Updated Environmental Assessment and Review Framework

Project Number: 35290-01

Original: January 2009
1st Update: March 2011
2nd Update: April 2014

India: Northeastern Region Capital Cities Development Investment Program

CONTENTS

I. INTRODUCTION

1. The North Eastern Region Capital Cities Development Investment Program (NERCCDIP) envisages achieving sustainable urban development in Agartala (Tripura), Aizawl (Mizoram), Kohima (Nagaland), Gangtok (Sikkim), and Shillong (Meghalaya) through investments in urban infrastructure sectors. The urban infrastructure and services improvement is proposed in the following sectors (i) water supply, (ii) sewerage and sanitation, and (iii) solid waste management. The expected impact of NERCCDIP is increased economic growth potential, reduced poverty, and reduced imbalances between the North Eastern Region (NER) and the rest of the country. The expected outcomes of NERCCDIP will be an improved urban environment and better living conditions for the 1.65 million people expected to be living in the NER cities by 2018. NERCCDIP will (i) improve and expand urban infrastructure and services in the cities including in slums and (iii) strengthen urban institutional, management, and the financing capacity of the institutions, including the urban local bodies. Based on considerations of economic justification, absorptive capacity and sustainability of the implementing agencies, subprojects have been identified in each city in the priority infrastructure sectors.

2. The Ministry of Urban Development (MOUD) is the national-level executing agency (EA) and the Urban Development Department of Tripura and the Urban Development and Poverty Alleviation Department of Mizoram are the state-level EAs. Each NERCCDIP state has established State-level Investment Program Management and Implementation Units (SIPMIU).

3. Though NERCCDIP aims to improve the environmental condition of urban areas, the proposed improvements of infrastructure facilities may exert certain adverse impacts on the natural environment. While developing urban infrastructure facilities, impacts during the construction stage are expected to be more severe than impacts during the operation phase, though for a short duration. Exceptions being some facilities such as solid waste landfills and sewage treatment plants, which may also exert adverse impacts during the operation phase, if due care is not taken.

4. The mandatory requirements applicable to NERCCDIP may also necessitate the proposed components to go through the environmental assessment process at an appropriate level. This Environmental Assessment and Review Framework (EARF) has been prepared.to provide EAs and SIPMIU with definite environmental criteria to be met for implementation of the subprojects and ensures that NERCCDIP, in its project cycle, will not deteriorate or interfere with the environmental sensitivity of a project area but rather improve environmental quality through development of infrastructure facilities. It aims to provide guidance on safeguard screening, assessment, institutional arrangements, and processes to be followed for components of the project, where design takes place after ADB approval.

5. This EARF was prepared by the EA with ADB assistance, and complies with ADB Safeguard Policy Statement (SPS), 2009 and the GoI EIA Notification (2006)[1]. Any component included in NERCCDIP shall comply with the environmental requirements of the Government of India (GoI), the respective state governments, and ADB SPS, 2009. The EAs will agree with

[1] Two tranches have been approved to date under NERCCDIP since original EARF submitted in 2009. The first tranche was approved in July 2009 and the second tranche in December 2011. ADB SPS applies to tranches of multitranche financing facility (MFF) projects for which periodic financing requests are to be approved by ADB Management after 20 January 2010. Tranche 2 and 3 subprojects will therefore require compliance with the SPS while ongoing Tranche I will be implemented under the former ADB safeguard policies for environment, resettlement, and indigenous people. In the event of any discrepancy or contradiction between the relevant features of this EARF pertaining to ADB's safeguards policies and SPS, 2009, the SPS, 2009 shall prevail.

ADB on screening and categorization, environmental assessment, preparation and implementation, monitoring, and updating existing safeguard plans for the subprojects to facilitate compliance with the requirements specified in ADB SPS, 2009 and government rules and laws. The environmental assessment reports prepared as part of the project preparation study outlined mitigation measures for some minor potential negative environmental impacts, and environmental management plans (EMP) for design, construction, and post-project maintenance phases. It is expected that the EARF will support the integration of these measures and practices in the project design. Since environmental assessment reports and EMPs to be prepared for subsequent subprojects are Borrower's documents, these shall be officially endorsed by the executing agency and submitted to the ADB for review, approval and disclosure.

II. OVERVIEW OF THE SUBPROJECT COMPONENTS

6. NERCCDIP consists of two parts. Part A covers urban infrastructure and services improvement including the rehabilitation, improvement and expansion of (i) water supply system, (ii) sewerage and sanitation, and (iii) solid waste management. Part B covers provision of project management support, institutional development, capacity building and project administration.

A. Part A: Urban Infrastructure and Services Improvement Components

1. Water Supply

7. Although 50-83% of the population of NERCCDIP cities have access to piped water supplies, the quality and quantity of water supplied falls substantially short of the expectations of the residents of all the cities, and the shortages that have emerged particularly in Agartala, Aizawl, Kohima and Shillong create severe hardship. In Aizawl and Kohima, water may be delivered during the dry season for only a few hours a week. In Shillong and Agartala, most consumers receive water a few hours a day but it cannot be used without boiling. In Gangtok, most consumers receive water more than six hours a day. Because there are abundant known water resources in all the cities except Aizawl, it is anticipated that it will be possible to improve water supplies to 12 hours per day or more in all the cities. The proposed components are:

8. **Agartala.** Upgrading and rehabilitation of existing networks is proposed in the South and Central Zones, including extension of networks into presently uncovered areas. The improvements proposed include:

(i) Under Tranche 1: procurement of electric resistance welded (ERW) pipes for drilling of tube wells, replacement of deep 16 tube wells, and construction of pump houses for the 16 tube wells

(ii) Under Tranche 2: procurement and installation of bulk flow meter, construction of 7 groundwater treatment units (GWTPs), construction of 14 service reservoirs (9 raft type and 5 pile type), procurement and laying of 59 km ductile iron (DI) pipes for new rising mains; and laying of 232 km distribution network for South Zone.

(iii) Under Tranche 3: rehabilitation of 178 km of water supply distribution network in the Central Zone[2] to supply treated water 24 hours at 135 lpcd, construction of 12 tube wells, construction of a jack well, and supply, install bulk meters and 40,000

[2] Works in the South Zone was sanctioned under Tranche 2, while works in the North Zone have been completed under the JNNURM scheme. With this subproject, the renewal and rehabilitation of the entire water supply system in Agartala will be complete and the entire population of Agartala will be supplied with water as per norms.

household water meters, expansion by an additional 4 MLD, and rehabilitation of two existing water treatment plants (WTPs)

9. **Aizwal.** Enhancement of the existing production capacity from 22.8 to 34.8 MLD has been undertaken with support by MDONER and JNNURM. This will provide sufficient capacity for up to 2015-2020, and therefore it is proposed that additional capacity increases be deferred to such date. However, while funds for most pumping and other equipment and machinery have been allocated, there is need to secure adequate power requirements. For this purpose, the following are proposed:

(i) Under Tranche 1: supply, installation and commissioning of 2 nos. of chlorinators, construction of 7 ground level reinforced cement concrete (RCC) zonal tank and buildings, and supply, installation, testing and commissioning of 15,000 nos. of water meters.

(ii) Under Tranche 2: supply, installation and commissioning of booster pumps, construction of 3 nos. water reservoirs, and purchase and installation of bulk and domestic water meters, and supply and laying of 108 km feeder mains and water distribution network in 3 zones.

(iii) Under Tranche 3: rehabilitation of 265 km of existing water distribution network, construction of 9 ground level service reservoirs, construction of one rain water harvesting unit with 1,000,000 L capacity, installation of 70 bulk water meters, and augmentation of 37 MLD from a new source consisting of construction of an intake well, WTP of 33 MLD capacity, laying of around 20 km of pumping mains from the WTP to central service reservoir, provision of power sub-station and transmission lines; and installation of SCADA.

10. **Gangtok.** No augmentation is proposed for the existing source and treatment works, which are more than adequate for the next several decades. Upgrading and rehabilitation of existing networks is proposed including extension of networks into presently uncovered areas. The proposed improvements are:

(i) Under Tranche 1: supplying and laying distribution system in Burtuk and Chandmari, construction of pump house, installation of pump sets and allied works.

(ii) Under Tranche 2: de-bunching of secondary distribution system and extending water supply to peripheral areas with allied works, provision of 12,000 consumer meters, and augmentation of feeder mains.

11. **Kohima.** The proposed improvements are:

(i) Under Tranche 1: construction of 18 RCC ground level water tanks, and refurbishment of 7.5 MLD WTP.

(ii) Under Tranche 2: supply and laying of 318 km distribution network, procurement and installation of 21 bulk water meters and 20,000 domestic and construction of additional 7 service reservoirs.

12. **Shillong.** ADB is of the opinion that no improvements in the treatment works are required as present capacity would be adequate. Augmentation of source on long-term basis is being implemented by PHED as part of the JNNURM program. PHED has indicated that Government of India is to provide for water augmentation and distribution in Shillong and support from ADB, if any, would be minimal. Since no specific information has been submitted by PHED, an evaluation cannot be conducted. If the proposed allocation of $14-15 million was to be required, ADB would exclusively focus on the conversion of the existing bunched connections to a conventional distribution system.

2. Sewerage and Sanitation

13. Towards improvement of sanitation in NERCCDIP cities, a two-pronged approach comprising (i) construction of central piped sewerage and sewage treatment systems designed according to master plans but scoped in such a way as to constitute a minimal feasible investment and (ii) improvement of individual sanitation systems, particularly septic tanks and soak pits, where and until sewerage systems can be constructed is followed. Taking into account that sanitary sewerage would be a new service in each of NERCCDIP cities except Gangtok, an effort was made to identify modestly sized components serving the worst-affected areas of each city as the first stage of development of the sewerage master plans. The project components are:

14. **Aizawl.** The following are proposed:
- (i) Under Tranche 2: supply, installation and commissioning of cesspool cleaner, construction of 10 MLD sewerage treatment plant (STP), development of approach road to STP, construction of 10 nos. community toilet blocks, and procurement and laying of primary and secondary sewerage networks.
- (ii) Under Tranche 3: pilot of a decentralized septage management system covering 5,290 households.

15. **Agartala.** The following are proposed:
- (i) Under Tranche 3: procurement of 5 cesspool cleaning trucks and construction of a septage treatment plant (STP) with 1 MLD capacity

16. **Kohima.** The following are proposed:
- (i) Under Tranche 2: construction of five community toilets, procurement of eight cesspool cleaners, and construction of 0.25 MLD STP.

3. Solid Waste Management

17. All of NERCCDIP cities dispose their wastes by open dumping. It is anticipated that it will be possible to improve existing collection levels to between 55% to 65% by 2011, depending upon the city, through improvements in primary and secondary collection facilities and through an intensive community awareness and consultation program, in consultation with NGOs.

18. **Agartala.** The following are proposed:
- (i) Under Tranche 3: provision of solid waste collection and compaction equipment

19. **Aizwal.** The following are proposed:
- (i) Under Tranche 2: procurement of household bins
- (ii) Under Tranche 3: procurement of collection bins and vehicles, construction of sanitary landfill, and construction of 2 resource recovery centers and compost plant

20. **Gangtok.** The following are proposed:
- (i) Under Tranche 2: construction of solid waste landfill, leachate treatment plant, and associated infrastructure works, procurement of primary and secondary collection vehicles, household bins, push carts and litter bins, procurement of landfill vehicles and equipment, personal protection equipment for solid waste management, refurbishment of the existing 50 tons per day compost plant and provision of resource center for handling of recyclables.

21. **Kohima.** The following are proposed:
    (i) Under Tranche 1: civil works and procurement of equipment for development of sanitary landfill, compost plant and internal access.
    (ii) Under Tranche 2: Procurement of 30 collection vehicles and 56,000 household bins, provision of resource center for recyclables.

22. **Shillong.** The following are proposed:
    (i) Under Tranche 1: development of short term sanitary landfill site including civil works and procurement of bulldozer.
    (ii) Under Tranche 2: construction of garage cum workshop and staff rest room at Marten, Mawiong, procurement of primary and secondary collection vehicles, workshop machineries, different types of bins, pushcarts and personnel protective equipment, and expansion of Marten landfill site by 8,500 m^2 to increase the life of the existing landfill facility to about 15 yrs.

B. Part B: Project Management and Capacity Building Components

1. Investment Program Management, Institutional Development, Capacity Building and Training

23. While NERCCDIP will involve provision of urban infrastructure and services in the capital cities, long-term sustainability of the assets created, and effective planning and management of urban basic services in general, requires that key urban management issues be addressed.

24. NERRCIP implementation is being managed by SIPMIU, responsible for overall project implementation. Provision is made under NERCCDIP for funding the costs of the SIPMIU, as well as the cost of consultants to provide assistance in project management and related capacity building. Such support is considered essential to the implementation of the project, particularly in light of the lack of experience of the proposed executing and implementing agencies with projects this large, implemented through separate design and construction contracts.

25. Effective and sustained delivery of urban services will require that the existing urban local bodies (ULBs) be strengthened and new ULBs be created, that water supply, sewerage and solid waste management operations be operated in a much more effective and efficient manner, that own source funding of all urban services be very substantially enhanced and that urban land management be improved. These will require a variety of actions which are expected to range from conduct of community consultations and institutional surveys to preparation and implementation of legislation and regulations, reorganization of departments, modernization of human resource management systems and improvement of financial management systems. Some of the measures, such as creation of a new ULB or a new water supply and sanitation agency, involve major changes and these will have to be conducted over a longer period of time. Support will be provided under NERCCDIP for the necessary measures.

26. The proposed project management and capacity development for each SIPMIU include:
    (i) safeguards compliance studies;
    (ii) community awareness programs,
    (iii) compost marketing studies;
    (iv) non-revenue reduction programs, power and water audits;

(v) support for migration to a double entry accounting basis system in ULB;
(vi) support for preparation of a GIS based property tax system
(vii) private sector participation opportunities studies
(viii) water utility reform program focusing on asset management improvement.

III. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Applicable Legislations

27. The implementation of subprojects under NERCCDIP will be governed by the environmental acts, rules, policies, and regulations of the GoI and the respective state government. These regulations impose restrictions on the activities to minimize/mitigate likely impacts on the environment. The following are the environmental regulations applicable to NERCCDIP (see Appendices for more information, particularly state programs):

(i) The Water (Prevention and Control of Pollution) Act, 1974, amended 1988;
(ii) The Water (Prevention and Control of Pollution) Rules, 1975;
(iii) The Air (Prevention and Control of Pollution) Act 1981, amended 1987;
(iv) The Air (Prevention and Control of Pollution) Rules, 1982;
(v) The Environment (Protection) Act, 1986, amended 1991 and including the following Rules/Notification issued under this Act;
    a. The Environment (Protection) Rules, 1986, including amendments;
    b. The Municipal Solid Wastes (Management and Handling) Rules, 2000;
    c. The Hazardous Wastes (Management and Handling) Rules, 1989;
    d. The Bio-Medical Waste (Management and Handling) Rules, 1998;
    e. Noise Pollution (Regulation and Control) Rules, 2000;
(vi) Wild Life (Protection) Amendment Act, 2002;
(vii) Environmental Impact Assessment Notification, 2006;
(viii) Environmental Standards of Central Pollution Control Board (CPCB);
(ix) The Indian Wildlife (Protection) Act, 1972, amended 1993;
(x) The Wildlife (Protection) Rules, 1995;
(xi) The Indian Forest Act, 1927;
(xii) Forest (Conservation) Act, 1980, amended 1988;
(xiii) Forest (Conservation) Rules, 1981 amended 1992 and 2003; and
(xiv) Guidelines for Diversion of Forest Lands for Non-Forest Purpose under the Forest (Conservation) Act, 1980.

28. Key standards include those related to drinking water quality, air quality, effluent discharge, leachate quality, and protected areas. Compliance is required in all stages of the project including design, construction, and operation and maintenance.

B. Environmental Assessment Requirements

29. The Environmental Impact Assessment (EIA) Notification of 2006, which replaces the EIA Notification of 1994, requires environmental clearance for certain defined activities/projects. This notification classifies the projects/activities that require environmental clearance into ‘A’ and ‘B’ categories depending on the impact potential and/or scale of project. For both category projects, prior environmental clearance is mandatory before any construction work, or preparation of land except for securing the land, is started on such project or activity. The notification provisions are as follows:

(i) Category 'A' projects require prior environmental clearance from the MoEF;[3]
(ii) Category 'B' projects require prior environmental clearance from the State Environment Impact Assessment Authority (SEIAA)[4]; and
(iii) Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of protected areas, notified areas and inter-state and international boundaries[5]. Also, in the case where a SEIAA does not exist, Category B project will be reviewed by the MoEF and reclassified as Category A.

30. Consequently, the only NERCCDIP subproject listed in the EIA Notification of 2006 Schedule of Projects Requiring Prior Environmental Clearance is solid waste facilities, otherwise referred to as common municipal solid waste facilities (CMSWF), which qualify as Category B projects and are thus reviewed by the respective SEIAA.

C. Other Environmental Regulations

31. **Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.** Water treatment, sewage, and solid waste management subprojects require approval by the State Pollution Control Boards (SPCB) under the Water (Prevention and Control of Pollution) Act, 1974 and/or the Air (Prevention and Control of Pollution) Act, 1981. The following approvals from SPCB are required: No Objection Certificates (NOC), Consent for Establishment (CFE) and Consent for Operation (CFO). The CFE/CFO is issued upon project review and site visits. The SPCB issues the CFE before start of construction and the CFO after completion of construction and satisfying CFE conditions, if any. During the operation period, the effluent and air emissions must conform to the stipulated standards (CPCB Environmental Standards). The CFO is renewed every year based on the operation performance of the facility.

32. The following subprojects require SPCB consent for establishment and operation.

(i) new or augmentation of water treatment plants (under the Water Act);
(ii) new or augmentation of sewage treatment plants (under the Water Act);
(iii) solid waste composting and landfills (under the Water Act and the Air Act);
(iv) diesel generators (under the Air Act); and
(v) hot mix plants, wet mix plants, stone crushers etc., if installed for construction (under the Air Act).

33. **Municipal Solid Waste (Management and Handling) Rules, 2000**. These Rules issued under the Environment (Protection) Act, 1986 have the objective of regulating the management and handling of the municipal solid wastes. The important provisions are:

---

[3] For Category A projects, based on the preliminary details provided by the project proponent as per Notification, the Expert Appraisal Committee (EAC) of MoEF, determine comprehensive terms of reference (TOR) for EIA studies. This TOR will be finalized within 60 days. On the recommendation of the EAC based on EIA studies, MoEF provides the environmental clearance.

[4] The B category projects will be further divided by State Level EAC into B1 – that require EIA studies and B2 – no EIA studies. The State Level EAC will determine TOR for EIA studies for B1 projects within 60 days. On the recommendation of the State level EAC based on EIA studies, SEIAA provides the environmental clearance.

[5] (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

(i) Solid waste generated in a municipal area shall be managed, including segregation, collection, transportation, and disposal in accordance with the Rules.
(ii) Solid waste processing and landfills shall meet design and operation specifications/standards specified under the Rules. These include site and facility design specifications, output compost characteristics, pollution control and monitoring programs, including closure of landfill site and post-care.

34. Forest legislation in India dates back to enactment of the Indian Forest Act, 1927. This Act empowers the State Government to declare "any forest land or waste-land, which is the property of Government or over which the Government has proprietary rights or to the whole or any part of the forest-produce of which the Government is entitled", a reserved forest or protected forest. The State Government may assign to any village-community the rights of Government over a reserved forest - those are called village-forests. Act also allows Government control over forest and lands not being the property of Government.

35. Acts like clearing or break up of any land for cultivation or for any other purpose, damage to vegetation/trees and quarrying or removing any forest produce from reserved forest is prohibited. All these are also applicable to village-forests. For protected forests, with the provision of the Act, the State Government makes rules to regulate activities like: cutting of trees and removal of forest produce; clearing or breaking up of land for cultivation or any other purpose; and for protection and management of any portion of protected forest.

36. Forest (Conservation) Act, 1980 (amended in 1988) enacted by Government of India, restricts the dereservation of forests for use of non-forest purposes. According to the Act, State Government requires prior approval of GoI for the use of forest land for non-forest purposes (means the breaking up or clearing of any forest land) or for assigning least to any private person or agency not controlled by government. The Forest (Conservation) Rules, 2003 issued under this Act, provide specific procedures to be followed for conversion of forest land for non-forest purposes.

37. Limited subprojects notably solid waste composting and landfills may require acquisition of forest land[6]. Linear subprojects like water supply rising mains/trunks mains may traverse forest lands. The forest land conversion will follow the "Guidelines for Diversion of Forest Lands for Non-Forest Purpose" under Forest (Conservation) Act, 1980. Compensatory afforestation is one of the most important conditions stipulated for diversion of forest land. The following proposals for conversion will be forwarded by the State Government to the MoEF:

(i) Forest land involving up to 5 ha will cleared by the Regional Office of the MoEF.
(ii) Forest land involving more than 5 ha and up to 20 ha sent will be cleared by the Regional Office after referring the case to MoEF.
(iii) Conversion of forest land (i) having density above 0.4 irrespective of the area involved, and, (ii) of more than 20 ha in the plains and 10 ha in the hilly region, irrespective of density, will be cleared by MoEF.
(iv) Compensatory afforestation is compulsory for conversion:
(v) Afforestation will be done over an equivalent area of non-forest land.
(vi) As far as possible, the non-forest land for compensatory afforestation should be identified contiguous to or in the proximity of Reserved Forest or Protected

[6] The term 'Forest land' refers to land owned by the Forest Department; it may or may not include reserved forest, protected forest or any area recorded as forest in the government records.

Forest. If non-forest lands are not available in the same district other non-forest land may be identified elsewhere in the state.

(vii) Where non-forest lands are not available, compensatory afforestation may be carried out over degraded forest twice in extent to the area being diverted.

38. Conversion of forest lands that are part of National Parks/Sanctuaries and Tiger Reserve areas (notified under Indian Wildlife (Protection) Act, 1972) is not permitted. In exceptional case, the State Government requires consent of the Indian Board of Wildlife for obtaining approval of the State Legislature for denotification of the area as a sanctuary.

39. Cutting of trees in non-forest land, irrespective of land ownership, also requires permission from the State Forest Department. Afforestation to the extent of two trees per each tree felled is mandatory.

40. A summary of the environmental compliance requirements is presented in below in Table 1.

Table 1: Environmental Compliance Requirements of NERCCDIP Subprojects

	Component	**Applicable Legislation**	**Compliance**	**Action Required**
A.	**Water Supply**			
1.	All components that require forest land acquisition	Forest (Conservation) Act, 1980 & Wildlife Act, 1972	Approval from MoEF	Identify non-forest land and formulate afforestation program
2.	WTP	Water (Prevention and Control Of Pollution) Act, 1974	NOC, CFE and CFO from SPCB	Obtain NOC and CFE from SPCB before construction. Obtain CFO from SPCB prior to commissioning. Renew CFO annually. Comply with CPCB environmental standards.
3.	Hot mix plants, wet mix plants, stone crushers etc., if installed for construction	Air (Prevention and Control of Pollution) Act, 1981	NOC, CFE and CFO from SPCB	Obtain NOC and CFE from SPCB before construction. Obtain CFO from SPCB prior to commissioning. Renew CFO annually. Comply with CPCB environmental standards.
4.	Diesel generator (power back-up)			
5.	All components requiring tree-cutting	Forest (Conservation) Act, 1980 & Wildlife Act, 1972	Approval from State Forest Department	Formulate afforestation program
B.	**Sewerage and Sanitation**			
1.	All components that require forest land acquisition	Forest (Conservation) Act, 1980 & Wildlife Act, 1972	Approval from MoEF	Identify non-forest land and formulate afforestation program
2.	STP	Water (Prevention	NOC, CFE and	Obtain NOC and CFE from

	Component	Applicable Legislation	Compliance	Action Required
		and Control Of Pollution) Act, 1974	CFO from SPCB	SPCB before construction. Obtain CFO from SPCB prior to commissioning. Renew CFO annually. Comply with CPCB environmental standards.
3.	Hot mix plants, wet mix plants, stone crushers etc., if installed for construction	Air (Prevention and Control of Pollution) Act, 1981	NOC, CFE and CFO from SPCB	Obtain NOC and CFE from SPCB before construction. Obtain CFO from SPCB prior to commissioning. Renew CFO annually. Comply with CPCB environmental standards.
4.	Diesel generator (power back-up)			
5.	All components requiring tree-cutting	Forest (Conservation) Act, 1980 & Wildlife Act, 1972	Approval from State Forest Department	Formulate afforestation program
C.	**Solid Waste Management**			
1.	CWMF including composting, landfills, and transfer stations	Environment (Protection) Act, 1986 EIA Notification, 2006 Category B	Environmental clearance from SEIAA	Categorize subproject based on preliminary information and site visits (category B1 or B2). B1 projects require EIA study for approval. If no SEIAA exists, then considered category A and reviewed by MOEF. If within 10 km boundary of protected areas such as national parks, sanctuaries, notified areas and biosphere reserves, then considered as category A.
2.	All composting and landfill facilities	Municipal Solid Wastes (Management and Handling) Rules, 2000	Site Clearance from SPCB	Obtain site clearance from SPCB. Include in project design, environmental documents and operations manual the conditions of the clearance/s.
3.	Sanitary landfill	Water (Prevention and Control Of Pollution) Act, 1974	NOC, CFE and CFO from SPCB	Obtain NOC and CFE from SPCB before construction. Obtain CFO from SPCB prior to commissioning. Renew CFO annually. Comply with CPCB environmental

	Component	Applicable Legislation	Compliance	Action Required
				standards.
4.	Hot mix plants, wet mix plants, stone crushers etc., if installed for construction	Air (Prevention and Control of Pollution) Act, 1981	NOC, CFE and CFO from SPCB	Obtain NOC and CFE from SPCB before construction. Obtain CFO from SPCB prior to commissioning.
5.	Diesel generator (power back-up)			Renew CFO annually. Comply with CPCB environmental standards.
6.	All components requiring tree-cutting	Forest (Conservation) Act, 1980 & Wildlife Act, 1972	Approval from State Forest Department	Formulate afforestation program

D. Institutional Capacity

41. The executing and implementing agencies are responsible for preparation of EIAs/IEEs and monitoring of safeguards issues. The national-level EA has successfully ensured environmental management and monitoring under ongoing locally and foreign funded infrastructure improvement projects in India. However, responsibility for environmental monitoring is generally fragmented and overlapping between different units within the state-level EAs and SIPMIUs, and there does not appear to be a unified database or consistent monitoring and reporting procedures. The SIPMIUs require assistance in implementing environmental management and monitoring.

42. Therefore, the EAs and SIPMIUs require capacity building measures (i) for a better understanding of the project-related environmental issues; and (ii) to strengthen their role in implementation of mitigation measures and subsequent monitoring. Trainings and awareness workshops are included in NERCCDIP, with the primary focus of enabling the EAs and SIPMIU staffs to conduct impact assessments, carry out environmental monitoring, and implement the EMPs. After participating in such activities, the participants will be able to make environmental assessments for subsequent subprojects, conduct monitoring of EMPs, understand government and ADB requirements for environmental assessment, management, and monitoring (short- and long-term), and incorporate environmental features into future project designs, specifications, and tender/contract documents, and carry out necessary checks and balances during project implementation.

IV. ANTICIPATED ENVIRONMENTAL IMPACTS

43. As part of the project preparatory technical assistance, environmental assessment for Tranche 1 subprojects was conducted and initial environmental examination (IEE) reports with EMPs were prepared. [7] The IEEs concluded that NERCCDIP will have only low-scale, localized impacts on the environment which can be readily mitigated. The potential adverse environmental impacts are mainly related to the construction period which can be minimized by the mitigating measures and environmentally-sound engineering and construction practices. Occupational and community health and safety measures and other health and hygienic

[7] IEEs prepared under Tranches 1 and 2 assessed potential environmental impacts during design, pre-construction, construction, and operation are minimal and can be mitigated through proper facility design, siting, high-quality construction and operations, and maintenance practices with mitigation measures and monitoring programs are EMPs.

conditions, including careful handling of public utilities along with social aspects, have been considered in the EMPs. It is likely that future subprojects will be of similar nature. No works with significant impacts are anticipated.

44. Table 2 provides generic anticipated impacts during design, construction, and operation. The potential impacts will be reviewed and assessed for each subproject by SIPMIU environmental specialists.

Table 2: Anticipated Environmental Impacts of NERCCDIP Subprojects

Impact Field	Anticipated Impact on the Environment
Design phase	
Environmental clearances	Environmental clearances, consents, and permits are required (Section II of the EARF) in order to implement the project. If not pursued on time, this can delay the project. Necessary environmental clearances and permits have to be obtained and must follow the guidelines issued by the authorities.
Construction phase	
Air quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction, resulting in dust and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons
Surface water quality	Mobilization of settled silt materials, runoff from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.
Noise levels	Increase in noise level due to earth moving and excavation equipment and the transportation of equipment, materials, and people. Operation of heavy equipment and machines in the nighttime can cause nuisance to the surrounding environment/ people.
Ecological resources	Felling of the trees affects terrestrial ecological balance.
Sources of materials	Extraction of materials can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and waterlogging, and water pollution.
Existing infrastructure, facilities, and utilities	Telephone lines, electric poles and wires, and water pipes (old) existing within right-of-way (RoW) require shifting without disruption to services. Health risk due to closure of existing water supply, such as community tanks, water stations, and privately-owned small water pipes
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas	Locations may cause encroachment/impact either directly or indirectly on adjacent environments. It may also include impacts on the people who might lose their homes or livelihoods due to the project activities. Temporary air and noise pollution from machine operation, and water pollution from storage and use of fuels, oils, solvents, and lubricants. This may cause conflict with residents and problem of waste disposal and disruptions to residents.
Construction waste	Excavation works, cleaning of drainages, and trenching will produce additional amounts of waste soil. Accumulation of debris waste materials and stockpiling can cause environmental visual pollution.
Social and cultural resources	Sites of social/cultural importance (schools, hospitals, religious places, tourism sites) may be disturbed by noise, dust, vibration, and impeded access. Ground disturbance can uncover and damage archaeological and historical remains.
Landscape and aesthetics	Solid wastes as well as excess construction materials create unacceptable aesthetic conditions.
Traffic	Traffic flow will be disrupted if routes for delivery of construction materials and temporary blockages during construction activities are not planned and coordinated.

Impact Field	Anticipated Impact on the Environment
Accessibility	Traffic problems and conflicts in RoW. Repeated trenching may disturb roads, people, and businesses.
Income	Impede the access of residents and customers to nearby shops. Shops may lose business temporarily.
Occupational health and safety	Occupational hazards can arise during construction (e.g., trenching, falling objects, etc.).
Community health and safety	Community hazards can arise during construction (e.g., open trenches, air quality, noise, falling objects, etc.). Trenching on concrete roads using pneumatic drills will cause noise and air pollution. Traffic accidents and vehicle collision with pedestrians during material and waste transportation
Post-construction phase	
Clean-up operations, restoration and rehabilitation	Impacts on social or sensitive receptors when post-construction requirements are not undertaken, e.g. proper closure of camp, disposal of solid waste, and restoration of land after project construction.
Operation and maintenance phase	
General	
Environmental clearance certificate renewal	Consent for operation must be renewed every year.
General maintenance	Maintenance activities may cause disturbance to sensitive receptors, dust, and increase in noise level.
Water Supply	
Water withdrawal	Development of water resources often involves balancing competing qualitative and quantitative human needs with the rest of the environment. This is a particularly challenging issue in the absence of a clear allocation of water rights which should be resolved with the participation of appropriate parties in advance of project design and implementation. For groundwater withdrawal, potential land subsidence due to unsustainable abstraction.
Economic development	Impediments to residents and businesses during routine maintenance of water supply network.
Biodiversity fauna and flora	Water supply subproject is situated within existing built-up areas where no areas of ecological diversity occur. Due to the nature and locality of the subprojects, there is unlikely to be any significant impacts on biodiversity within the areas during maintenance works. The use of fertilizers and herbicides in maintenance of newly planted trees, landscape and vegetation may affect the environment.
Health and safety	Danger of operations and maintenance-related injuries Safety of workers and public must be ensured. Poor waste management practices and unhygienic conditions at the improved facilities can breed diseases. Standing water due to inadequate storm water drainage systems and inadequate waste management practices pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies, and rats.
Solid waste	Solid waste residuals that may be generated during operations and maintenance activities. Sludge will be generated from WTPs.
Wastewater	Wastewater from water treatment projects include filter backwash. This waste streams may contain suspended solids and organics from the raw water, high levels of dissolved solids, high or low pH, heavy metals, etc.
Hazardous chemicals	Water treatment involves the use of chemicals for coagulation, disinfection, and water conditioning.
B. Sewerage	
Economic development	Impediments to residents and businesses during routine maintenance of sewer network.
Biodiversity fauna and flora	Sewerage and septage management subprojects are situated within existing built-up areas where no areas of ecological diversity occur. Due to the nature

Impact Field	Anticipated Impact on the Environment
	and locality of the subprojects, there is unlikely to be any significant impacts on biodiversity within the areas during maintenance works. The use of fertilizers and herbicides in maintenance of newly planted trees, landscape and vegetation may affect the environment.
Health and safety	Danger of operations and maintenance-related injuries Safety of workers and public must be ensured. Poor waste management practices and unhygienic conditions at the improved facilities can breed diseases. Standing water due to inadequate storm water drainage systems and inadequate waste management practices pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies, and rats.
Solid waste	Solids removed from wastewater collection and treatment systems may include sludge and solids from cleaning of sewer collection systems, sludge from STPs, and bio-solids from septage treatment plants/biodigesters.
Effluent	Partial treated sewage can cause contamination of soil, groundwater, and surface water.
Hazardous Chemicals	Wastewater treatment often includes the use of hazardous chemicals, such as strong acids and bases for pH control, chlorine or other compounds used for disinfection, etc.
C. Solid Waste Management	
Waste collection and transport	The causes of littering and clandestine dumping in urban areas occur because of inadequate availability of litter bins along walkways, inadequate public awareness of their responsibilities as urban dwellers, and inadequate refuse collection service.
Air emissions	Air emissions from solid waste collection and transport include, dust and bio-aerosols, odors, and vehicle emissions.
Waste receipt, unloading, processing, and storage	Control of the incoming waste stream is necessary to ensure safe and effective processing, treatment, and disposal of the waste and the quality of end products (e.g., compost).
Contaminated Runoff	Leachate from waste piles caused by exposure to precipitation and from residual liquids in the waste itself may contain organic matter, nutrients, metals, salts, pathogens, and hazardous chemicals. If allowed to migrate, leachate can contaminate soil, surface water, and groundwater potentially causing additional impacts such as eutrophication and acidification of surface water and contamination of water supplies.
Noise and Vibration	Principal sources of noise and vibration include truck traffic; loading equipment (e.g., cranes, wheeled loaders), stationary compactors, balers, grinders, and other treatment and conveyance systems.
Landfill Gas Emissions	Solid waste contains significant portions of organic materials that produce a variety of gaseous products when dumped, compacted, and covered in landfills.

V. ENVIRONMENTAL ASSESSMENT PROCEDURES TO BE USED FOR THE SUBPROJECTS

A. Environmental Criteria for Subproject Selection

45. It may be mentioned that none of the components will have significant negative impacts, which is mainly attributed to the nature of components, which will primarily improve the environmental condition. In the case sensitive features (i.e., water bodies) may exist near or in the vicinity of project sites, careful siting and engineering of project components coupled with clearly defined operation and maintenance procedures are specified to mitigate adverse

environmental impacts. In addition, fulfilling the GoI and the state governments' requirements will ensure environmental safeguards for the most potentially impacting facilities namely STP and solid waste disposal sites. The other components are unlikely to have negative impacts; however, the selection criteria indicated in Table 3 should be followed while identifying and finalizing Project components.

Table 3: Environmental Criteria for Subproject Selection

Component	Criteria
Overall selection criteria (applicable to all components)	• Will avoid resettlement/relocation. If unavoidable the extent of resettlement will be minimized. • Will not result in destruction of or encroachment onto protected areas, including reserved forests or biodiversity conservation hotspots (identified in the State Biodiversity Strategy and Action Plans). • Will not result in destruction/disturbance to historical and cultural places/values. • Will avoid conversion of prime agriculture areas for component establishment. • Will not involve social conflicts. • Will reflect inputs from public consultation and disclosure for site selection.
Water supply	• Adequate buffer around treatment plants and pumping stations to alleviate noise and other possible nuisances. • Will not result in excessive abstraction of water affecting downstream water users and other beneficial water uses for surface and ground water. • Will ensure adequate protection from pollution of intake works or wells. • Will not utilize raw water of very poor quality evidenced by the presence of high levels of pathogens and /or mineral contents • Ensure occupational safety measures for the safe handling of chlorine, including wash area, as well as proper handling as not to result in inadequate/poor treatment and chlorination. • Will ensure proper and adequate treatment and disposal facilitates for increased volumes of wastewater generation. • Will ensure networks and distribution systems are designed considering vulnerability to landslides and earthquakes. • Will not involve the use or handling of asbestos cement (AC) pipes. Existing AC pipes, if any, will be left as it is, but project team cause to ensure that pipes will be marked appropriately. • Will ensure location of water treatment plant will take into account the present and future demands, direction and rate of growth of the service area and potential deterioration of source quality in the future. • Will ensure location of water treatment plant will follow the natural hydraulic gradient so that the service area can be supplied by gravity • Will be located above the one in 100 year design flood level of the maximum flood level experienced if records are insufficient for flood analysis. • Include treatment of all backwash and sludge resulting from water treatment plants and acceptable to discharge standards of the SPCB before disposal.
Sewerage and sanitation	• Will ensure sewage treatment plant (STP) site selection is not in (i) close proximity to inhabited areas; (ii) flood and landslide prone areas; and (iii) effluent disposal points close to water intake or water usage points. • Subprojects will be implemented only with consent of State Pollution Control Board (SPCB). • Will ensure sewage pumping station locations avoids sensitive receptors (e.g. proximity of high density residential, schools, hospitals, etc.). • Will ensure networks and distribution systems are designed considering vulnerability to landslides and earthquakes. • Will ensure low cost sanitation measures proposed do not increase vulnerability to landslides or result in pollution of groundwater.

Component	Criteria
	• Subproject sewage treatment technology and low-cost sanitation schemes are appropriate to the site and local culture, and do not require sophisticated O&M, but will ensure treatment as per the disposal standards. Air/odor dispersion will be considered during detailed design to reflect appropriate technology, design, and required mitigation measures.
Solid waste management	• Site selection will be based on the provisions (Specifications of Landfills) of Municipal Solid Waste (Management and Handling) Rules, 2000 (Government of India). Will ensure compliance with Municipal Solid Waste (Management and Handling) Rules, 2000 (Government of India). • Will ensure no land use conflicts. • Subprojects will be implemented only with Environmental Clearance from the government, and consent from the State Pollution Control Board (SPCB). • Subprojects will not be constructed in areas where the groundwater table is less than 2 meters below ground level.

B. Environmental Assessment Procedures for Subprojects

1. ADB Environment Policy

a. Environmental Classification

46. According to ADB Safeguard Policy Statement (2009) the environmental classification of subprojects is determined by the Environment and Social Safeguards Division (RSES) of ADB, and there are four possible outcomes:

(i) **Category A**: A subproject is classified as Category A if it could have significant adverse environmental impacts. Such projects require Environmental Impact Assessment (EIA).
(ii) **Category B:** A subproject is classified as Category B if it is likely to have some negative impacts, but these will be less significant than those of Category A. These projects require an Initial Environmental Examination (IEE).
(iii) **Category C**: A subproject is classified as Category C if it is not expected to have any environmental impacts. In this case no EIA or IEE is required, although environmental implications are reviewed.
(iv) **Category FI**: A proposed project is classified as category FI if it involves the investment of ADB funds to, or through, a financial intermediary.

47. A project's environment category is determined by the category of its most environmentally sensitive component, including direct, indirect, induced, and cumulative impacts. Each proposed project is scrutinized as to its type, location, scale, sensitivity and the magnitude of its potential environmental impacts. NERCCDIP has been classified as category B as per ADB SPS, 2009. The classification will be reviewed on completion of the designs of the subprojects and may be revised, if appropriate, by ADB. Subprojects with significant environmental impacts will not be considered thus it is unlike for NERCCDIP to be reclassified as ADB SPS category A.

b. Preparation of Initial Environmental Examinations (IEEs):

48. As NERCCDIP has been classified as category B for environment as per ADB SPS, 2009, IEEs are required to be prepared for the subprojects. Appendix 1 of ADB SPS, 2009 provides the specific outline and contents to be followed while preparing IEEs. **Appendix 1**

provides the outline of an ADB IEE report. Also, the IEEs prepared during project preparation stage provide good samples which can be followed for preparation of IEEs of subsequent subprojects.

49. Issues regarding natural and critical habitats will be covered in the IEEs. In case of subprojects located within these areas, a review of management plans and consultation with concerned management staff, local communities, and key stakeholders will be undertaken. Pollution prevention for conservation of resources, particularly technology for management of process wastes and occupational and community health and safety, will be addressed. The IEEs will also reflect meaningful consultation and disclosure process with a provision for grievance redress mechanism.

50. ADB requires that an EMP must be developed as part of the IEE. The EMP will outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the subproject is designed, constructed, and operated in compliance with applicable laws and regulations, and meets the requirements specified in the EMP. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the subproject's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties," the "polluter pays" principle, the precautionary approach, and adaptive management.

51. If some residual impacts are likely to remain significant after mitigation, the EMP will also include appropriate compensatory measures (offset) that aim to ensure that the project does not cause significant net degradation to the environment. Such measures may relate, for instance, to conservation of habitat and biodiversity, preservation of ambient conditions, and greenhouse gas emissions. Monetary compensation in lieu of offset is acceptable in exceptional circumstances, provided that the compensation is used to provide environmental benefits of the same nature and is commensurate with the project's residual impact.

52. All IEEs will be conducted and EMPs prepared prior to the award of construction contracts. The bid documents will include the requirement to incorporate necessary resources to implement the EMP. For each subproject, the IEE and EMP will form part of the contract document, and, if required, will need to be further updated during the construction phase of a subproject.

c. Consultation and disclosure

53. Consultation and disclosure is mandatory under ADB SPS, 2009 and best practice approaches should be followed[8]. This involves meaningful consultation with stakeholders at an early stage of IEE preparation, and throughout project implementation. A variety of approaches can be adopted. As a minimum, stakeholders should be consulted regarding the scope of the environmental assessment before work commence, about the likely impacts of the subproject and proposed mitigation once the IEE is under preparation. The IEE should record the views of stakeholders and indicate how these have been taken into account in subproject development.

[8] There are a variety of approaches for such contacts including public meetings, focus group discussions, workshops, public information campaigns, etc., and several methods should be used in order to reach all sectors of society, as well as institutional stakeholders, NGOs etc.

54. Information is disclosed through public consultation and more formally by making documents and other materials available in a form and at a location in which they can be easily accessed by stakeholders. This normally involves making IEEs and relevant information available at public locations, SIPMIU and ADB websites.

d. Environmental Audit of Existing Facilities

55. For subprojects involving facilities and/or business activities that already exist or are under construction, the EAs and SIPMIUs will undertake an environment audit, including on-site assessment, to identify past or present concerns related to impacts on the environment. The objective of the compliance audit is to determine whether actions were in accordance with ADB's safeguard principles and requirements for borrowers/clients, and to identify and plan appropriate measures to address outstanding compliance issues. Where noncompliance is identified, a corrective action plan agreed on by ADB and the implementing agencies will be prepared. The plan will define necessary remedial actions, the budget for such actions, and the time frame for resolution of noncompliance. The audit report (including corrective action plan, if any) will be made available to the public in accordance with the information disclosure requirements of ADB SPS, 2009. If a project involves an upgrade or expansion of existing facilities that has potential impacts on the environment, the requirements for environmental assessments and planning specified in ADB SPS, 2009 will apply in addition to compliance audit.

e. Review of Environmental Assessment Reports

56. The IEEs will be prepared by SIPMIUs and reviewed initially by EAs. In case an environmental clearance is required, the IEEs are to be forwarded to the MoEF for approval. ADB will review the IEEs and/or other instruments that have been submitted by EAs, against the applicable safeguard policy principles and requirements set out in ADB SPS. If the review of ADB reveals gaps between the submitted documents and applicable ADB requirements, ADB will advise and assist the EAs and SIPMIUs in filling such gaps, and requires EAs and SIPMIUs to address these concerns during the project preparation phase. ADB will assess the EAs and SIPMIUs capacity to address environmental impacts and risks, identify capacity building needs, and integrate necessary capacity building programs into the project design.

2. GoI Environmental Clearance Procedures

a. Environmental Classification

57. Under the GoI EIA Notification, 2006 the environmental classification of projects is determined by MoEF, and there are two possible outcomes:

(i) **Category A.** A subproject is classified as Category A if it is likely to have significant negative impacts and is thus one of the types of project listed in this category in the EIA Notification. Such projects require EIA, plus environmental clearance from MoEF;

(ii) **Category B.** A subproject is classified as Category B if it is likely to have fewer negative impacts and is listed in this category in the EIA Notification. These projects require environmental clearance from SEIAA, who classify the project as B1 (requiring EIA) or B2 (no EIA), depending on the level of potential impacts. Projects classified as B2 require no further study. If an SEIAA does not exist all Category B projects are considered Category A requiring clearance from MoEF.

b. Preparation of EIA Reports

58. An EIA is mandatory for Category A and B1 projects. Projects in Category A are those with major negative impacts (such as power plants, chemical manufacturing, etc.), so it is very unlikely that any subprojects developed under NERCCDIP would fall into this group. However, certain subprojects (e.g. CWMF and STPs) are included in Category B, and these may be classified by SEIAA as B1. These would then require EIA, which should follow the content and format shown in Annex 1 of the EIA Notification which includes Social Impact Assessment Studies and Rehabilitation and Resettlement Action Plans.

c. Environmental Monitoring and EMP:

59. The EIA Notification requires that the EIA includes a comprehensive program for monitoring the effectiveness of mitigation measures. This should specify measurement methodologies, frequency, locations, data analysis, reporting schedules, emergency procedures, detailed budget and procurement schedules. An Environmental Management Plan is also required, identifying mitigation measures and specifying administrative arrangements to ensure that mitigation measures are implemented and their effectiveness is monitored after approval of the EIA. A budget for the EMP should also be provided.

d. Public Consultation and Information Disclosure:

60. Public consultation and disclosure is required for A and B1 projects and consists of (i) a public hearing at or near the proposed site, and (ii) responses in writing from stakeholders. The public hearing is conducted by the appropriate SPCB. Disclosure is also handled by SPCB, who lodge the Summary EIA report on their website and invite responses from stakeholders. The Draft EIA report is available on request until the public hearing.

e. Review of Environmental Assessment Reports by Government Agencies:

61. After completion of the public consultation the proponent addresses all material concerns expressed during consultation and disclosure, by appropriate changes in the draft EIA and EMP, which are then submitted for approval. The report is reviewed by an Expert Appraisal Committee (EAC), constituted by MoEF for Category A projects and SEIAA for B1 projects. The EAC provides its recommendation to the appropriate authority, which then decides on the basis of the recommendation whether to issue or deny the environmental clearance, which will include certain conditions, with which the proponent must comply.

f. Post Environmental Clearance Monitoring:

62. Under the EIA Notification it is mandatory for the project proponent to submit half-yearly compliance reports in respect of the stipulated environmental clearance conditions.

g. Other Mandatory Environmental Requirements

63. Subprojects that include STP, WTP, landfill and composting facilities, or hot/wet mix plants and stone crushers (if required for construction) require CFEs before commencement of work and CFOs upon completion of construction under Water (Prevention and Control of Pollution) Act 1974, and/or the Air (Prevention and Control of Pollution) Act 1981 from SPCB before commencement of civil works. Landfills and compost plants additionally require site

authorization from SPCB under the Municipal Solid Waste (Management and Handling) Rules 2000. During the operation period effluent, air emissions, noise levels, etc. must conform to applicable CPCB environmental standards. The CFOs will be renewed every year

64. Table 4 below summarizes ADB and GoI procedures during subproject processing.

Table 4: ADB and GoI Environmental Procedures during Subproject Processing

Project Stage	ADB Procedures	GoI
Subproject Identification	REA Checklist	Categorization (A or B) according to Schedule and General/Specific Conditions in GoI Environmental Protection Rules, 2006
	Categorization (A/B/C/FI)	Application for Prior Environmental Clearance (environmental clearance) after the identification of the prospective site, or before commencing any construction, or land preparation. Category A requires environmental clearance from MOEF. Category B requires environmental clearance from SEIAA. In the absence of SEIAA or SEAC, Category B treated as Category A.
	Meets subproject selection criteria	Screening (for Category B) subject by SEAC. Categorized as B1 (requires full EIA) or B2 (does not require full EIA).
Detailed Design	Preparation of IEE (NERCCDIP is category B per ADB SPS)	Scoping and TOR for EIA (A or B1) with scrutiny by EAC. TOR (or rejection of environmental clearance) finalized by EAC or SEAC within 60 days. Approved TOR posted on MOEF or concerned SEIAA website.
	Public Consultation – it is recommended that public consultation be carried out during the early stages of the project design and throughout the project implementation to address any environmental issues that affect the local communities, NGOs, governments, and other interested parties.	Public Consultation for Category A and B1 projects (as per Appendix IV of EPR, 2006). and consists of two components: (i) public hearing conducted by SPCB or UTPCC within 45 days of a request from the applicant, and (ii) Obtain written responses. Draft EIA publicized widely before hearing. Notice of public hearing within 7 days of date. 30 days for public responses. Incorporate concerns expressed into the draft EIA and EMP.
	Documents and other materials to be available in a form and at a location in which they can be easily accessed by stakeholders. This normally involves making IEEs and relevant information available at public locations, SIPMIU and ADB websites.	.
	SIPMIU to incorporate mitigation measures in project design specified in IEE and EMP.	
	SIPMIU to identify and incorporate environmental mitigation and monitoring	

Project Stage	ADB Procedures	GoI
	measures into bidding and contract documents.	
Appraisal	EMP and other environmental loan covenants are incorporated into the Project Administration Memorandum (PAM).	Appraisal of application completed by EAC or SEAC within 60 days of receipt of final EIA repot.
Approval	ADB reviews and approve based on IEE compliance with ADB SPS, 2009.	environmental clearance Decision within 40 days of the receipt of the recommendations of the EAC or SEAC or within 105 days of the receipt of the final EIA. Where EIA is not required, within 105 days of the receipt of the complete application and requisite documents
Contract Award	Obtain necessary environmental clearances, NOCs, CFEs prior to contract award. Contractors submit site-specific EMP based on approved IEE and EMP.	Necessary environmental clearance obtained prior to commencing any construction, or land preparation. NOCs, CFE and CFO from respective SPCB; and Forest clearances.
Implementation	Implementation of EMP. Periodic monitoring reports from SIPMIU. Implement any corrective or preventive actions set out in safeguards monitoring reports	Project must submit half-yearly compliance monitoring reports on 1st June and 1st December. All compliance reports are public documents and displayed on website of concerned regulatory authority

VI. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation and Information Disclosure

65. Consultation, participation, and disclosure will ensure that information is provided and feedback on proposed subproject design is sought early, right from the subproject preparation phase, so that the views/preferences of stakeholders, including potential beneficiaries and affected people, can be adequately considered in project design, and continue at each stage of project preparation, processing, and implementation.

66. Project-affected persons will be consulted at various stages in the subproject cycle to ensure incorporation of their views/concerns on subproject environmental impacts and mitigation measures. Relevant information about any major changes to subproject scope will be shared with beneficiaries, affected persons, vulnerable groups, and other stakeholders.

67. A variety of approaches will be adopted. At minimum, stakeholders will be consulted regarding the scope of the environmental assessment during IEE preparation and before work commences, and they will be informed of the likely impacts of the subproject and proposed mitigation measures once the draft IEE are prepared. The IEE will record the views of stakeholders and indicate how these have been taken into account in the subproject development. Consultations will be held with a special focus on vulnerable groups.

68. The key stakeholders to be consulted during subproject preparation, EMP implementation, and subproject implementation include:

(i) beneficiaries;
(ii) elected representatives, community leaders, religious leaders, and representatives of community-based organizations;
(iii) local NGOs;
(iv) local government and relevant government agency representatives, including local authorities responsible for protection and conservation of forests and environment, archaeological sites, religious sites, and other relevant government departments;
(v) residents, shopkeepers, and business people who live and work alongside the roads where pipes will be laid, and near sites where facilities will be built; custodians and users of socially and culturally important buildings;
(vi) SIPMIU staff and consultants; asset owners, and
(vii) ADB and Government of India.

B. Information Disclosure

69. Information will be disclosed through public consultation and making relevant documents available in public locations. The following documents will be submitted to ADB for disclosure on its website:

(i) final IEE;
(ii) new or updated IEE and corrective action plan prepared during project implementation, if any; and
(iii) environmental monitoring reports.

70. SIPMIUs will send written endorsement to ADB for disclosing these documents on ADB's website. SIPMIUs will also provide relevant safeguards information in a timely manner, in an accessible place and in a form and languages understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.

C. Grievance Redress Mechanism

71. A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of APs' concerns, complaints, and grievances related to social and environmental issues of the project. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project.

72. A common GRM will be in place for social, environmental, or any other grievances related to the project. Every grievance shall be registered and careful documentation of process with regard to each grievance undertaken, as explained below. The SIPMIU environmental and social safeguards officers will have the overall responsibility for timely grievance redress on environmental and social safeguards issues.

73. Public awareness campaign will be conducted to ensure that awareness on the project and its grievance redress procedures is generated. The SIPMIU environment and social safeguard officers will be assisted by design and supervision management consultant (DSMC) safeguards specialists with information/collateral/awareness material etc. and in conducting project awareness campaigns. The campaign will ensure that the poor, vulnerable and others are made aware of grievance redress procedures and entitlements per project Resettlement Framework, and SIPMIU will ensure that their grievances are addressed.

74. Affected persons will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaints/suggestion boxes that have already been installed by SIPMIUs or through telephone hotlines at accessible locations, by e-mail, by post, or by writing in a complaints register in SIPMIU offices. Appendix 2 has the sample grievance registration form. Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area, and how the problem was resolved will be undertaken. SIPMIU safeguard officers will have the overall responsibility for timely grievance redressal on environmental and social safeguards issues and for registration of grievances, related disclosure, and communication with the aggrieved party.

75. **Grievance redress process**. In case of grievances that are immediate and urgent in the perception of the complainant, the contractor and DSMC on-site personnel will provide the most easily accessible or first level of contact for quick resolution of grievances. Contact phone numbers and names of the concerned SIPMIU safeguard officers and contractors, will be posted at all construction sites at visible locations. The SIPMIU safeguard officers will be responsible to see through the process of redressal of each grievance.

(i) **1st Level Grievance.** The phone number of the SIPMIU office should be made available at the construction site signboards. The contractors and SIPMIU safeguard officers can immediately resolve on-site in consultation with each other, and will be required to do so within 7 days of receipt of a complaint/grievance.

(ii) **2nd Level Grievance.** All grievances that cannot be redressed within 7 days at field/ward level will be reviewed by the city-level grievance redress committee (GRC) with support from SIPMIU safeguard officers and DSMC environment and resettlement specialists. City-level GRC will attempt to resolve them within 15 days.

(iii) **3rd Level Grievance.**The SIPMIU safeguard officers will refer any unresolved or major issues to the State-level GRC, who with consultation with SIPMIU and city-level GRC will resolve them within 15 days.

76. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

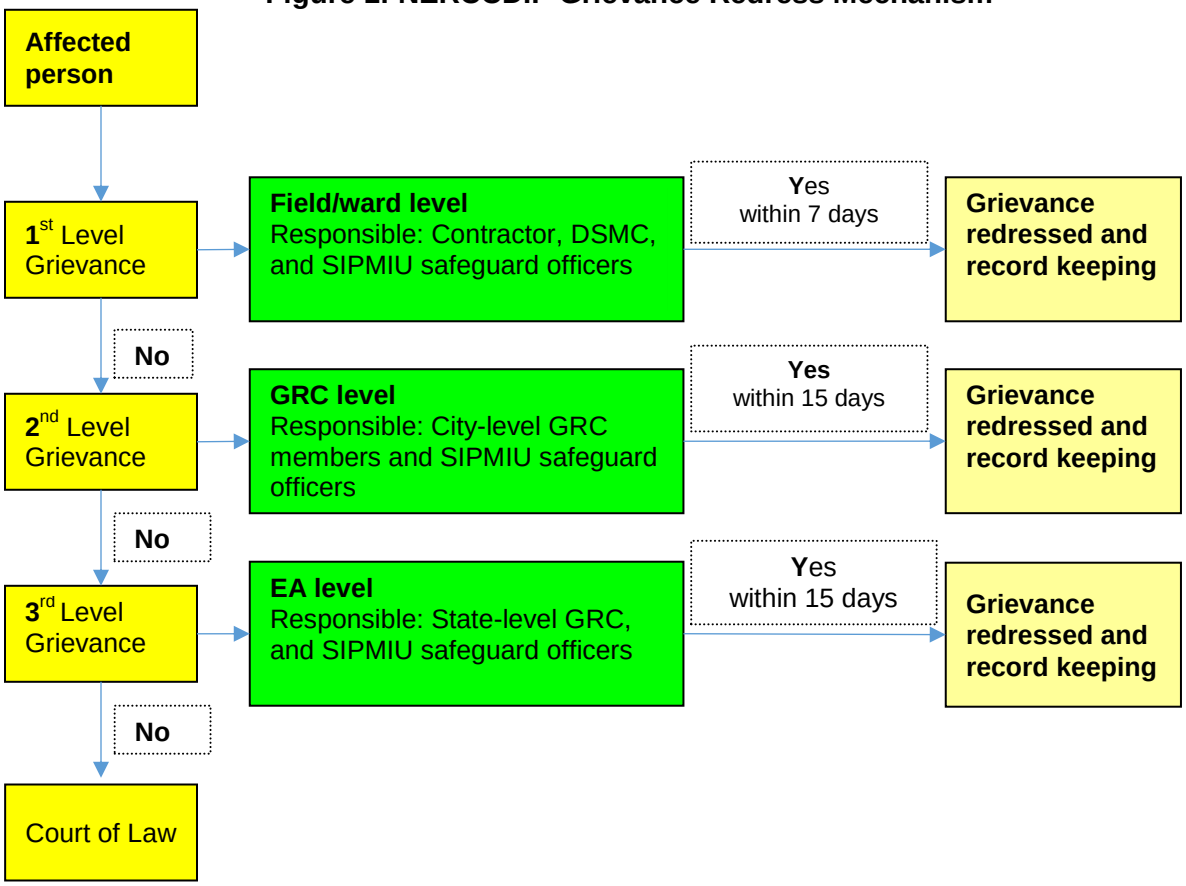
77. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB India Resident Mission (INRM). The complaint can be submitted in any of the official languages of ADB's developing member countries. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities, as part of the project GRM.

78. **Recordkeeping.** Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were effected and final outcome will be kept by SIPMIU. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the SIPMIU office, and on the web, as well as reported in the semi-annual environmental monitoring reports to be submitted to ADB.

79. **Periodic review and documentation of lessons learned.** The SIPMIU safeguard officers will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the SIPMIU's ability to prevent and address grievances.

80. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the concerned SIPMIU; while costs related to escalated grievances will be met by the EAs. Cost estimates for grievance redress are included in resettlement cost estimates. The grievance redress process is shown in Figure 1.

Figure 1: NERCCDIP Grievance Redress Mechanism



Note: GRC = Grievance Redressal Committee; SIPMIU = State Investment Program Management and Implementation Unit; DSMC = Design, Supervision and Management Consultants

VII. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

A. Implementation Arrangements

81. The Ministry of Urban Development (MOUD) is the national-level executing agency (EA) and the Urban Development Department of Tripura and the Urban Development and Poverty Alleviation Department of Mizoram are the state-level EAs. Each NERCCDIP state has established State-level Investment Program Management and Implementation Units (SIPMIU).

82. The environmental safeguards officer in the SIPMIU will:

(i) confirm existing IEEs/EMPs are updated based on detailed designs and that new IEEs/EMPs are prepared in accordance with the EARF and subproject selection criteria related to safeguards;
(ii) confirm whether IEEs/EMPs are included in bidding documents and civil works contracts;
(iii) provide oversight on environmental management aspects of subprojects and ensure EMPs are implemented by the contractors;
(iv) establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP;
(v) facilitate and confirm overall compliance with all Government rules and regulations regarding site and environmental clearances as well as any other environmental requirements (e.g., No Objection Certificates, Consent for Establishment, Forest Clearance, Consent for Operations, etc.), as relevant; All necessary environmental clearances should be obtained prior to contract awards to avoid delay in physical progress of relevant subprojects;
(vi) supervise and provide guidance to the contractors to properly carry out the environmental monitoring and assessments as per approved IEEs/EMPs;
(vii) review, monitor and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
(viii) consolidate monthly environmental monitoring reports from contractors and submit semi-annual monitoring reports to ADB;
(ix) ensure timely disclosure of final IEEs/EMPs in locations and form and language accessible to the public and local communities; and
(x) address any grievances brought about through the Grievance Redress Mechanism (GRM) in a timely manner; and
(xi) organize an induction course for the contractors covering, including among others, EMP implementation, health and safety, grievance redressal, and community protection.

83. SIPMIU will be assisted by the DSMC, who will design the infrastructure, manage tendering of contracts, and supervise the construction process. The environment sspecialist in the DSMC will, but not limited to:

(i) review environmental guidelines and requirement of GoI, state governments and ADB SPS, 2009, and EARF;
(ii) guide the implementation of future subprojects;
(iii) provide technical support to SIPMIU including review of EARF guidelines for specific type of subprojects and assist in subproject screening, categorization and preparation of required environmental assessment report;
(iv) assist and guide SIPMIU environment officer in environmental management functions including preparing IEEs, updating subproject IEEs as required during subproject implementation, monitoring EMP implementation, preparing semi-annual environmental monitoring reports;
(v) assist SIPMIU environment officer in preparing guidelines and procedure as required in the subproject EMPs;
(vi) provide support and guidance to SIPMIU environment officer in undertaking environmental monitoring;
(vii) facilitate grievance redress at field level;
(viii) assist contractors in implementing corrective actions for non-compliances;

(ix) provide training on environmental safeguards to SIPMIU staff and contractors; and
(x) perform any other task assigned by DSMC team leader, deputy team leader and SIPMIU project director.

84. **Civil works contracts and contractors.** IEEs and EMPs are to be included in bidding and contract documents and verified by the SIPMIUs. The contractor will be required to designate an environmental supervisor/focal person to (i) coordinate with DSMC on updating the IEE/EMP or developing a site-specific EMP based on detailed designs, and (ii) ensure implementation of EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract.

B. Institutional Capacity Development Program for EMP Implementation

85. The DSMC environmental specialist is responsible for trainings on environmental awareness and management in accordance with both ADB and government requirements. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of NERCCDIP. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to attend environmental awareness and orientation prior to deployment to work sites. The proposed training project along with the frequency of sessions is presented in Table 5.

Table 5: Proposed Institutional Capacity Building Program

Description	Contents	Schedule	Participants
Pre-construction stage			
Orientation workshop	**Module 1 – Orientation** • ADB Safeguards Policy Statement • GoI Environmental Laws and Regulations **Module 2 – Environmental Assessment Process** • ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements • Review of environmental assessment report to comply with ADB	1 day	Officials and SIPMIU involved in the project implementation

Description	Contents	Schedule	Participants
	requirements • Incorporation of EMP into the project design and contracts		
Construction stage			
Orientation program/ workshop for contractors and supervisory staff	• Roles and responsibilities of officials/contractors/ consultants towards protection of environment • Environmental issues during construction • Implementation of EMP • Monitoring of EMP implementation • Reporting requirements	1 day	SIPMIU Contractors
Experiences and best practices sharing	• Experiences on EMP implementation – issues and challenges • Best practices followed	1 day on a regular period to be determined by EAs, SIPMIUs, consultants and contractors	SIPMIUs

C. Budget

86. Costs required for implementing the EARF will cover the following activities:
(i) preparation of IEEs;
(ii) updating IEE, preparing and submitting semi-annual reports;
(iii) consultations and disclosure;
(iv) application for environmental clearance/s, NOCs, CFEs, and CFOs;
(v) EMP, including environmental monitoring program implementation; and
(vi) long-term surveys.

87. For budgeting purposes, it is assumed that all new subprojects will be classified by ADB as category B (requiring IEE). Some subprojects may require a simpler environmental review, but this is discounted for budgeting purposes. SIPMIU will aim to produce a single document that is acceptable to both ADB and SEIAA/MoEF to avoid duplication of effort.

88. Each of the IEEs prepared to date involved approximately 2 weeks of effort by an experienced environmental specialist conducting the following activities: (i) site visit to assess environmental conditions and potential impacts of the scheme; (ii) liaison with the ULBs, key stakeholders, and others to obtain any environmental data that might be available locally (e.g. population figures, designated sites, etc.); (iii) consultation with the local community to inform them about the scheme and identify their views and concerns; (iv) assessment of impacts and development of mitigation; and (v) desk study and report preparation. This will be conducted by DSMC environment specialist under supervision of SIPMIU environment officer. Therefore no separate budget required for DSMC environment specialist as this has been covered by DSMC contract.

89. The subprojects are generally straightforward and components will take between 3 and 9 months to build. Environmental monitoring during construction will also be straightforward and will only involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by DSMC environment specialist under supervision of SIPMIU environment officer. Therefore no separate budget required for DSMC environment specialist as this has been covered by DSMC contract.

90. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs.

91. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of the asset owners, therefore, there are no additional costs required from NERCCDIP.

92. The indicative costs of EARF implementation are shown in Table 6.

Table 6: Indicative EARF Implementation Costs (INR)

Component	Description	Number	Cost per Unit (INR)	Cost (INR)	Source of Funds
Legislation, Permits and Agreements	Consent to Establish and Consent to Operate for plants and machinery of the contractor.	As required	As specified in GoI and state laws and regulations	Variable (Each SIPMIU allocated INR100,000 budget)	SIPMIU
Public consultations and information disclosure	Information disclosure and consultations during preconstruction and construction phase.	As required	Lump sum	Variable (Each SIPMIU allocated INR100,000 budget)	Concerned Contractor during project implementation will do public consultation Information disclosure in website by SIPMIU – project budget
Capacity Building	Increase capacity of EAs, SIPMIU, and asset owners to manage environmental impacts and issues	Lump sum	Lump sum	INR250,000	SIPMIU – project budget DSMC cost
Baseline Monitoring	**Site preparation and preliminary activities**				
Air	Once before start of construction works (sampling locations to cover working site)	As required	8,000 per sample		Concerned Contractor
Noise	Once before start of construction	As required	2,000 per sample		Concerned Contractor

Component	Description	Number	Cost per Unit (INR)	Cost (INR)	Source of Funds
	works (sampling locations to cover working site)				
Construction Monitoring					
Air	Quarterly at 2 locations near project sites for at least 1 year	As required	8,000 per sample		Concerned Contractor
Noise	Quarterly at 2 locations near project sites for at least 1 year, additional sampling sites if subproject locations are adjacent to sensitive receptors	As required	2,000 per sample		Concerned Contractor
Defect Liability Period (No. of sites will be finalized as per Consent to Operate condition)					
Air	Twice at 3 locations near project sites for 1 year		8,000 per sample		Concerned Contractor
Noise	Twice at 3 locations near project sites for 1 year		2,000 per sample		Concerned Contractor
Any unanticipated impact due to subproject implementation (including compensation for tree felling)	Mitigation of any unanticipated impact arising during construction phase and defect liability period.	Lump sum	Lump sum	50,000	As per requirement - SIPMIU
Capacity Building					

VIII. MONITORING AND REPORTING

93. The monitoring activities will correspond with the project's risks and impacts, and will be identified in the subproject IEEs. The EAs and SIPMIU will monitor and measure the progress of EMP implementation. SIPMIU and DSMC will undertake site inspections and document review to verify compliance with the EMP. SIPMIU will communicate with ADB regarding environmental safeguard issues.

94. During construction, implementation of the environmental monitoring program as specified in the EMP is the responsibility of the contractor. SIPMIU environment officer and DSMC environment specialist will monitor the construction contractor's environmental performance. During operation stage, the asset owner will conduct environmental monitoring and ensure conditions as per CFOs, if applicable, are complied.

95. Construction contractor will submit monthly environment compliance report to DSMC. DSMC will submit quarterly monitoring and implementation reports to SIPMIU. Semi-annual environmental monitoring report will be submitted by SIPMIU to ADB. The semi-annual environmental monitoring report will focus on the progress of EMP implementation, issues encountered and measures adopted, follow-up actions required, if any, as well as compliance with relevant loan covenants.

96. The template for the semi-environmental monitoring report for Tranches 1 and 2 is attached as Appendix 3 and for Tranche 3 attached as Appendix 4. SIPMIU environment specialist, with assistance from DSMC environment specialist, will document monitoring results, identify the necessary corrective actions, reflect them in a corrective action plan, and for each quarter, will study the compliance with the action plan developed in the previous reporting period.

97. Compliance with loan covenants will be screened by MoUD. ADB will review project performance against the MoUD's commitments as agreed in the loan agreement. The extent of ADB's monitoring and supervision activities will be commensurate with the NERCCDIP risks and impacts. Monitoring and supervising of environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

(i) conduct periodic site visits for projects with adverse environmental or social impacts;
(ii) conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
(iii) review the periodic monitoring reports submitted by EAs/SIPMIUs to ensure that adverse impacts and risks are mitigated, as planned and as agreed with ADB;
(iv) work with EAs/SIPMIUs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate; and
(v) prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

APPENDIX 1: OUTLINE OF AN ADB INITIAL ENVIRONMENTAL EXAMINATION (IEE) REPORT

Executive Summary
1. Introduction
2. Policy and Legislative Framework
3. Analysis of Alternatives
4. Proposed Description
   - 4.1 The Study Area
   - 4.2 Description of Site and Surroundings
   - 4.3 The Proposal
5. Assessment of Environmental Impacts and Safeguards
   - 5.1 Existing Environment
     - 5.1.1 Landforms, Geology and Soils
     - 5.1.2 Climatic Condition
     - 5.1.3 Water Quality
     - 5.1.4 Air Quality
     - 5.1.5 Acoustic Environment
     - 5.1.6 Biodiversity
     - 5.1.7 Physical and Cultural Heritage
     - 5.1.8 Socio-economic Conditions
   - 5.2 Impacts and Mitigation Measures
     - 5.2.1 Erosion Hazards
       - 5.2.1.1 Mitigation Measures
     - 5.2.2 Impacts on Water Quality
       - 5.2.2.1 Mitigation Measures
     - 5.2.3 Impacts on Air Quality
       - 5.2.3.1 Mitigation Measures
     - 5.2.4 Noise and Vibration Impacts
       - 5.2.4.1 Mitigation Measures
     - 5.2.5 Impacts on Flora and Fauna
       - 5.2.5.1 Mitigation Measures
     - 5.2.6 Impacts on Physical Cultural Resources
       - 5.2.6.1 Mitigation Measures
   - 5.2.7 Impact due to Waste Generation
   - 5.2.8 Impacts on Occupational and Community Health and Safety
   - 5.2.9 Greenhouse Gas Emissions (GHG)
   - 5.2.10 Cumulative Impacts
6. Information Disclosure, Consultation, and Participation
7. Grievance Redress Mechanism
8. Environmental Management
9. Conclusion and Recommendations

APPENDIX 2: SAMPLE GRIEVANCE REGISTRATION FORM

(To be available in local language and English)

The _____Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.
Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date		**Place of registration**			
Contact information/personal details					
Name		**Gender**	* Male * Female	**Age**	
Home address					
Place					
Phone no.					
E-mail					
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)	
Mode of communication: Note/letter E-mail Verbal/telephonic	
Reviewed by: (Names/positions of officials reviewing grievance)	
Action taken:	
Whether action taken disclosed:	Yes No
Means of disclosure:	

APPENDIX 3: SAMPLE SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT CHECKLIST

A. Tranche 1 Monitoring checklist

Project: **Package No:** **Progress:** **Physical progress** :						
Sr. No.	**Mitigation Activities and Method**	**Location**	**Responsible for Mitigation**	**Monitoring Method**	**Responsible for Monitoring**	**Compliance Status/ Explanation**
Pre-Construction Design phase						
1	Site preparation work completed including necessary clearance					
Construction						
2	Establishment of temporary camps with sanitary and solid waste management arrangement					
3	Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures					
4	Water sprinkling at construction site for arresting dust (if any during dry period)					
5	Materials carrying vehicle are covered					
6	All vehicles and equipment mobilized to construction site and producing emission, have Pollution Control Board certification					
7	At sensitive locations enclosures provided around generator set or other noise producing machinery					
8	Regular maintenance of noise producing equipment done					
9	Arrangement of drainage of waste water and arresting solid waste from waste water generated at construction site					
10	Arrangement of pit for storage of muck					
11	Felling of trees done (if necessary) with mitigation measures i.e. planting of three trees for each tree fell.					
12	Pollution of water bodies at construction site					
13	Disposal of construction					

Project:						
Package No:						
Progress:						
Physical progress :						
Sr. No.	**Mitigation Activities and Method**	**Location**	**Responsible for Mitigation**	**Monitoring Method**	**Responsible for Monitoring**	**Compliance Status/ Explanation**
	debris if any as per mitigation measures					
14	Ensure use of Personal Protective Equipment like helmet, gumboot, gloves, and earplugs at work place Arrangement of First Aid Box at working site					
15	Provide Health and Safety training to all personnel and implement H&S plan					
16	Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites					
17	Consideration of public safety - as per prescribed mitigation measures					
18	Employ at least 50% of workforce from communities near sites					
19	Continuous monitoring on implementation of mitigation measures					

B. Tranche 2- Monitoring checklist

Project:						
Package No:						
Progress:						
Physical progress:						
Sr. No.	**Mitigation Activities and Method**	**Location**	**Responsible for Mitigation**	**Monitoring Method**	**Responsible for Monitoring**	**Compliance Status/ Explanation**
Pre-Construction Design phase						
1	Site preparation work completed including necessary clearance					
Construction						
2	Establishment of temporary camps with sanitary and solid waste management arrangement					
3	Removal of overburden and excavated material from working site and use / preservation of the same – as per mitigation measures					
4	Water sprinkling at construction site for arresting dust (if any during dry period)					
5	Materials carrying vehicle are					

Project:

Package No:

Progress:

Physical progress:

Sr. No.	Mitigation Activities and Method	Location	Responsible for Mitigation	Monitoring Method	Responsible for Monitoring	Compliance Status/ Explanation
	covered- Reducing dust hazard					
6	All vehicles and equipment mobilized to construction site and producing emission, have Pollution Control Board certification					
7	At sensitive locations enclosures provided around generator set or other noise producing machinery					
8	Regular maintenance of noise producing equipment done					
9	Arrangement of drainage of waste water and arresting solid waste from waste water generated at construction site					
10	Felling of trees done (if necessary) with mitigation measures i.e. planting of three trees for each tree fell.					
11	Pollution of water bodies at construction site					
12	Disposal of construction debris if any as per mitigation measures					
13	Ensure use of Personal Protective Equipment like helmet, gumboot, gloves, and earplugs at work place Arrangement of First Aid Box at working site					
14	Provide Health and Safety training to all personnel and implement H&S plan					
15	Plan truck routes (for carrying construction materials including pipes) to avoid narrow or congested roads and tourist sites					
16	Consideration of public safety - as per prescribed mitigation measures					
17	Employ at least 50% of workforce from communities near sites					
18	Continuous monitoring on implementation of mitigation measures					

APPENDIX 4: SAMPLE SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT TEMPLATE

This template must be included as an appendix in the EIA/IEE that will be prepared for the project. It can be adapted to the specific project as necessary.

I. Introduction

- Overall project description and objectives
- Description of subprojects
- Environmental category of the subprojects
- Details of site personnel and/or consultants responsible for environmental monitoring
- Overall project and subproject progress and status

No.	Subproject Name	Status of Subproject				List of Works	Progress of Works
		Design	Pre-construction	Construction	Operational Phase		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

II. Compliance status with national/state/local statutory environmental requirements

No.	Subproject Name	Statutory Environmental Requirements	Status of Compliance	Action Required

III. Compliance status with environmental loan covenants

No. (List Schedule and Paragraph Number of Loan Agreement)	Covenant	Status of Compliance	Action Required

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

- Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including environmental site inspection reports.
- There should be reporting on the following items that can be incorporated in the checklist of routine environmental site inspection reports, followed with a summary in the semi-annual report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection need to note and record the following:
  - what are the dust suppression techniques followed for site, and if any dust was noted to escape the site boundaries;
  - if muddy water was escaping site boundaries, or muddy tracks were seen on adjacent roads;
  - adequacy of type of erosion and sediment control measures installed on-site, condition of erosion and sediment control measures, including if these were intact following heavy rain;
  - are there designated areas for concrete works and refueling;
  - are there spill kits on site, and if there are site procedure for handling emergencies;
  - is there any chemical stored on site and what is the storage condition;
  - are there any dewatering activities, if yes, where is the water being discharged;
  - how are the stockpiles being managed;
  - how are solid and liquid waste being handled on-site;
  - review of the complaint management system; and
  - checking if there are any, activities being undertaken outside of working hours, and how that is being managed.

Summary Monitoring Table

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum, those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
Pre-construction Phase						
Construction Phase						
Operational Phase						

Overall Compliance with EMP

No.	Subproject Name	EMP Part of Contract Documents (Y/N)	EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

- Brief description on the approach and methodology used for environmental monitoring of each subproject

VI. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (AMBIENT AIR, WATER QUALITY, AND NOISE LEVELS)

- Brief discussion on the basis for monitoring
- Indicate type and location of environmental parameters to be monitored
- Indicate the method of monitoring and equipment to be used
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

As a minimum, the results should be presented as per the tables below.

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM_{10} µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM_{10} µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3

Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/l	TSS mg/l	TN mg/l	TP mg/l

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity µS/cm	BOD mg/l	TSS mg/l	TN mg/l	TP mg/l

Noise Quality Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Government Standard)	
			Daytime	Nighttime

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Daytime	Nighttime

VII. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- Summary of follow up time-bound actions to be taken within a set timeframe.

APPENDIXES

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- Other

SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
Contract Number

NAME: _____ DATE: _____
TITLE: _____ DMA: _____
LOCATION: _____ GROUP: _____

WEATHER CONDITION:
_____

INITIAL SITE CONDITION: _____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory _____ Incident _____ Resolved _____ Unresolved _____

INCIDENT:
Nature of incident:
_____

Intervention steps:
_____

Incident issues:

Resolution

Project activity stage	Survey	
	Design	
	Implementation	
	Pre-commissioning	
	Guarantee period	

Inspection

Emissions	Waste minimization
Air quality	Reuse and recycling
Noise pollution	Dust and litter control
Hazardous substances	Trees and vegetation

Site restored to original condition Yes [ ] No [ ]

Signature
_____

Sign off

_____ _____

Name **Name**
Position **Position**