Environmental Assessment and Review Framework (EARF)

Project Number: 49038-001
May 2015

PAK: Flood Emergency Reconstruction and Resilience Project (FERRP)

Asian Development Bank

ABBREVIATIONS

ADB	Asian Development Bank
CAP	Corrective Action Plan
DNA	Damage Needs Assessment
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EAP	Emergency Assistance Program
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESU	Environment and Social Unit
IA	Implementing Agency
IEE	Initial Environmental Examination
NDMA	National Disaster Management Authority
NGO	Non-governmental Organization
SPS	Safeguard Policy Statement

CONTENTS

APPENDICES

I. INTRODUCTION

1. Since September, 2014, heavy monsoon rains and raised water levels in major rivers across Pakistan have claimed the lives of hundreds of people. In Punjab the 2014 floods claimed around 300 lives. Furthermore, more than 83,000 houses were damaged in the province and around 3,000 villages, with around 1 million acres of cropland, were affected. The 2014 flood resulted in approximately $136.87 million in reconstruction costs of damage to infrastructure in the social and economic sectors of Punjab province, of which over 75% represents damage to the road and irrigation sectors.

2. The flash floods caused by the heavy monsoon rains that hit Districts Haveli, Poonch and Kotli, among others, in September 2014 are estimated to have affected over 61,900 people. According to the Pakistan Metrological Department, 981 mm of rain fell within a three day period. The floods destroyed community and large scale infrastructure, communications networks, transport networks, and other public and private infrastructure. There were also widespread losses to crops and livestock affecting income and food security of rural populations. Affected populations were primarily situated in Districts Haveli, Poonch and Kotli. Fifty-six people were killed in the floods and nearly 28,000 housing units damaged/destroyed. Furthermore, 4,204 people were temporarily displaced.

3. The Asian Development Bank (ADB) will support the efforts of the Government of Pakistan (GoP) for rehabilitation and reconstruction of infrastructure in the sectors of transport (primarily roads and bridges) and irrigation (including flood control measures). The assistance will be provided through the Flood Reconstruction and Resilience Project. ADB support would be provided for the rehabilitation and reconstruction of damaged roads, irrigation and flood protection infrastructure, and for supporting disaster risk management and livelihood restoration efforts. Where appropriate the principle of “build-back-better” would apply.

4. The proposed project will contribute to the economic and social recovery of flood-affected areas through the restoration and reconstruction of critical infrastructure to safer standards. The scope of the proposed project will include:

i. Rehabilitation and reconstruction of flood damaged roads and bridges.
ii. Rehabilitation and reconstruction of damaged irrigation, drainage and flood protection schemes, and upgrading of priority flood protection schemes.
iii. Strengthening disaster risk management through: (i) human and institutional capacity development and strengthening the interface with the districts (downward) and other mandated institutions (horizontal and upwards) that have a key role in flood management; and, (ii) Multi-hazard risk assessment data and system development.

5. The objective of this EARF is to establish systems and functions that will ensure that conditionalities are built into each initiative at its design stage such that through reconstruction, improved and environmentally sustainable structures are built that have better resistance to natural calamities, particularly floods.

6. The EARF is endorsed by the GoP and provincial governments, and will be translated and disclosed on the websites of the respective sector agencies in the affected districts and the ADB website.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

7. All subprojects that may be undertaken as part of the Flood Reconstruction and Resilience Project will be screened, classified, and assessed based on ADB's Safeguard Policy Statement (SPS), 2009, and Pakistan's environmental legislation.

8. Post the adoption of the 18th Constitutional Amendment in 2011, the subject of environment has been devolved and the provinces have been empowered for environmental protection and conservation. Subsequently, the Punjab government has amended PEPA 1997 as Punjab Environmental Protection Act 1997 (Amended 2012), and the Environment Protection Department (EPD) Punjab is responsible for ensuring the implementation of provisions of the Act in Punjab's territorial jurisdiction. The Environmental Protection Act, 2000 applicable to the districts of Haveli, Kotli and Poonch, among others, is the primary environmental legislation in the state and is implemented by the Environment Protection Agency.

9. All development initiatives undertaken in Pakistan, according to the Pakistan Environmental Protection Act 1997 (PEPA1997) and provincial/state environmental legislation are required to undergo an "Initial Environmental Examination" (IEE), or where the project is likely to cause an adverse environmental effect, an "Environmental Impact Assessment" (EIA). The environmental assessment reports are filed with the relevant provincial Environmental Protection Agencies for review and approval prior to project construction.

10. In order to facilitate the IEE/EIA preparation process the Federal Ministry of Climate Change has provided general policy/guidelines to guide and inform developers regarding preparation of environmental assessment reports. Environmental clearance of ADB is stipulated in the Safeguard Policy Statement (SPS), 2009.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

A. Description of the Project

11. The Flood Reconstruction and Resilience Project will be aimed at the sectors of transport and irrigation. The project will rehabilitate and reconstruct two main types of infrastructure: (i) roads and bridges at the provincial levels; and (ii) irrigation infrastructure at provincial levels. These are briefly discussed below:

- Road and bridges: The floods and rains of 2014 have damaged various categories of roads, railways, bridges, civil airports and telecommunications infrastructure. The Flood Reconstruction and Resilience Project will mainly rehabilitate and reconstruct provincial roads including bridges. In the subprojects identified to date, mostly comprise of rehabilitation of road sections ranging in length from 0.5 km to 50 km for provincial roads. The reconstruction of some bridges is also included.
- Irrigation, drainage and flood protection: The irrigation network that supplied water to about 50,000 hectares of agricultural lands has suffered great damage. For the rehabilitation and reconstruction of provincial irrigation systems, Flood Reconstruction and Resilience Project subprojects will focus on the reconstruction and rehabilitation of schemes damaged by the floods, as well as financing for flood protection works in need of urgent upgrading in preparation for the next flood season.

B. Environmental Impacts

12. It is anticipated that beside significant positive environmental impacts associated with clearance, removal and disposal of debris, reconstruction of roads, and rehabilitation of the irrigation network, the Flood Emergency Reconstruction and Resilience Project can potentially have adverse environmental impacts typical for construction and reconstruction projects.

13. ***Construction*** **Impacts**:

14. Adverse environmental impacts associated with the reconstruction and rehabilitation activities of this emergency intervention relate largely to the construction phase of the individual projects. The degree, magnitude and intensity of the actual impacts will depend upon the nature of the intervention-impact intensity of road construction projects will be very different from the impact intensity associated with irrigation channel rehabilitation.

15. Broadly, the impacts stemming from construction activities can be of the following types:

- **Soil Erosion and Dust Emissions:** Construction activities will involve vegetation clearing, land excavation, quarrying, cut and fill, asphalt machine operation, formation of windrows, stockpiles of gravel etc. All of these, if not performed carefully can result in soil erosion in arid areas. They activities can cause soil to dislodge and increase the rate of soil loss from an area beyond that occurring under natural conditions. This movement of soil will also give rise to dust emissions. Therefore, it will be necessary to introduce intensity specific mitigation measures to counter the impacts of soil erosion and dust emissions.
- **Noise Levels:** The operation of heavy equipment on construction sites such as excavators, diggers, bulldozers, dumper trucks, rollers, stone crushers and controlled rock blasting result in noise generated well above the ambient noise levels in rural areas. It is important to introduce noise control measures as part of the construction stage mitigation measure to bring construction noise levels down to an acceptable level. Background ambient noise levels will need to be measured, and then compared with typical values for noise generated by construction equipment.
- **Groundwater Quantity:** Despite devastating floods in Pakistan, water resources, especially ground water remain scarce in various parts of the country. If groundwater is identified as sensitive in the area where the subproject is to be located, then it is important to develop mitigation measures that restrict and monitor abstraction to obliterate the possibility of over exploitation.
- **Soil and Groundwater Quality:** With large scale construction activities where heavy machinery is operated, soil contamination by oil and chemical leaks has a significant probability of occurrence. Groundwater contamination by construction wastes and medium scale spills is also possible. The subprojects will need to factor in this probability and develop systems and mechanisms to handle such incidents, including the final disposal of contaminated soil, and containment of contaminants in groundwater.
- **Drainage:** The drainage patterns in areas may have been damaged by the accumulation of debris and heavy silt. It is important to develop mitigation measures that ensure that the new construction does not disrupt the natural drainage patterns of the area.

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS

16. The following general criteria will be adopted for selection of the subprojects under the Flood Reconstruction and Resilience Project:

(i) The subprojects shall only be selected from the list of projects prioritized by the Government;

(ii) The subprojects shall only involve activities that follow all the government regulations;

(iii) Types of projects listed in ADB SPS's Appendix 5 (ADB Prohibited Investment Activities List) do not qualify for ADB's financing; and

(iv) The subprojects that can have considerable adverse impacts to the environment or located in environmentally sensitive areas are subject to mandatory environmental assessment as detailed below.

17. A final check on conformity with the selection criteria will be the submission of selected subprojects for ADB's clearance. Any subproject, which does not meet the general criteria listed above may be rejected.

18. 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. The Flood Reconstruction and Resilience Project has been categorized as Environment Category B. However, there is a likelihood that future subprojects may fall under Environment Category A. Such high risk subprojects (Category A) will require a full-scale environmental impact assessment (EIA). In view of the large number of subprojects in the irrigation and road sectors, and the limited nature of their environmental impacts, a sectoral IEE may be considered.

19. All environmental assessments will follow ADB's disclosure requirements. However, since this is an emergency assistance program, for projects requiring immediate and urgent execution that may be Category A, the 120 days EIA disclosure requirement prior to board approval will be changed to 120 days disclosure prior to the release of funds for the subproject.

20. For subprojects proposed for Retroactive Financing, an environmental screening will be carried out through REA checklists, based on which it will be decided whether a detailed environmental audit is required. If the audit is carried out, an environmental audit report will be prepared and submitted to ADB for approval. The outline of a typical environmental audit report is attached as Appendix 3.

A. Requirements to Environmental Screening and Classification

21. All subprojects will be screened to determine their environmental category based on the ADB's Rapid Environmental Assessment (REA) Checklist. Templates of the REA for subprojects that may fall across the selected sectors (road transport, irrigation and flood management) are attached in Appendix 1. Categorization is to be based on the most environmentally sensitive component, which implies that if any one component of a subproject has potential of significant adverse environmental impacts, then the project is to be classified as Category A regardless of potential environmental impacts of other aspects of the project. In general, a project will be classified 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

ii. will generate impact on an ecologically sensitive area, particularly if the project is located in buffer or core zone of any designated specially protected areas, or area of international significance (such as Ramsar site) or cultural heritage and archaeological sites.

22. Other infrastructure rehabilitation subprojects that do not fall into the above category are typically classified as Category B or C depending upon the scale of impacts.

B. Requirements for Environmental Assessments and Environmental Management Plans

23. It is expected that the majority of subprojects will involve the rehabilitation or reconstruction of damaged infrastructure at its existing location. However, in some instances there may be a requirement to relocate infrastructure to new locations. In these instances the EA/IA 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/IA will undertake an environmental assessment as early as possible in the project cycle. For subprojects with potentially significant adverse impacts that are diverse, irreversible, or unprecedented, the EA/IA 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.

24. Impacts and risks will be analyzed in the context of 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 Flood Reconstruction and Resilience Project, 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 of the Flood Reconstruction and Resilience Project, and other sources of similar impacts in the geographical area; 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.

25. 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 such as rehabilitation or restoration.

26. The EA/IA will prepare an Environmental Management Plan (EMP) that addresses the potential impacts and risks identified by the environmental assessment. The EMP will include 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.

27. Since the Flood Reconstruction and Resilience Project is being administered as an emergency assistance, there will be a need to implement subprojects, particularly in the irrigation and flood protection sector, on an urgent basis before the onset of monsoon rains. A review of available information on these subprojects suggests that they are of a similar nature and will not have extensive or severe environmental impacts. Hence, based on environmental screening through REA checklists, sectoral (generic) IEEs may be prepared for such subprojects. However, where the REA checklists indicate environmental impacts of a serious nature, a detailed IEE will be carried out. The same environmental assessment and management procedure will also be employed for provincial and district road rehabilitation and reconstruction projects.

28. The EA/IA should ensure that ADB be given access to undertake environmental due diligence for all subprojects. However, the EA/IA 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 needs to be documented systematically and be available to the public.

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation

29. Although the Flood Reconstruction and Resilience Project subprojects will be undertaken for the welfare of the communities, to rehabilitate, or reconstruct important infrastructure, it is still likely that the environment, communities and immediate stakeholders may be affected by the reconstruction exercise. In cases, infrastructure may need to be constructed along new alignments, thereby, disturbing habitat that was previously not affected. In order to minimize any impacts on the already marginalized communities and the environment rendered fragile by the devastating floods, it is important to involve communities in the reconstruction process through a system of consultation. Consultation will be based on the following principles:

i. Early start in the individual project preparation stage and continuation throughout the project cycle;
ii. Timely disclosure of relevant information in a comprehensible and readily accessible to affected people format;
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

30. Overall responsibility for ensuring that the environmental requirements of the Project set forth in ADB's Safeguard Policy Statement 2009, PEPA 1997 and provincial environmental legislation lies with the relevant EA/IA implementing the individual projects.

- All environmental documents are subject to public disclosure, and are therefore to be made available to public;

- All environmental assessment documentation for Category B subprojects (IEEs) will be posted on the ADB website;
- Under the SPS (2009), If any Category A subprojects are identified, the first working Draft EIA is to be prepared, and posted on the ADB website 120 days before board approval. However, as this is an emergency assistance project, there may be an urgency to implement a selected subproject. In such a case, the Draft EIA may be prepared and posted on ADB's website 120 days prior to release of funding.
- All IEE/EIAs have to be reviewed by ADB before being disclosed to the public; and,
- The Government will ensure that meaningful public consultations are undertaken during the assessment process for the subprojects.

C. Grievance Redress Mechanism

31. Since the Flood Emergency Reconstruction and Resilience Project centers around displaced families, destroyed infrastructure and lost livelihoods, it is anticipated that there will be complaints from the communities at various levels pertaining to the environmental impacts of the infrastructure being rehabilitated or reconstructed.

32. Field level grievances will be addressed through a local Grievance Redress Committee (GRC) to be formally constituted by the EA/IA. GRCs will be instituted under the relevant Project Management Unit (PMU). The GRC will include the Environment and Social Unit's (ESU) Environment Specialist in addition to a specially recruited grievance officer and a local notable. 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. Each GRC will record its deliberations and inform the concerned parties of a resolution within 2 weeks of its findings and recommendations. Communities will be informed about the GRC through the ESU outreach program. Additionally Environmental Tribunals exist at the provincial level and can be approached for the resolution of conflicts and grievances that cannot be resolved by the GRC. Grievance may also be addressed to ADB's Office of Special Projects Facilitator.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

A. Institutional Arrangements and Responsibilities

33. Institutional arrangements and responsibilities for various categories of subprojects are detailed below.

34. **Districts Haveli, Kotli and Poonch:** The Planning and Development (P&D) Department will be the overall Executing Agency (EA) for this portion of the project and also the implementing agency (IA) for the DRM strengthening component of the project. The other IA will be the Communication and Works (C&W) Department for reconstruction of the district roads (and bridges) component, and would also be responsible for the respective cash-for-work efforts linked to the roads and bridges reconstruction, and surveys and landslides works that they undertake in their respective components. The EA will establish a project steering committee (PSC) to provide policy direction and strategic oversight, and inter-agency coordination.

35. A project coordination unit (PCU) will be established that will have two distinct functions -- one as an EA and one as an IA. As an EA it will have the overall responsibility for planning, coordination, monitoring, overall reporting and approval of subprojects and activities according to the selection criteria, relating to disaster risk management support; and provincial and

districts roads. The PCU at the P&D will be headed by a dedicated Director General, supported by staff deputed from C&W, Irrigation, Land Use Planning, Forestry and SDMA.

36. The implementation arrangement at the IA level will use the existing capacities of the respective IAs as much as possible. The C&W will establish a lean Project Implementation Unit (PIU) headed by a full-time Project Director from existing staff, supported by dedicated core staff responsible for coordination, financial control, record keeping, payments, procurements, safeguards and reporting. The existing field formation of these departments through the Executive Engineers in the affected districts will sign the work and supply contracts related to their area of responsibility and will be responsible for implementation, contract administration and payment certification, supported by third party resident or top supervision consultants hired by the PIU. The PCU at the P&D as an IA will implement the second component of the project through the deputed staff from C&W, Irrigation, Land Use Planning, Forestry and SDMA.

37. **Punjab:** The Planning and Development Department (P&D) of the GoPb is the Executing Agency (EA) for the project, and the implementing agencies (IAs) are the PID for the irrigation, drainage, and flood risk management components; C&W for provincial and district roads; and PDMA for provincial disaster risk management support component. The PID and C&W will also be responsible for the respective cash-for-work efforts linked to their respective components. The EA will establish a project steering committee (PSC) to provide policy direction and strategic oversight, and inter-agency coordination.

38. The P&D will have the overall responsibility for planning, monitoring, project progress review, coordinating with line departments/agencies and the Federal Government for approval of the umbrella project by the Central Development Working Party (CDWP). However, the approval of subprojects and related activities according to the selection criteria relating to irrigation, drainage, flood protection, provincial disaster management support, and provincial and district roads will be the responsibility of respective competent approval forum, i.e. DDC/DDWP/DDSC/PDWP. The Project Coordination Unit (PCU)at the P&D will be headed by the Member Infrastructure, supported by existing Chief of section related to irrigation and roads. However, Chief DRM responsibilities will be carried out by the Chief, Irrigation until a Chief DRM position can be established.

39. The implementation arrangements at the IA level will also use the existing capacities of the respective IA's as much as possible. The PID and C&W will establish a lean Project Implementation Unit (PIU) headed by a full-time Project Director from existing staff, supported by dedicated core staff responsible for coordination, financial control, record keeping, payments, procurements, safeguards and reporting The PIU at the PDMA will have 4 existing staff members headed by the existing Director General. All PIUs will be supported by staff provided through dedicated TA attached to the project in areas of procurement, financial control and safeguards.

40. A separate Environment and Social Unit (ESU) will be established within each EA/IA's Project Management Unit (PMU) in the office of the Project Director (PD). The ESU will appoint a Director, Social and Environment Safeguards, and an Environment Specialist. Environmental management and monitoring tasks will be supported by consultants. The PMU will ensure that all subprojects comply with ADB's Safeguard Policy Statement (2009) and PEPA 1997.

41. The ESU will be responsible for:

- Appointing an environment specialist to monitor the implementation of environmental management measures required for each subproject.
- Preparing environmental screening checklists and classifying subprojects that have not been yet classified.

- Based on the checklist and as per ADB SPS (2009) and PEPA 1997 requirements, preparing IEEs and EMPs.
- Submitting the checklists and IEE reports to ADB as part of the approval of subproject.
- Ensuring that EMPs are included in Tender documents.
- Ensuring that all regulatory clearances are obtained before starting civil works for the subproject.
- Ensuring that the EMPs, including all proposed mitigation measures and monitoring programs are properly implemented.
- Undertaking monitoring of subprojects and preparing environmental monitoring reports every six months (in case of projects with long duration) and post-project reports (for shorter projects), to be delivered to ADB.
- In the case of unpredicted environmental impacts occurring during project implementation, preparing and implementing a Corrective Action Plan (CAP).
- In case of subprojects with significant environmental impacts, having an IEE report (for category B) (outline of an environmental assessment report is attached as Appendix 2), including an EMP prepared for public disclosure.
- In the case that a Category B subproject needs to have its siting or alignment changed or its environmental classification reconfirmed, reviewing it to determine whether a supplementary study is required. If so, carry out the study and implement any amendments to the original EMP.
- Preparing a project specific EMP for the operations that includes a sub-plan for each of the work areas.
- Providing awareness training in environmental management for all employees working on the subproject.
- 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.
- Retroactive financing – In the case of subprojects identified for Retroactive financing, carrying out environmental audits (including screening, site visits, and review of tender documents) to ensure that ADB's environmental safeguard requirements have been met, and preparing environmental audit reports.
- Sharing information and disclosure of environmental safeguard documents (including any Corrective Action Plans prepared in cases of change to original project design) as required.

42. ADB will take the following responsibilities:

- In case of IEEs review them as a basis for the approval of subprojects.
- Publicly disclose the final IEE before project appraisal, a new or updated IEE and corrective action plan prepared during project implementation, if any, as well as environmental monitoring reports on the ADB website.
- Monitor the implementation of the EMP and due diligence as part of overall project review mission.
- Provide assistance to the EA/IA, if required, in carrying out its responsibilities and safeguard capacity building.

B. Staffing Requirements and Budget

43. Consultant support for environmental management and monitoring will be provided to enhance the existing resources of each of the EA/IA. One Environmental Specialist will be based in each of the Environment and Social Units (ESUs) of the respective PMUs.

44. The project'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 subprojects, (iii) monitor the implementation of EMPs, and (iv) undertake environmental mitigation measures as required.

45. The cost of conducting training, undertaking monitoring, procuring laboratory equipment, hiring environmental consultants, and implementing the environmental impact assessment and review framework will also be incorporated in the project.

VII. MONITORING AND REPORTING

46. The extent of monitoring activities, including their scope and periodicity, will be commensurate with the project's risks and impacts. The EA/IA is required to implement safeguard measures and relevant safeguard plans, as provided in the legal agreements, and to submit periodic monitoring reports on their implementation performance. ADB will require the IEA/IA to:

i) establish and maintain procedures to monitor the progress of implementation of EMPs;
ii) verify the compliance with environmental measures and their progress toward intended outcomes;
iii) document and disclose 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 or qualified NGOs to verify monitoring information for projects with significant impacts and risks;
vi) use independent advisory panels to monitor project implementation for highly complex and sensitive projects, and
vii) submit periodic monitoring reports on safeguard measures as agreed with ADB.

ADB will carry out the following monitoring actions to supervise subprojects 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 subprojects with significant adverse social or environmental impacts;
iii) review the periodic monitoring reports submitted by the EA/IA to ensure that adverse impacts and risks are mitigated as planned and as agreed with ADB;
iv) work with the EA/IA 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 EMPs have been achieved, taking into account the baseline conditions and the results of monitoring.

Appendix 1

Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the 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?			
▪ PROTECTED AREA			
▪ WETLAND			
▪ MANGROVE			
▪ ESTUARINE			
▪ BUFFER ZONE OF PROTECTED AREA			
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY			
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
▪ loss of precious ecological values (e.g. result of encroachment into forests/swamplands or historical/cultural buildings/areas, disruption of hydrology of natural waterways, regional flooding, and drainage hazards)?			
▪ conflicts in water supply rights and related social conflicts?			
▪ impediments to movements of people and animals?			

Screening Questions	Yes	No	Remarks
▪ potential ecological problems due to increased soil erosion and siltation, leading to decreased stream capacity?			
▪ Insufficient drainage leading to salinity intrusion?			
▪ over pumping of groundwater, leading to salinization and ground subsidence?			
▪ impairment of downstream water quality and therefore, impairment of downstream beneficial uses of water?			
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ potential social conflicts arising from land tenure and land use issues?			
▪ soil erosion before compaction and lining of canals?			
▪ noise from construction equipment?			
▪ dust during construction?			
▪ waterlogging and soil salinization due to inadequate drainage and farm management?			
▪ leaching of soil nutrients and changes in soil characteristics due to excessive application of irrigation water?			
▪ reduction of downstream water supply during peak seasons?			
▪ soil pollution, polluted farm runoff and groundwater, and public health risks due to excessive application of fertilizers and pesticides?			
▪ soil erosion (furrow, surface)?			
▪ scouring of canals?			
▪ clogging of canals by sediments?			
▪ clogging of canals by weeds?			
▪ seawater intrusion into downstream freshwater systems?			
▪ introduction of increase in incidence of waterborne or water related diseases?			
▪ dangers to a safe and healthy working environment due to physical, chemical and biological hazards during project construction and operation?			

Screening Questions	Yes	No	Remarks
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ 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., irrigation dams) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
• Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)			
▪ Could changes in temperature, precipitation, or extreme events patterns over the Project lifespan affect technical or financial sustainability (e.g., increased glacial melt affect delivery volumes of irrigated water; sea level rise increases salinity gradient such that source water cannot be used for some or all of the year).			
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by diverting water in rivers that further increases salinity upstream, or encouraging settlement in earthquake zones)?			

Note: Hazards are potentially damaging physical events.

Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change	Example Impact on Irrigation Systems
Arid/Semi-arid&desertenvironments	Low erratic rainfall of up to 500 mmrainfall 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.	In cases where water availability may decreases due to reduced precipitation, increased water use may be unsustainable
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.	In many cases, climate change is expected to result in more intense but less frequent rainfall events and longer dry seasons and water capture systems may not be designed to accommodate these changes.
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.	As temperature increases, the spread of vector and water borne diseases may spread, standing water created by irrigation systems may promote their spread by creating habitats for their transmission.
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.	Areas previously suitable for agriculture may become less so as sea-level rise causes salt water intrusion and soil salinity. Planned agricultural areas may no longer be viable and therefore irrigation systems that feed them.

Environment	Natural Hazards and Climate Change	Example Impact on Irrigation Systems
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.	Irrigation infrastructure may be damaged and blocked by glacial lake outbursts and mudflows. Water resources supplied by mountain systems may increase or diminish as rates of glacial melt change.
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.	Irrigation infrastructure may be lost during volcanic eruptions.

Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (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 by road embankments, cuts, fills, and quarries?			
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?			

Screening Questions	Yes	No	Remarks
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation?			
▪ noise and vibration due to blasting and other civil works?			
▪ dislocation or involuntary resettlement of people?			
▪ dislocation and compulsory resettlement of people living in right-of-way?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?			
▪ hazardous driving conditions where construction interferes with pre-existing roads?			
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?			
▪ increased noise and air pollution resulting from traffic volume?			
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			

Screening Questions	Yes	No	Remarks
▪ social conflicts if workers from other regions or countries are hired?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ 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 causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.			

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 temperature, precipitation, or extreme events patterns over the Project lifespan affect technical or financial sustainability (eg., increased erosion or landslides could increase maintenance costs, permafrost melting or increased soil moisture content could affect sub0-grade).			
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (eg., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?			
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by encouraging settlement in areas that will be more affected by floods in the future, or encouraging settlement in earthquake zones)?			

Note: Hazards are potentially damaging physical events.

Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change	Example Impact on Roads and Highways
Arid/Semi-arid and desertenvironment	Low erratic rainfall of up to 500 mmrainfall 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.	Reduced availability of water for compaction during construction, increased sand on carriageways reduce road safety, road alignment may need to be reviewed where, for example, agriculturally productive zones are shifting.
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.	Increased landslides and mudflows disrupt road networks, Increased moisture content in the subsurface can result in increased penetration of water into the fill, which may also collapse, Reduced effectiveness of drainage which results in a reduction in the bearing capacity of the soils which become saturated
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.	Same as above
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.	Increased salinity increases corrosion of materials which can break-down, Road is eroded by increased wave action, Increased flooding from overtopping of sea-water over road or salt-water intrusion in to groundwater,
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	Damage to infrastructure from landslides and mudflows, permafrost melting causes damage to roads, glacial lake outbursts wash out river-crossings.

Environment	Natural Hazards and Climate Change	Example Impact on Roads and Highways
	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.	Damage and loss of roads, insecuirity for roadworks crew and maintenance

Appendix 2

Outline of an Environmental Assessment Report

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

A. Executive Summary

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

B. Policy, Legal, and Administrative Framework

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

C. Description of the Project

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

D. Description of the Environment (Baseline Data)

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

E. Anticipated Environmental Impacts and Mitigation Measures

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media), 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.

Appendix 3

Major Elements of an Environmental Audit Report

i) Executive Summary;
ii) Facilities description, including both past and current activities;
iii) Summary of national, local, and any other applicable environmental laws, regulations, and standards;
iv) Audit and site investigation procedure;
v) Findings and areas of concern; and
vi) Corrective action plan that provides the appropriate corrective actions for each area of concern, including costs and schedule.