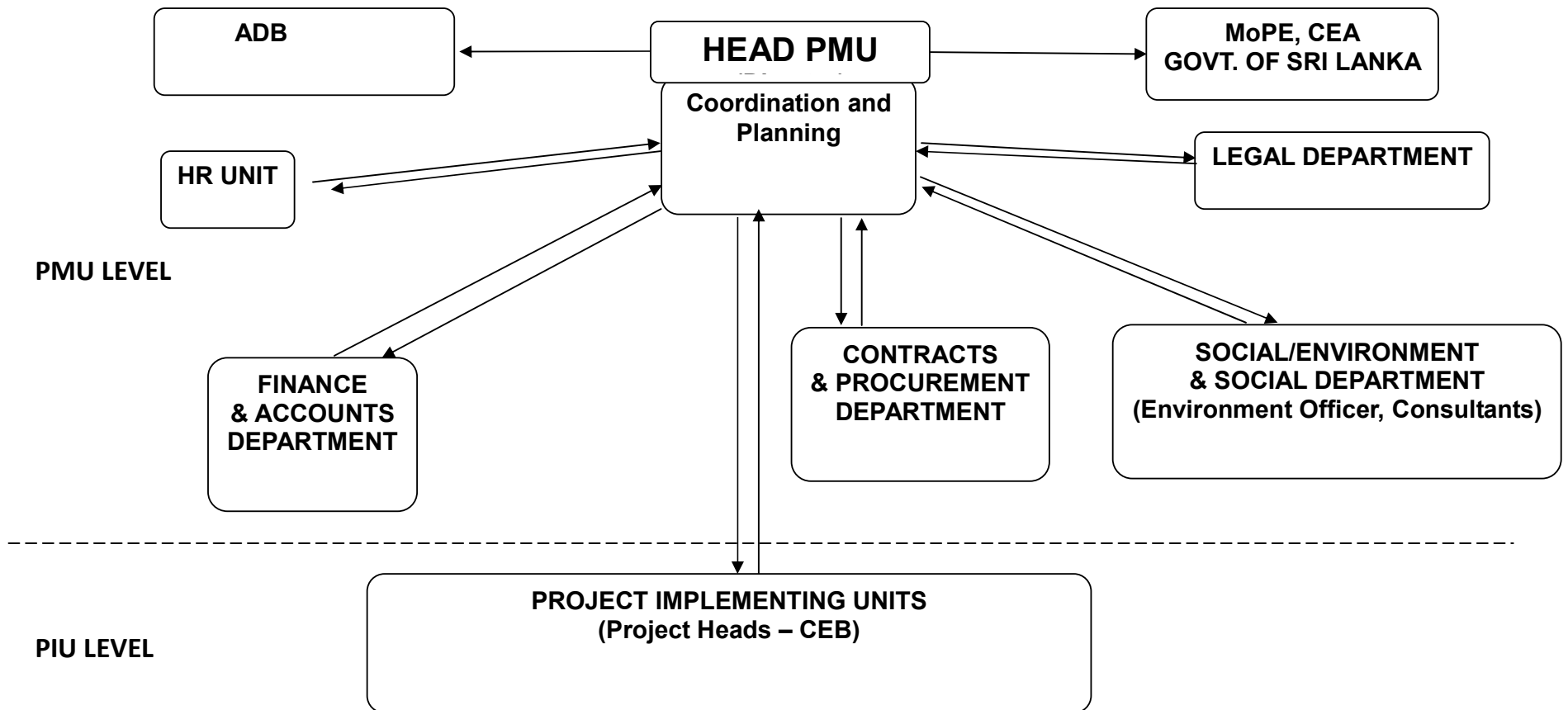
- i). Conducting IEE/EIA studies, preparing and submitting reports and public consultation and disclosure, which involves collection and analysis of data of proposed subproject, assessment and mitigation of impacts, preparation of the EMP, budget, public consultation, and preparation of the IEE/EIA report and the summary;
- ii). Implementation of EMP mitigation measures by Engineering, Procurement and Construction (EPC) contractor, the cost of which is included in the construction contracts. PMU will make necessary budgetary provision and staffing requirement for preparation of IEE/EIA and its due monitoring for the tranches.
- iii). Certain mandatory mitigation measures and CSR initiatives might have to be undertaken to adhere to the Environmental Clearance/Consent to Establish conditions as prescribed by CEA, GoSL at the cost of CEB. Other costs that need to be added may include, but not limited to, training for HIV/AIDS prevention and independent audit.

82. About 1% of the total project costs would be included as the EMP mitigation and monitoring costs which include both one time and recurring<sup>30</sup>.

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<sup>30</sup> Since the sub-projects in Tranche 2 are not yet scoped out entirely, separate cost estimation is not done at this stage.

**Figure 2: PMU STRUCTURE**



## **G. Monitoring and Reporting**

83. The EMP will have both internal and external monitoring. The field office will be responsible for internal monitoring of the EMP implementation, and will forward quarterly progress reports to the PMU with details of activities and progress made during EMP implementation. The PMU will submit semi-annual monitoring reports to ADB.

84. The PMU will prepare subproject monitoring reports every six months during subproject implementation for submission to ADB. The PMU will also prepare environmental management reports in accordance with the subproject specific IEEs and environmental management plan every six months during construction (or at the end of construction when it takes less than six months), and once between 6-12 months after the commencement of sub-project operation. The environmental management reports will cover EMP implementation, focusing on compliance and any needed corrective actions. Public consultation will be conducted as necessary during construction by CEB. ADB will conduct periodic review missions which will include a review of safeguard implementation issues and make suitable recommendations for undertaking remedial measures for mid-term correction and improvement, if required.

85. If subproject activities are noticed to have significant adverse environmental impacts, ADB requires CEB to retain qualified and experienced experts<sup>31</sup> or qualified Non-Government Organisation (NGO) or Community Based Organization (CBO) to verify the report. If required, these external experts/NGO or CBO will report on a semi-annual basis directly to ADB to verify if sound environmental management practices were followed during implementation. In case the implementation of EMP measures is not satisfactory, the external experts/NGO or CBO will recommend actions to enhance environmental compliance.

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<sup>31</sup> External expert who is not involved in day-to-day project implementation or supervision

## Annexure 1: Applicable National Environmental Policies and Procedures

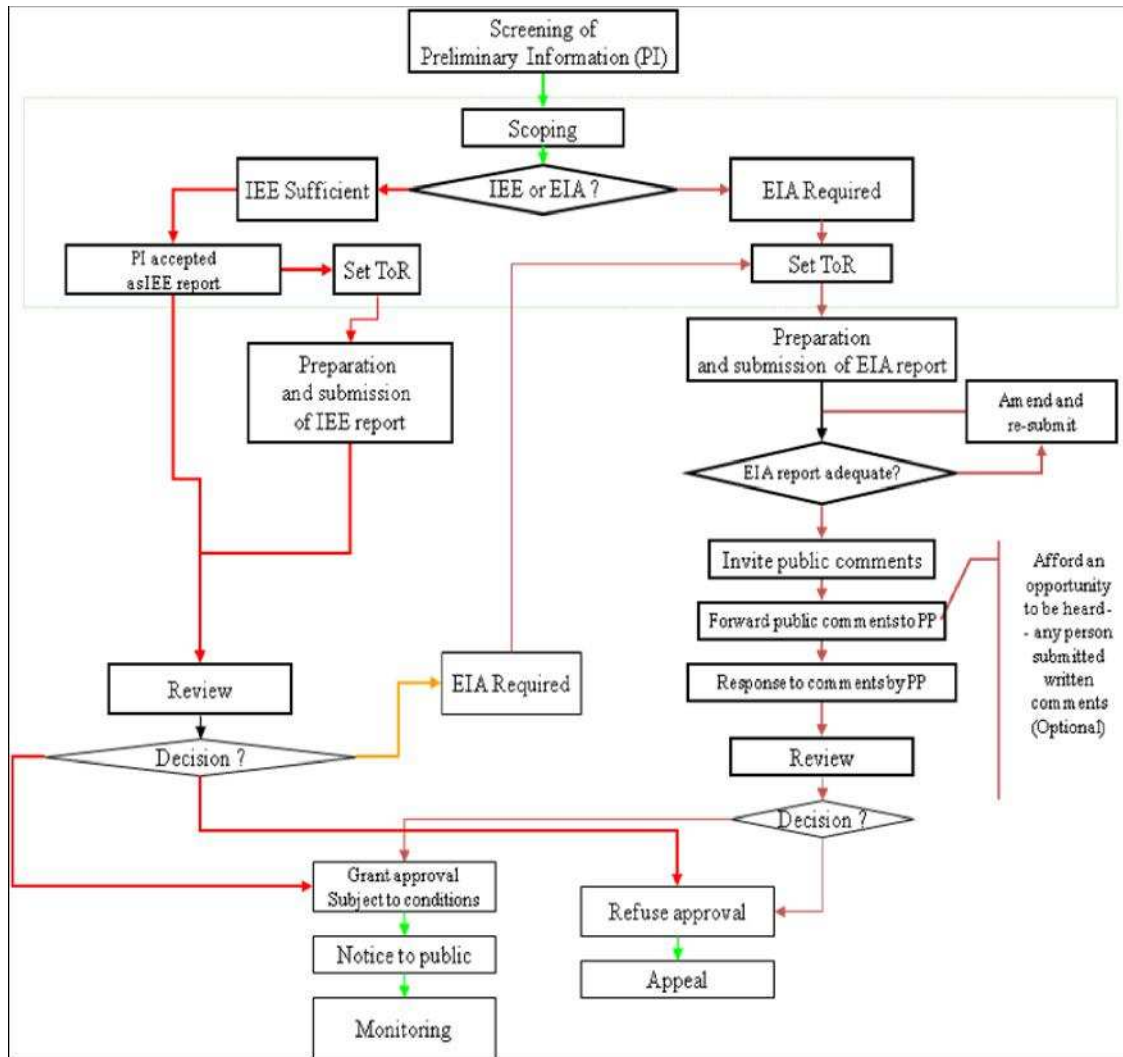
Name	Scope and Objectives	Key Areas	Operational Agencies / Key Players
Agrarian Services Act (N <sup>o</sup> 58 of 1979) Agrarian Development Act N <sup>o</sup> 46 of 2000	To provide secure background to farmers and their agricultural premises	Regulates the acquisition of land belonging to paddy and other activities which related to agricultural areas.	The Ministry of Agriculture Development and Agrarian Services
Ceylon Electricity Board Act, 1969	To provide for the establishment of an electricity board for the development and co - ordination of generation	Enters with the joint schemes by such board with any government department or approved body for the generation of electrical energy, the irrigation lands, control of floods or other like objects, and to make provision for all matters connected there with or incidental thereto.	Ceylon Electricity Board
Electricity Act 2009	To provide reliable and cheap electrical energy	Regulates the generation, transmission, transformation, distribution, supply and use of electrical energy	Ceylon Electricity Board
Fauna and Flora Protection (Amendment) Act 1993 (N <sup>o</sup> 49 of 1993).	To provide greatest protection to fauna and flora	Makes provision for the establishment of protected areas, regulates human involvements to such areas and their fauna and flora.	Department of Wild Life and Department of Forest
Felling of Trees (Amendment Act N <sup>o</sup> :01 of 2000 and Act to Amend felling of trees control)	The control removal of trees.	Regulates the removal of trees relevant to type and the compensation	Department of Forest
Fisheries and Aquatic Resources Act 1996	To provide for the management, regulation , conservation and development of fisheries and aquatic resources	Restricts detrimental or risk activities for aquatic fauna and flora	National Aquatic Resources Research & Development Agency (NARA) and CEA
Flood Act N <sup>o</sup> 22 of 1955	Protection of areas subject to Flood	Flood prevention	Department of Irrigation
Forest Ordinance Act N <sup>o</sup> 13 of 1966 Forest (Amendment) Act N <sup>o</sup> 65 of 2009	Conservation, protection and management of forest and forest resources for control of felling and transport of timber	Definition of Conservation Forest, Reserve Forest, Village forests	Forest Department
Irrigation Clauses Act 1973	To provide regulations for the construction of structures across the irrigation canals and water recourses.	Regulates the construction of structures across the irrigation canals and water recourses.	Department of Irrigation
Land Acquisition (Amendment) Act, N <sup>o</sup> 13 of 1986	Establishes the procedure to be followed by the competent authorities for the acquisition of land for public purpose.	It includes, among other matters: investigations for selecting land to be carried out by a district officer appointed by the Minister; issue of notice of intended acquisition indicating the compensation to be paid for any damage caused	Department of Valuation

Name	Scope and Objectives	Key Areas	Operational Agencies / Key Players
Monuments and Archaeological Sites and remains Act, 1958. Act N° 24 of 1958	An Act to provide for the preservation of ancient and historical monuments and archaeological sites and remains of national importance,	during investigations; issue of notice of acquisition of land or servitude for a public purpose.	Department of Archaeology
Antiques Ordinance, 1960		For the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects etc	
Motor Traffic Act N° 60 of 1979	To provide sustainable approach for vehicle traffic	Regulates vehicle traffic during transportation of construction materials and the construction activities	
National Environmental Act N° 47 of 1980, amendment N° 56 of 1988, and other amendments	Provide protection, management, enhancement of the environment with prevention and control of pollution	Regulates sustainable utilization of almost all natural resources such as water, soil and air	Central Environmental Authority (CEA)
National Environmental (Protection & Quality) Regulations, N° 01 1990.	To provide for the prevention and control of water pollution and enhancing the quality of water	Controls sewage and effluents into inland surface water	CEA
National Environmental (Ambient Air Quality) Regulations, 1994.	To provide for the prevention and control of air pollution	Controls emissions of air pollutants	CEA
National Environmental (Noise Control) Regulations N° 1 1996	To provide maximum allowable noise levels	Regulates noise pollution	CEA
National Involuntary Resettlement Policy	Land Acquisition Act does not deal with the boarder social and economical impacts of the project. Thus this Policy established to overcome these impacts.	To land replacement, income restoration, relocation assistance and allowances, consultation and grievance redress, assistance to vulnerable groups and provision of resettlement sites and services.	Government of Sri Lanka/Land Acquisition and Resettlement Committee (LARC)
Public Utilities Commission of Sri Lanka Act , N° 35 of 2002	Create an environment for all inhabitants of Sri Lanka and the contributors to its development, to have access to essential infrastructure and utility services in the most economical manner within the boundaries of the sustainable development agenda	Regulate all the utilities within the purview of the Public Utilities Commission of Sri Lanka, to ensure safe, reliable and reasonably priced infrastructure services for existing as well as future consumers in the most equitable and sustainable manner.	The Public Utilities Commission of Sri Lanka
Soil Conservation (Amendment) Act N° 24 of 1996	Act for Conservation of Soil resources and productive capacity of land	Degraded Land, prevent damage against salinity, water logging, drought, floods	Soil Conservation Board
Sri Lanka Sustainable Energy Authority Act, N° 35 of 2007	To develop renewable energy resources; to declare energy development areas; To implement energy efficiency	Reliability and cost effectiveness in energy delivery and information management, function as a National Technical Service Agency	Sri Lanka Sustainable Energy Authority

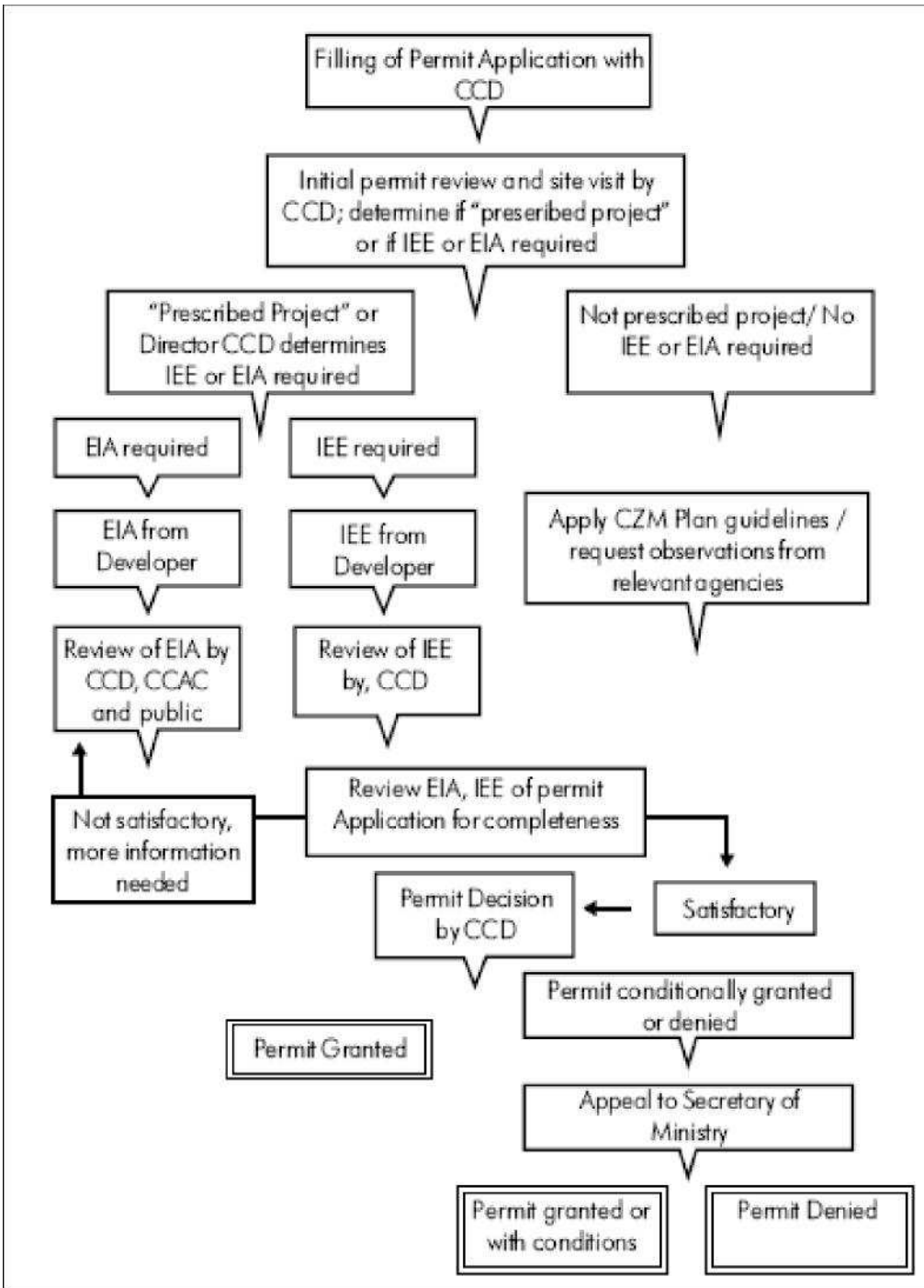
<b>Name</b>	<b>Scope and Objectives</b>	<b>Key Areas</b>	<b>Operational Agencies / Key Players</b>
	measures and conservation programs; to promote energy security	of Clean Development Mechanism (CDM) in Sri Lanka that provides technical assistance to the Designated National Agency for Clean Development Mechanism and project developers, on energy sector clean development project activities	



## PROCESS OF OBTAINING ENVIRONMENTAL CLEARANCE FROM CENTRAL ENVIRONMENT AUTHORITY



**PROCESS OF OBTAINING PERMIT FROM COAST CONSERVATION  
DEPARTMENT**



## Annexure 2: Rapid Environmental Assessment (REA) Checklist - Hydropower

### Instructions:

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 (RSES) for endorsement by Director, RSES and for approval by the Chief Compliance Officer.

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.

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:**

#### A. Basic Project Design Data

1. Dam height, m = \_\_\_\_\_
2. Surface area of reservoir, (ha) = \_\_\_\_\_
3. Estimated number of people to be displaced = \_\_\_\_\_
4. Rated power output, (MW) = \_\_\_\_\_

#### Other Considerations:

1. Water storage type:    \_\_\_ reservoir                            \_\_\_ run of river  
                                 \_\_\_ pumped storage
2. River diversion scheme: \_\_\_ trans-basin diversion            \_\_\_ in-stream flow regulation  
   \_\_\_ in-stream diversion
3. Type of power demand to address: \_\_\_ peak load    \_\_\_ base load

Screening Questions	Yes	No	Remarks
<b>B. Project Location</b>			
Is the dam and/or Project facilities adjacent to or within any of the following areas?			
Unregulated river			
Undammed river tributaries below the proposed dam			
Unique or aesthetically valuable land or water form			
Special area for protecting biodiversity			
Protected Area			
Buffer zone of protected area			
Primary forest			
Range of endangered or threatened animals			
Area used by indigenous peoples			
Cultural heritage site			
Wetland			
Mangrove			
Estuary			

Screening Questions	Yes	No	Remarks
<b>C. Potential Environmental Impacts</b> Will the Project cause...			
short-term construction impacts such as soil erosion, deterioration of water and air quality, noise and vibration from construction equipment?			
disturbance of large areas due to material quarrying?			
disposal of large quantities of construction spoils?			
clearing of large forested area for ancillary facilities and access road?			
impounding of a long river stretch?			
dryness (less than 50% of dry season mean flow) over a long downstream river stretch?			
construction of permanent access road near or through forests?			
creation of barriers for migratory land animals			
loss of precious ecological values due to flooding of agricultural/forest areas, and wild lands and wildlife habitat; destruction of fish spawning/breeding and nursery grounds?			
deterioration of downstream water quality due to anoxic water from the reservoir and sediments due to soil erosion?			
significant diversion of water from one basin to another?			
alternating dry and wet downstream conditions due to peaking operation of powerhouse?			
significant modification of annual flood cycle affecting downstream ecosystem, people's sustenance and livelihoods?			
loss or destruction of unique or aesthetically valuable land or water forms?			
proliferation of aquatic weeds in reservoir and downstream impairing dam discharge, irrigation systems, navigation and fisheries, and increasing water loss through transpiration?			
scouring of riverbed below dam?			
downstream erosion of recipient river in trans-basin diversion?			
increased flooding risk of recipient river in trans-basin diversion?			
decreased groundwater recharge of downstream areas?			
draining of downstream wetlands and riparian areas?			
decline or change in fisheries below the dam due to reduced peak flows and floods, submersion of river stretches and resultant destruction of fish breeding and nursery grounds, and water quality changes?			
loss of migratory fish species due to barrier imposed by the dam?			
formation of sediment deposits at reservoir entrance, creating backwater effect and flooding and waterlogging upstream?			
significant disruption of river sediment transport downstream due to trapping in reservoir?			
environmental risk due to potential toxicity of sediments trapped behind the dams?			
increased saltwater intrusion in estuary and low lands due to reduced river flows?			
significant induced seismicity due to large reservoir size and potential environmental hazard from catastrophic failure of the dam?			
cumulative effects due to its role as part of a cascade of dams/ reservoirs?			
depletion of dissolved oxygen by large quantities of decaying plant material, fish mortality due to reduced dissolved oxygen content in water, algal blooms causing successive and temporary eutrophication, growth and proliferation of aquatic weeds?			
risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			

Screening Questions	Yes	No	Remarks
large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
creation of community slums following construction of the hydropower plant and its facilities?			
social conflicts if workers from other regions or countries are hired?			
uncontrolled human migration into the area, made possible by access roads and transmission lines?			
disproportionate impacts on the poor, women, children or other vulnerable groups?			
community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards?			
risks to community safety due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., dams) 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?			

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?			
Does the Project use or depend on resources which could be affected by climate change such as changes in temperature, precipitation, or extreme events (e.g increased erosion which reduces generation efficiency, glacial melt which could affect generation potential)?			
Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g.. by diverting water from areas where drought is increasing, or encouraging settlement in earthquake zones)?			

Note: Hazards are potentially damaging physical events.

#### Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change	Example Impact on Hydropower
<b>Arid/Semi-arid and desert environment</b>	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.	Temperature increases reduce overall thermoelectric power generation efficiencies as well as water availability
<b>Humid and sub-humid plains, foothills</b>	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water;	Increased sediment load from intense rainfall events may result in rapid

Environment	Natural Hazards and Climate Change	Example Impact on Hydropower
<b>and hill country</b>	increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.	sedimentation of water reservoirs, causing reduced storage capacity of large hydropower projects.
<b>River valleys/deltas and estuaries and other low-lying coastal areas</b>	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.	Increased sediment load may result in greater turbine erosion and lower turbine and generator efficiency, leading to less power generation, Changes to the hydrologic cycle and river runoff can result in changes in hydropower potential for electricity generation,
<b>Small islands</b>	Small islands generally have land areas of less than 10,000km <sup>2</sup> in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.	Oil and gas refineries, storage infrastructure, transmissions lines, and other infrastructure in low lying coastal locations are increasingly at risk of damage, disruption and higher maintenance costs.
<b>Mountain ecosystems</b>	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.	The retreat of glaciers may increase water discharge and consequent power generation in the short term, and then be followed by a drastic reduction in summer flows and hence power generation.
<b>Volcanic environments</b>	Recently active volcanoes (erupted in last 10,000 years – see <a href="http://www.volcano.si.edu">www.volcano.si.edu</a> ). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.	Volcanic deposits in watersheds and reservoirs may reduce hydro-potential

### Annexure 3: Rapid Environmental Assessment (REA) Checklist – Power Transmission/Distribution

**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 Environment and Safeguards Division (RSES) for endorsement by Director, RSES 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			
▪ Protected Area			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Buffer zone of protected area			
▪ Special area for protecting biodiversity			
<b>B. Potential Environmental Impacts</b> Will the Project cause...			
▪ encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation? ▪			
▪ encroachment on precious ecosystem (e.g. sensitive or protected areas)? ▪			
▪ alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?			
▪ damage to sensitive coastal/marine habitats by construction of submarine cables?			
▪ deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction? ▪			
▪ increased local air pollution due to rock crushing, cutting and filling?			



Screening Questions	Yes	No	Remarks
<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>▪ chemical pollution resulting from chemical clearing of vegetation for construction site?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ noise and vibration due to blasting and other civil works?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ dislocation or involuntary resettlement of people?</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>▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ hazardous driving conditions where construction interferes with pre-existing roads?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?</li> <li>▪</li> </ul>			
<ul style="list-style-type: none"> <li>▪ facilitation of access to protected areas in case corridors traverse protected areas?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?</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>▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ risks to community safety associated with maintenance of lines and related facilities?</li> </ul>			
<ul style="list-style-type: none"> <li>▪ community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?</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>			

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., high voltage wires, and transmission towers and lines ) 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>			

Climate Change and Disaster Risk Questions	Yes	No	Remarks
The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.			
<ul style="list-style-type: none"> <li>Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?</li> </ul>			
<ul style="list-style-type: none"> <li>Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?</li> </ul>			
<ul style="list-style-type: none"> <li>Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?</li> </ul>			
<ul style="list-style-type: none"> <li>Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)?</li> </ul>			

#### Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change
<b>Arid/Semi-arid and desert environments</b>	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.
<b>Humid and sub-humid plains, foothills and hill country</b>	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
<b>River valleys/deltas and estuaries and other low-lying coastal areas</b>	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
<b>Small islands</b>	Small islands generally have land areas of less than 10,000km <sup>2</sup> in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which

	landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
<b>Mountain ecosystems</b>	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.
<b>Volcanic environments</b>	Recently active volcanoes (erupted in last 10,000 years – see <a href="http://www.volcano.si.edu">www.volcano.si.edu</a> ). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

## **Annexure 4: Outline of Environmental Impact Assessment Report**

This outline is Annex 1 of Safeguard Requirements 1: Environment (Appendix 1 of ADB's Safeguard Policy Statement, June 2009). An environmental assessment report is required for all environment category A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements, and an IEE may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

### **A. Executive Summary**

This section describes concisely the critical facts, significant findings, and recommended actions.

### **B. Policy, Legal, and Administrative Framework**

This section discusses the national and local legal and institutional framework within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the country is a party.

### **C. Description of the Project**

This section describes the proposed project; its major components; and its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project's layout and components, the project site, and the project's area of influence.

### **D. Description of the Environment (Baseline Data)**

This section describes relevant physical, biological, and socioeconomic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

### **E. Anticipated Environmental Impacts and Mitigation Measures**

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media [Appendix 2, para. 6]), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

### **F. Information Disclosure, Consultation, and Participation**

This section:

- (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
- (ii) summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and
- (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

### **G. Grievance Redress Mechanism**

This section describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

### **I. Environmental Management Plan**

This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

- (i) Mitigation:
  - (a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
  - (b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
  - (c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.
- (ii) Monitoring:
  - (a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and
  - (b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.
- (iii) Implementation arrangements:
  - (a) specifies the implementation schedule showing phasing and coordination with overall project implementation;
  - (b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
  - (c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.
- (iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

## **J. Conclusion and Recommendation**

This section provides the conclusions drawn from the assessment and provides recommendations.