

# Environmental Assessment and Review Framework

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## UZB: CAREC Corridor 2 Road Investment Program II

Prepared by the Road Fund under the Ministry of Finance of the Republic of Uzbekistan for the Asian Development Bank.

The environmental 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

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### Abbreviations, Acronyms and Special Terms

Item	Units	Definition
CAREC	na	Central Asia Regional Economic Cooperation
CO <sub>2</sub>	mg/cm <sup>3</sup>	Carbon dioxide
CSC		Construction Supervision Consultant
CSE	na	Construction Supervision Engineer or Chief Engineer, usually heading the PMU
Cyanobacteria	na	RoU
dBA	dBA unit	A measure of audible (the ear) noise
EA	na	Environmental Assessment
EARF	na	Environmental Assessment and Review Framework
EIA	na	Environmental Impact Assessment
EMiP	na	EMP: Mitigation Measures
EMoP	na	EMP: Monitoring Measures
EMP	na	Environmental Management Plan
Goskompriroda (GOZ)	na	Uzbek National Environmental Management Agency
Glavgosekoexpertiza	na	The Environmental Assessment Department within Goskompriroda, operating at both the central and oblast levels.
GRC	na	Grievance Redress Committee
IEE	na	Initial Environmental Examination
MFF	na	Multi-tranche Financing Facility-a type of loan offered by the ADB
NO <sub>2</sub>	mg/cm <sup>3</sup>	Nitrate or Nitrogen Dioxide
PEIA	na	Preliminary Environmental Assessment, Screening or Terms of Reference Document prepared as a 1 <sup>st</sup> step of the Uzbek environmental assessment process
PMU	na	Program Management Unit, established to manage a single large project, such as this MFF
RAMSAR	na	A special international convention protecting important wetlands, to which Uzbekistan is a signatory
RoU	na	Republic of Uzbekistan
RoW	na	Right of Way
RF	na	Road Fund
SNIP	na	Uzbekistan's Construction Norms and Rules
SP <sub>10</sub>	micrograms/m <sup>3</sup>	Suspended particulate matter , with particles ≥ 10 microns in size, and a danger to lungs
SPS	na	ADB's 2009 Safeguard Policy Statement;
ST		Safeguards Team formed within the PMU
Uzavtoyul	na	Uzbekistan's Agency for Road Planning, Construction and Operation

## I. INTRODUCTION

1. The CAREC 2 Road Investment Program II is the second investment program to fully upgrade the country's main N-S and E-W highways A380 and A373. This upgrading includes not only roadwork, but also improvement to the management and institutional capacity of the national and oblast-level road agencies. The investment under the investment program II will be split into three separate projects under three tranches (Table 1).

2. The executing agency (EA) for the Project is the Road Fund (RFRF) under the Ministry of Finance.

**Table 1: Description of Works under Investment Program II**

Tranche 1 Project Road Section: km 116–190	A373 highway	74 km
Tranche 2 Project Road Section : km 228–315	A380 highway	87 km
Tranche 3 Project Road Section: km 0–75	A373/4R112 highway	75 km

See Map 1 for details on location.

3. **Project 1** under the first tranche will commence in 2011, with subsequent tranches to follow as they are prepared. Pkg. 1 will have two major components: (i) road development, targeting reconstruction of about 74 km of A373 highway between km 116 and km 190 and (ii) road sector sustainability which will improve road safety management. Civil works under Pkg. 1 will not include land acquisition and involuntary resettlement.

4. **Project 2.** The outputs will be about 87 km of the reconstructed section of A380 highway (between Km 228 and 315), strengthening capacity of the Road Fund for road asset management, piloting the introduction of road user charges on reconstructed road section of Project 1, and implementation of road safety action plan for projects 1 and 2 of the investment program II.

5. **Project 3.** The outputs will be about 75 km of the reconstructed section of A373/4R112 highway (between Km 0 and 75), updated road asset management plans, and implemented road safety action plan.

## II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

### A. Legal Framework

6. The RoU has adopted many laws and regulations on environmental management. The Law on Environmental Protection (1992) established a legal, economic and organizational framework for environment protection, ensuring sustainable development and defining principles, including the conduct of environmental studies.<sup>1</sup> The State Committee for Nature Protection (Goskompriroda) is a primary environmental regulatory agency, and reports directly to the Parliament. Goskompriroda is responsible for supervising, coordinating and implementing

<sup>1</sup> At present Uzbekistan uses a more reactive, as opposed to preventative, approach to management of environmental impacts of development projects.

environmental protection and controlling the usage and renewal of natural resources at the central, oblast and rayon (district) levels. The mandate of Goskompriroda is based on the Regulation on the State Environmental Committee of the RoU (1996).

7. The organizational structure of Goskompriroda consists of a central body in Tashkent, and provincial and district branches and agencies for scientific and technical support. In Tashkent, Goskompriroda consists of various authorities and departments. The authorities have responsibilities in the fields of protection of air, water and land resources. The departments have technical responsibilities related to environmental standards, environmental law, international relations, use of environmental funds, and other technical and administrative matters related with environmental management. Three remaining units deal with economics, publicity, environmental impact assessment (EIA) and ecological (environmental) review (State Ecological Expertise).

8. Goskompriroda, through its State Ecological Expertise/SEE Department (Glavgoosekoexpertiza), reviews, inter alia, environmental impact reports, promotes the use of low waste technologies, prepares and implements ecological regulations and standards, coordinates environmental programs and elaborates the structure for environmental monitoring and governance of nature reserves. It approves regulations proposed by the environmental committees at various levels and issues permits for pollutant emissions and may prohibit projects and construction works that do not comply with environmental legislation. Any EIAs or initial environmental examinations (IEEs) prepared as part of this project would be reviewed and cleared by the SEE at the national level as well as Oblast-level officials.

9. In addition to the 1992 Law in Environmental Protection, Goskompriroda uses the following additional legal instruments to manage environmental issue related to road development:

- Law №543-1on Protection and Management of Flora Approved on 26 December 2007,
- Law on Wildlife Protection and Management. Approved on 26 December 1997; Law on Protection and Management of Flora approved on 26 December 1997 (New Laws of the RoU, 18th Edition, p. 207).
- Law №770-1on Forest, approved on 15 April 1999
- Law on Introduction of Amendments into the Law on Nature Protection and On Specially Protected Environmental Areas, approved on 5-6 May 1994; (New Laws of the RoU. 10th Edition, p.242. [*Biodiversity*])
- Law (#469 on Atmospheric Air Pollution, 1999, including ambient air quality standards, emission standards and Guidelines for Application.
- Law on Water Pollution, 1999
- Law on Mineral Resources, approved on 23 October 1994 (borrow areas and quarries)
- Law on Ecology Security (Safety), 2005
- Law on Health Safety and Environment, approved on 6 May 1993 (Occupational Health and Safety).
- SNIP (KMK) 301012-2000, "Health Safety in construction "
- Rules and Norms developed by Road Research Institute approved in December 2008 on health protection while working in asphalt making plant and other quarries used in road construction.
- Law on protection archeological monuments, 13 October 2009

10. Uzbekistan has a set of specific norm and rule for construction works or known as "SNIPs" that refer to the handling and disposal of specific wastes ranging from sewage to hazardous wastes from construction activities. Therefore, all activities under the RF need to comply with the environmental quality standards.

11. Uzbekistan legal framework for protection of biodiversity is reflected in Law on "*Flora Protection*" and "*Fauna Protection*" (1997), Law on "*Forest*" (1999), Law on "*Introduction of Amendments into the Law on Nature Protection and On Specially Protected Environmental Areas*" (Approved on May 5-6 1994 [New Laws of the RoU. 10th Edition, p.242]), and also on Cabinet Ministries Decree #139 "*National Strategy and Action Plan on Saving Biodiversity*"

**Map 1: Location of Tranche 1–3 Sections of Highways A380 and A373**

**Typical Cross Section of Road Bed with Devising Strip**

Concrete Pavment h=25cm
Crushed stone and sand mix hardened with cement of 6% h=16cm
Gravel sand mix h=20cm
Gravel sand mix h=20cm (Binder Course)
Sand (Road Bed )

**Typical Cross Section with Seperate road Bed**

Concrete Pavment h=25cm
Crushed stone and sand mix hardened with cement of 6% h=16cm
Gravel sand mix h=20cm
Gravel sand mix h=20cm (Binder Course)
Sand (Road Bed )

5



12. Uzbekistan's Law №73-11 on Ecological Expertise (Assessment) dated 25 May 2002, addresses Environmental Assessment and defines for which types of projects an EIA must be undertaken. Preparation of the review reports and approval of projects on environmental grounds is regulated by the Resolution of the Cabinet of Ministers No 491 of 31 December 2001. Annex 1 of Resolution 491 defines four categories of projects and the associated environmental assessment requirements. Category I Projects require a preliminary EIA (PEIA) defining how and to what extent the required EIA will be conducted, followed by a complete EIA. Category I and II are undertaken and evaluated at the central level only.

13. Category II projects are completed in three stages by the state level agency, with the oblast level agency actively involved. As with Category I projects, these environmental assessments involve three stages:

- (i) Stage 1. Draft Environmental Impact Statement (PEIS);
- (ii) Stage 2. Environmental Impact Statement Preparation ; and
- (iii) Stage 3. Statement on Environmental Consequences.

14. At Stage 3, Goskompriroda, working at both the state and oblast levels, defines the pollution limits the project is permitted to reach.

15. The assessment of Category III PEIAs is under provincial jurisdiction with no central Glavgoosekoexpertiza involvement. These are also based on three stages but may end with a PEIA, depending on the evaluation and decision by the expert committee. The Category III process is most similar to the ADB's IEE.

16. Category IV project are exempted from any EIA requirements. Only submission of a project description and proof of Category IV status is required.

17. Uzbekistan prescribes 30 days as the maximum review period for Goskompriroda for Category I and II projects, 20 days for category III, and 10 days for Category IV projects.

18. RFR Under the Uzbekistan's Law №73-11 on Ecological Expertise (Assessment) of 25 May 2002, and Annex 1 of Resolution 491, this MFF, Tranche 1 (SP1 and 2 (SP2) and Tranche 3(SP3), are classified as Category III and will only require PEIA or IEEs, while Tranche 3 (SP4) is a Category II project and will require the three stage process.

## **B. Institutional Capacity**

19. Like many other ADB's developing member countries, the institutional capacity to implement environmental law, and its EIA regulation in 2002 has not been strong as it was expected. There have been several routine training programs on environmental management including environmental impact assessment, and environmental monitoring conducted by the Nature Protection Committee. However, the benefits of this work were not clearly felt by the road transport sector, as such training programs focused on the environmental agency only.

20. The RF's function is to implement transport sector projects, and carry out financial disbursement and due diligence oversight. While RF have no environmental staff, it relies on Gozkompriroda's (GOZ) environmental unit responsible for road development. This unit has either internally or on-call experts in the biophysical sciences, such a hydrology, soils

engineering, meteorology, and ecology who could team up in addressing environmental management. Therefore, the IEEs or EIAs for projects need to be submitted to the Goskompiroda for reviewed. For this loan, the Program Management Unit (PMU) established by RF will oversee all the work. The PMU acting on behalf of RF will hire a construction supervision consultant to oversee the day-to-day progress of the work and undertake monitoring as required. The PMU needs to monitor the program defined in an Environmental Management Plan (EMP). Therefore, RF is establishing a Safeguards Team (ST) within the PMU. The ST will assist in the implementation of all safeguard measures and will be staffed by one national environment safeguard specialist and other specialist(s) as required.

21. The 2000 legislation states that all new projects require an environmental study, beginning with a screening, its details depending on which of four categories a project was classified based on this legislation. Therefore, the RF and its PMU must be able to review, understand and deliver:

- Environmental Screening Activities to classified the proposed project based on the RoU legislation and ADB's SPS, 2009
- Initial Environmental Examinations (IEEs); and,
- Environmental Impact Assessments (EIAs) including Environmental Mitigation (EMiP) and Monitoring Plans (EMoPs).

22. The ST will also task to assist with the organization and delivering workshops to familiar the consultants, contractors, RF staff responsible for this Facilities, and Glavgosekoexpertiza at the Oblast level, with all environmental management required by the project under each tranche. The workshops will focus on environmental management and assessment as it is applied by ADB and in Uzbekistan.

### **III. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATIVE MEASURES**

23. Construction of the project road will involve new construction and rehabilitation of bridges, culverts, and other associated drainage structures; site preparation; land clearing; disposal of gravel, soil, vegetation, and unstable material; setting up of temporary construction camps to house workers; excavation and operation of borrow pits; operation of a boulder quarry; extraction of material for embankments using cut and fill procedures; protection of landslide, rockfall, and snowfall areas; measures to protect critical side-slopes; and extraction and cartage of sand for aggregate mixtures, cement works, and asphalt plants.

24. Application of mitigative and monitoring actions should be applied as indentified in the specific environmental assessments to be completed, and as suggested in the model environmental mitigation and monitoring plan (Annex 2).

### **IV. ENVIRONMENTAL ASSESSMENT FOR THE FOLLOW UP TRANCHE UNDER THE MFF**

#### **A. The Authorities Involved and Responsibilities**

##### **1. Executing Agency**

25. The RF under the Ministry of Finance will act as the overall technical and administrative authority for this MFF. The PMU will lead the day-to-day implementation of the

project. The PMU assisted by ST will conduct package screening for classification of subsequent tranches, prepare TOR for IEE/EIA, information disclosure and consultation with project-affected people, and will oversee the conduct of feasibility studies (including IEEs/environmental assessments) by project consultants.

26. Responsibilities of the PMU on behalf of the EA include:

- a. preparing any environmental screening checklists and classifying projects in consultation with Goskompriroda and other departments;
- b. preparing terms of reference for Environmental Assessment, based on the environmental classification of projects;
- c. conducting IEE or EIA studies, including hiring an environmental consultant to prepare IEE or EIA reports including EMP for public disclosure;
- d. ensuring that the EA documentation is prepared in compliance with the requirements of the Government and ADB, and that adequate consultation with affected people is undertaken in accordance with ADB requirements;
- e. overseeing the review of the IEE or EIA, including submission to Glavgoosekoexpertiza for government review, ensuring that all documentation is compliant with RoU and ADB requirements;
- f. obtaining necessary permits and/or clearance, as required, from Goskompriroda and other relevant government agencies, ensuring that all necessary regulatory clearances are obtained before commencing any civil work; and
- g. submitting to ADB the final IEE or EIA, and its EMP and other documents, as necessary
- h. ensuring that EMP tasks including relevant mitigation and monitoring measures needing to be incorporated during the pre-construction stage are implemented
- i. ensuring that any EMP tasks including relevant mitigation and monitoring measures needing to be incorporated during the construction stage by the contractor are included in the bidding documents and are implemented
- j. ensuring that contractors have access to the EIA or IEE and EMP reports of the projects, and confirming that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities
- k. investigating and reporting on environmental effects stemming from any design and construction changes added after the detailed design is completed, leading to unpredicted environmental impacts;
- l. ensuring that EMP tasks including relevant mitigation and monitoring measures needing to be incorporated during the operating period are implemented
- m. monitoring the implementation of EMP and submit the report in its quarterly report to ADB. The PMU responsible also to submit to the ADB of semi-annual reports on implementing EMPs, including any emergency program;
- n. submitting project environmental mitigation and monitoring completion report to ADB, three years after the start of the operating period of the project; and,

**2. The Contractor**

27. The contractor responsible to implement mitigation measures to address environmental impacts related with construction works. The contractor will responsible to monitor its implementation of mitigation measures during the construction phase, and report

to the supervision consultants/engineer as part of the PMU. If the contractors have no such expertise, the contractor should engage a consultant to provide the expertise to help them implement all mitigation and monitoring tasks defined in the EMP. In addition, the contractor responsible for:

- a. confirming the provision of environmental safeguard expertise;
- b. completing the mitigation and monitoring actions related with construction works as defined in the EMP, by preparing a construction period monitoring plan and reporting on actions taken on a monthly basis;
- c. completing mitigation and monitoring report for every construction inspection cycle and for inclusion in the bi-annual submission to ADB;
- d. preparing mitigation and monitoring completion reports for submission to the road operator or the project EA.

### **3. ADB**

28. The ADB will be responsible to:

- a. Review and provide a clearance on EIA or IEE reports prepared by the RF, or the consultant on their behalf
- b. undertake annual environmental review missions, and
- c. disclose to the public on the ADB website, the EIA and IEE
- d. Review all proposed change alignment and design changes planned for each tranche, if any, and guide the RF to comply with ADB's requirement for changing alignment or design change

## **B. Procedures for Environmental Assessment of the future Tranches**

29. ADB classifies all its projects into one of three environmental assessment categories, namely "A" through "C". Projects with potential for significant adverse environmental impacts are classified into Category A, requiring a complete EIA. Project judged to have some adverse impacts, but less severe, mostly reversible effects, and where impacts and mitigative measures are well understood (based on past experience), are classified as Category B projects. These require an Initial Environmental Examination (IEE). The IEE can also act as an EIA screening document and indicate when a full EIA is needed to fully address environmental matters. Under ADB guidelines, if an EIA is not needed, the IEE is regarded as the final environmental assessment report.

30. The guidelines to prepare an environmental impact assessment as required by the ADB's 2009 Safeguard Policy Statement (SPS) are described in detail in [www.adb.org/Safeguards](http://www.adb.org/Safeguards) (in both English and Russian).

31. The ADB's environmental assessment process is the preferred procedure, however, the process to comply with RoU is required. The following procedure will be applied to comply with ADB and the Government Uzbekistan requirement:

## 1. Screening

32. **STEP 1:** All future tranche under this MFF will be screened to determine their environmental category based on the ADB's Rapid Environmental Assessment Checklist. A suggested template of the Environmental Assessment, based on the ADB's format, is provided in Annex 1. Categorization is established by defining the most environmental sensitive component and the extent and duration of the impact on that component. If this analysis identifies a significant impact, the project is classified according to the most sensitive component.

33. In general, a project will be classified as 'Category A' if it:

- a. is a new road alignment;
- b. will generate impact affecting an ecologically sensitive area, particularly if the project is located less than 1,000 meters from any designated wildlife sanctuary, national park, other sanctuary, or area of international significance (e.g., a RAMSAR site) or cultural heritage and archaeological sites designated by UNESCO and/or the RoU; and,
- c. exists<sup>2</sup> and already passes through any ecologically, culturally or archaeologically sensitive areas.

34. Road upgrading and rehabilitation that do not involve any of the three conditions defined above and which do not trigger any of ADB's 10 no-funding conditions (Annex 5, ADB SPS, 2009) are classified as B.

35. RoU screening is completed via a project classification list provided in the legislation. If a project is not found on the list, a screening or Preliminary Environmental Assessment is completed.

36. Projects involving training and purchase of equipment usually do not involve any impacts and are classified as Category C. These still require a short report justifying their classification and why no impacts are predicted.<sup>3</sup> The RoU process requires screening as part of its Preliminary EIA or ToR report preparation, for Category I-III projects.

## 2. Scoping

37. **STEP 2:** Before conducting any environmental assessment involving category A or B projects, a scoping exercise is recommended. This helps to bound the assessment by defining the geographic boundary and time scale to be used to define impacts, mitigation measures, monitoring tasks, and the overall duration of an assessment. A very important scoping task is to define the projects 'corridor of impact', usually the legal RoW plus additional land in either side of the carriageway/alignment. A recent topographic map of the project area showing the project road(s) in relation to topography, water courses, settlement areas and preferably land use should be developed and used in the scoping exercise. RoU scoping is usually undertaken as part of the Stage 1 environmental assessment for Category I-III projects.

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<sup>2</sup> Based on Annex 5 of ADB's 2009 SPS, ADB will not fund any new projects affecting ecologically sensitive areas.

<sup>3</sup> This becomes important when, e.g., highly polluting equipment is purchased over less polluting brands. In such cases an IEE may be required.

38. With the screening and scoping completed, yielding a project classification and boundary, the planning and execution of the field program is the next important task. This work should involve an experienced environmental assessment practitioner, and is summarized on the following eight subsections.

39. The RoU process does not have a scoping step.

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

40. **STEP 3:** Establishing the baseline conditions for the components of the environment likely affected by the project is completed with a thorough review of existing information, a site visits and the collection of any available and relevant databases, such as for terrain/topography, soils, geology, forest cover, protected areas, land use, and all ambient air, noise and water quality conditions in the project corridor. This baseline will become the conditions against which any changes due to project effects will be measured. All data must be collected so that their source can be traced by anyone who picks up the document. If the project will pass through any protected ecological area or located less than 1000 m from the boundary of the protected ecological area, the rapid assessment on the wild life/protected ecology needs to be carried out.

41. **STEP 4:** This step involves predicting likely change as a result of major construction activities and operation of the road, by relating cause with effect such as changes in traffic volume, fleet makeup and traffic patterns degrading air quality and noise. The locations where base data are collected, or where monitoring takes place and the timing of these activities should remain uniform or at least easily traceable, permitting future comparative analysis or audits of the technical credibility of the assessment. While following strict scientific method in EIA is far too costly and time consuming, every effort should be made that the assessment works 'transparent' and traceable. RoU's process has identical steps.

### **4. Public Consultations and Information Distribution**

42. **STEP 5:** The objective of public consultation is to engage the general affected public as well as government officials a several levels in a dialogue leading to better mitigative measures, helping to identify oversights regarding impacts, etc. The consultation must be preceded by the provision of information on the project to the affected communities; often via a written short booklet accompanied by an invitation<sup>4</sup> to attend a workshop/information session. It is important to provide enough lead time (at least 3 weeks) for communities to attend such sessions.<sup>5</sup> Details are provided in Section. V of this Environmental Assessment and Review Framework (EARF). The RoU process has no provision for consultation and information disclosure.

### **5. Preparation of the Environmental Management Plan (EMP)**

43. **STEP 6:** The preparation of the EMP is one of the two most important output of an environmental assessment. The EMP must be practical, specific and systematic, such that it can easily be converted to mitigative and monitoring actions which:

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<sup>4</sup> For complete EIAs, the proponent should prepare a list of important participants and send emails or letters of invitation providing details including consultation date(s).

<sup>5</sup> It is standard procedure to provide any citizen attending with a small stipend to cover expenses to get to the session as well as at least 2 meals.

- proponents and contractors can undertake;
- people assigned monitoring tasks can easily complete; and,
- can be translated or simply referenced as environmental clauses in contract specification.

44. Therefore, each mitigative measure needs to be matched with a monitoring activity. Good EMPs not only identify the source of the impact, the effect on the biophysical environment and the monitoring action to be taken, but also where, how often, when and who should implement each mitigative and monitoring action and who is responsible. This is the same for both EIAs and IEEs.

45. With a record of impact source, impacts and location, the EIA/IEE team should at this point systematically record each predicted impact occurrence (see Annex 2), define an appropriate mitigative action that either prevents the impact or reduces it a level acceptable under RoU standards or international best practice, and then specifies when, where, and who should implement and supervise each action.

46. The PMU is required to review and update the EMP as soon as the contractor has been appointed and the mobilization date is established.

47. The RoU process does not have an explicit requirement for EMP, rather mitigation and monitoring is discussed at various points in the assessment report. This approach is not compliant with ADB standards.

## 6. Assessing Institutional Capacity for EMP Implementation

48. **STEP 7** involves the identification of the agencies and units at the national and oblast level that will likely be involved in the management, implementation, and supervision of the mitigation and monitoring actions from preconstruction through the operating period. The EMP should identify the lead implementing and supervising agencies and their oblast-level counterparts 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 any 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 most. Finally appropriate capacity building actions addressing both longer term and short term requirements, in relation to realistic budgetary limits need to be specified and costed.

49. Since the contractors play such an important role in EMP implementation, they must not be left out of the analysis and a general approach to strengthening their safeguards skills must be included in the analysis, and recommended actions.

50. RoU environmental assessments have no such analysis.

## 7. Estimating Mitigation, Monitoring and Training Costs

51. **STEP 8** involves costing of each of the mitigative 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; therefore reducing the risk of double

counting. This estimation is done by using the EMP columns that identify the mitigative action and associated monitoring task, then estimating the cost to undertake each. It is important to separate capital or one time expenses to reoccurring costs, such as compliance monitoring during the construction period. An EXCEL template for these calculations is provided as Annex 4.

52. No costing is undertaken under the RoU's environmental assessment process.

## **8. Reporting**

53. **STEP 9.** While listed as the last environmental assessment step, the preparation of the environmental assessment document should begin at the very start of the work, with the completion of a detailed Table of Contents (based on the mandatory content defined in the ADB's SPS [2009] Annex 1 & 2)<sup>6</sup> or as specified in the relevant RoU SNIP. Having a clear vision of what must go into the environmental assessment document, helps with the collection and analysis of the appropriate information. The template ToC for the EIA/IEE reports is given in Annexes 2 of ADB's, 2009 SPS ([www.adb.org/safeguards](http://www.adb.org/safeguards)).<sup>8</sup>

54. RoU's environmental assessment SNIPs specify the table of contents of its environmental assessments.

## **V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM**

### **A. Consultation and Information Disclosure**

55. The environmental assessment team, in collaboration with the project EA, needs to present the project, its location and timetable for implementation, an overview of the environmental assessment process, and any findings on impacts and benefits. These findings must be defined as tentative or interim, indicating that participants' input can still be applied to project planning and design. The participants should be explicitly invited (not instructed) to provide comments and corrections to what is presented. Adequate and convenient contact information for use by participants should be provided.

56. For a Category A project consultation is required at least twice during the EIA:

- a. first as part of the scoping stage to define the project and to get feedback in options, and,
- b. after the draft EMP has been prepared.

57. Public consultations for full EIAs include newspaper advertisement(s) in the regional and national news papers at least one month before the session(s) is to take place. The announcement should provide a brief project description, location and specific contact data (including telephone numbers). Sometimes, a project website is created containing more details on the project and a link provided in the announcement.

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<sup>6</sup> The SPS document is also available in Russian.

<sup>7</sup> As of this SPS, the ToCs of an IEE and EIA are basically the same, and the authors need to establish the level of detail. Further SIEEs and SEIAs are no longer prepared; rather an Executive Summary is added to the report.

<sup>8</sup> As of this SPS, the ToCs of an IEE and EIA are basically the same, and the authors need to establish the level of detail. Further SIEEs and SEIAs are no longer prepared; rather an Executive Summary is added to the report.



58. For Category B projects, nearly all conditions as defined above are the same except only 1 consultation session is needed, there is no newspaper advertisement, and no written invitations (a list of potential attendees and contact should be made). Often, the consultation session takes place at the time when the EMP is being prepared.

59. Consultation sessions must have minutes and attendance sheets prepared and included as part of the environmental assessment documentation (a template of the Consultation Record is included as Annex 3 of this EARF).

## **B. Grievance Redress Mechanism**

60. ADB requires that the EA (Road Fund) establish and maintain a grievance redress mechanism to receive and facilitate resolution of affected peoples' concerns and grievances about its deliver of environmental safeguards at the project level, as defined in the assessment documents (primarily the EMPs). The grievance redress mechanism should be scaled to the risks and impacts of the project. It should address affected people's concerns and complaints using an understandable and transparent process that is gender responsive, culturally appropriate, and easy to access.

61. To that end, the EA, in cooperation with the Oblasts and impacted rayons, will establish Grievance Redress Committees (GRCs) at both levels. At the oblast level these will be comprised of the head of the environmental planning department and two members, one being a woman and one being identified as the point of contact for any grievance claim. At the rayon level it will consist of a government official and two no-government members, one being a woman. GRCs established in each rayon affected by the road will be the most important.

62. At the first consultation session the committee structure, members function and method of filing a grievance will be defined. Grievances can be filed in writing or verbally with the GRC's contact person. The committee will have 15 days to respond with a resolution. If unsatisfied with the decision the complainant can resubmit the grievance with the oblast GRC for final resolution, and at the same time submit a copy of the letter to the ADB project officer in charge. The oblast GRC will have a further 15 days to provide a decision, and if no ruling is forthcoming the grievance will be automatically decided in favor of the complainant and all compensation will be provided.

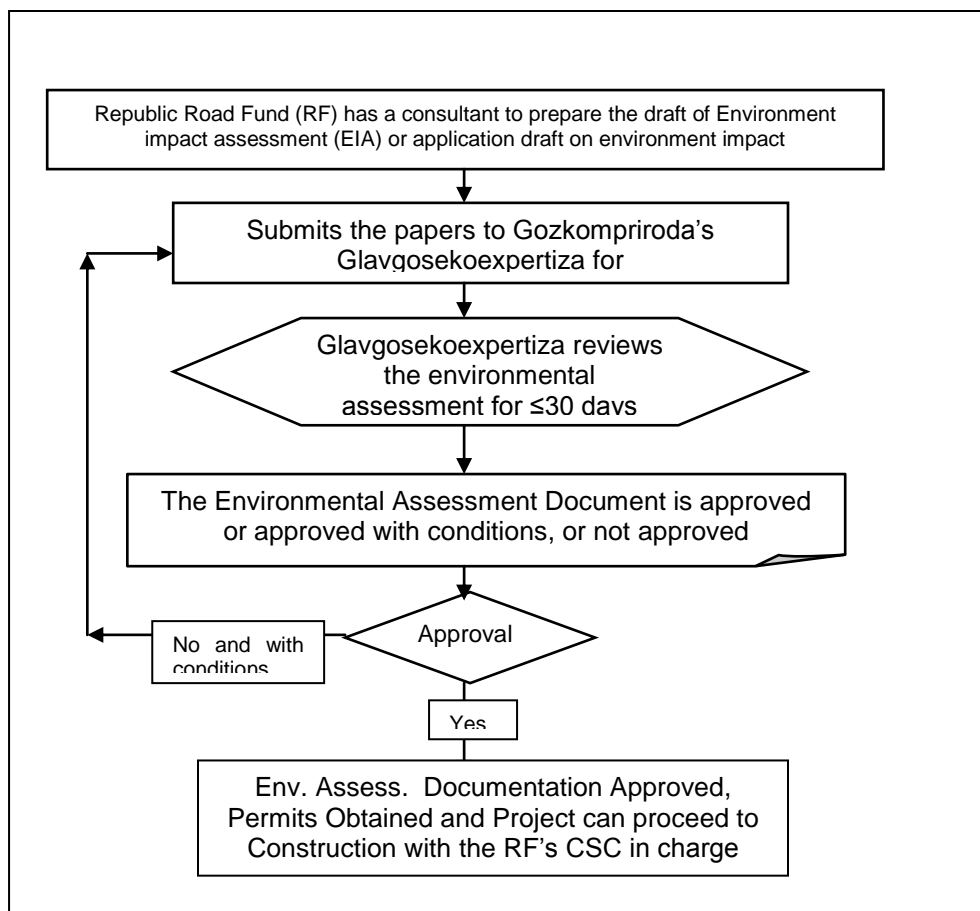
63. To be effective the composition and operation of the GRC needs to be included in the consultation material distributed during the consultation and information distribution sessions.

## **VI. INSTITUTIONAL ARRANGEMENT**

64. The transport sector is governed by the Cabinet of Ministers. Uzoavtoyul provides all planning, operating and maintenance functions, while RF provides construction oversight functions. Within the RF there is an appraisal division where feasibility studies are reviewed and assessed. The environmental expertise, as with many other agencies in Uzbekistan has great strength in the hard sciences such as geology, hydrology, and meteorology; but not in environmental management or the implementation of environmental mitigation and monitoring measures, such as defined in this IEE. For this reason RF is establishing the ST within the PMU and requiring that the CSC/Engineer to have an environmental expert.

65. The Goskompriroda units who are mandated to undertake the day-to day compliance inspection compliance monitoring of the roadways, their technical capacity is in the chemical and physical sciences, with less knowledge of ecosystems-based environmental management or impact mitigation. Therefore, monitoring of the impact mitigation has never been systematically done. Therefore, the ST will work closely with Goskompriroda units at oblast level for environmental monitoring works

66. For the approval of environmental assessment document, If the oblast Goskompriroda is not exist for particular region, the draft EIA/IEE documents will be submitted to the environmental expertise department of Goskompriroda, known as Glavgosekoexpertiza for review and approval, and at the same to time to the ADB for comment. Based in the relevant regulation, the RoU review period is not more than 30 days (**Figure 1**).



**Figure 2: Steps of Environmental Assessment and Review in the Republic of Uzbekistan.**

## **VII. MONITORING AND REPORTING**

### **A. Monitoring**

67. Monitoring is required during all three stages of a project, i.e. planning, construction and operation to record the mitigative actions taken and the resulting effects designed to either avoid or reduce predicted impacts. The preparation and oversight of any monitoring work is the responsibility of the EA and its consultant.

68. Monitoring during the planning stage usually takes place twice; once to incorporate mitigative measures in the planning process and then at the end of that stage to monitor compliance. Construction monitoring takes place at regular intervals throughout the construction period, usually quarterly, with bi-annual monitoring reports.

69. Operating period monitoring is dependent on the types and duration of impacts identified during the environmental assessment, but usually are completed annually for three years, for a variable time period.

70. Some of the monitoring during both the construction and operating periods will require sample collection as well as field measurements.

## **B. Reporting**

71. The best approach to reporting is to use the EMPs mitigation and monitoring tables (See Annex 2), collapse these into one table showing the mitigative measures and monitoring requirements; then add columns to record actions taken, dates and results observed.

72. Well prepared EMPs present the impacts mitigative actions and monitoring requirements throughout the project, including not only what needs to be monitored by where and for what duration.

73. During the planning stage the EA will be required to prepare a planning stage monitoring checklist confirming that all items listed in the EMP.

74. Prior to the mobilization of the contractor(s) the EMP's construction period mitigation and monitoring tasks need to be converted into a construction period action plan by the contractor, working in cooperation with the PMU. This plan then forms the basis of the construction period mitigation and monitoring task list and can be used as a monitoring checklist. Major responsibility for implementation of these actions will rest with the contractor(s), supervised by the Executing and Implementing Agencies or the PMU. Interim monitoring reports are to be complete every 6 months, but monitoring checklists every 3 months.

75. Within 4 months of the end of the construction period the EA or its PMU should instruct the contractor(s) to prepare the construction period environmental mitigation and monitoring summary. This report needs to be submitted to PMU, and the PMU will share the report with the operating Unit of the road.

76. The road operator, likely Uzavtoyul, will use this report and the items defined under Operating Period in the EMP, to develop its monitoring activities,

77. The ADB requires that monitoring reports should be submitted by PMU in its quarterly report and a separate annual environmental monitoring report need to be prepared annually. During the operating phase, once a year environmental monitoring is also required for three road operating years (during the periode of the MFF).

## **VIII. COST ESTIMATE FOR CONDUCTING ENVIRONMENTAL ASSESSMENT STUDY**

78. This MFF loan will include Category A through C environmental assessments. Category C does not need any elaborate assessment process, other than a due diligence statement indicating how the decision for C was reached and what impacts are likely and what the mitigative and monitoring actions should be. This can be complete with a 3–5 page report plus a simple form of the mitigation and monitoring management plan matrix table, as shown in Annex 2. The cost for such an assessment would range between USD4,000–9,000, assuming that it was being completed by a competent and knowledgeable safeguards specialist and that information on the site/area was readily available.

79. For Category B projects the IEE report with EMP need to be prepared. The cost estimates for IEE could range between US\$30,000 and US\$70,000.

80. The environmental assessment for Category A projects, or those needing full EIA. The costs to conduct full EIA to collect require a primary data and two comprehensive

consultation and information sessions (generally only one required for IEE), as well as an environmental benefit cost analysis, will be around 20–30% higher than IEEs.

81. IEEs and EIAs conducted without the use of international consultants would reduce to cost considerably. Since fees would be lower, international airfares, per diems and translation would not be needed, costs would decrease by 50%.

82. Finally, it is suggested to include contingency when undertaking IEEs and EIAs since the unexpected can happen and costs can increase. For example a simple IEE might discover a previously unknown hazardous waste disposal site within the proposed construction corridor, well after the IEE has been initiated. Such a find would require a survey and special analysis and reporting on impacts and mitigative measures. Another example might be the discovery of a possible archeologically significant area within the vicinity if the construction zone, requiring a specialized survey and protocol.

## **ANNEXES**

Annex 1: Template of Rapid Environmental Assessment Checklist (based on ADB)

Annex 2: Sample of an Environmental Management Plan (mitigation and monitoring tables)

Annex 3: Template of consultation meeting record table of contents

Annex 4: Sample Mitigation and monitoring costing table (based on an EXCEL spreadsheet)

### Project Screening and Categorization Form

**Instructions:** 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.

**Suggested Category Divisions:** “YES” answers for all A questions, the project may lead to Category “A”. “YES” answers for questions B, and if no mitigation measures will be able to manage the impacts, the project will need to be categorized as an “A”. However, if mitigation measures could be identified, the project could be categorized as a “B”. The specialists completing the screening are encouraged to provide comments in the Remarks that would help explain the reason for the category.

**Project Name:**

Screening Questions	Yes	No	Remarks
<b>A. PROJECT SITING</b>			
IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
▪ CULTURAL HERITAGE SITE			
▪ PROTECTED AREA			
▪ WETLAND			
▪ MANGROVE			
▪ ESTUARINE			
▪ BUFFER ZONE OF PROTECTED AREA			
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY			
<b>B. POTENTIAL ENVIRONMENTAL IMPACTS</b>			
WILL THE PROJECT CAUSE			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?			
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?			
▪ 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?			

Screening Questions	Yes	No	Remarks
▪ 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?			
▪ 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?			



Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>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.</li> </ul>			

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
<ul style="list-style-type: none"> <li>Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)</li> </ul>			
<ul style="list-style-type: none"> <li>Could changes in 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).</li> </ul>			
<ul style="list-style-type: none"> <li>Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (eg., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?</li> </ul>			
<ul style="list-style-type: none"> <li>Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by encouraging settlement in areas that will be more affected by floods in the future, or encouraging settlement in earthquake zones)?</li> </ul>			

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

**NOTE REGARDING THE SAMPLE ENVIRONMENTAL MANAGEMENT PLAN  
PRESENTED IN ANNEX 2**

In Annex 2 Sample of the Environmental Management Plan for based on a similar project is provided as an example of how complete EMPs should be prepared. Note that the mitigative and monitoring measures are cross referenced numerically. These two tables can be collapsed into a monitoring checklist. The EMP provided is at a high level of detail.

The EMP should be prepared to a level of detail related to the scale of the impacts identified. Therefore for a simple IEE, it might be only 2 pages. The important features are cross referencing between mitigation and monitoring and a description of specific actions.

### Example of Environmental Management Plan: Mitigative Measures

Environmental Impact/Issue	Mitigative Measures	Location <sup>2</sup>	Time Frame	Responsibility	
				Implementati on	Supervisio n
■ PRE-CONSTRUCTION PERIOD					
1.1 Lack of any capacity to understand and implement environmental mitigative measures	AGENCY will operationalize the Environmental mitigation and monitoring measures as defined in the IEE and provide the necessary instructions to the contractor and the oblast level agencies responsible and conduct such a session	In Taraz or Almaty	Within 1 week of the start of contractor mobilization		
1.2 No provision for translation of IEE and related documents for use by Oblast Inspectors, and for use in Bid documents ( at least the EMP)	AGENCY RC will provide the successful contractor with the translated IEE , including the EMP, with instructions on how the mitigative measures and monitoring are to be undertaken, making provision for assistance to the contractor in preparing the Construction Environmental Action Plan (CEAP).  Secondly, the Site Engineer assigned will provide the DOEP inspectors with the EAI EMP and any supporting reports for use in their inspection process. Given the uncertainty of inspection qualifications AGENCY and the PMC will organize 1-day workshop in Oblast field for technical inspectors to review environmental compliance monitoring and reporting, and fill any gaps arising from this session.	Not applicable  As part of 1.1 a Workshop will be held in Oblast	Translate during detailed design stage and provide instructions prior to contractor field mobilization.  To be determined		
1.3 Bid documents prepared without access to or use of the IEE and particularly this EMP	No bid documents will be prepared without the authors have read and having a copy of the mitigation and monitoring plans found in the IEE. These tables plus sample environmental clauses together help formulate the safeguard clauses to include in the contract specifications.	Capital	Before the bid documents for Section 3 and 6 contracts are completed		
1.4 Failure of designers to include design measures that will prevent later impacts such as: livestock crossing management, poor traffic management and excessive tree removal	During detailed design the design team will consult with XXX team and develop best practice means for: 1. management of livestock crossing the road 2. minimizing the removal of mature trees from roadsides during widening operations; 3. planning for optimum traffic management during construction operations 4. provision of step-by-step guidance on environmentally acceptable bridge and culvert replacement methods	1. At any sites along Sect. 3 and 6 where crossings are frequent 2. At any locations where mature trees will be cut down 3. At all sites along an existing road 4. N A	1. Interviews with local people and shepherds 2. Initially at preconstruction planning and then prior to work starting in a treed stretch. 3.Continuous 4.Early in the construction period before any bridge building tasks place		
1.5 Failure to carry out a roadside soil testing program to establish lead and possible chromium +6 contamination.	AGENCY in cooperation with the XXX of the Ministry of Health will undertake a roadside sampling program for lead and Chromium, establish the distance from the pavement edge and depth of dangerous contamination including a treatment plan and map of locations and depths. Testing or products such as milk and foods such as lettuce melons and cucumbers derived from this area will also be tested. Testing must take place at least 6 sites on both sides of the pavement and replicated at least twice. These data will form a lead management protocol	Anywhere where roads shoulders are to be work in/on along the road	During the detailed design stage		
■ CONSTRUCTION PERIOD					
2.1 Contractor fails to retain a ecological expert to prepare the CEAP and to implement all mitigation and monitoring measures, leading to a failure to implement the EMP	As specified by law, contractor will be required to retain an ecologic expert with EIA experience to prepare the CEAP and obtain all relevant permits. The contractor will not be permitted to mobilize the workers without an approved CEAP and the appropriate permits in place	Prior to the start of the construction work.	NA		
2.2 Improper management of earthworks transport and Storage procedures, including	Large volumes of quarry rock, aggregate and sand will be transported and stored in the airport work site. These operations and storage areas will be constantly exposed to the elements and will create primarily dust during the frequent windy conditions.	Throughout the construction period	Anywhere where there is material moved, earthworks cutting and		

Environmental Impact/Issue	Mitigative Measures	Location <sup>2</sup>	Time Frame	Responsibility	
				Implementati on	Supervisio n
cleaning; leading to dust and air pollution <b>(Also see 2.5)</b>	Dust will be managed by daily use of watering trucks.  All topsoil needs to be collected and reused to rehabilitate/revegetate the areas disturbed.		filling		
<b>2.3</b> Inadequate erosion control and slope stabilization leading to land slip and chronic erosion at cuts and water crossings.	Contractor will be required to know the subsoil materials that are being cut into and excavated and have ready appropriate plans to stop land slippage and erosion, particularly in the valleys of Section 3. At water crossings where structures are to be replaced careful replacement and use of gabions with culverts and bioengineering methods for rapid revegetation and slope stabilization will be used.	Based in a analysis of soils conditions by contractor and consultation with Meterological AGENCY	Throughout the construction period		
<b>2.4</b> Side borrow operations leading to erosion, landslide and destruction of landscape	While not strictly forbidden, the practice of taking fill material from the side of the road, creating a landscape of craters is not acceptable to AGENCY and therefore should not be done, unless complete landscaping and erosion control follows. Any such borrow areas should not intrude visually on the road, meaning it should be out of eyesight from the road with proper site re-contouring and replacement of topsoil. The traditional method of scooping materials and leaving craters will not be permitted.	During construction period along any stretches where road will be raised and fill is needed, particularly in areas with long visual distances	Throughout the construction period		
<b>2.5</b> Failure to maintain the earthworks and materials handling process, including aggregate sites, haul roads to quarries/agg. processing sites including management of dust, noise, drainage during haulage of materials	Mitigation will involve <ol style="list-style-type: none"> <li>1. upgrading the haul road so it becomes an all weather road;</li> <li>2. enforcing a speed limit of 30 KMP within 500m of any village and the use of chemical dust suppressants at least on road for 500m on either side of a village. Same approach is to be taken if the other site is used.</li> <li>3. restricting operating hours through roadside villages and settlements to between hours of 0800 and 1730.</li> <li>4. Aggregate sites will require permits and contractors will be required to mark the boundaries, work within them and fully rehabilitate and stabilize the site as part of decommissioning.</li> </ol>	1-3. All access roads and haul routes for materials movement, particularly through settlement areas, villages and towns  4. Define restricted locations as anywhere within a 1 km distance of a settlement area, with a preference for sites downwind of settlements.	Throughout the construction period		
<b>2.6</b> Inadequate handling of lead and possibly Chromium contaminated roadside soils	Should the tests during the preconstruction period indicate consistently contaminated soils and these need to be excavated, the contractor must treat these soils as hazardous materials, seek proper disposal permits and get expert advice on how and where to dispose or decontaminate these soils.	Any road shoulders where excavation is planned	Prior to any road shoulder excavation or clearing		
<b>2.7</b> Failure to adhere to construction related good housekeeping practices, including solid and sanitary waste management	Contractors will adhere to standard good housekeeping practices as defined in the contract Terms & Conditions and Contract Specifications. Special considerations will be given to <ol style="list-style-type: none"> <li>1. management of construction waste and water</li> <li>2. equipment lubricants and fuel, including management and collection of waste oils and fuel particularly related to refuelling depots, maintenance areas and diesel generator sets (See further details in 2.13)</li> <li>3. Sewage will require latrines or chemical toilets with complete clean up after the construction is complete.</li> <li>4. Garbage will be collected and properly disposed of after recycling and sorting,</li> </ol> <p>This work will be completed in accordance with GOK norms and codes which the contractor will be expected to know, based on the completion of the CEAP. Also, the contractor shall orient all construction workers in basic sanitation and health care issues, particularly as related to ticks which carry in southern Kazakhstan carry encephalitis, general health and safety matters, and on the specific hazards of their work and will need to certify to that effect at the start of the construction period.</p> <ol style="list-style-type: none"> <li>5. Once the site is no longer needed the contractor must fully decommission it, with special emphasis on waste removal and</li> </ol>	All work camps, construction maintenance yards and any other areas operated by the contractor and involved in the project	Throughout the construction period		

Environmental Impact/Issue	Mitigative Measures	Location <sup>2</sup>	Time Frame	Responsibility	
				Implementati on	Supervisio n
	clean up of any spills or hazardous materials plus any necessary revegetation.				
<b>2.8</b> Failure of contractor to manage bitumen/asphalt and concrete production facilities	Sighting and operation of the asphalt and concrete batch plants will require permits, including information in sighting and environmental controls. The contractor will be required to locate an asphalt plants at least 1 km from any existing or old water course and at least 3 km away from any residential or commercial dwelling, preferable down-wind. Concrete batch plants will have the same limits and must have dust suppression equipment installed. Operating periods for such facilities will be 0700-1500 Monday through noon Saturday.	At bitumen storage area, particularly at mobile asphalt plants where bitumen is loaded into boiler and heated for mixing	Throughout the construction period		
<b>2.9</b> Modification of surface drainage during culvert and bridge replacement and raising of horizontal road alignment without repair and rehabilitation after construction is finished	When modifying or interfering with surface drainage of any sort the contract will have to undertake the following: <ol style="list-style-type: none"> <li>1. All culverts must be sized at or larger than the one being replaced and with care about slope and erosion protection at inflow and outflow. All construction materials in the channel must be removed so as not to provide any obstruction. Culvert removal and replacement will be done when there are low flows or no water in the channel and during the dry months of the year.</li> <li>2. Bridges will be repaired and widened and as such there will be machinery at least at the water edge. Maximum care is needed to avoid degradation of the river, stream shore and to undertake excessive excavation at the shore and in the water (at least not when there is water in the stream). Demolition must be done in a way that prevents large junks of material from falling into the river. Stabilization of disturbed crossing banks must take place as part of the construction work and include filter fabric, gabions and preferably bioengineering techniques.</li> <li>3. Where roadways are elevated to reduce flooding, extra care is needed to be sure that all drainage channels have a means to get under the road to the other side. To achieve this, the contractor must undertake a surface drainage inventory of the future raised road sections and map out where existing and needed new culverts are to go. There may be cases where old culverts need to be relocated.</li> </ol>	<ol style="list-style-type: none"> <li>1. At all existing culvert sites and where new culverts are specified in the design drawings</li> <li>2. At all bridges which will need widening and repair</li> <li>3. Along any road sections where vertical alignments are to be raise via the addition of fill material.</li> </ol>	Throughout the construction period		
<b>2.10</b> Excessive construction-period air pollution	Emissions will be kept to a minimum by: <ol style="list-style-type: none"> <li>1. ensuring that the contractor's fleet of vehicles are properly maintained and use acceptable fuel and haul loads within specified limits.</li> <li>2. Vehicle idling time limits to no more than 2 minutes and</li> <li>3. equipment maintenance specifications will be imposed through construction inspection and regular reporting,</li> <li>4. Dust control at the construction site will be particularly stringently controlled by watering, setting strict speed limits of no more than 30kph in or near settled areas, and clean up of paved haul roads.</li> <li>5. Equipment such as the diesel generator will be included in the emission control program and will be and regularly tuned to prevent excessive TPM pollution.</li> </ol>	Anywhere at construction sites where vehicles of the contractor or under the contractors control (including paying for services), such as subcontracted trucks hauling materials	Throughout the construction period		
<b>2.11</b> Loss of Cultural/Arch. Heritage, including cemeteries and roadside graves/markers of accident victims	There are a number of roadside graves/markers of accident victims along sections 3 and 6 and are often located within a few meters of the carriageway. To move these will require a process of consultation with the local administration as well as the victim's family in order to move the grave to an appropriate site. Since all the work is basically in previously disturbed soil the risk of loss of historical or cultural relics is highly unlikely. However when widening roads in villages and towns, contractors will have to meet with local administration (Hokim) to consult about any possible past relics or foundations of old buildings along the road. Any finds must be reported to the Oblast Cultural	<p>At any gravesites</p> <p>Within 200m of any town or village located along the roads to be widened</p>	<p>During the construction period and ahead of excavation at any such site</p> <p>Prior to earth moving in these areas</p>		

Environmental Impact/Issue	Mitigative Measures	Location <sup>2</sup>	Time Frame	Responsibility	
				Implementati on	Supervisio n
	Heritage Department and all construction work stopped until authorities have inspected the site.				
<b>2.12</b> The lack of technical capacity in CEAP implementation and reporting leading to the collapse of the environmental safeguards tasks defined in the EIA and GoU Norms and Codes	The AGENCY will hire a consultant to deliver a 1.5 day training workshop to the Oblast and Rayon level in Oblast government agencies involved and the contractor. Focus will be in the complete understanding of the EMP, the mitigation and monitoring tasks, responsibility of the stakeholders and proper documentation. Approximately 12-13 people will be involved, plus three people delivering the workshop.	Taraz	Prior to the start of construction but after the contractor has been named and has appointed an ecological expertise		
<b>2.13</b> Contractor undertakes an excessive and unnecessary tree removal program damaging the old trees and shelter belt plantings along roadsides	For each section of the road, contractors are required to develop a sketch map of the location number and species of trees along the roadside that are located within the area likely to be cleared. In areas where there are large trees creating a long green tunnel, designers will be contacted and alternative designs, such as narrowing the carriageway and transforming this area into a roadside rest area should be discussed and an option found that requires the minimum tree loss. Any tree removed will be replaced by replanting several (>2) young trees of the same species.	Along any section of the road where trees are encroaching into the area to be cleared for widening	Prior to any clearing taking place		
<b>2.14</b> Failure to properly manage petroleum products such as fuel, lubricants and bitumen, leading to spill and contamination.	Contractor will be required to have the following spill prevention measures in place at all work sites: <ol style="list-style-type: none"> <li>1. all fuelling to be done on a concrete surface provided with spill catch tank that can be cleaned and all spilled fuel recovered and recycled based on discussions with fuel supplier.</li> <li>2. All repair and maintenance work must either be done on a concrete surface with oil spill catch basin or oil catch pans must be provided at all service areas and training provided to all 'mechanics'.</li> <li>3. All fuel use areas where spills and leakage is possible, e.g. the generator, must have drip basins installed to prevent any leakage. These recovered materials must be recycled.</li> <li>4. A fuelling areas must be equipped with proper fuel nozzles</li> <li>5. All fuel tanks must have means for containment of accidental spills.</li> <li>6. All bitumen handling must not permit any material from leaking to the ground, including transfer areas and any areas where bitumen is transported in drums.</li> <li>7. Bitumen drums must be stored in a dry covered secure place where no leakage to water or ground is possible. Drums must be recycled at least 1X/yr.</li> <li>8. Any spills must be cleaned up according to GoK norms and codes within 24 hours of the occurrence, with contaminated soils and water treated according to GoK norms and codes.</li> </ol>	At any work camps, maintenance yards and any other areas that the contractor uses or subcontractor use during the construction period	Throughout the construction period		
<b>■ OPERATING PERIOD</b>					
<b>3.1</b> Inadequate management of traffic-generated air pollution	The improvements of the road surfaces and widening, will improve the flow of traffic, reduce deceleration-acceleration cycles and idling periods, therefore leading to the overall reduction in the emission levels, despite an increase in the overall traffic volume. The expected annual growth in traffic will be 6% after construction is completed, or a 2% increase over pre construction levels, not enough to be significant project-related emission.				
<b>3.2</b> Inadequate management of Traffic related noise					
<b>3.3</b> Inadequate control of roadside farming, leading to lead <sup>9</sup> and heavy metal contamination in is	The road operator will undertake a heavy metal testing of grasses and crops grown within 50m of the carriageway and establish lead and heavy metal levels.  National roads have a 50m farming restriction zone and	At 20 sites with steady existing traffic and grazing and crop growing	This will be done at 20 random sites where traffic volumes are		

<sup>9</sup> Between 75% and 85% of gasoline powered vehicles XXXXXXXX still use leaded fuel.

Environmental Impact/Issue	Mitigative Measures	Location <sup>2</sup>	Time Frame	Responsibility	
				Implementati on	Supervisio n
such items as any leaf crops, melons and milk from roadside grazers	the road operator will enforce this where possible should the data suggest that there are problems. Lead levels will be estimated for future traffic conditions and contamination predicted and appropriate action taken	within 50m of the carriageway edge.	known and for at least roadside soil as well as grass, and food crops such as lettuce, cucumbers and tomatoes grown near the road and milk of goats and sheep grazing along the roadside.		
<b>3.4</b> Increased risk of pedestrian accidents due to improved roads, faster speeds and greater traffic volume	To manage these problems the operator will enforce speed limits through increased 'radar' surveillance, better and more frequent signage and increased speeding fines. In villages at crossing the owner will improve the signage and include amber lights where possible. As many town bypasses as possible are planned and should reduce project generated traffic through towns and villages.	In every village and town where the road will be upgraded	Planned during the detailed design stage and installed during the construction period then completed at the start of operations		
<b>3.5</b> Increased risk of haz. materials spills due to increased traffic volume and provision of larger capacity bridges and stronger road surfaces, inviting large trucks to use the road.	Although the risk is extremely small since most such materials are transported by rail, the road operator will: <ol style="list-style-type: none"> <li>1. Insure that all trucks carrying haz. materials are marked according to GoU norms and codes</li> <li>2. Enforce speed limits for trucks carrying haz. material to &lt;= 85kph or according to the GoU norms and codes.</li> <li>3. Restrict of all truck carrying haz. material from passage through town and villages where bypasses exist;</li> <li>4. Assist Oblast to prepare a rapid spill response and clean up protocol so that in the event of a spill the appropriate people and equipment are quickly notified and action can be taken.</li> </ol>	In Taraz	Within the first year of the road being in operation		

**CEAP**-Construction Environmental Action Plan

**EEC**-Environmental Expertise Committee of the MOEP

**EIA**-Environmental Impact Assessment

**EMP**-environmental management plan (a key output of the environmental assessment document)

**PMC**- Projects Management Consultant-a unit proposed by the donors to assist the government implement the project and at the same time train nationals who would eventually for the critical mass of a Transport Agency, replacing the Roads Committee (RC)

**NOTE:** To be self explanatory, EMPs must have all definitions and acronyms used defined at the end of the EMP, as shown above.



## Example of Environmental Management Plan: Monitoring Measures (EMoP)

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
<b>1. PRE-CONSTRUCTION (DESIGN) PERIOD:</b> all written confirmation and reports submitted to AGENCY and PMC with copies to Oblast-Env. Department				
1.1 Lack of any capacity to understand and implement environmental mitigative measures	Collect written material indicating that AGENCY has provided instructions for the contractors to use to better use the IEE output	During Detailed Design Period		
1.2-1.3 No provision for translation of IEE and related documents for use by Oblast Inspectors, and for use in Bid documents (at least the EMP)	Confirm that Uzbek/Russian version of IEE and EMP are with the Oblast Inspectors  Confirm that bid documents contain environmental clauses tailored to the project conditions as well as a general set	During Detailed Design Period		
1.4 Failure of designers to include design measures that will prevent later impacts such as: livestock crossing management, poor traffic management and excessive tree removal	Confirm by reviewing design documents and discussion with design team that <b>1)</b> livestock crossings in Section 3 have been addressed <b>2)</b> a plan to protect roadside trees as much as possible has been prepared; <b>3)</b> There is step-by-step protocol for traffic management during construction (as opposed to ad hoc, hap hazard existing system); and <b>4)</b> an environmentally friendly bridge and culvert replacement guide has been prepared	During Detailed Design Period		
1.5 Lead contamination of roadside soil testing program	Monitor to verify that soil and local food stuffs, particularly goats and sheep milk is tested for lead contamination and that a management protocol is being developed with the participation of the SES of the MOH.	During Detailed Design Period		
<b>2. CONSTRUCTION PERIOD</b> -prepare and use this section as construction monitoring checklist				
2.1 ecological expert to prepare the CEAP and to implement all mitigation and monitoring measures with contractor	Confirm ecological expertise is with contractor at start of construction period: obtain name and CV.	At time of contractor appointment		
2.2 Earthworks transport and storage monitoring	Undertake, as part of the construction inspection, regular confirmation that earthworks are handled in an environmentally acceptable manner and dust control is undertaken at all time, including the use of tarpaulins by trucks hauling fine materials, as well as watering and use of chemical suppressants along the haul road sections for 1 km at villages, AND THAT A SPEED LIMIT OF 30KPH IS ENFORCED.	Every day, throughout the construction period		
2.3 erosion control and slope stabilization TO PREVENT land slip and chronic erosion at cuts and water crossings is being applied.	Undertake regular inspection to confirm that slope stabilization and standard erosion protection method are being used by the contractor for all work where there is clearing of topsoil, cutting and filling	Every day, throughout the construction period		
2.4 Side borrow operations leading to erosion, landslide and destruction of landscape	Undertake inspections to determine the type of borrow operations the contractor is applying and ensure that roadside borrowing is not taking place and is always out of the visual field from the road.	Throughout the construction period and monthly		
2.5 Environmentally acceptable earthworks and materials handling process, including aggregate sites, haul roads to quarries/agg. processing sites ; managing of dust, noise, drainage during haulage of materials	Using a checklist confirm the following: 1. haul road upgraded so it becomes an all weather road; 2. speed limit of 30 KMP within 500m of any village and the use of chemical dust suppressants at least on road for 500m on either side of a village is enforced. The same approach is to be taken if the other site is used. 3. haulage through roadside villages and settlements is restricted to between hours of 0730 and 1730. 4. Aggregate sites are operating legally and contractors have marked the boundaries, work within them, and fully rehabilitate and stabilize the site as part of decommissioning.	Start of Construction period and thereafter monthly until use of roads/sites is finished.		

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
<b>2.6</b> Contractor is following protocol related to the excavation of roadside lead contaminated soils (See No. 1.5)	The excavation of every roadside area needs to be matched with reasonable proof that the materials are not severely contaminated with lead and/or Chromium and if contamination exists, confirmation of proper handling and treatment	At every shoulder excavation site, anywhere where lead contamination is shown to be high		
<b>2.7</b> Contractor is adhering to construction related good housekeeping practices, including solid and sanitary waste management	Using a monitoring checklist, confirm that the items as listed in the EMP; Mitigation Measures Table: Item 2.6 [1-5] are fully implemented.	Throughout the construction period and monthly		
<b>2.8</b> Preventing bitumen/asphalt and concrete production spills and pollution	Confirm that sighting specification for both asphalt and concrete plants are according to norms and codes but also that are at least as far away from settlement areas as defined in the mitigation table. Bitumen storage and handling is done without spillage	Throughout the construction period and monthly		
<b>2.9</b> Monitoring of surface drainage at construction area	The PMU will inspect and verify that adequate consideration and drainage works and protection have been provided: specifically that the 3 mitigative measures defined in 2.9 of the mitigation table are fully implemented in a timely manner.	5X during the construction period, once to confirm that sites have been identified and 2X during each rainy season for at least through 2010.		
<b>2.10</b> Controlling construction-period air pollution	Using a monitoring checklist confirm that the six mitigative actions defined in 2.9 of the Mitigation Table are being implemented	Ongoing throughout the project as part of the construction inspection		
<b>2.11</b> Loss of Cultural/Arch. Heritage, including cemeteries and roadside graves/markers of accident victims	Confirm that all roadside graves (based on an inventory of sites) are dealt with in a dignified and legal manner including viewing records of consultation with administration (Hokimiyat) and with family members and reviewing the process being taken for check the possible presence of cultural relics.	Ongoing with specific checks each time a construction inspection takes place		
<b>2.12</b> Contractor has provided the capacity for CEAP implementation and reporting as defined in the defined in the project EIA, GoU Norms and Codes and this IEE	Meet with contractor's ecological expertise and discuss all issues and to confirm experts period on the job throughout the construction period	At start of the construction period		
<b>2.13</b> Tree removal program damaging the old trees and shelter belt plantings along roadsides kept to a absolute minimum	Inspection of cutting plan and confirmation of consultation with Forest Authority then review and record re-planting/revegetation efforts.	Throughout the construction period (quarterly) and before cutting is to start in densely treed sections		
<b>2.14</b> Management of petroleum products such as fuel, lubricants and bitumen, without spills and contamination being practiced by contractor and all subcontractors.	Using the monitoring checklist the 8 specific spill and contamination prevention measures listed in item 2.13 of the Mitigation table will be assessed and reported on. Any non-compliance will be rectified immediately	Quarterly inspections at all work sites, work camps, diesel generators, maintenance yards and fuel and bitumen storage facilities		
<b>3. OPERATING PERIOD</b>				
<b>3.0</b> Conduct the 1-year post construction operational audit	The owner of the road must organize and undertake a complete audit of the project. Findings must be reported within 15 days of completion of the field inspection and actions to repair any non compliance conditions started within 5 days of notification by the Inspection Department. All such actions must be completed or be well underway within 30 days.	No more than 13 months after the operating period has fully started.		

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
3.1 Management of traffic-generated air pollution	Should traffic growth exceed the projected 2%/year monitoring at sensitive areas such as roadside towns and villages will be required	Monitoring 1X/year for 2 continuous 24 hour period during the non-winter season at 9 station for Sect. 3 and 3 stations for Sect. 6		
3.2 Management of traffic-generated noise	Noise is an existing problem in roadside communities, particularly during the peak traffic season from about April through October. The improvements are expected to marginally affect noise levels and in some cases reduce noise through the use of bypasses and enforcement of speed limits for trucks and buses. A smoother road will also reduce noise. However noise will be monitored at sensitive sites	Monitoring will take place 1X/year during peak traffic periods over 2 24 hour continuous monitoring periods at 9 stations for Sect. 3 and 3 for Sect. 6		
3.3 Control of roadside farming minimizing the ingestion of lead <sup>10</sup> and heavy metal contamination in is such items as any leaf crops, melons and milk from roadside grazers—due to leaded fuels	Conduct a testing program to establish the lead levels in products coming from roadsides in the corridor. Goat and cattle milk is to be tested as well as crops grown within 50 m of the road, including lettuce tomatoes and cucumbers and melons.  If the tests show dangerous levels, discuss the enforcement of the 50m-rule with AGENCY and ensure that this or similar measure are being undertaken	Monitoring to be completed on milk and at least 3 products coming from plots within 50m of the road. Testing is to be done during the construction period at 10 roadside sites and for at least 3 animal heard known to use roadside pasture		
3.4 Manage risk of pedestrian accidents due to improved roads, faster speeds and greater traffic volume	Traffic volume due to the project of 2% per year is not expected to affect the accident rate, however the increased speeding will and to that end signage and enforcement will be essential. bypasses will help considerably and restriction of bus speed in town will help. Aside from aggressive enforcement, the best method will be to significantly improve speed limit signage, highlighting school and other high pedestrian use zones, and provide more cross walk lighting.	Undertake annual safety check and review statistics of pedestrian-vehicle accidents and address those areas where problems occur		
3.5 Reduce risk of haz. materials spills due to increased traffic volume and provision of larger capacity bridges and stronger road surfaces, inviting large trucks to use the road.	Using a monitoring checklist annual inspection to confirm the implementation of 4 mitigative measures as define in Mitigation Table item 3.5 will be required	Undertake an annual audit of these conditions and actions		

**Note Regard Cross-referencing provision of EMiP, EMoP and Mitigation and Monitoring Costing Table provided in Annex 4.** Annex 4 is an excel Spreadsheet and is attached as an extra file with this report, for adaptation and use by Uzavtoyul and its PMU.

Each of the mitigative and monitoring measures are given a task number. These are consistent throughout the two matrix tables and should carry over to the costing table. That way all can be easily cross-referenced.

<sup>10</sup> Between 85% and 90% of gasoline powered vehicles in XXXXX still use leaded fuel.

**MINUTE OF ENVIRONMENTAL PUBLIC CONSULTATION  
AND INFORMATION SESSION ON ADB TECHNICAL ASSISTANCE  
PROJECT \_\_\_\_\_**

**1/ Meeting location:**

**2/ Meeting date:**

**3 Project:**

**4 List of Special Government Participants:**

**5 Presentation given by:**

**6 Environmental consultant presentation content:**

**7 Comments of participants** (this can be a summary or individual comments-see example)

**1/ Mr. X resident in ABZ village:** people are very worried about suspended projects or projects that prolong or delay. Consequently, the people will lead a miserable life and take a long time to stabilize. Normally, if the project time is 2 years, the people will take 4 years to settle down. In sum, it is up to conscience of the contractor and investor's management, if they construct the project on schedule, the people shall feel easier.

- Issue on outgoing and incoming trucks in construction site, which may bring dust and soil to resident houses. Some measures should be proposed to treat dust problem right at the entrance and exit of construction site.

- Toilet for workers: Mobile toilet or temporary toilet, how it would be treated after completion of the project.

- Maintenance station: waste oil, oil-containing cloths from maintenance works should be treated according to the Government Decision/ Cabinet circular.

- EIA report must include the assessment on dust, flooding, traveling as they are the most important issues.

2/.....

3/.....

**8 Follow Up Actions.**

Issue Raised: including real and perceived environmental issues	Approach to Addressing the Issue as suggested at Session; including <i>how</i> , <i>when</i> and by <i>whom</i>	Agreed to Action

**9 Complete List of Attendees (including Name, home village/town and Occupation):**

Agency Name or General Public	Name of Person	Title	Name Hometown or Village

## Blank Costing Matrix Table for Project

Note: P=People	Non Reoccurring							Reoccurring							Total Cost
	No Cycles	No. Days /cycle	No. P. KZ	No. P. Int'l.	Unit cost Int'l	Unit Cost KZ.	Total Cost	No Cycles /Yr.	No Yrs	No. Days /cycle	No. P. KZ	No. P. Int.	Unit cost Int'l	Unit Cost KZ.	Total Cost
<b>Mitigation and Monitoring Items</b>															
<b>Pre-Construction Period:</b>		7 mnth													
1.1 Undertake technical briefing to improve understand and implement environmental mitigative measures by PMU and Contractors	0	0	0	0	0	0	0.00								
1.2 Translate all of IEE, EMP related documents to Russian; provide Oblast Inspectors, use in Bid documents	0	0	0	0	0	0	0								
1.3 Provide EMP and IEE to bid preparation team	0	0	0	0	0	0	0								
1.4 Design in livestock crossings, proper traffic management and careful roadside tree removal	0	0	0	0	0	0	0								
1.5 Lead contamination of roadside soil testing program	0	0	0	0	0	0	0								
1.6 Policy Discussion Regarding Revision to Monitoring Regulation							0								
Lab testing Details ( Approximate): testing Lead Chromium 6 in soils and food stuffs along road	N. Stn.	Samp. Size	No. rep.	PB & Cr	Unit cost										
Sampling Design							0.00								
Logistics and Related															
Other Expenses	(workshop materials, partic. costs, Int'l. Per Diem)														
<b>Pre-construction Period Total</b>							0.00								\$0.00
<b>Construction</b>		36 months minimum													
2.1 Confirm ecological expertise is with contractor	0	0	0	0	0	0	0.00								
2.1A PMU to provide Snr. Int'l. Safeguards Spec. To assist with prep of Contractors Constr. Env. Action Plan (CEAP) and with Compliance Monitoring Forms and Reporting Template, as needed to meet donor requirements.	0	0	0	0	0	0	0.00								
2.2 and 2.5 Inspection and confirmation that earthworks are handled in an environmentally acceptable manner, dust control is undertaken at all time, particularly along haul road sections for 1km past roadside villages, AND enforced 30-35 kph speed limit								0	0	0	0	0	0	0	\$0.0
2.3 confirm that slope stabilization and standard erosion protection method are being used								0	0	0	0	0	0	0	\$0.0
2.4 inspection of borrow operations								0	0	0	0	0	0	0	\$0.0
2.6 Roadside contaminated Soil testing & removal program	To be done if preconstruction testing finds problem							0	0	0	0	0	0	0	\$0.0
2.7 Sewage and garbage management program								0	0	0	0	0	0	0	\$0.0
2.8 Bitument, asphalt plant cement and concrete batch plant environmental controls								0	0	0	0	0	0	0	\$0.0
2.9 surface drainage during culvert and bridge replacement, repair and widening															\$0.0
2.10 construction-period air pollution control															\$0.0
2.11 Ident. and moving of culturally or historically important items found along the road	0	0	0	0	0	0	0.00						0	0	\$0.0
2.12 MOTC will hire a consultant to deliver a 15 day training workshop to the Oblast and Rayon level in Zhambyl Oblast government agencies involved and the contractor	0	0	0	0	0	0	0.00						0	0	\$0.0
2.13 contractors to develop a sketch plan of the location number and species of trees along the roadside that are located within the area likely to be cleared. In areas where there are large trees creating a "green tunnel" needs to be assessed	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	\$0.0
2.14 Contractor to install and have in place and maintain at least 8 fuel and oil spill prevention measures at all work sites	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	\$0.0
Transportation															
Workshop costs															
Other Expenses															
<b>Construction Period Total</b>							0.00								\$0.0
<b>Operating Period</b>		3-Yrs													
3.0 Conduct operational Period audit: Yr 1 of operations	0	0	0	0	0	0	0.00	Contractors to undertake most of this at their cost							
3.2 Noise Monitoring will take place 1X/year during peak traffic periods over two 24- hour continuous monitoring periods at ? stations for ? and ? for ?							0.00	0	0	0	0	0	0	0	\$0.0
3.3 Monitor lead pollution protocol and report on types of actions needed	Contaminated soils program if testing alarming							0	0	0	0	0	0	0	\$0.0
3.5 Manage hazardous materials spill	0	0	0	0	0	0	0.00	If spills occur these are operating costs of the MOTC							
Expenses															\$0.00
<b>Operation Period Total</b>							0.00								\$0.00
<b>Unusual Expenses</b>	Possibly disposal sites for contaminated soils						????								
Total Unusual Expenses (not incl. contamin. soil disposal)	Moving graves @ 800/grave x 10						0.00								
<b>Totals: Non Reoccurring and Reoccurring</b>							<b>0.00</b>								<b>0.00</b>
<b>MITIGATION AND MONITORING</b>	<b>Totals</b>														
<b>Pre Construction Period</b>							\$0								
<b>Construction (3+ years)</b>							\$0								
<b>Operating Period ( Yrs. 1 and 2)</b>							\$0								
<b>Total</b>							\$0								
<b>Contingency Costs @ 6% of total</b>							\$0								
<b>Total including Unusual expenses</b>							\$0	Total Costs minus stnd. environmental engineering costs (italics)							<b>\$0</b>