

# Environmental Assessment Report

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Environmental Assessment and Review Framework  
Project Number: 42417  
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## Armenia: Sustainable Urban Development Investment Program

The environmental impact assessment and review framework is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

## ABBREVIATIONS

ADB	Asian Development Bank
EARF	environmental assessment and review framework
EIA	environmental impact assessment
EMP	environmental management and monitoring plan
EA	executing agency
IA	implementing agency
IEE	initial environmental assessment
IUCN	International Union for Conservation of Nature
MNP	Ministry of Nature Protection
MOC	Ministry of Culture
MFF	multitranche financing facility
NPE	Nature Protection Expertise
NGO	nongovernment organization
PCR	physical cultural resource
PIU	project implementation unit
PMU	program management unit
RAMSAR	Ramsar Convention on Wetlands
REA	Rapid Environmental Assessment (checklist)
RA	Republic of Armenia
SEI	State Environmental Inspectorate
SNCO	State Non-commercial Organization
TA	technical assistance
TOR	terms of reference
YDPIU	Yerevan Development Project Implementation Unit
YM	Yerevan Municipality
UNESCO	United Nations Educational, Scientific, and Cultural Organization

### NOTE

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

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## I. INTRODUCTION

1. The mandatory requirements applicable to the multitranche financing facility (MFF) necessitate that the proposed projects of the first tranche and the projects of subsequent tranches follow adequate environmental assessment processes. To ensure that the projects comprising all tranches of the Program are evaluated in a manner consistent with the requirements of the Ministry of Nature Protection (MNP), which is the national environmental agency of the Republic of Armenia (RA), and the ADB, this Environmental Assessment and Review Framework (EARF) has been prepared. The EARF will guide Yerevan Municipality (YM), in carrying out the environmental assessment of the projects to be financed under the MFF: “Sustainable Urban Development Investment Program”. The EARF sets out:

- (i) the general principles; selection criteria; procedure of organization, and conducting environmental expert assessment, of the project documents under this MFF;
- (ii) the requirements on the type of project documents and the procedure of submitting thereof for environmental expert assessment; and
- (iii) a list of environmentally hazardous types of activities subject to mandatory environmental impact assessment (EIA) on the project approval stage.

2. The implementation arrangements are as follows:

- (i) The Executing Agency (EA) will be the Ministry of Economy (MOE). The EA will oversee the implementation of these contracts, and disburse the loan.
- (ii) The Implementing Agency (IA) will be Municipality of Yerevan (YM). YM will establish a Program Management Unit which will procure all contracts with the assistance of Yerevan Development Project Implementation Unit (YDPIU). YDPIU will manage day-to-day coordination, implementation, monitoring, and administration activities of individual projects through a Program Implementation Team comprising, *inter alia*, expertise in social and environmental safeguards and whose Environmental and Resettlement Specialists will provide immediate oversight for environmental and social safeguards.

## II. COUNTRY’S ENVIRONMENTAL ASSESSMENT AND REVIEW FOUNDATION

### A. National legislation and ADB policy

3. After Armenia gained its independence in 1991, the deteriorating environmental condition of the country became more apparent and environmental concerns became high priority political issues and the process of development of environmental legislation was initiated. The 10th Article of the Constitution of the Republic of Armenia (passed in 1995) states the State responsibility for environmental protection, reproduction, and wise use of natural resources. Some 25 laws have been promulgated to protect the environment. The relevant national laws on environmental protection and assessment are:

- (i) Law on the Principles of Environmental Protection of 1991
- (ii) Law on Environmental Impact Assessment (EIA) of 1995

4. These two laws are the main laws administered by the MNP. Other pieces of pertinent environmental legislation to be considered are:

- (i) Law on Specially Protected Natural Areas (1991, updated 2006)
- (ii) Law on Ensuring Sanitary-epidemiological Security of the RA Population (1992)
- (iii) Law on Atmosphere Air Protection (1994)
- (iv) Law on Automobile Roads (1996)
- (v) Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment (1998)
- (vi) Law on Environment and Nature Use Charges (1998)
- (vii) Law on Flora (1999)
- (viii) Law on Fauna (2000)
- (ix) Land Code (1991, updated 2001)
- (x) Law on Hydro-meteorological Activity (2001)
- (xi) Law on Environmental Education (2001)
- (xii) Code on Underground Resources (2002)
- (xiii) Water Code (1992, updated 2002)
- (xiv) Law on Seismic Defense (2002)
- (xv) Law on Water Users' Associations and Federations of the Water Users Associations (2002)
- (xvi) Law on Waste (2004);
- (xvii) Law on Environmental Oversight (2005)
- (xviii) Forest Code (2005)
- (xix) Law on Rates of Environmental Charges (2006)
- (xx) Law on National Water Program (2006)
- (xxi) Law on Oversight of Land Use and Protection (2008)

5. The key departments within the MNP that have administrative authority over EIA and the project approval process are two State Non-commercial Organizations (SNCOs):

- (i) The SNCO "Nature Protection Expertise" (NPE) is responsible for reviewing and approving EIA reports and projects for implementation and adding conditions when necessary to protect the environment.
- (ii) The SNCO "State Environmental Inspectorate" (SEI) is responsible for inspecting projects to ensure compliance with conditions imposed by the NPE and with the project Environmental Management and Monitoring Plan (EMP).

6. The EIA process and the SEI's power to inspect are the principal tools used by the MNP to achieve compliance with environmental protection principles.

7. The Armenian system of environmental assessment is different from ADB requirements (as set out in the Safeguard Policy Statement of 2009), as ADB classifies projects into three categories (A, B and C) depending on the nature and scale of the expected impacts, and requires a different level of environmental study for each category. This includes EIA and Initial Environmental Examination (IEE), which is a shorter form of Environmental Impact assessment that is not represented in the Armenian system. Furthermore, in determining environmental standards for projects it supports, ADB follows the approach set out in the World Bank group's Environment, Health and Safety Guidelines (2007), although alternative emission levels and approaches to pollution prevention/abatement can be adopted if necessary to better reflect national legislation and local conditions.

## B. Institutional capacity and development

8. Yerevan Municipality has a Department of Nature Protection with five staff members whose mandate is to control environmental degradation of the city. The YDPIU has been set up 8 years ago and has undertaken many construction projects but it did not structure its organization with an environment unit and does not have its own environment specialist. Approval of the loan for the Sustainable Urban Development Investment Program, and implementation of the projects within the tranches of funding, would require a real and specific organization and an increase of the environmental capacity, particularly as ADB procedures, despite their broad similarities with those of the Armenian Government, are new to Armenia and YM and YDPIU. Therefore an element of capacity building has been included in the loan provisions to create an environment unit in the YDPIU, recruit environmental specialists, and provide them with consulting support as needed, as it will be of long-term benefit to this program and subsequent investments.

### III. OVERVIEW OF THE PROGRAM AND THE PROJECTS TO BE ASSESSED

9. The Program will develop a Sustainable Urban Transport Sector Development Plan for a period of 9 years and an institutional development and capacity building plan for all the municipalities involved. This program will support the development of municipal sector policy and will address: (i) approaches to urban transport service coverage and delivery, including operation, maintenance, and asset creation; (ii) investment plans; (iii) institutional arrangements and coordination framework; and (iv) legal and regulatory framework. The Program will have the following components and expected outputs:

- **Component A:** Completion, extension, rehabilitation, and improvement of urban transport municipal infrastructure in urban areas in Armenia (physical investment);
- **Component B:** Institutional Capacity Development Plan, with Urban transport institutional and management capacity strengthened in relevant municipalities including concession (non-physical investment).
- **Component C:** Program Management Facility, with assistance and consulting services to implement and manage the program and all the specific projects comprising this MFF (non-physical investment).

10. In the first tranche of the MFF, two projects have been identified in conjunction with the Government and Yerevan Municipality comprising two missing links in the Yerevan by-pass road system. The two road sections that will be upgraded to 4-lane divided roads are (i) Project 2 - Argavand Highway - Shirak Street, and (ii) Project 2 - Shirak Street - Artashat highway.

11. Based on standard Rapid Environmental Assessment (REA) checklists, ADB has assessed these road sections and the Metro subway entrance as environmental category "B", requiring only initial environmental examinations (IEEs)<sup>1</sup>. The four IEE reports were prepared in accordance with ADB's Safeguard Policy Statement (2009). The sections of road proposed are mostly roads within a semi-arid zone devoid of any unique or sensitive areas (except for

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<sup>1</sup> Armenia does not distinguish between IEE and EIA as ADB does. All infrastructure projects that are considered to have potential environmental impact beyond a certain threshold are reviewed and approved by the MNP based on an EIA.

Projects 2 and 4, paragraphs 9 (ii) and (iv) refer), forests, and protected areas within one kilometer of the alignment for which environmental impacts can be expected to be minor, standard, and easily prevented or mitigated. One section in Project 2 will pass closely by a small cemetery and it is envisaged that a suitable barrier will be constructed between the road and the cemetery. Another section will add a short length of road through municipality-owned land, connecting parts of existing roadways. All sections are located within existing rights-of-way (“red lines”<sup>2</sup>):

- (i) The Argavand highway – Shirak Street section is about 1.5 km long, includes a new bridge over the Hrazdan River. It is located near the archaeological site of Karmir Blur (Red Hill). Ministry of Culture already approved the alignment of the project but mitigation measures are proposed to ensure proper protection of this cultural heritage. Chance finds procedures that are consistent with Ministry of Culture requirements will be put in place during construction phases.
- (ii) The second project actually consists of three sections (Shirak St. – Artashat Highway and St. Tamanciner - Shirak St. and Arshakunyac St., for a total of about 3.7 km, including a railway under-pass. The areas slated for road widening are slightly populated (mostly private houses, some of which have been identified as illegal; i.e., constructed on public land without municipal approval).

12. The checklists indicate that most of the environmental and social risks occur during the construction stage, which is as expected as these are major construction projects, conducted in populated urban areas, often in locations where there are already traffic and transportation problems. Most construction impacts are, however, temporary, related to the construction process itself, and can be mitigated by relatively straightforward measures that are common practice at sites of urban construction. These include:

- (i) reducing dust by using wheel washes, watering site roads, and covering loose material when carried on trucks (including removal of waste soil and delivery of sand);
- (ii) reducing noise, dust and visual intrusion by retention of existing mature trees and erecting barrier fences around sites;
- (iii) preparing and implementing pollution prevention and abatement plans to reduce risks of accidental spills of toxic materials and to contain and clean up any spills that do occur; and
- (iv) preparing and implementing traffic management plans to avoid exacerbating congestion problems and maintain vehicle and pedestrian safety in the vicinity of sites.

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<sup>2</sup> Armenian planning refers to rights-of-way as land between “red lines”.

#### IV. SPECIFIC PROCEDURES TO BE USED FOR PROJECTS UNDER MFF

##### A. Responsibilities and Authorities

13. **Implementing Agency (IA).** The Municipality of Yerevan will be the IA responsible for the overall technical supervision and execution of the Project. Within the IA, a Program Management Unit (PMU) will be set up to be headed by a full-time Program Director. The PMU may be comprised of the following units: (i) Financial Unit, (ii) Procurement Unit, and (iii), Administration Unit. Responsibilities of the PMU shall include (i) preparing and updating procurement plan; (ii) tendering, evaluating bids, and awarding works; contract administration; supervision; and quality control; and (iii) preparing contract awards schedule and disbursing the loan according to ADB guidelines. The PMU is responsible for fulfilling project-related Armenian environmental requirements and conducting the required level of environmental assessment consistent with the ADB guidelines.

14. **Project Implementation Unit (PIU).** The PIU will be responsible for day-to-day implementation of the projects. It may be comprised of at least four units: (i) Technical Unit, (ii) Safeguard Unit, (iii) Management, Evaluation and Monitoring unit, and (iv) Planning and Administration Unit. The Safeguard Unit will be staffed, *inter alia*, with at least one Environment Specialist. The PIU will conduct project screening, classification, information disclosure, and consultation with project-affected people. It will also incorporate all consulting services under the project and will oversee the conduct of feasibility studies (including IEEs and EIAs) by project consultants. For environment category “B” projects, the IEE reports prepared by the PIU will be reviewed by the EA based on ADB’s Safeguard Policy Statement (2009). The PMU will seek approval of the IEE/EIA from the concerned government authority. ADB will review and approve IEE/EIA reports for the Program for tranche 1 and for subsequent MFF tranches.

15. The responsibilities of the PIU shall include (i) carrying out detailed surveys, investigations, and engineering designs of urban transport infrastructure components; (ii) measuring works carried out by the contractors and certifying payments; (iii) conducting public awareness campaigns and participation programs, (iv) updating EMPs prepared during the IEE/EIA at the feasibility stage; and (v) preparing monthly reports. The project consultants will assist the PIU in all these activities.

16. Mitigation measures that are incorporated into the design will be reviewed by the PMU before providing technical approvals. The mitigation measures identified in the IEE and/or EIA will be implemented during design, construction, and operation. Environmental controls pertaining to design and location will be incorporated into the detailed design by the project consultants. Mitigation measures that are listed in the EMP to be implemented during the construction stage shall form part of the bidding and contract documents.

17. During project implementation, monitoring of the implementation of mitigation measures set out in the EMP is the main responsibility of the PIU, with assistance from the project consultants. The monthly progress reports prepared by PIU, which will be sent to the PMU for review, will include a section on implementation of mitigation measures. Annual reports on implementation of the EMPs and compliance with loan covenants for each of the projects will be submitted to the ADB. Environment Specialists from the State Environmental Inspectorate will conduct periodic monitoring to assess if conditions imposed by the NPE have been implemented.



18. During the operation stage of the project, the MNP (through its Department of Nature Protection) will conduct periodic monitoring of the project activities and in particular, monitoring environmental performance of project components as set out in the EMP and in relevant MNP regulations.

19. Table 1 summarizes the roles and responsibilities of the institutions in conducting environmental assessments and implementing the EMPs of the Sustainable Urban Development Investment Program.

**Table 1: Institutional Roles and Responsibilities**

PIU	PMU	ADB
<b>A. Pre-Construction Phase</b>		
1. Conducts project screening using the project selection criteria and ADB's project classification system; 2. conducts IEEs (for environment category "B" projects), with findings, as well as an EMP, included in each IEE report; 3. discloses environment-related information to, and consults, people likely to be affected by, the project at the early stage of IEE report preparation in accordance with ADB's Public Communications Policy (2005); and 4. fulfills the government's requirements as follows: <ul style="list-style-type: none"> <li>- prepares EIA reports for clearance from the relevant government authority, and secures the government permits and approvals;</li> <li>- submits IEE (or EIA) reports to ADB for review and approval, makes the reports available to the public and on request, makes the IEE (or EIA) available to interested parties;</li> <li>- ensures that mitigation measures specified in the EMP, as well as national standards, whichever are the more stringent, are incorporated in the project design;</li> </ul>	<ul style="list-style-type: none"> <li>- With the assistance of project consultants, identifies and incorporates environmental mitigation and monitoring measures into bidding and contract documents;</li> <li>- ensures that bidders and contractors have access to the EIA or IEE and EMP reports of the projects and ensures that the successful bid includes provisions to implement those relevant mitigation measures; and</li> <li>- makes the successful bidder aware of its responsibilities to mitigate environmental problems associated with its construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>- Reviews project screening results and ratifies inclusion as environment category "B" projects.</li> <li>- Reviews and approves IEEs on no-objection basis.</li> <li>- Discloses IEEs (for environment category "B" projects) and EIAs to the public through the ADB website.</li> </ul>
<b>B. Construction Phase</b>		
Undertakes the following tasks with the assistance from project consultants: <ul style="list-style-type: none"> <li>- monitors and ensures that EMPs are updated by the contractor within 30 days of contract effectiveness based on the actual contract, reviewed by ADB, and properly implemented;</li> <li>- monitors the implementation of mitigation measures by contractor;</li> <li>- prepares monthly progress reports including a</li> </ul>	<ul style="list-style-type: none"> <li>- Reviews progress reports to ensure that all mitigation measures are properly implemented.</li> <li>- Consolidates monthly reports and submits quarterly reports to ADB for review and every 6 months, prepares progress reports</li> </ul>	Reviews semi-annual reports and provides necessary advice to the PIU through PMU.

PIU	PMU	ADB
<p>section on implementation of the mitigation measures and submits to PMU for review;</p> <ul style="list-style-type: none"> <li>- in case a project needs to be realigned during implementation, reviews the environmental classification, revises it if necessary, identifies whether a supplementary IEE or EIA study is required, prepares the terms of reference for undertaking a supplementary IEE or EIA, and hires an environmental consultant to carry out the study.</li> <li>- in case unpredicted environmental impacts occur during the project implementation stage, ensures that the contractor prepares and implements as necessary an environmental emergency program in consultation with MNP, other relevant government agencies, and ADB.</li> </ul>	<p>on the implementation of the project EMPs and in compliance with government and ADB environmental requirements and submits them to ADB for review.</p> <ul style="list-style-type: none"> <li>- Ensures that the EMPs include provisions for Physical Cultural Resources (PCRs<sup>3</sup>) chance-finds and that the contractor is acquainted with the relevant procedures by the Ministry of Culture.</li> <li>- Submits semi-annual reports on implementing EMPs, including implementation of an environmental emergency program, if any, to MNP and ADB</li> </ul>	

### C. Operation Phase

<p>Conducts monitoring, as specified in the EMP, consistent with generic mitigation measures formulated for urban transportation facilities.</p>	<ul style="list-style-type: none"> <li>- Every 6 months, prepares progress reports on project and environmental performance and submits them to ADB for review.</li> <li>- Submits project completion environmental monitoring report to ADB after three years of completion of construction summarizing the overall environmental impacts from the projects.</li> </ul>	<p>Undertakes annual environmental review missions for environment category "A" and "B" projects.</p>
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Environmental specialists from relevant government agencies (e.g., MNP) conduct periodic monitoring consistent with their mandate.

## B. Environmental Criteria for Project Selection

20. Considering the potential environmental impacts of future projects and the relevant environmental requirements of ADB and the Government of Armenia, the Government and ADB agreed on the following criteria for selection of future projects to be included in the Sustainable Urban Development Investment Program:

- (i) Projects shall only involve activities that follow all the applicable Government regulations.

<sup>3</sup> PCRs are movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. PCR may be located in urban or rural settings and may be above or below ground or under water. Their cultural interest may be at the local, provincial, national, or international level.

- (ii) Projects should be located wherever possible on Government-owned land, to avoid impacts related to involuntary resettlement.
- (iii) If it is not possible to locate all project components or construction activities on Government land, designs should minimize the acquisition of privately-owned land, buildings, and businesses.
- (iv) Projects should not pass through any wildlife sanctuaries, national parks, nature reserves, and protected areas designated by national and international regulations.
- (v) Projects should not pass through any ecologically sensitive and significant areas as recognized by the Government of Armenia or any area that is internationally significant (such as protected wetlands and mangroves).
- (vi) If a project passes through any cultural heritage or archaeological sites designated by the Ministry of Culture, it must be approved by the Ministry of Culture and must address all provisions required by the Ministry of Culture to safeguard the physical and cultural resources (PCR).
- (vii) Projects should not pass through any cultural heritage or archaeological sites designated by UNESCO.
- (viii) If, during the implementation of a project, the contractor encounters chance-finds, such chance-finds shall be dealt with according to Ministry of Culture regulations, as stipulated in the EMP.

### **C. Procedures for Environmental Assessment of Projects**

21. ADB categorizes road projects into two environmental categories, “A” and “B”. Projects with potential for significant adverse environmental impacts, and as listed in para.22 below, are environment category “A”, for which an EIA is required to address significant impacts. Projects judged to have some adverse impacts, but of lesser degree and/or significance than environment category “A” are environment category “B”, for which an IEE is required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report. The guidelines to prepare environmental assessment reports for an environment category “A” project (EIA) and for an environment category “B” project (IEE) in compliance with ADB’s Safeguard Policy Statement (2009) are given in the following sections.

#### **1. Screening**

22. Every project to be included in this MFF Program will be screened to determine its environment category based on appropriate ADB Rapid Environmental Assessment (REA) checklist, examples of which are in Appendix 1. Classification is to be based on the most environmentally sensitive component, which means that if one part of a project has the potential for significant adverse environmental impacts, then the project is to be classified as environment category “A” regardless of the potential environmental impacts of other aspects of the project. In general, a project will be classified as environment category “A” if :

- (i) it is a new road alignment;
- (ii) complex mitigation measures need to be prepared through an in-depth assessment of the impacts;
- (iii) it will adversely impact an ecologically sensitive area, particularly if the project is located less than 500 meters from a designated wildlife or other sanctuary; a national park; a botanical garden; an area of international significance (e.g., an

- IUCN or RAMSAR site); or cultural heritage and archaeological sites designated by UNESCO and the Ministry of Culture; or
- (iv) passes through any ecologically sensitive areas (hilly or mountainous, forested, nearby estuarine, or other area with important ecological function).

Road upgrading and rehabilitation and other construction-related urban transport projects that do not fall into the above category are classified as environment category “B”.

## **2. Scoping**

23. Before conducting any environmental study, a scoping document consisting of the scope of the environmental surveys, methods of data collection and outputs anticipated from the study is to be prepared. In case of environment category “A” projects, the scoping document is to be approved by the EA before detailed environmental studies are undertaken. Scoping should focus on identifying those components of the environment that are likely to be significantly affected by the project based on project location, past documented experience, the likely geographic and time-related extent of the effects, and the measurements or thresholds to be used to assess significance. A topographic map of the study area showing the project road(s), water courses, settlement areas, and preferably land use should be part of the scoping document. A sample scoping document is in Appendix 2.

## **3. Identifying Baseline Conditions and Impacts**

24. With the screening and scoping results in hand, planning of the field program is simplified; however, it does require the involvement of an experienced environmental assessment practitioner.

25. The first step is to establish the baseline conditions against which any change is measured for the components of the environment likely affected by the project. This will usually be carried out through site visits and review of databases for all available environmental parameters such as terrain, soils, rivers, forest, protected areas, and land use. This will also include collection and analysis of background noise, and air and water quality. These data must be collected in such a manner that their source can be traced by anyone who reads the document.

26. The second step is to predict likely changes as a result of construction activities and operation of the project, by relating cause and effect such as changes in traffic volume, fleet make-up, and traffic patterns to air quality and noise levels. The locations where base data were collected and where ongoing monitoring takes place should be well documented to facilitate analysis and provide credibility. While following strict scientific methods in EIA preparation is far too costly and time consuming, every effort should be made to make the entire study transparent and traceable.

## **4. Public Consultations/Hearing**

27. The third step is to present the findings on impacts and benefits during a consultation and information session to inform key stakeholders and affected communities of the issues identified and to invite comments. For a category “A” project, consultation is required at least twice during the EIA:

- (i) first as part of the scoping stage to define the project and to get feedback in options, and
- (ii) secondly after the draft EMP has been prepared and prior to loan appraisal by ADB.

28. Public consultations should be advertised in regional and national newspapers before the intended consultations giving brief project description, location, and specific contact data (including telephone numbers). Often a project website is created and link information is provided. Further, the IA, working with the consultant, should prepare a list of important stakeholders and send emails or letters of invitation providing details including dates for both consultations.

29. Consultations must have attendance sheets and meeting notes prepared, both of which are included in the EIA documentation.

30. For environment category “B” projects, nearly all conditions as defined above are the same except there is only one public consultation session required, which generally takes place as the EMP is being prepared.

## **5. Preparation of the Environmental Management and Monitoring Plan**

31. The Fourth Step is the preparation of the EMP, the most important output of an environmental assessment. The EMP must be practical, specific, and systematic such that it can form the basis of environmental clauses in bidding and contract documents and facilitate mitigating and monitoring actions by contractors and proponents. Each mitigation measure should be matched with a monitoring activity.

32. Good EMPs not only identify the source of the impact, the effect in the biophysical environment, and the monitoring action to be taken, but also where, when, how often, and by whom each mitigation and monitoring action should be performed.

33. The PMU is required to review and update the EMP as soon as the contractor has been appointed and the mobilization date is established and periodically thereafter as appropriate. The contractor is required to update the EMP to reflect the contract within 30 days of the mobilization date and to submit the updated EMP to the government and ADB for approval through the IA and EA.

## **6. Assessing Institutional Capacity for EMP Implementation**

34. The Fifth Step involves the identification of the agencies and units at the national and sub-national level that will likely be involved in the implementation and supervision of the mitigation and monitoring actions as well as the general management of the EMP from preconstruction through the operating period. The EMP is also useful in that it identifies the lead implementing and supervising agencies (YM, MOEC, and MNP and their pertinent departments) involved in all mitigation and monitoring actions. The assessment, using mostly the interview approach, should be short and focused, identifying needs based on obvious gaps, such as lack of experience in international-level assessments or lack of experience with preparation and implementation of EMPs. Careful interviews will almost always result in those needing assistance identifying what they need. Finally, the needs are assessed in terms of longer-term capacity building and short-term training and workshops in relation to realistic budgetary limits and a capacity building and training program is proposed. Since the contractors play such an

important role in EMP implementation, their safeguards skills must also be assessed with a view to strengthening them.

## **7. Estimating Mitigation, Monitoring, and Training Costs**

35. The Sixth Step involves costing of each of the mitigation and monitoring actions as well as the institutional capacity building. Costing details must be systematic and include rates and unit costs and an indication of actions that, while referred to as environmental, are normally found in other budget items, for example slope stabilization, revegetation, fuel handling and storage protocols, and work camp waste management.

## **8. Reporting**

36. The Seventh Step is preparation of the assessment document according to a prescribed format and level of details. An outline of an EIA report, which also generally applies to IEE reports, is in Appendix 3 and can also be found in ADB's website at [www.adb.org/documents/guidelines/environmental\\_assessment/default.asp](http://www.adb.org/documents/guidelines/environmental_assessment/default.asp).

# **V. COMPLIANCE WITH ADB'S ENVIRONMENTAL POLICY - DUE DILIGENCE**

37. The EA and IA have the responsibility to undertake environmental due diligence and monitor implementation of environmental mitigation measures for all projects under each respective mandate. The due diligence report as well as monitoring of EMP implementation (in the annual report) need to be documented systematically. ADB must be given access as needed to undertake environmental due diligence for all projects.

38. An EMP will be part of the overall project monitoring and supervision, and will be implemented by the contractor with oversight from specialists within the IA. Progress on the preparation and implementation of an EMP will be included in the periodic project progress reports. Specific monitoring activities defined in the IEEs or EIAs and EMPs will be carried out by the contractors and monitored by specialists within the IA. The EA/IA will submit reports on EMP implementation to ADB every six months for environment category "A" and annually for other environment category "B" projects.

39. The EA/IA, with assistance from environmental consultants, will prepare the IEE or EIA and corresponding EMP for each project to ensure that mitigation measures and monitoring plans proposed in those documents are in compliance with ADB's and government's requirements. According to the reports and reviews during its missions, ADB, in consultation with the government, will confirm compliance. For this purpose, the EA/IA will provide ADB with access to information on any project. The information on implementation of an EMP, as well as that on environmental and social safeguard compliance, will be systematically documented and reported to ADB as part of the regular progress reports.

## **A. Public Disclosure**

40. The IA is responsible for ensuring that all environmental assessment documents, including the environmental due diligence and monitoring reports, are properly and systematically kept as part of the project record of each project under its responsibility. All environmental documents are subject to public disclosure. These documents should be made available to the public, if requested. In case there is environment category "A", the EIA will be

reviewed by ADB and after finalization, disclosed to the public through ADB's website at least 120 days before the project is approved by ADB's Board of Directors. The IA will also ensure that public consultations, particularly with persons that are affected by a project, are undertaken during the IEE or EIA preparation consistent with ADB and relevant Government requirements.

## **B. Staffing Requirements and Budget**

41. The EA and/or IA will recruit environmental consultants as a part of the engineering design consultant to prepare environmental assessment reports for each project consistent with this EARF. Terms of reference for environmental consultants along with the budget are given in Annex 7. The estimated costs for preparation of each IEE and EIA are about \$60,000 and US\$90,000 respectively. In addition, adequate funding resources must be provided under each project for environmental monitoring and mitigation measures for each project.

42. Indicative costs for preparation of each IEE and EIA are provided in Tables 2 and 3 respectively.<sup>4</sup> A team of international and national specialists are recommended for these studies. Generally for Government-funded projects, the environmental assessment team would include an environmental specialist, a hydrologist, a geologist, and a biologist. Since Armenia is rich in archaeological remains, the services of a recognized archaeologist should also be included to assist with the liaison with the Ministry of Culture and the Board of Conservation and Preservation of Historical and Architectural Monuments. Actual team compositions and costs will depend on the size and complexity of each project and may be more or less than those indicated.

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<sup>4</sup> If the conclusion of an IEE is that an EIA is necessary, the cost for such subsequent EIA will be significantly less than an EIA that was determined necessary as a result of environment category "A" screening (para. 22 refers) or the result of the REA.

**Table 2: Estimated Cost of IEE Preparation for each Project**

<b>Item</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Cost (\$)</b>	<b>Total</b>
International Environmental Specialist	Person-month	1.5	22,500	33,750
National Environmental Specialist	Person-month	2	3,500	7,000
National Hydrologist	Person-month	0.5	3,500	1,750
National Geologist	Person-month	0.5	3,500	1,750
National Biologist	Person-month	0.5	3,500	1,750
National Archaeologist	Person-month	0.5	4,000	2,000
International airfare	Unit	1	1,500	1,500
Land Transportation	Months	2	1,500	3,000
Communication	Months	2	500	1,000
Data collection and sample analysis	Lump sum	1	3,000	3,000
Report production and distribution	Lump sum	1	1,500	1,500
Public Consultation	Lump sum	1	2,000	2,000
<b>Total</b>				<b>60,000</b>

**Table 3: Estimated Cost of EIA Preparation for each Project**

<b>Item</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Cost (\$)</b>	<b>Total</b>
International Environmental Specialist	Person-month	2	22,500	45,000
National Environmental Specialist	Person-month	3	3,500	10,500
National Hydrologist	Person-month	1	3,500	3,500
National Geologist	Person-month	1	3,500	3,500
National Biologist	Person-month	1	3,500	3,500
National Archaeologist	Person-month	1	4,000	4,000
International airfare	Unit	2	1,500	3,000
Land Transportation	Months	3	1,500	4,500
Communication	Months	3	500	1,500
Data collection and sample analysis	Lump sum	1	5,000	5,000
Report production and distribution	Lump sum	1	2,000	2,000
Public Consultation	Lump sum	2	2,000	4,000
<b>Total</b>				<b>90,000</b>



**APPENDIX 1:  
RAPID EXAMINATION ASSESSMENT (REA) CHECKLIST  
FOR POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS**

Country/Project Title: Armenia / Sustainable Urban Development Investment Program

Project Name:

Sector Division: Urban services

Conducted by

Date:

**Instructions:**

- This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on; (i) involuntary resettlement; (ii) indigenous peoples planning; (iii) poverty reduction; (iv) participation; and (v) gender and development.
- 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.

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			
Estuary			
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)?			
Alteration of surface water hydrology of waterways, resulting in			

increased sediment in streams affected by increased soil erosion at construction site?			
Deterioration of surface water quality due to silt runoff, 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?			
Noise and vibration due to blasting and other civil works?			
Dislocation or involuntary resettlement of people?			
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 from workers to local populations?			
Creation of temporary breeding habitats for mosquito vectors of disease?			
Dislocation and compulsory resettlement of people living in right-of-way?			
Accident risks associated with increased vehicular traffic leading to accidental spills of toxic materials and loss of life?			
Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			

## APPENDIX 2: SAMPLE SCOPING DOCUMENT

### A. Introduction

1. This scoping framework has been prepared to carry out detailed environmental impact assessment (EIA) for the 'XXXX Project in accordance with ADB's *Safeguard Policy Statement* (2009) and relevant laws and regulations in Armenia. The project involves XXXXX. The study will identify potential environmental impacts on physical, ecological, social, cultural, and economic resources of project areas during design (for different alignments), construction and operation. An Initial Environmental Examination (IEE)<sup>5</sup> report will be prepared along with environmental management and monitoring plan to address all identified environmental impacts as per the work plan provided. The study will be carried out by Consultant and the draft IEE report will be submitted for review to the ADB and, in suitable local EIA format, to the MNP.

### B. Scope of Work

#### 1. Baseline Studies

##### a. Output 1: Memorandum on Armenian Legal and Administrative Procedures

1. **Activity 1.1:** Collection and review of relevant information regarding environmental legislation, statutory orders, by-laws, etc. connected to preparation and approval of the EIA report by Armenian Authority, and draft the memo. The memorandum will also consider the requirements of ADB policy and guidelines for category "B" projects.

2. **Activity 1.2:** Conducting a series of meetings with the senior staff of ministries responsible for environment protection, natural resources, culture, and archaeology to discuss appropriate legal and administrative procedures. Discussions also include issues such as basis for further approval / disapproval of EIAs by Armenian authorities and on the issuance. Review of other relevant environmental laws, regulations, norms, and standards on air, noise, water, waste, flora, and fauna.

3. **Activity 1.3:** Discussions with the Implementing Agency (IA) on the issuance of construction permits and environmental clearance certificates in accordance with the Government's relevant laws and regulations.

##### b. Output 2: Preparation of Baseline Assessment

5. **Activity 2.1:** Review of reports and field data collected from the project's pre-feasibility study; and other road projects carried out under the World Bank, JBIC, EBRD, and MCC's funding.

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<sup>5</sup> Preliminary assessments of the tranche 1 projects indicate environment category "B", for which ADB policy requires Initial Environmental Examinations. For project approval from the Ministry of Nature Protection (MNP), an EIA will be prepared to satisfy relevant regulations of the MNP. The MNP EIA will have similar, if not identical, requirements as the ADB IEE.

6. **Activity 2.2:** Collection of baseline information on existing environmental condition along the project road alignments and identification of the environmental components that need detailed further study. Baseline assessment will be done based on the available secondary information, field visits, sampling and environmental monitoring including, but not limited to, the following:

- (i) Physical resources: topography, climate, soils, geology, landuse, coastal resources, and surface and groundwater resources.
- (ii) Natural hazards: seismicity, floods, landslides, and volcanic activity.
- (iii) Ecological Resources: landscape and natural ecosystem, flora and fauna, wildlife and wetland habitats, nature reserve and protected areas.
- (iv) Environmental quality: Air quality (PM, CO, NO<sub>x</sub>, SO<sub>x</sub>, etc.), noise levels, and water quality (DO, BOD<sub>5</sub>, COD, TOC, pH, total nitrogen, total phosphorus, suspended solids, etc.).
- (v) Physical and Cultural Resources (PCRs): structures or sites that are of historical, archaeological, paleontological, or architectural significance.

## 2. Detailed Field Investigation to Screen Environmental Impacts

### c. Output 3: Field Investigation and Analysis of Results

7. **Activity 3.1:** Preparation of layout plan of the project road including, but not limited to, the following information:

- (i) Road alignments
- (ii) Sampling location for environmental parameters (air, noise, water)
- (iii) Construction camp including storage of petroleum products and explosives
- (iv) Asphalt and batch mixing plants, construction sites and camps, quarry sites, borrow pits, soil disposal areas
- (v) Water sources, waste disposal sites, environmentally sensitive areas
- (vi) Existing dwellings and commercial buildings within 100 m of the ROW
- (vii) Locations of trees >150 mm diameter and orchards within 100 m of the ROW
- (viii) Locations of cemeteries within 100 m of the ROW

8. **Activity 3.2:** Preparation of a cadastral land use map showing the project locations and descriptions of the surrounding activities. This is to ensure that the project road is compatible with the national regulation specified for construction sites.

9. **Activity 3.3:** Initiation of necessary investigations and fieldwork for gathering of the following additional information about ecological and environmental parameters in the project area.

- (i) **Landscape, Geohazards and Slope Stability.** Identification of natural landscape along the project road. Assessment of geological and geomorphologic features of the project area, as well as any violent interference in the natural processes. Investigation and evaluation of results to predict rock falls, landslide, mudflow, and debris flow, erosion, ground subsidence, floods, lateral erosion of river banks (washing-off), and seashore erosion.
- (ii) **Soil Erosion and Slope Stability.** Analysis of soil characteristics, moisture contents, vegetation cover, etc., in conjunction with the above activity, to predict possible soil erosion and landslides due to project activities.

- (iii) **Terrestrial Flora and Fauna.** Investigation of the composition of plant species and migratory birds in the project area. Attention should be paid to the distribution of protected plant and animal/birds species in order to ensure favorable conservation status for these species.
- (iv) **Wetland habitats and Aquatic Flora and Fauna.** Investigations of occurrence of species (flora and fauna) in the identified wetlands along the project area and assess the potential influence of the proposed road alignment. Attention should be paid to the distribution of protected species in order to ensure favorable conservation status for these species.
- (v) **Protected Areas and Sensitive Environmental Receptors.** Collection of protected and sensitive area maps and exact coordinates showing the boundaries and buffer zones of protected areas and project alignments and descriptions of the habitats. This is to ensure that the locations of sensitive areas and project alignment are sufficiently distant enough to maintain harmonization and avoid any potential disturbances on the habitats. Investigation will also be done along the project alignment for other sensitive situations such as wetlands, seashore, tourism, etc.
- (vi) **Traffic Flow.** Traffic counts and historical traffic flow to predict the future traffic growth and the load on the project road and surrounds.
- (vii) **Air Quality and Noise Level.** Collection and analysis of air (PM, CO, NO<sub>x</sub>, SO<sub>2</sub>) and noise levels along the project road and at representative receptors.
- (viii) **Water Quality.** Collection and analysis of water quality (DO, BOD<sub>5</sub>, COD, TOC, turbidity, suspended solids, pH, and total dissolved solids) of the major rivers along the project road. Investigation of water quality impacts during construction and operations stages in selected river sites.
- (ix) **PCRs.** Investigation of the impact of the project on structures or sites that are of historical, archaeological, paleontological, or architectural significance along the project corridor.
- (x) **Quarry and Borrow Sites and Spoil Disposal.** Estimation of effects on the ecological resources in the area connected to quarry and barrow pit operations and spoil disposal sites needed for construction.

### 3. Analysis of Alternatives and Economic Assessment

#### d. Output 4: Analysis of Alternative Options

10. **Activity 4.1:** Comparative environmental analysis of all available project alignments, including “No Project” scenario.

#### e. Output 5: Economic Assessment

11. **Activity 5.1:** Economic analysis of all alternatives in accordance with ADB’s Handbook on Economic Evaluation of Environmental Impacts for: (i) costs and benefits of environmental impacts; (ii) costs, benefits, and cost-effectiveness of mitigation measures; and (iii) discussion of impacts that have not been expressed in monetary values, in quantitative terms where possible.

### 4. Forecast Future Impacts and Mitigation Measures

#### f. Output 6: Forecast of Impacts

12. **Activity 6.1:** Forecast air quality and noise levels based on meteorological data and traffic estimates using computer modeling software and recommended mitigation measures.
13. **Activity 6.2:** Evaluate the project impact on all physical and ecological resources described in Activity 3.3 and recommendation of mitigation measures.
14. **Activity 6.3:** Evaluate socio-economical and cultural impacts, such as:
- (i) Assessment of the status of livelihoods (agriculture, business, etc.) in the context of socio-economical impact.
  - (ii) Assessment of the impact on objects or areas with known archaeological values in the project area.
  - (iii) Assessment of impacts on culturally and religiously sensitive locations (church, cemetery, etc.)
  - (iv) Assessment of impacts in tourism sector
  - (v) Assessment of traffic safety.
15. **Activity 6.4:** Assess impact on human health and estimation of possible health impacts on construction workers and roadside residents (such as safety, HIV/AIDS, STDs, human trafficking) due to construction camps and other project activities.

#### **g. Output 7: Environmental Management and Monitoring Plan**

16. **Activity 7.1:** Prepare an Environmental Management and Monitoring Plan (EMP) for all phases of the project for effective implementation of environmental protection and mitigation measures and monitoring of significant environmental impacts. Detail environmental protection measures to (i) mitigate potential environmental impacts, (ii) provide in-kind compensation for lost environmental resources, or (iii) enhance environmental resources. Prepare cost estimates for each mitigation measure proposed in the EMP and include all the mitigation measures in the engineering design of the Project.
17. **Activity 7.2:** Define environmental criteria for several variables including air quality, noise levels, water quality, accidental spills of hazardous substances, and naturally protected areas.

### **5. Institutional Assessment and Monitoring Mechanism**

#### **h. Output 8: Institutional Assessment**

18. **Activity 8.1:** Identify responsible institutes for implementation and supervision of the EMP. Assess institutional capacity of the executing and implementing agencies for effective implementation of EMPs. Assess training needs for these agencies and propose capacity building measures and institutional arrangements to strengthen these agencies. Provide cost estimates.

#### **i. Output 9: Monitoring Mechanism**

19. **Activity 9.1:** Specify “feed back monitoring” program, a tool to be used by implementing entities enable them to respond quickly to activities, which during the construction and operation turn out to have a negative effect to the environment. The tool will specify the parameters, location, frequency and means of monitoring.

## 6. Public Consultations and Disclosure Plan

### j. Output 10: Conduct Public Consultations and Document Them

20. **Activity 10.1:** Assist the IA to conduct two public consultations (one during the inception stage and the second one after finalization of EIA report) according to ADB's Public Communications Policy (2005) for Category "A" projects and the pertinent clause in RA's Law on Environmental Impact Assessment (1995). This will ensure that the consultation process will involve affected people, key agencies, NGOs, and other stakeholders and they are provided with opportunities to participate in the decision-making process and to influence decisions that will affect them. Address all the comments in the engineering designs.

21. **Activity 10.2:** Agreement by the relevant authorities of specific zones where minor temporary and/or permanent impacts to the environment can be accepted during the construction and operation phase of any bypass road required to construct SP1.

### k. Output 11: Disclosure Plan

22. **Activity 11.1:** In consultation with the stakeholders, prepare an information disclosure plan for dissemination of safeguard documents to the affected community and general public.

## **APPENDIX 3: OUTLINE OF AN ENVIRONMENTAL IMPACT 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 [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 and Monitoring Plan (EMP)**

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 4:  
OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES  
FOR ENVIRONMENTAL ASSESSMENT**

**A. Objectives**

1. The objectives of the services are (i) to conduct an initial environmental examination (IEE) and/or environmental impact assessment (EIA) of the proposed project to identify potential environmental impacts on physical, environmental, ecological, social, cultural, and economic resources, and (ii) to prepare IEE/EIA report(s) along with environmental management and monitoring plans (EMPs). The duration of an IEE study is about three months and an EIA study about five months.

**B. Scope of Work**

2. The consultant's scope of work will include the following tasks:

- (i) review prevailing government regulations and donor guidelines governing the assessment and management of environmental impacts of road projects;
- (ii) prepare a scoping document for the environmental studies to be carried out under the project;
- (iii) undertake the IEE/EIA6 study to assess the direct and indirect environmental impacts of the project including, as necessary (a) ecological impacts (plants and wildlife); (b) soil erosion and desertification; (c) protection of wetland habitat; (d) impact of quarry sites; (e) impact of construction camps on local environment (natural and social); (f) operational traffic safety measures; (g) areas with known archaeological value; and (h) potential spills of hazardous or toxic chemicals and an appropriate response plan for the project;
- (iv) prepare the IEE/EIA report in accordance with ADB's Safeguard Policy Statement (2009), and Public Communications Policy (2005);
- (v) assess all potential direct and indirect environmental impacts of the project in the IEE/EIA study and present the assessment and appropriate mitigation and monitoring measures together with their costs in the order of project cycle: pre-construction, construction, and operation;
- (vi) conduct formal public consultations with affected people (at least two consultations for EIA and at least one consultation for IEE). The first consultation aims to gather environmental concerns from affected people and the final consultation aims to share the result of the assessment and the proposed mitigation measures;
- (vii) record in systematic manner the list of people who attended the consultation, the time and locations, and the subjects discussed during consultation and attach the record in the IEE/EIA report as an appendix;
- (viii) solicit and incorporate comments on the draft IEE/EIA reports from ADB, MNP, NGOs, civil society, and other stakeholders and finalize the reports to accommodate inputs from all the stakeholders; and
- (ix) submit the reports to MNP and make presentations as required by MNP to obtain environmental impact clearance certificates or equivalent.

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<sup>6</sup> ADB requires the preparation of and EIA for environment category "A" projects. Environment category "B" projects require an IEE followed by an EIA only if the IEE concludes that an EIA is necessary.

### C. Organization and Staffing

3. The services are expected to be provided by a team comprising one international environmental specialist and national specialists in appropriate disciplines to suit each project and corresponding IEE/EIA.

4. **The International Environmental Specialist** shall at least be graduate of a recognized university in environmental science, environmental engineering, geological science, engineering hydrology, biology, or related discipline and have at least 15 years experience and familiarity with all aspects of environmental management and with significant experience in environmental management and monitoring of projects, environmental assessment and / or implementation of environmental mitigation measures on construction projects. The specialist shall also have experience working in teams of multi-discipline experts and leading a national team of consultants. Candidates with higher degrees in environmental engineering or environmental science or environment management are preferred.

5. Each **National Specialist** shall at least be a graduate of a recognized university in environmental science, environmental engineering, geological science, engineering hydrology, biology, or related discipline with significant experience in environmental management and monitoring of projects, environmental assessment, and/or design and implementation of environmental mitigation measures. A reasonable command of the English language, both spoken and written, is required.