

Environmental Assessment and Review Framework

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India: Odisha Power Sector Emergency Assistance Project

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CURRENCY EQUIVALENTS

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\$1.00 = Rs. 62.2075

ABBREVIATIONS

ADB	–	Asian Development Bank
CPCB	-	Central Pollution Control Board
CSC	-	construction supervision consultant
EA	-	executing agency
EARF	–	environmental assessment and review framework
EAG	–	environmental assessment guidelines
EIA	–	environmental impact assessment
EMMP	–	environmental management and monitoring plan
IEE	–	initial environmental examination
JRDNA	-	joint rapid damage and needs assessment
MOEF	–	Ministry of Environment and Forests
O&M	–	operation and maintenance
OPSEAP	-	Odisha Power Sector Emergency Assistance Project
PMU	–	project management unit
PIU	-	project implementation unit
REA	–	rapid environmental assessment
SPCB	–	state pollution control board
SPS	-	safeguard policy statement

NOTE

In this report, "\$" refers to US dollars.

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ENVIRONMENTAL ASSESSMENT AND REVIEW FRAMEWORK

I. INTRODUCTION

1. A major cyclonic storm “Phailin” severely affected a coastal district Ganjam in the State of Odisha on 12 October 2013. The winds in excess of 220 km per hour (kmph) were recorded during this storm. The tidal waves up to 4 m height and continuous heavy rainfall for about 20 hours resulted in flooding of vast areas. The areas in and around Brahmapur, Chhatrapur, and Gopalpur were left with wreckages of homes, uprooted trees, flattened electrical poles, submerged crops, and damaged power (transmission and distribution), telecommunication and transportation networks. Nearly 34,000 km of low tension (LT) and 37,000 km of high tension (HT) electric lines including transmission towers, poles and substations (both power and distribution) have been damaged. The State machinery focused on emergency restoration of power supply as quickly as possible. The electric lines have been re-energized by erecting temporary poles; and the equipment damaged in substations have been repaired to the extent possible. However, these poles would not be able to sustain winds in excess of 60-70 kmph; and are susceptible to damages in case of recurrence of such stormy winds.

2. Based on the request of India, a Joint Rapid Damage and Needs Assessment was undertaken by the Asian Development Bank (ADB) and the World Bank. ADB agreed to assist the Government of India (GoI) with reconstruction and rehabilitation efforts for which the Odisha Power Sector Emergency Assistance Project (OPSEAP) has been formulated as an emergency loan. OPSEAP would focus on power infrastructure. The executing agency (EA) for the OPSEAP will be the Government of Odisha (GoO), Department of Energy, acting through Odisha Power Transmission Corporation Limited (OPTCL).

3. The proposed project is in response to natural calamity. The scope under OPSEAP includes repairs, strengthening and rehabilitation of substations, transmission and distribution lines, replacement of other associated damaged equipment or their augmentation, and supplementary works in the power infrastructure for areas in and around Brahmapur, Chhatrapur, and Gopalpur of Ganjam district. OPTCL is proposing to opt for gas insulated system based substations, and a combination of underground and overhead transmission and distribution lines. The overhead lines would be provided on specially designed poles/towers capable of withstanding wind speeds up to 300 kmph.

4. Some actions have already been initiated by the state government for restoration of damaged structures. OPTCL has almost finalized the locations of substations to be augmented and/or established for strengthening the electrical network, alignments for underground and overhead electric lines, and other ancillary works to build-up a robust infrastructure that could sustain recurrence of such storms. The list of identified sub-projects may undergo a revision depending on the prioritization by the executing agency (EA), hence it is considered to be still “indicative”. The field visits for preliminary environmental investigations have been undertaken, and discussions were held with all relevant agencies for additional data. Considering the need to respond quickly towards emergency situation; Para 11 of SR 4 under ADB’s *Safeguard Policy Statement (2009) (SPS 2009)* acknowledges that the completion of standard environmental assessments, and environmental management plans may not be possible prior to Board approval. In such cases, an environmental assessment and review framework (EARF) will be prepared. The available data and information have been relied upon to prepare this EARF. The EARF was prepared in accordance with ADB’s *SPS 2009*. The recommendations are consistent with the environmental requirements under SPS 2009 and related legislations of the GoI at the national, state and local levels. An engineering assessment with field surveys and detailed investigations are underway for preparation of a detailed project report.

5. This EARF will (i) describe the OPSEAP and its subprojects and/or components; (ii) explain the general anticipated environmental impacts of the components or subprojects to be financed under the OPSEAP; (iii) specify the requirements that will be followed in relation to subproject screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, where applicable, environmental criteria that are to be used in selecting subprojects and/or components; (iv) assess the adequacy of the OPTCL's capacity to implement national laws and ADB's requirements and identify needs for capacity building; (v) specify implementation procedures, including the budget, institutional arrangements, and capacity development requirements; (vi) specify monitoring and reporting requirements; and (vii) describe the responsibilities of OPTCL and of ADB in relation to the preparation, implementation, and progress review of environmental safeguard documents of subprojects. This EARF has been endorsed by GoO, and will be disclosed on ADB's website. It will also be translated in the local language and disclosed on OPTCL's website.

6. The indicative list of works that will be considered under OPSEAP is given in Appendix 1.

II. ASSESSMENT OF INDIA'S ENVIRONMENTAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. GOI requirements

7. The fundamental responsibility of GOI of protecting and improving the environment of India is enshrined in the Articles of the Indian Constitution. These articles provide that the State will protect and improve the environment and safeguard forests and wildlife of the country; and every citizen is bound to protect and improve the natural environment and to have compassion for living creatures.

8. The Ministry of Environment and Forests (MoEF) is the prime regulatory body of GOI for formulating environmental policies, laws and rules. It has several divisions that evaluate proposed development activities under applicable legislations, and for issuing environmental clearance (EC) for developmental projects.¹ The Central Pollution Control Board (CPCB) provides technical and advisory support to MOEF in terms of formulating the legislation and developing national standards for usage of water for various purposes, and limiting the liquid, gaseous, and solid emissions and noise levels from different activities. The enforcement of the provisions under these environmental legislations and associated notifications are done by a range of agencies in the central and state governments. The State Pollution Control Boards (SPCB) are vested with the powers to implement certain provisions of specific legislations, and are the enforcement agencies for ensuring that the activities continue to comply with these emission standards and relevant legislations.² The SPCB can, however, specify stricter standards than the national standards depending on the sensitivity of the location. The departments of forests, wildlife, and coastal regulatory zone of GoO have the responsibility for enforcing provisions of related acts. The range of legislations, notifications, and the complexity of institutions vested with enforcement authority lead to the conclusion that the relevant clearances and approvals required for subprojects would vary from case to case.

9. The primary legislation governing environmental assessment of projects in India is the Environment (Protection) Act (No. 29 of 1986) and rules and notifications issued thereunder. Several other legislations govern the protection of natural resources and clearance requirements on projects and activities that have a bearing on such resources.

¹ The GOI uses thresholds for categorization in addition to project type and location. The GOI follows national standards as prescribed by the Central Pollution Control Board.

² At the Union Territories, pollution control committees are tasked with this responsibility.

These legislations include (but are not limited to) the Water (Prevention and Control of Pollution) Act 1974 as amended; the Water (Prevention and Control of Pollution) Cess (Amendment) Act (No. 19 of 2003) as amended; the Air (Prevention and Control of Pollution) Act 1981 as amended; the Wildlife (Protection) Act 1972 as amended; the Wildlife (Protection) Amendment Act (No. 16 of 2003) as amended; the Forest (Conservation) Act 1980, as amended; the Forest (Conservation) Rules, 1981 as amended; the Biological Diversity Act (No. 18 of 2003) as amended; the Wetlands (Conservation and Management) Rules 2010 as amended; the Environmental Impact Assessment Notification of 2006 as amended; the Coastal Regulation Zone (CRZ) Notification of 2011 as amended; Batteries (Management and Handling) Rules, 2001; Hazardous Wastes (Management, Handling, and Transboundary Movement) Amendment Rules, 2008; Ozone Depleting Substances (Regulation and Control) Rules, 2000; and the Noise Pollution (Regulation and Control) Rules, 2000 as amended. These legislations pertain to environmental protection, and also include the assessment requirements specific to the aspect being governed under those specific legislations. These legislations and overriding policies are available on the web site of the MOEF.³ The Government of India is also a signatory to Multilateral Environmental Agreements (list of major agreements given in Appendix 2). Apart from these, there are several standards that need to be complied with. These are for drinking water, discharge of wastewater, air emissions, and noise levels. The environmental assessment review procedures for any subproject included under OPSEAP will address the requirements of all applicable acts, rules, notifications, and standards referred above.

10. The following are the key operational principles of the GOI's Environmental Policy and Regulatory Framework:

- (i) The environmental impact assessment (EIA) is primarily concerned with assessing direct and indirect impacts of a project on the biophysical and human environment, and ensuring that these impacts are addressed by appropriate environmental protection and enhancement measures;
- (ii) The EIA supports project proponents in incorporating environmental considerations in project planning and in determining environmental impacts of their projects;
- (iii) Project proponents are responsible for determining and disclosing all relevant project information needed for a methodical assessment of environmental impacts of their proposed projects;
- (iv) Effective regulatory review of an EIA depends on timely, full, and accurate disclosure of relevant information in the EIA by project proponents to project stakeholders; and
- (v) Meaningful public participation is a part of EIA and it will be assessed in considering EC application.

11. Considering the nature and scale of the substation and transmission line subprojects under OPSEAP and associated environmental aspects, these acts and regulations require that the facility and/or construction equipment owners as applicable shall obtain:

- (i) clearance from the relevant regulatory agencies at the Centre and the state for all improvements and rehabilitation activities that fall within the purview of CRZ Notification 2011, and Wetland Rules 2010; and located in the protected areas and reserve forest areas;⁴
- (ii) clearance from the Department of Forests, GoO or MOEF as required to carry out the work within forest areas, to use forest land for non-forest purposes, and to fell roadside trees; the department also requires that cutting of trees be compensated by compensatory afforestation; and
- (iii) a no-objection certificate for the subproject activity, and consents from SPCB (to

³ See, www.envfor.nic.in.

⁴ Currently the EIA Notification 2006 as amended does not require projects involving transmission lines and substations to obtain environmental clearance.

establish before setting up and to operate prior to commencement of operations in case the activity generates any emissions), and for construction equipment.

12. During the operational phase of the subproject, it is required that regular environmental monitoring under those regulations is carried out to ensure that the subprojects continue to comply with the GOI statutory environmental standards.

13. The EA shall establish a project management unit (PMU) to oversee implementation. A designated nodal environment officer will be placed within PMU who would be responsible for tasks associated with implementation of environment safeguards including regulatory compliances. The nodal environment officer would coordinate with the regulatory agencies and the facility owners to ensure compliance with statutory environmental requirements. He/she would be supported by qualified and experienced environment experts. It is proposed to engage a short-term environment expert initially based at PMU for environmental documentation; and two construction and supervision consultants (CSC) later for implementation supervision. Each CSC would have an environment expert on intermittent basis throughout their contract period. The nodal environment officer would be trained regarding the statutory environmental provisions through ADB organized capacity building programs, safeguard review missions, and by these environment experts. The nodal environment officer would also ensure compliance with the terms and conditions stipulated in the environmental permissions and timely renewals as applicable.

B. ADB requirements

14. The objectives of ADB's environmental safeguards requirements are to ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process. The environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts. The environmental safeguards related policy principles require screening of the proposed project's likely impacts, conducting an environmental assessment for it including examining alternatives, conducting consultations with the stakeholders, developing an environmental management and monitoring plan for the project, and disclosure of all assessment and monitoring reports to affected persons. The principles also require avoidance of critical habitats, safe and healthy working conditions for workers and community, conservation of physical cultural resources, and adoption of best environmental practices.

III. ANTICIPATED ENVIRONMENTAL IMPACTS.

15. The OPSEAP primarily aims to repair, strengthen, and/or rehabilitate the existing power infrastructure damaged or destroyed by the cyclonic storm and subsequent floods due to heavy rains. The implementation of subprojects can have negative impacts on various environmental aspects, namely: (i) topography and drainage, (ii) soil and land use, (iii) surface water, (iv) ground water resources, (v) ambient air quality, (vi) ambient noise levels, (vii) biotic environment, (viii) cultural and historic sites, (ix) community utilities; and (x) other socioeconomic impacts. These impacts may arise in the project lifecycle during implementation and/or during operation phase, and in limited cases may also arise after the end of the operation period. The potential environmental impacts are categorized into (i) location impacts, (ii) design and pre-construction impacts, (iii) construction impacts, and (iv) operation and maintenance impacts.

16. Based on the field visits, preliminary environmental investigations, and considering the scale, magnitude, and type of the works proposed under OPSEAP, ~~most of~~ the subprojects are judged to have environmental impacts that are largely construction-related, temporary, site specific, and reversible in nature. These impacts will be mitigated through carefully developed EMMPs that will be incorporated into related contract documents as

budgeted line items. None of the identified subprojects are reported to be in close proximity to, or within, environmentally sensitive areas such as national parks, wildlife sanctuaries, biospheres, and reserve forests. In accordance with ADB's *SPS 2009*, the determination of the environment category of the Project is to be based on the most environmentally sensitive component of the Project. The OPSEAP is thus classified category B for environment. (environment categorization explained in Para 24).

17. A preliminary list of potential negative environmental impacts resulting from the proposed components is (a) disruption to community utilities and commercial activities; (b) increased dust emissions and noise levels due to construction activities; (c) elevated vibrations due to construction and operations of facilities; (d) soil and groundwater contamination due to establishment and operation of construction and/or workers camps; (e) improper disposal of excavated spoil; (f) traffic disruption due to blocking of roads during laying of the underground cable network and limitations on access to roads, sidewalk closures, traffic delays and detours, parking modifications; (g) road congestion caused by construction vehicles and activities; (h) workers and community health and safety; (i) water pollution due to runoff from construction camps, sites, and machines; (j) damage to other utility lines within the right-of-way; (k) spills of oils and chemicals at site resulting in land and water pollution due to runoff; (l) lack of safety measures during construction; (m) poor and inadequate operation and maintenance (O&M) of the rehabilitated systems; etc. OPSEAP is an emergency loan, and the sub-projects would be finalized during implementation. Based on the current available information, sub-projects are not envisaged in protected areas. However, given uncertainties of locations, the highly unlikely possibility of coming across protected areas is not ruled out entirely. In the unlikely case a sub-project is determined to be of environment category A, the OPSEAP would be reclassified as of environment category A. Further some additional impacts such as (i) encroachment on protected areas (flora and fauna), and historical, and cultural areas; (ii) use of hazardous substances; etc. may have to be then considered as applicable.

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

A. Environmental Criteria for Subproject Selection

18. The EA will ensure that the subprojects under OPSEAP are properly selected adopting following criteria:

- (i) The subprojects with the type of activities listed in ADB *SPS 2009* Appendix 5 (ADB Prohibited Investment Activities List) do not qualify for ADB's financing;
- (ii) Subprojects will comply with environmental requirements specified in ADB's *SPS 2009* and those specified in India's environmental laws and regulations, including discharge and emission standards;⁵
- (iii) Subprojects encroaching into any core or buffer zones of national parks, wildlife sanctuaries, designated wetlands of international importance, reserved forests, or other environmentally sensitive areas shall obtain national, state and local statutory environmental clearances (including clearance from the Supreme Court of India, as required) before commencing with works; and
- (iv) Subprojects shall not affect any protected historical or cultural heritage sites or areas, and in case the subproject is in close proximity of such sites, all relevant regulatory clearances and approvals would be obtained prior to commencement of works.

B. Environmental Guidelines for Specific Components

⁵ Based on the preliminary assessment of the planned subprojects, OPSEAP has been classified as environment category B (see para. 16) and changes in the nature of their impacts are not anticipated. In the highly unlikely event that any environment category A sub-project should be considered for ADB funding, the project as a whole would be reclassified as environment category A following *SPS 2009* procedures. Further, an EIA would be prepared for the sub-project and subjected to 120-day disclosure rule (see Para 21).

19. Taking into account of the potential impacts associated with the subprojects of OPSEAP, the following environmental guidelines will be adopted.

- (i) have minimal, if any, locations and alignments through legally protected environmentally sensitive areas, or areas that are of international significance (e.g. protected wetlands), or heritage sites;
- (ii) minimize disfiguration of landscape;
- (iii) avoid development on flood-prone land or floodplains,
- (iv) low-lying flood-prone areas that cannot be relocated to a safer site, then flood defense and mitigation measures should be implemented;
- (v) minimize the risk of driving accidents where construction interferes with preexisting roads.
- (vi) ensure space availability for road safety, residents, and pedestrians;
- (vii) minimize dislocation or involuntary resettlement of people living in right-of-way;
- (viii) minimize use of densely populated residential areas, especially for underground cables;
- (ix) choose sites to avoid impacts on neighboring communities and properties;

20. A final check on conformity with the selection criteria will be done by the EA prior to the submission of selected subprojects to ADB for ADB's clearance. Any subproject, which does not meet the environmental criteria listed above, will be returned to the EA for ensuring compliance with the criteria. A subproject that is non-compliant with India's regulatory requirements will be rejected.

21. All subprojects will be subjected to the environmental assessment process. This is a process of environmental analysis and planning to address the environmental impacts and risks associated with a project. All environmental assessments will follow ADB's disclosure requirements. Since the OPSEAP is an Emergency Assistance Loan (EAL), a procedural flexibility has been requested for the disclosure requirements of EIA reports for the subprojects in category A, if any. The disclosure requirement for the EIA report will be changed from the 120 days prior to ADB Board of Directors approval to 120 days prior to award of contract of the subproject.

22. For the subprojects proposed under retroactive financing, the environmental assessment process outlined in following paragraphs will be completed including ADB's approval of such environmental assessment reports prior to award of contracts, and all relevant environmental mitigation and monitoring measures will be made a part of the contract document. In case of some subprojects where the work has commenced prior to completion of the environmental assessment process, a detailed environmental audit will be carried out prior to approval of the subproject under OPSEAP. The audit will include a corrective action plan to address non-compliance with SPS requirements. The environmental audit report will be prepared and submitted to ADB for approval. No sub-project of environment category A will be financed under retroactive financing.

C. Environmental Assessment and Review Procedures for Subprojects

23. This EARF also provides specific procedures to be used for every subproject under the OPSEAP for (i) environmental classification and assessment through a rapid environmental assessment (REA), an EIA or an Initial Environmental Examination (IEE), of eligible subprojects; (ii) design and implementation of the EMMPs as stipulated in the EIA or IEE; (iii) compliance with public consultation and information disclosure-related requirements; (iv) maintaining records of all subprojects' environment-related documents for disclosure by the EA; and (v) monitoring the performance of the EA responsible for implementing environmental assessment-related activities, including EMMPs. The

designated nodal environment officer of the EA will be supported by qualified and experienced environment experts in this regard.

D. Requirements to Environmental Screening and Classification

24. The OPSEAP will use a classification system to reflect the significance of a sub-project's potential environmental impacts. Each proposed subproject is scrutinized as to its type, location, scale, and sensitivity; and the magnitude of its potential direct, indirect, cumulative, and induced environmental impacts in the project's area of influence. All sub-projects will be screened to determine their environmental category based on the ADB's REA Checklist. The template of the REA checklist is attached in Appendix 3. The subprojects will be assigned one of the following categories:

- (i) **Category A.** A proposed subproject is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required;
- (ii) **Category B.** A proposed subproject is classified as category B if its potential adverse environmental impacts are less adverse than those of category A subprojects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- (iii) **Category C.** A proposed subproject is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

25. Rehabilitation subprojects with environmental impacts that are site specific, reversible, temporary, and manageable through mitigation measures will be classified as Category B and those with minimal or no adverse environmental impacts as Category C. As the subprojects are judged to have environmental impacts that are construction-related, temporary, site specific, and reversible in nature and changes in the nature of their impacts are not anticipated, OPSEAP has been classified as environment category B. In the highly unlikely case that any component of a subproject has potential for significant adverse environmental impacts that are irreversible, diverse or unprecedented, then the subproject, and OPSEAP as a whole, have ~~is~~ to be reclassified as Category A. Given the emergency modality of this project, the remote possibility of a Category A level impact cannot be entirely ruled out and therefore the following guidance will be considered.

26. In general, a subproject would trigger SPS classification as Category A if the project:

- (i) has a significant level of environmental impacts requiring complex mitigation measures needing to be prepared through an in depth assessment of the impacts and detailed study for preparing mitigation measures; and/or
- (ii) will generate impact on an ecologically sensitive area, particularly if the subproject passes through or falls within 100 meters of ecologically sensitive areas, particularly designated wildlife sanctuaries, national parks, other sanctuaries, botanical garden, or area of international significance (e.g., protected wetland designated by the Wetland Convention); or pass through any cultural heritage sites designated by UNESCO;

27. If any environment category A sub-project should be considered for ADB funding, the project as a whole would be reclassified as environment category A following SPS 2009 procedures. Further, an EIA would be prepared for the sub-project and subjected to 120-day disclosure rule as stipulated for this Emergency Assistance Loan (see para. 21). The disclosure requirement for the EIA report will be 120 days prior to award of contract for the subproject.

E. Requirements for Environmental Assessments and Management Plans

28. The procedures for environmental assessment of subprojects must be in line with the requirements of ADB's *SPS 2009*, as amended from time to time and India's statutory environmental regulations at the national, state, and local levels.

29. It is expected that the majority of subprojects will involve the rehabilitation or reconstruction of damaged infrastructure (substations, transmission and distribution towers, poles and lines) at its existing location. However in some instances there may be a requirement to relocate these to a new location. In these instances the EA will identify potential direct, indirect, cumulative and induced environmental impacts on and risks to physical, biological, socioeconomic, and physical cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people. If potentially adverse environmental impacts and risks are identified, the EA will undertake an environmental assessment as early as possible in the project cycle. It is highly unlikely that subprojects would have significant adverse impacts that are diverse, irreversible, or unprecedented (classified as of environment category A). However, in such cases the EA will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The rationale for selecting the particular subproject location, design, technology, and components will be properly documented, including, cost-benefit analysis, taking environmental costs and benefits of the various alternatives considered into account. The "no action" alternative will be also considered.

30. The impacts and risks will be analyzed in the context of the each subproject's area that encompasses:

- (i) the primary subproject site(s) and related facilities;
- (ii) associated facilities that are not funded as part of the OPSEAP, and whose viability and existence depend exclusively on the subproject and whose goods or services are essential for successful operation of the subproject;
- (iii) areas and communities potentially affected by cumulative impacts from further planned development of the OPSEAP, and other sources of similar impacts in the geographical area; any existing project or condition; and other project-related developments that are realistically defined at the time the assessment is undertaken; and
- (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the subproject that may occur later or at a different location.

31. Environmental impacts and risks will also be analyzed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and post-closure activities.

32. **Environmental Classification.** The proposals for subprojects would be generated by the EA. The environment experts attached to the EA or Construction and Supervision Consultants (DSC) will assist the EA to develop a rapid environmental assessment (REA) of each subproject. The rapid assessment takes the form of a checklist. After screening by the EA, duly endorsed REA checklist will be submitted to ADB for review and for ADB's confirmation of the environmental classification of each subproject. The format of REA checklist is given in Appendix 3.

33. **Preparation of IEEs and EIAs:** Based on confirmation by ADB of the environment category of the subproject, the EA will prepare an IEE for subproject classified as B and an

EIA for subproject classified as Category A.⁶ For category C subprojects, the EA and/or the IAs will review environmental implications of the subprojects. The IEE (or EIA) for each subproject will include an Environmental Management and Monitoring Plan (EMMP) that reflects the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. During IEE/EIA preparation, adequate public consultation will be carried out,⁷ and the comments from the public will be reflected in the final reports.

34. **Review of IEEs and EIAs.** IEEs (and EIAs if required) will be prepared by the EA with the help of qualified and experienced environment experts engaged under OPSEAP. These reports will be vetted and endorsed by the designated nodal environment officer at the EA, and submitted to ADB for review and approval. The EIAs and IEEs will be disclosed on ADB website as per *SPS 2009* and ADB's *Public Communications Policy (2011)*. The EIAs, if applicable, will also be subject to ADB's "120 day" rule mentioned in Para 21 of this EARF. In the event that a subproject design undergoes changes following approval of the IEE/EIA and the new design has elements that impinge on the environmental impacts identified and addressed in the original IEE/EIA, or introduces new potential environmental impacts, the IEE/EIA must be revised by the EA, and will be subject to re-approval by ADB, to address these new impacts. Any subproject observed to be in noncompliance with ADB's guidelines or requirements will not be eligible for financing under OPSEAP.

35. **Supervision, Monitoring and Reporting.** The information on the implementation of the EMMP, as well as that on the environmental safeguard compliance will be systematically documented and reported to ADB by the EA as part of the semi-annual monitoring reports. The EA will ensure that all environmental assessment documentation, including the environmental monitoring reports, are properly and systematically kept as part of subproject specific records

36. The EA shall ensure that ADB is given access to undertake environmental due diligence for all subprojects. The EA has the main responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation measures for all subprojects. The due diligence report as well as monitoring reports on implementation of the environmental management plan will to be documented systematically, will be disclosed on OPTCL website, and will made available to the public if requested.

V. CONSULTATION, INFORMATION, DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation

37. Although these projects will be undertaken for the welfare of the communities, to rehabilitate, or reconstruct essential and important infrastructure, it is still likely that the environment, communities and immediate stakeholders may be affected by the reconstruction exercise. In some cases infrastructure may need to be constructed along new alignments and in locations disturb habitats that were previously not affected. In order to minimize any impacts on the communities and the environment rendered fragile by the disaster, it is important to involve communities in the reconstruction process through a system of consultation. The EA will ensure that meaningful public consultations are undertaken during the assessment process for the subprojects. The EA will ensure that in carrying out an IEE for any subproject under OPSEAP, at least one consultation with

⁶ The content of an EIA or IEE study and recommended formats of EIA and IEE reports are given in Appendix 3;

⁷ Two consultations will take place for EIAs and one consultation will take place for IEEs.

affected people will be carried out to ascertain their concerns about the subproject and its likely impacts. If an EIA is required, the EA will ensure that two consultations with affected people are undertaken. The aim of the first consultation will be to gather affected persons' concerns about the subproject and its impacts. The aim of the second consultation will be to share the EMMP with affected persons and gather their views on the EMMP. The outcome of consultations would be documented in the environmental assessment reports.

38. Consultation will be based on the following principles:

- (i) Early start in the individual sub-project preparation stage and continuation throughout the project cycle;
- (ii) Timely disclosure of relevant and adequate information to affected people in a comprehensible and readily accessible format in local language;
- (iii) Ensuring the absence of intimidation or coercion during public consultation;
- (iv) Gender inclusive and responsive with focus on disadvantaged and vulnerable groups, and
- (v) Enabling the integration of all relevant views of affected people and stakeholders into decision-making.

B. Information Disclosure

39. Information disclosure will be based on the following:

- (i) Overall responsibility for ensuring compliance of OPSEAP with the environmental requirements set forth in ADB's *SPS 2009* and statutory environmental regulations of India lies with the EA;
- (ii) The EA is primarily responsible for ensuring that all environmental assessment documentation, including the environmental due diligence and monitoring reports, are kept properly and systematically documented as part of the OPSEAP record;
- (iii) All environmental documents are subject to public disclosure, and are therefore to be made available to public, if requested;
- (iv) All environmental assessment documentation for Category B subprojects (IEEs) will be posted on the ADB website upon approval by ADB;
- (v) Under the *SPS (2009)*, if any Category A subprojects were to be identified, the Draft EIA is to be prepared, and posted on the ADB website 120 days before board approval. Since the OPSEAP is an emergency assistance loan, a procedural flexibility has been requested for the disclosure requirements of EIA reports for the subprojects in category A. The disclosure requirement for the EIA report will be changed from the 120 days prior to board approval to 120 days prior to award of contract of the subproject; and
- (vi) The semi-annual environmental monitoring reports submitted by the EA; and the corrective action plans agreed during implementation will be posted on ADB website.

C. Grievance Redress Mechanism

40. Since OPSEAP centers on destroyed or damaged infrastructure, it is anticipated that there could be complaints from the communities at various levels pertaining to the environmental impacts of the infrastructure being strengthened or rehabilitated or reconstructed.

41. Field level grievances will be addressed through Grievance Redress Committees (GRC) to be formally constituted at each PIU, and the nodal environment officer of the PMU would be responsible for management of complaints pertaining to environmental aspects. The GRC would comprise of representatives from the PIU, PMU, local administration, and local residents. A gender balance would be ensured. A complaint register would be maintained at each site for a subproject. The GRCs will be formally notified and established

at the project sites, and will function as open forums for hearing complaints and exploring quick resolutions to resolving conflicts. A suitable outreach program would be carried out for local residents to be aware of the presence of such grievance redress mechanism such as notices in the local urban body offices; project sign board providing names and contact details of persons with whom complaints could be lodged; etc. The contractor and CSC field staff would be appropriately trained by environment expert, CSC regarding complaint handling, resolution, and maintain records. Ideally, the local residents would be encouraged to discuss their grievances with the contractors. The environment expert, CSC would be a part of these deliberations. If the contractors fail to resolve the issue within two weeks, then the environment expert, CSC would escalate the issue to GRC for resolution. Each GRC will record its deliberations and inform the concerned parties of a resolution within 3 weeks of its findings and recommendations. Communities will be informed about the GRC through the outreach mechanism of the EA.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

42. A secretariat will be established in the EA as the project management unit (PMU) for the implementation of OPSEAP. The PMU will consist of officials from the EA for project and financial management. It will designate one of its officials as a nodal officer to work closely with the project implementation units (PIU) set-up at field levels of the EA for effective implementation of environmental safeguards related requirements. The institutional arrangements and responsibilities are detailed below.

43. The PMU established within the EA will be responsible for ensuring compliance of subprojects with (i) ADB's *SPS 2009* and India's applicable statutory environmental regulations at the national, state and local levels; and (ii) day-to-day coordination with the PIUs. The PIUs will be responsible for supervision and monitoring of day-to-day implementation of subprojects. The EA will be responsible for preparing environmental assessment reports for ADB approval. The designated nodal officer for environmental safeguards in the PMU would be supported by the environment experts (mentioned in Para 13 and table 2, Para 48 below) to fill-up REA checklists; prepare environmental assessment reports and implementation of EMMPs. The EA will ensure that the designated nodal officer as well the other officials are provided with appropriate training for effective supervision and monitoring of implementation of environmental safeguards.

44. The EA will be supported by construction supervision consultants (CSC) during implementation. Each CSC would recruit one qualified and experienced environment expert to supervise implementation of environmental safeguards under its scope. The scope of works for each CSC would be finalized after firming up the overall scope of works under OPSEAP. This environmental expert from CSC would be available on intermittent basis (12 person-months) till the completion of their contracts. The senior engineers of the EA (in-charge of site works) or their nominated engineering field staff will be trained on key environmental management aspects by the environment experts, and will be assigned the task of monitoring day-to-day implementation of the EMMPs in the field.

45. For monitoring of environmental parameters as outlined in the ADB approved EMMPs, appropriate monitoring agencies would be engaged by the contractors (cost to be included in each contract based on subproject specific monitoring plans) or by the EA for the monitoring works not included in the civil works contracts (cost included in the budget given in table 3).

46. In case of unlikely environment category A subprojects, qualified and experienced external environment expert(s) will be engaged by the EA for verification of the EA's monitoring information through third party monitoring. These experts will undertake periodic field visits, review implementation of EMMPs, develop corrective actions if required and discuss those with the environment and field staff. These experts would also review the

corrective actions taken in their subsequent follow-up visits. These experts will submit their semi-annual reports on the implementation of EMMPs directly to ADB.

47. The EA will be responsible for:

- (i) Designating one of its officers in the PMU as nodal environment officer to monitor the implementation of environmental management measures required for each subproject;
- (ii) Appointing an environment expert to prepare a) environmental screening checklists for each subproject (for ADB's approval of environment category), and b) environmental assessment documents⁸ (IEE and EIA reports including EMMPs), based on environment category for the sub-projects proposed under OPSEAP (for ADB's approval);
- (iii) Preparing documentation for obtaining clearances, consents, and approvals as required to comply with applicable statutory environmental regulations for all projects; following up with respective regulatory agencies (at the state and central government,) and responding to their queries; ensuring compliance with the terms and conditions mentioned in the clearances, permissions, consents, etc.; and renewing these within the validity period as mandated under the then prevailing rules and regulations;
- (iv) Ensuring that all applicable regulatory clearances are obtained before starting civil works for the subproject or the relevant stretches (in case of linear activities);
- (v) Ensuring that EMMPs and other specific conditions, if any, are included in bidding and subsequently in contract documents;
- (vi) Ensuring that contractors have access to the EIA, or IEE reports and EMMPs for the relevant subprojects;
- (vii) Ensuring that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities;
- (viii) Conducting field visits for compliance verification, preparing and ensuring implementation of corrective action plans (including those developed during ADB review missions);
- (ix) Ensuring that the EMMPs, including all proposed mitigation measures and monitoring programs are properly implemented;
- (x) Undertaking monitoring of subprojects and preparing environmental monitoring reports every six months to be delivered to ADB.
- (xi) In the case of unpredicted environmental impacts occurring during project implementation, preparing and implementing an environmental emergency plan in consultation with relevant government agency, the EA and ADB, if necessary.
- (xii) In case of subprojects with significant environmental impacts, preparing an IEE report (for category B) or an EIA report (for category A) as the case may be, including an EMMP prepared for public disclosure.
- (xiii) In the case that a subproject needs to have its siting or alignment changed during implementation, review the environmental classification, obtain its confirmation from ADB (through PMU), reviewing it to determine whether a supplementary study (IEE or EIA) is required. If so, prepare TOR for undertaking a supplementary IEE or EIA, and engage an environment expert to carry out the study, and implement any amendments to the original EMMP.
- (xiv) Preparing a project specific EMMP for the operations that includes a sub-plan for each of the work areas.
- (xv) Conducting capacity building programs in consultation with ADB and CSCs for strengthening of environmental assessment, management, and monitoring capability of the staff from PMU, and PIUs, as deemed necessary. The relevant project staff, including consultants and contractors, would be trained through ADB organized

⁸ In accordance with ADB's *SPS (2009)* and incorporating India's statutory environmental requirements.

- capacity building programs and during safeguards review missions, in addition to project internal training.
- (xvi) Ensuring that meaningful public consultations (including both men and women) are undertaken with affected groups and local NGOs. The list of people attending the consultation, time and locations, subjects discussed during consultation will be recorded in a systematic manner.
 - (xvii) Sharing information and disclosure of environmental safeguard documents (including any corrective action plans prepared in cases of change to original project design) as required.
 - (xviii) Ensuring that an external environmental expert is engaged for monitoring of category A subprojects, if any, and submission of an external monitor's report to ADB on semi-annual basis, as well as implementation of corrective actions recommended by the external monitor or by ADB.
48. The proposed institutional arrangements are given below:

Table 2: Proposed Institutional Arrangements

Unit	Designation	Remarks
PMU at the EA	Nodal Environment Officer	Intermittent basis
PMU	Environment Expert	Full-time basis (2 person-months)
Construction Supervision Consultants (CSCs)	Environment Expert	Intermittent basis in each CSC (12 person-months)
External Monitor (in EA) ⁹	Environment Monitoring Specialist	Intermittent Inputs
Contractor	Environment Health Safety Officer	Full-time basis till contract period

49. ADB will take the following responsibilities:
- (i) Review the REA checklists submitted for the subprojects, and confirm environment categorization;
 - (ii) In case of EIAs and IEEs prepared for each subproject (both new or updated as applicable), review them as a basis for the approval of subprojects;
 - (iii) Review of any corrective action plan prepared for environmental safeguards during project implementation, as well as environmental monitoring reports;
 - (iv) Disclose the EIAs and IEEs and the environmental monitoring reports on ADB web site in line with disclosure requirements outlined in *SPS 2009*;
 - (v) Monitor the implementation of the environmental assessment procedures described above and the approved EMMPs;
 - (vi) Conduct environmental safeguards due diligence as part of project review missions;
 - (vii) Provide assistance to the EA, if required, in carrying out its responsibilities; and
 - (viii) Provide resource persons during environment capacity building events to deliver lectures on ADB specific requirements.

A. Staffing Requirements and Budget

50. One environmental expert (short-term) will be based in PMU to prepare environmental documentation. Consultant support for environmental management and monitoring will be provided to enhance the existing resources. OPSEAP's costs will incorporate a budget and resources needed to (i) implement the environmental review and screening procedure, (ii) undertake the environmental assessment studies for the

⁹ Only for environment category A sub-projects.

subprojects, (iii) monitor the implementation of EMMPs, and (iv) undertake environmental mitigation measures as required.

51. A timeframe of 2 person-months is considered sufficient to prepare environmental documentation. A provision has been made for preparing additional reports during implementation if deemed necessary. Sufficient budget funds and resources have been incorporated into OPSEAP to cover costs to (i) implement the environmental review procedures, (ii) conduct IEEs and EIAs for the follow up subprojects, (iii) monitor the implementation of the EMMPs, and (iv) undertake environmental monitoring by PIUs.

52. The cost of conducting training, undertaking monitoring of environmental parameters through recognized laboratories (part of civil contract), hiring environmental experts, and implementing the EARF will also be incorporated in OPSEAP.

53. Implementation of the above environmental assessment and review procedures would require the following budget:

Table 3: Estimated Cost for Implementation of Environmental Management and Monitoring Plans

Item	No. of Units	Rate per Unit (\$)	Budget (USD)
Environmental expert attached to PMU in the EA	1 person x 2 months	Lumpsum	20,000
Environmental specialists attached to the CSCs	2 persons x 12 months	5,000 per month	120,000 ¹⁰
Environment monitoring specialist (external monitor) in the EA for third party monitoring of category A subprojects.	0.5 persons x 12 months	5000 per month	30,000
Preparation of additional environmental assessment reports (IEEs/EIAs)	Lumpsum	50,000	50,000
Office expenditure related to preparation of environmental assessment reports and EMMPs.	Lumpsum	25,000	25,000
Provision of travel budget and expenditure of monitoring the implementation of EMMPs	Lumpsum	1000 per month per PIU and PMU for 24 months	96,000
Capacity building programs (3 per year for 2 years)	Lumpsum	50,000	50,000
Contingency			9,000
TOTAL			400,000

VII. MONITORING ENVIRONMENTAL PERFORMANCE AND SUPERVISION

54. The extent of monitoring activities, including their scope and periodicity, will be commensurate with the project's risks and impacts. An environmental monitoring plan will be prepared for each subproject. This plan will recommend environmental monitoring mechanisms to be used to indicate the effectiveness of the EMMP in mitigating negative impacts identified in the EIA or IEE report. The plan will also identify the agencies and institutions that are responsible for monitoring. The EA has the overall responsibility to monitor the implementation of the EMMPs for all subprojects under OPSEAP. The PMU at

¹⁰ The cost is supported by the consultancy contracts.

the EA would be assisted by the PIUs. The CSCs would provide support to the PMU and PIUs in this regard.

55. During the design and pre-construction stage, monitoring will be the responsibility of the EA. This is mainly in the form of review and verification of designs and incorporation of mitigation measures into design and contract documents. Mitigation measures to be taken during the construction stage will be mostly implemented by the main contractor. The PIUs will also monitor the environmental performance. During the operation stage, monitoring will be the responsibility of the facility owner and the distribution licensee. The SPCB may carry out third-party monitoring in line with the regulatory requirements of India. Although sufficient care and appropriate mitigation will be incorporated into the design of these facilities, performance monitoring during operation will be essential to making the investments environmentally suitable and socially acceptable. Therefore, environmental parameters to be monitored during the subproject lifecycle will be identified and during environmental assessment and recorded in the EIA or IEE reports prepared for the subprojects.

56. Reports on the implementation of environmental management and environmental monitoring plans need to be documented systematically. The EA shall ensure that ADB is given access to undertake environmental review of any subproject, as and when required. When unexpected environmental impacts are encountered during implementation, the EA, in close consultation with ADB, shall undertake remedial measures to mitigate those impacts at the earliest opportunity. These environmental mitigation measures shall be implemented by the respective PIUs and monitored by the PMU. The actions and the results shall be recorded in writing and included in the environmental monitoring report. The PIUs will prepare quarterly reports for subprojects that will capture the status of implementation of mitigation measures and monitoring carried out thereof and submit to the PMU. The PMU will consolidate reports received from each PIU, and submit the consolidated report semi-annually to ADB through the EA. This report will be disclosed on ADB website in accordance with ADB's *Public Communication Policy (2011)*. If the EA finds any issues that need further environmental monitoring and/or mitigation measures, it will give instruction to the PMU and the PIUs, and inform ADB. ADB will review the implementation of the EMMP, both through semi-annual reports from the EA, and through its review missions.

57. ADB will require the EA to:

- (i) establish and maintain procedures to monitor the progress of implementation of EMMPs;
- (ii) verify the compliance with environmental measures and their progress toward intended outcomes;
- (iii) document and analyze monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports;
- (iv) follow up on these actions to ensure progress toward the desired outcomes,
- (v) retain qualified and experienced external experts to verify monitoring information for projects classified as of environment category A, if any;
- (vi) use independent advisory panels to monitor project implementation, in the unlikely event that a highly complex and sensitive project would be identified during implementation; and
- (vii) submit periodic monitoring reports on safeguard measures as agreed with ADB.

58. ADB will carry out the following monitoring actions:

- (i) conduct periodic desk review of implementation of environmental safeguards;
- (ii) conduct supervision missions with detailed review by ADB's safeguard specialists/officers for sub-projects with significant adverse environmental impacts;
- (iii) review the semi-annual monitoring reports submitted by the EA to ensure that adverse impacts and risks are mitigated as planned and as agreed with ADB;

- (iv) work with the EA to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to reestablish compliance as appropriate; and
- (v) prepare project completion reports that assess whether the objective and desired outcomes of the EMMPs have been achieved, taking into account the baseline conditions and the results of monitoring.

59. This environmental assessment and review framework has been formulated for the use of the EA to ensure that the subprojects will be prepared and implemented in accordance with the statutory environmental regulations at the national, state and local levels, and ADB's *Safeguard Policy Statement (2009)*, as amended from time to time.

INDICATIVE LIST OF SUB-PROJECTS

I. Transmission Investments

A. four numbers of 132kV underground (UG) transmission lines totaling 52 km

- (i) 132kV UG cable from Narendrapur to Berhampur grid (16 km)
- (ii) 132kV UG cable from Narendrapur to Chhatrapur grid (13 km)
- (iii) 132kV UG cable from Berhampur grid to Autonagar grid (9 km)
- (iv) 132kV UG cable from Narendrapur to Autonagar grid (14 km)

B. one number of 132/33kV gas insulated switchgear (GIS) substation

II. Distribution Investments

- (i) conversion of one 33/11kV air insulated substation (AIS) substation to GIS substation at Berhampur Medical College
- (ii) three numbers of 33/11kV GIS substations at Gopalpur, Municipality Kalyanmandap (Berhampur), and Lingrajpur section of Chhatrapur.
- (iii) one number of 33/11kV AIS substation at the water works within Berhampur.
- (iv) renovation of 10 numbers of 33/11kV AIS substations located at N.K. Nagar, Goodshed, Ambagada, Lochapad, Kansi, Lathi, Ambapua, Rangeilunda, Narendrapur and Chatrapur.
- (v) erection of 33 kV UG distribution cables totaling 85.5 km
- (vi) erection of 33 kV overhead distribution lines totaling 138 km
- (vii) erection of 11 kV UG distribution cables totaling 120 km
- (viii) erection of 11 kV overhead distribution lines totaling 136 km
- (ix) erection of low tension (LT) UG cables totaling 400 km
- (x) erection of low tension (LT) overhead lines totaling 1,295 km
- (xi) a supervisory control and data acquisition system for improved response capabilities

INDIA AND MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAS)

- I. India is member of almost all major Multilateral Environmental Agreements (MEAs), under four clusters, namely the following:
 - A. Nature conservation;
 - B. Hazardous material;
 - C. Atmospheric emissions; and
 - D. Marine environment.
- II. There are 20 major multilateral global MEAs, to which India is a signatory. These are listed below:
 - A. **Nature conservation**
 - (i) Ramsar Convention on Wetlands
 - (ii) CITES (Convention on International Trade in Endangered Species of Fauna and Flora)
 - (iii) TRAFFIC (The Wildlife Trade Monitoring Network)
 - (iv) CMS (Convention on the Conservation of Migratory Species)
 - (v) CAWT (Coalition Against Wildlife Trafficking)
 - (vi) CBD (Convention on Biological Diversity)
 - (vii) ITTC (International Tropical Timber Organisation)
 - (viii) UNFF (United Nations Forum on Forests)
 - (ix) IUCN (International Union for Conservation of Nature and Natural Resources)
 - (x) GTF (Global Tiger Forum)
 - B. **Hazardous material**
 - (i) Cartagena Protocol on Biosafety
 - (ii) SAICM (Strategic Approach to International Chemicals Management)
 - (iii) Stockholm Convention on Persistent Organic Pollutants (POPs)
 - (iv) Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and Their Disposal
 - (v) Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade
 - C. **Atmospheric emissions**
 - (i) UNFCCC (United Nations Framework Convention on Climate Change)
 - (ii) Kyoto Protocol
 - (iii) UNCCD (United Nations Convention to Combat Desertification)
 - (iv) Montreal Protocol (on Ozone Depleting Substances)
 - D. **Marine environment**
 - (i) IWC (International Whaling Commission)

(Source: <http://www.moef.nic.in>)

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST**Instructions:**

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

Country/Project Title:

Sector Division:

Screening Questions	Yes	No	Remarks
A. Project siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site			
▪ Protected area			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Buffer zone of protected area			
▪ Special area for protecting biodiversity			
B. Potential environmental impacts Will the project cause...			
▪ encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?			
▪ encroachment on precious ecosystem (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?			
▪ damage to sensitive coastal/marine habitats by construction of submarine cables?			

Screening Questions	Yes	No	Remarks
▪ deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?			
▪ increased local air pollution due to rock crushing, cutting and filling?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			
▪ chemical pollution resulting from chemical clearing of vegetation for construction site?			
▪ noise and vibration due to blasting and other civil works?			
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?			
▪ hazardous driving conditions where construction interferes with pre-existing roads?			
▪ creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?			
▪ dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?			
▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?			
▪ facilitation of access to protected areas in case corridors traverse protected areas?			
▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?			
▪ large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?			

Screening Questions	Yes	No	Remarks
▪ risks to community safety associated with maintenance of lines and related facilities?			
▪ community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
▪ Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?			
▪ Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?			
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)?			

Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
River valleys/deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
Small islands	Small islands generally have land areas of less than 10,000km ² in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.
Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

OUTLINE OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

An environmental assessment report is required for all environment category A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical environmental impact assessment (EIA) report contains the following major elements, and an initial environmental examination (IEE) report may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. Executive Summary

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

B. Policy, Legal, and Administrative Framework

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

C. Description of the Project

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

D. Description of the Environment (Baseline Data)

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

E. Anticipated Environmental Impacts and Mitigation Measures

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

F. Analysis of Alternatives

This section examines alternatives to the proposed project site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring

requirements. It also states the basis for selecting the particular project design proposed and, justifies recommended emission levels and approaches to pollution prevention and abatement.

G. Information Disclosure, Consultation, and Participation

This section:

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

H. Grievance Redress Mechanism

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

I. Environmental Management Plan

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

(i) Mitigation:

- (a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
- (b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
- (c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

(ii) Monitoring:

- (a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and

- (b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

- (a) specifies the implementation schedule showing phasing and coordination with overall project implementation;
- (b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
- (c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

(iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

J. Conclusion and Recommendation

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

TERMS OF REFERENCE (TOR) FOR ENVIRONMENT CONSULTANT

A. Scope of Works:

- i. Prepare Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) reports for the sub-projects identified under OESEAP. The reports should include environmental management and monitoring plans (EMMPs);
- ii. Assess the capacity of the Executing Agency (EA) in implementing the proposed EMMPs and propose necessary training to enable EA and the Local Government to implement the EMMPs.
- iii. All documents shall be developed and the project will be implemented in accordance with ADB's *Safeguard Policy Statement (2009)* and the prevailing statutory environmental regulations of India.

B. Detailed Tasks:

- i. Gather as much as possible the information related to the proposed sub-projects from the engineering group. The information should at least cover the following: need for project, type of project, location (use maps showing general location, specific location, layout of project site), size and magnitude, proposed schedule for project implementation, and description of project activities;
- ii. Gather secondary data on physical environment, ecological resources and the quality of life values of the project areas and primary data for some ecologically sensitive issues (endangered species, national park, sanctuaries, etc.). Particular attention has to be given on the relation between the ecological function of the whole protected area and the area that will be affected by the proposed project;
- iii. Gather the data on the legal status of the area at local, state and national levels;
- iv. Gather the information pertaining to the statutory environmental clearances and approvals required for the project as a whole and for the individual sub-projects, check applicability of any international environmental agreement to the project for which India is a signatory, and suggest the measures to ensure compliance with the requirements, facilitate obtaining the requisite clearances from the regulatory agencies for the facility owner, ensure compliance with the terms and conditions stipulated therein by the facility owner, and ensure timely renewal of the permissions;
- v. Fill-up Rapid Environmental Assessment (REA) checklist in consultation with the EA, and assist the EA in categorizing the sub-project for environment category;
- vi. Once the environment category is approved by ADB, define the scope of the IEE and/or EIA study in respect to the study area, and environmental component to be studied;
- vii. Undertake survey for all proposed sub-projects and provide information on the environmental conditions thereof;
- viii. Undertake field survey covering the area that will be used as the main sources for the construction materials;
- ix. Undertake field survey covering the area that will be used as temporary storages of construction materials, construction equipment, temporary offices and camps;
- x. From this surveys and secondary data, the consultant should be able to provide the existing environmental conditions at the sub-station locations, transmission and distribution line alignments and the affected areas;
- xi. Predict and assess the potential environmental impacts of project for each stage of project activities (e.g. environmental impacts due to project location, design, construction activities, and operation);
- xii. For environment category A sub-projects, if any, undertake the economic valuation of any significant impacts identified during this study, therefore it can be used as a basis to calculate extended benefit cost analysis. from the environmental aspects. The result should be presented in the economic valuation section;

- xiii. Identify mitigation measures for each predicted impact and its costs, and resources needed to implement the mitigation measures;
- xiv. Formulate a management plan to operate the project and identify the right parties to monitor the implementation of the mitigation measures and the management plan;
- xv. Undertake adequate consultations with communities (during document preparation as well as during implementation later on) who will be affected by the project to get their perception about the project and their acceptance;
- xvi. Ensure that the EMMPs are made a part of the bidding documents and subsequently of contract documents;