

# Environmental Assessment and Review Framework

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August 2021

## Uzbekistan: Climate Adaptive Water Resources Management in the Aral Sea Basin Sector Project

Prepared by the Agency for Implementation of Water Sector Projects of the Republic of Uzbekistan for the Asian Development Bank.

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## CURRENCY EQUIVALENTS

(as of 1 August 2021)

|               |   |                         |
|---------------|---|-------------------------|
| Currency unit | – | Sum (SUM)               |
| SUM1.00       | = | \$0.000094 <sup>1</sup> |
| \$1.00        | = | SUM10,633               |

## ABBREVIATIONS

|           |   |
|-----------|---|
| BISA      | Basin Irrigation System Authority   |
| CAWRMASBP | Climate Adaptive Water Resources Management in the Aral Sea Basin Project |
| CBTA      | Capacity Building and Technical Assistance                                |
| CIFIPWS   | Center for Implementation of Foreign Investment Projects in Water Sector  |
| DCM       | Decree of the Cabinet of Ministries                                       |
| DID       | District Irrigation Department  |
| DSEI      | Draft Statement of the Environmental Impact                               |
| EARF      | Environmental Assessment and Review Framework                             |
| EIA       | Environmental Impact Assessment   |
| EMP       | Environmental Management Plan   |
| GRM       | Grievance Redress Mechanism   |
| IEE       | Initial Environmental Examination   |
| ISA       | Irrigation System Authority   |
| IWRM      | Integrated Water Resources Management                                     |
| MOM       | Management, Operation, and Maintenance                                    |
| MPC       | Maximum Permissible Concentrations  |
| MPE       | Maximum Permissible Emissions   |
| MWR       | Ministry of Water Resources   |
| OCHS      | Occupational and Community Health and Safety                              |
| O&M       | Operation and Maintenance   |
| PCR       | Project Completion Report   |
| PIC       | Project Implementation Consultant   |
| PIU       | Project Implementation Unit   |
| REA       | Rapid Environmental Assessment  |
| SAEMR     | Semi Annual Environmental Monitoring Report                               |
| SCADA     | Supervisory Control and Data Acquisition                                  |
| SCEEP     | State Committee for Ecology and Environmental Protection                  |
| SEC       | Statement on Environmental Consequences                                   |
| SEE       | State Environmental Expertise   |
| SEI       | Statement of the Environmental Impact                                     |
| SPS       | Safeguard Policy Statement (2009)   |
| SSEMP     | Site-Specific Environmental Management Plan                               |
| TRTA      | Transaction Technical Assistance  |
| URM       | ADB Uzbekistan Resident Mission   |
| UZAIFSA   | Agroindustry and food security agency                                     |
| WCA       | Water consumers' association  |
| WHO       | World Health Organization   |
| WMO       | Water Management Organizations  |

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<sup>1</sup> [Foreign Exchange \(adb.org\)](http://www.adb.org)

## GLOSSARY

|                         |   |
|-------------------------|---|
| Aksakal                 | Elderly wise man; <i>Makhalla</i> chairman is also often referred to as <i>Aksakal</i> .  |
| Dehkan                  | <i>Dehkan</i> farm consists of homestead lands, allotted to heads of families under inheritable life tenure, producing and selling agricultural products on the basis of the labor of family members.   |
| Goskomecologiya         | State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan. State administration in the field of ecology, environmental protection, rational use and reproduction of natural resources.   |
| Kengashi                | Councils of People's Deputies of viloyats (provinces), tumans (districts), and towns, elected to the <i>Oliy Majlis</i> (senate) of the Republic of Uzbekistan and the President of the Republic of Uzbekistan can act on behalf of the people.   |
| Khokims                 | Head of the Public authority in places, carrying out interaction between local communities and the government at regional and national levels. Possesses the highest administrative and legal authority over the local population living in the territory within the jurisdiction.  |
| Kishlaks                | A rural settlement of peoples of Uzbekistan.  |
| Makhalla                | Organization of the community type at local level, officially recognized in Uzbekistan, serving as interface between the government and the community and responsible for provision with the means of social support and cultural interaction of its members. Chairmen of <i>Makhalla</i> are elected by local gatherings.  |
| Sanoatgeokontekhnazorat | State body, specially authorized in the field of industrial and radiation safety, the mountain relations, exercising state supervision of observance by all legal entities and physical persons in the territory of the republic of requirements of the legislation and regulating technical documents on industrial and radiation safety, use and protection of subsoil, and also other measures of state regulation in accordance with the established procedure. |
| Uzhydromet              | State governing body specially authorized for the solution of tasks in the field of hydrometeorology in the Republic of Uzbekistan.   |

## NOTE

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

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## **I. INTRODUCTION**

### **A. Background**

1. This environmental assessment and review framework (EARF) was prepared by the Ministry of Water Resources (MWR), supported by the Asian Development Bank's (ADB) Transaction Technical Assistance (TRTA) to guide the environmental assessment process to screen subproject interventions, set up institutional arrangements in relation to environmental management and monitoring, and define environmental assessment requirements in accordance with the existing procedures to comply with the applicable laws and regulations of the Republic of Uzbekistan and with ADB Safeguard Policy Statement (SPS 2009) for the Project.

2. The Climate Adaptive Water Resources Management in the Aral Sea Basin Project (CAWRMASBP) is following a sector approach by which the TRTA is supporting the government to prepare feasibility studies of two core subprojects selected out of eight subprojects for modernized and improved irrigation and drainage infrastructure (Jondor subproject and Babatag subproject), using the agreed selection criteria. The engineering designs will be used to prepare bidding documents so that bidding process could be initiated in parallel to the loan approval processes. The feasibility studies conducted will meet the requirement of both ADB and the government of Uzbekistan. The feasibility studies for the remaining (non-core) subprojects will be conducted during the project implementation period.

3. The Project is following sector approach in which the government proposes a list of candidate non-core subprojects for investment with the option of adding or deleting any project from the list at any time. The feasibility studies and associated field surveys and investigations for the non-core subprojects as well as implementation of both core and non-core subprojects will be carried out during the implementation period of the ensuing loan project.

### **B. Requirements for the Environmental Assessment and Review Framework (EARF)**

4. Consistent with SPS 2009, this EARF has been developed for the non-core subprojects to be prepared during the implementation period of the ensuing loan project.

5. The purpose of this EARF is to: (i) describe the project and its subprojects and/or components; (ii) explain the general anticipated environmental impacts of the components or subprojects to be financed under the proposed project; (iii) specify the requirements that will be followed in relation to subproject screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, safeguard criteria that are to be used in selecting subprojects and/or components; (iv) assess the adequacy of the executing agency and implementing agencies' capacity to implement national laws and ADB's requirements and identify needs for capacity building; (v) specify implementation procedures, including the budget, institutional arrangements, and capacity development requirements; (vi) specify monitoring and reporting requirements; and (vii) describe the responsibilities of the executing agency and implementing agencies and of ADB in relation to the preparation, implementation, and progress review of safeguard documents of subprojects.

6. The preparation of environmental assessment documents should follow the procedures outlined in this EARF to ensure environmental impacts are appropriately addressed and mitigated to acceptable levels and provisions of SPS 2009 are complied with. This EARF was prepared and submitted to ADB by the MWR as the executing agency, disclosed on the ADB website, and will

be translated into Uzbek and disclosed on the website of the Ministry of Water Resources of the Republic of Uzbekistan (MWR).<sup>2</sup>

### **C. Project Overview**

7. The project impact is improved food and water security in the Aral Sea Basin in Uzbekistan. The outcome is climate-resilient and modernized irrigation systems established in selected irrigation and drainage (I&D) subprojects in the Amu Darya and Zarafshan River Basins, Uzbekistan.

#### **1. Output 1: Main Canal Water Supply Systems Modernized**

8. This will modernize existing main canals located in the Amu Darya and selected reaches of the Zarafshan river basins to enable more climate resilient operation, provide increased service levels to secondary canals, improve efficiencies and reduce water losses, and provide canal infrastructure protective measures. Output 1 has 3 subcomponents.

##### **a) Re-sectioning and modernization of main canals**

9. This sub-component will include re-sectioning of the canal, removing sediments, selective raising of embankment, repair of an inspection road, selective concrete lining including a low-density high-density polyethylene (HDPE) membrane for 84 km long Jondor main canal in Bukhara province. It will also include re-sectioning, removing sediments; selective raising of embankment, construction of an inspection road, selective concrete lining including a low-density HDPE membrane for 43.1 km long Babataq main canal in Surkhandarya province.

##### **b) Establishment of improved control structures and protective works**

10. This sub-component will include upgrading and modernization of 3 head regulators, 27 outlet structures, 2 siphons, 6 road bridge crossings of Jondor main canal in Bukhara province. It will also include upgrading and modernization of 2 head regulators, 43 outlet structures, 5 road bridge crossing, and reconstruction of 6 mudflow structures, repair of 1 spillway structure, and repair of 1 piped drop structure of Babataq main canal in Surkhandarya province.

##### **c) Construction of improved measurement and canal control systems**

11. The works under this sub-component will include the repair of 19 hydrometric bridges, upgrading and modernization of 23 gauging stations, installation of supervisory control and data acquisition (SCADA) system for water level and flows monitoring and control of Jondor canal in Bukhara province.<sup>3</sup> It will also include the repair of 43 hydrometric bridges, upgrading and modernization of 43 gauging stations, installation of SCADA system for water level and flow monitoring and control of Babataq canal in Surkhandarya province.

#### **2. Output 2: Inter-farm I&D systems and on-farm water management modernized**

12. This output increases climate change resilience, irrigation, drainage, and agricultural performance through improvements in land and water management. This is at inter-farm, secondary, and tertiary canal levels and it will apply modern on farm irrigation technologies including for women-managed farms. It has 3 subcomponents. The Project Implementation Unit

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<sup>2</sup> <https://water.gov.uz>

<sup>3</sup> Hydrometric bridges, being auxiliary structures, are built over the canal and serve two purposes: performing hydrometric works and providing pedestrian communication between the banks.

(PIU) will work with the MWR regional units in implementing on-farm water saving technologies. It will also work with the units and state-owned enterprises implementing the collector drain networks' cleaning activities.

**a) Re-sectioning and modernization of inter-farm canals**

13. This subcomponent will include re-sectioning, removing sediments; selective raising of embankments and selective concrete lining including a low density HDPE membrane. This will be for the 9.8 km long Shakhriislom inter-farm canal and the 1.17 km long Shakhriislom -1 canal main canal. It will also upgrade and modernization 5 outlet structures, 1 aqueduct, repair 5 hydrometric bridges, upgrade and modernize 1 gauging station on Shakhiislom inter-farm canal in Bukhara province. It will include re-sectioning, removing sediments; selective concrete lining including a low density HDPE membrane for 6.0 km long main canal-1-1 inter-farm canal. It will upgrade and modernize 14 outlet structures, 14 hydrometric bridges and 14 gauging station on main canal-1-1 inter-farm canal in Surkhandarya province.

**b) Introduction of innovative climate smart on-farm irrigation technologies**

14. This subcomponent will include introduction of 3,000 ha precision land leveling, 3,000 ha deep ripping of soil and 500 ha drip irrigation system installed at Jondor canal command area. It will undertake 2000 ha precision land leveling, 2,000 ha deep ripping of soil and 500 ha drip irrigation installation at Babatag main canal command area. The project will modernize and modernize an existing buried pipe irrigation system serving 1,210 ha. It will construct a new buried pipe system for 1,645 ha at main canal-1-1 inter-farm canal command area. It will include introduction of innovations for women-managed farms.

**c) Drainage works for salinity improvement**

15. This sub-component will include cleaning of the 1,547 km length of collector drain network. It will undertake flushing of 160 km length of subsurface horizontal drains at Jondor canal command area. It will clean 50 km length of collector drain network at Babatag main canal command area.

**3. Output 3: Policy and institutions strengthened for climate resilient and sustainable water resources management**

16. Output 3 has four subcomponents.

**a) Modernized water allocation and use at irrigation system, district, and WCA levels**

17. This subcomponent aims to (i) improve the water planning and allocation and water sharing approach in the subproject areas, (ii) improve efficiency of water use, productivity and climate resilience in the study areas, and (iii) strengthen the approach and capacity of water management organizations (WMO) and WCA for improved water resources planning and water usage. It includes four activities.

- (i) **Strengthening water allocation and sharing arrangements.** This will review the current approach to water allocation and related compliance measures and support the introduction of new and relevant approaches for more equitable water delivery. It will include improved calculation and modelling of crop water demand under changing climate conditions and viable alternative allocation and compliance approaches. Deliverables are (i) a strengthened water allocation and sharing approach that has been trialed, (ii) a roadmap for full adoption of the

approach and relevant guidance manuals developed, and (iii) WMO and WCA trained in improved water allocation and sharing procedures.

- (ii) **Improved measurement of water supply and deliveries to farm.** The project will introduce improved water measurement and increased capacity for volumetric water deliveries throughout the subprojects. This activity will review and plan options for the degree of automation and requirement for SCADA . Output 1-3 will implement the preferred system. This activity will install up to 3,500 hydro posts (1,254 for core subprojects) and for WMO and WCA; 260 flow and water quality measurement devices (90 for core subprojects), and 11 electronic current meters (4 for core subprojects). These are to measure water deliveries to the farm level as a foundation for introducing volumetric irrigation service fees (ISFs). It will ensure equity in water distribution and provide system operators and farmers with less exposure to current and future adverse climate conditions. The WMO and WCA will be trained in operation and maintenance (O&M) of the equipment and in setting ISF appropriately. Deliverables are (i) an effective and operational water measurement system that is integrated into irrigation system management and water accounting systems, (ii) volumetric ISF implemented in at least one WCA of each subproject area, and (iii) production of supporting manuals and management system and provision of assistance to training of WMO and WCA.
- (iii) **Strengthening on-farm water and agricultural management.** This element will increase irrigation efficiency and productivity by improved understanding of climate-smart irrigation management, demonstration and adoption of new technologies, and farmer technical support. This activity will (i) revise and update guidelines for whole farm planning and precision land levelling, provide guidance to contractors, establish arrangements with government and WCA to better promote the technology and overcome the constraints to its adoption; and (ii) extend agricultural and agronomic support to farmers in the sub-project area. Outreach will also be made to private sector service suppliers such as agri-chemical and seed suppliers, so they are able to provide well informed advice to farmers. Deliverables are (i) revised guidelines for whole farm planning and precision land levelling, (ii) farmer and private sector extension materials on agricultural measures for better productivity and adaption to climate change, and (iii) capacity building of WCA, female and male farmers and private sector in water and agricultural management.
- (iv) **Remote sensing of water allocations and water productivity.** Remote sensing will be used to (i) measure and spatially present, water productivity and water use in subproject areas, (ii) compare spatially and at a system level: water consumption, water allocations and water deliveries, and (iii) transfer capacity to the MWR to conduct the long-term monitoring and incorporate outcomes in water allocation planning. Deliverables are: (i) biennial reports on performance of water allocation implementation with recommendations and evidence of Basin Irrigation System Authority (BISA) adoption of the results, (ii) biennial reports on water productivity with evidence of application to improve water productivity and monitoring of performance in the subproject areas, (iii) training of counterpart organizations (i.e., Water Information Center of MWR) in remote sensing of water productivity and water consumption, and (iv) procedures for the use of remote sensing for the monitoring of water allocation and sharing plans.

**b) Establishment of improved asset and management operation and maintenance (MOM) arrangements**

18. This subcomponent will improve asset management, management-operation and maintenance (MOM) by strengthening and introducing volumetric water fees at WCA levels, climate risk management tools, and capacity building. These approaches will include climate change risks that affect MOM on the long-term, as for example impacts of higher temperature on

operating costs and maintenance schedules. The project will supply required equipment for the BISA for routine maintenance including 23 small excavators, 23 concrete mixers and 23 welding units (8 of each for core subproject areas). Deliverables are (i) training WMO and WCA in asset management and MOM, (ii) procedures and examples for asset management (asset database, asset condition assessment, asset management plans, investment plans, management tools, etc.), (iii) roadmap for strengthening MOM and asset management, water fee setting and cost recovery, and (iv) implementation of volumetric cost recovery in one WCA in each subproject area.

### **c) Improved salinity and water quality management**

19. This subcomponent will improve the management of water tables and salinity in the project's salinity affected command areas by introducing new technologies, development of integrated management plans, improving approaches for developing leaching plans and better controlling water quality in canals. BISA, WMO and WCA will be trained to strengthen the approaches. The project will supply six (two for the core projects) (electromagnetic ground conductivity meter) (EM38) equipment for the rapid surveying of soil salinity; 12 (four for core projects) groundwater monitoring probes; 28 (10 for core projects) water quality monitoring kits. Deliverables are: (i) integrated land and water (salinity) management plans, including development of improved leaching plans, (ii) assistance in further developing salinity management capacity, (iii) application of EM38 in project areas for improved leaching plans and integrated management plans, and (iv) assistance to the Ameliorative Expedition of BISA, PIU, WMO, and WCA in strengthening the approach to salinity management.

### **d) Institutional Strengthening of WMOs, WCA and farmers**

20. This subcomponent will strengthen the understanding of IWRM, water and irrigation management, and climate change impacts by WMO, WCA and farmers. It will also improve the capacity of WMO and WCA in governance approaches by training and providing equipment and procedural manuals. It will strengthen WCA arrangements including overall procedures, climate risk management, climate-smart agriculture, farmer participation and ISF setting and collection. It will also undertake irrigation system management; development of WCA and agricultural cluster models and their responsibilities for water and irrigation management; and District Irrigation Department (DID) support of WCA. The project will provide office equipment (e.g., computers, printers, plotters and digital projectors) to participating WCAs and WMOs. Deliverables are (i) assistance in training WMO and WCA to strengthen their organizational capacity, (ii) procedures and manuals developed for WCA management, and (iii) implementation of volumetric cost recovery for one WCA in each subproject area (with subcomponent 3b).

21. WMO, WCA and female and male farmers will be involved in a wide range of work-related training which will be provided by a training organization. WCA training will assist WCA to adapt to the new, one WCA/District arrangements and improve their governance approaches and capacity to better cope with climate change. The training will comprise 110, 1-day workshops (54 for core subprojects). Participants will be water users and WCA members and there will be 3,500 (1,785 for core subprojects) participant days of training (participants will be involved mostly in more than 1 event) with 30% female attendees. The location for training locations will be arranged depending upon the size of the subproject area and the number of districts involved. The thematic training areas for WCA and farmers are: (i) development and maintenance of water use plans, (ii) operation and maintenance and asset management, (iii) salinity and drainage management, and (iv) IWRM, climate change, WCA governance and management.

22. Training of WMOs (BISA, ISA, ME. PIU, DID) will build knowledge and capacity for management of climate change resilience and adaptation, as well as support of TA activities,

procedural manuals, guidance notes, and outputs conducted by the project. There will be 126 training courses (63 for core subprojects) with 3,000 (1,500 for core subprojects) participant days with 30% female attendees. Trainings will be held in each Province with the planned duration of each training topic for WMO at two days for each class. Topics include: (i) irrigation water demand and water allocation management for climate resilience, (ii) irrigation system management, operations and maintenance, (iii) salinity and drainage management, and (iv) IWRM, management technologies and applications. Women will be engaged in water saving campaign for farmers, capacity building to overcome gender stereotypes, and training workshops on development of the necessary skills and knowledge on land use, crop production, irrigation on-farm land and water management, and application of high-level technologies.

23. Twelve manuals and guidelines are to be prepared by the project for reference during the training as well as for application by WMO and WCA in conducting their responsibilities.

24. Study visits involving senior WMO and MWR staff are to be arranged to national and international locations (e.g., Australia) that will demonstrate modern approaches to climate-smart irrigation management. This will include for water allocation and compliance, asset management, farm level irrigated agriculture and irrigation technologies, salinity management, water management organizations, etc.

25. There will be close coordination with the activities of the national Water Resources Management Concept and Strategy and the development of national policy and procedures. Support will also be provided to introduce international approaches to climate change adaptation, water resources planning, IWRM, irrigation management and use of smart technologies, in line with the technical assistance to implement the government's Water Resource Management and Irrigation Sector Development Strategy 2021–23.<sup>4</sup>

#### D. Subprojects for Modernization

26. The MWR provided a list of the following eight irrigation and drainage subprojects for modernization under the ensuing investment project (see Table 1).

**Table 1: Subprojects Proposed by the MWR for Modernization**

| No. | Irrigation System | Province       |
|-----|-------------------|----------------|
| 1   | Kegali            | Karakalpakstan |
| 2   | P-8               | Khorezm        |
| 3   | Jondor            | Bukhara        |
| 4   | Shokhrud          | Bukhara        |
| 5   | Narpay            | Samarkand      |
| 6   | Mirza             | Samarkand      |
| 7   | Babatag           | Surkaandarya   |
| 8   | Zang              | Surkhandarya   |

27. Two subprojects listed below (No.3-Jondor and No.7 Babatag) are selected as core subprojects. Feasibility studies and implementation for two or three of the remaining subprojects (non-core subprojects) will be carried out during the project implementation period.

- **Jondor irrigation system** located in Bukhara region, it is a part of the larger Amu-Bukhara Irrigation System. It has a command area of 44,100 ha, main canal 84 km long, and has three pumping stations in series.

<sup>4</sup> Government of Uzbekistan. 2021. Water Resource Management and Irrigation Sector Development Strategy 2021–23. Presidential Resolution No. PP-5005.

- **Babatag irrigation system** located in Surkhandarya region is a part of the Amu-Zang Irrigation System. It has a command area of 18,626 ha and 43.1 km long main canal.

## II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

### A. ADB Safeguard Policy Statement (2009)

28. ADB SPS 2009 addresses three key safeguard areas: environment, involuntary resettlement and Indigenous Peoples. This policy provides the scope, triggers, and principles to avoid, minimize, or mitigate adverse environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the development process. To ensure this, impacts of project activities on the environment are to be identified early in the project cycle so that appropriate mitigation and management actions are undertaken. The SPS also states that implementation of identified safeguards is the responsibility of the client/borrower, while ADB is to monitor compliance.

29. The safeguards policy requirements and associated documentation requirements in relation to environmental assessment for this project are provided in Table 9.

**Table 2. ADB Safeguards Policy and Documentation Requirements**

| ADB Safeguards Requirement   | ADB Documentation requirement   |
|--|---|
| <b>SPS Appendix 1:</b> Safeguards Requirement 1: Environment<br>Applies to the project as a whole and to each subproject individually. | <b>Annex to Appendix 1:</b> Outline of an Environmental Impact Assessment report.<br>Specifies content and format for IEEs, which will be applied to Category B subprojects (and for Category A, which are not anticipated for this project). |
| <b>SPS Appendix 4:</b> Special Requirements for Different Finance Modalities. Applies to this project as Sector Lending.               | <b>Annex 1 to Appendix 4:</b> Outline of an Environmental Assessment and Review Framework.<br>Specifies content and format for an EARF, which will be applied to the project as a whole.  |

30. **Screening and Categorization.** The ADB has also developed categorization of all projects according to the level and type of impacts, and type of investments. ADB uses a classification system to reflect the significance of a project's potential environmental impacts. Projects can be categorized into four depending upon their impacts. These are:

- **Category A:** Projects that could have significant environmental impacts that are irreversible, diverse or unprecedented. An EIA is required.
- **Category B:** Projects that could have some adverse environmental impacts, but of less significance than those in Category A. An Initial Environmental Examination (IEE) is required to determine whether significant impacts warranting an EIA are likely. If an EIA is not warranted, the IEE is regarded as the final environmental assessment report.
- **Category C:** Projects unlikely to have adverse environmental impacts. No IEE or EIA is required, although environmental implications are still reviewed.
- **Category F1:** Projects are classified as Category F1 if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must establish an environmental management system, unless all projects result in insignificant impacts.

31. For sector projects, categorization is based on the subproject that has the most significant environmental impacts, which means that if one subproject is likely to have potential for significant adverse environmental impacts (Category A), then the whole project is to be classified as Category A. Each subproject will be individually categorized at the beginning of the environmental

planning process, based on Rapid Environmental Assessment (REA) checklist (Appendix 1) for each subproject.

32. For Category A and B subprojects, ADB SPS 2009 requires an environmental assessment to identify potential direct, indirect, cumulative, and induced impacts, transboundary and global impacts and risks (including climate change) to physical, biological, socio-economic, and physical cultural resources in the context of the project's area of influence.

33. The subprojects considered under this EARF are expected to be Category B due to the nature of anticipated works having less adverse impacts at site specific level.

34. **Meaningful Consultation and Grievance Redress Mechanism (GRM).** To ensure that people's concerns and needs are included in the project design, consultation with those impacted by the project need to be undertaken early in the project design cycle. Furthermore, there is a need for the client to identify an appropriate GRM for project impacted stakeholders and to ensure transparency.

35. **International good practice.** During the design, construction, and operation of a project, the ADB SPS requires the borrower to follow environmental standards consistent with good international practice as reflected in internationally recognized standards such as the World Bank Group's *Environment, Health and Safety Guidelines* (hereafter referred to as the *EHS Guidelines*).<sup>5</sup> The *EHS Guidelines* contain discharge effluent, air emissions, and other numerical guidelines and performance indicators as well as prevention and control approaches that are normally acceptable to ADB and are generally considered to be achievable at reasonable costs by existing technology. When host country regulations differ from these levels and measures, the borrower/client is to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client is required to provide justification for any proposed alternatives.

## **B. Country Policies and Administrative Framework**

### **1. Overall Legal Framework**

36. The Republic of Uzbekistan is an independent democratic republic based upon the 1992 Constitution (as amended on 28 December 1993, 24 April 2003, 11 April 2007, and 18 April 2011). The national environmental and social policy in Uzbekistan is based on the provisions of the country's Constitution. The Constitution recognizes that all natural resources such as land, its subsoil, water, flora and fauna and others are national wealth and protected by the state and they are subject to rational use. The purpose of the Law "On Water and Water Use" (1993) is to regulate water resources, rational use of water for the needs of the population and economic sectors, protect water from pollution, prevent and eliminate the harmful effects of water, improve the condition of water bodies, and protect the rights and legitimate interests of enterprises, institutions, organizations, farms, dehqan farms and citizens.

37. Uzbekistan is a presidential republic in which the President is the executive head of the state who secures efficient coordination of governmental authorities. The President issues decrees, resolutions and ordinances which shall be binding across Uzbekistan.

38. The Oliy Majlis of the Republic of Uzbekistan is the main Government Institution which identifies and approves the regulation of water related issues, adopts legislative acts on water and water use. In addition, it introduces amendments, determines main directions of state policy in the field of use and protection of water resources and adoption of strategic state water

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<sup>5</sup> World Bank Group, *Environmental, Health, and Safety Guidelines*, April 30, 2007, Washington, USA. <http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines>.

management programs. The Cabinet of Ministers of the Republic of Uzbekistan focuses on regulation of water relations by pursuing a unified state policy in the field of integrated and rational use, management and protection of water resources, and coordinates activities of the Ministries, State Committees, Departments, other legal entities in the field of integrated and rational use, management and protection of water resources. It also prevents and eliminates the harmful effects of water, establishes the procedure for the formation and using of the water fund.

39. The Cabinet of Ministers is the executive. It comprises the Prime Minister, Deputy Prime Ministers, Ministers, State Committees Chairmen and the Government Executive of the Karakalpakstan Republic. The Cabinet of Ministers exercises state control of environmental protection and natural resources management along with the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection (SCEEP) and the local governments. Based on its environmental and social mandate, the Cabinet of Ministers (i) pursues national environmental and social policy; (ii) regulates natural resources management; (iii) is responsible for natural resources inventory and evaluation; (iv) coordinates the development and implementation of national socio-economic programs; (v) develops mitigation measures; (vi) establishes procedures for collecting environmental charges, pollution and waste disposal fees; (vii) sets up limits for the use of natural resources and waste disposal; (viii) develops environmental education and awareness systems; (ix) identifies zones of special environmental management, environmental protection and management regimes; and (x) develops international environmental relations.

40. The Councils of People's Deputies, or '*Kengashi*', led by governors known as '*khokims*', are the representative bodies of government authority in regions, districts, cities and towns (except for towns under regional jurisdiction and city districts). Under the Constitution they address any issues within their mandate and responsibility based on the interests of the state and its citizens. The *Kengashi* are responsible for (i) Law and order; (ii) the security and safety of citizens; (iii) issues of economic, social and cultural development; (iv) local budgets and taxes; (v) local utilities; (vi) environment protection, civil registration; (vii) local standards and regulations, and (viii) enforcement. The term of office for both the *Kengashi* and the *Khokim* is five years. The *Khokim* is personally responsible for decisions and actions taken by the *Kengashi*, while decisions of the *Khokim* are binding to all ventures, institutions, organizations, associations as well as public officers and citizens across the respective territory.

41. The environmental responsibility of regional/local government authorities includes: (i) identification of environmental priorities for the respective territory; (ii) approval of regional (local) environmental programs; (iii) inventory and evaluation of natural resources; (iv) inventory of environmentally hazardous facilities; (v) logistical support to environmental actions; (vi) environmental permitting; (vii) waste management; (viii) the collection of environmental charges; and (ix) environmental control.

42. The *Makhalla* (community level organization) is an independent local form of self-government in Uzbekistan. *Makhalla* pursue general initiatives and actions locally, including environment-related ones. *Makhallas* are responsible for taking decisions on issues of local importance, such as infrastructure improvement and development, arrangements for *khashars* (voluntary unpaid work on Sunday), and the provision of social aid to low-income families.

43. Settlements, *kishlaks* (villages) and *auls* (mountain villages) are governed by *aksakals* (chairmen) and their advisors. They are elected by the gathering of citizens for a period of 2.5 years.

## 2. National Environmental Legislation and Procedures

44. Legal Framework in the field of Nature Protection and Management established in the Republic of Uzbekistan, provides to the citizens the rights and duties specified in the country's Constitution. Specific articles that address environment protection issues within the Constitution are:

- Article 50. All citizens shall protect the environment;
- Article 51. All citizens shall be obliged to pay taxes and local fees established by law;
- Article 54. Any property shall not inflict harm to the environment;
- Article 55. Land, subsoil, flora, fauna, and other natural resources are protected by the state and considered as resources of national wealth subject to sustainable use.

45. Uzbekistan has enacted several supporting laws and statutes for environmental management and is party to several international and regional environmental agreements and conventions. The key national environmental law is the Law on Nature Protection (1992). A brief description of this law and the other supporting laws related to environmental protection is presented below.

- ✓ **The Law "On nature protection"** (1992) states legal, economic, and organizational bases for the conservation of the environment and the rational use of natural resources. Its purpose is to ensure balanced relations between man and nature, to protect the environmental system and to guarantee the rights of the population of a clean environment. Article 25 of this law states that State Environmental Expertise (SEE) is a mandatory measure for environmental protection, preceded to decision-making process. In addition, Article 25 says that the implementation of the Project without a positive conclusion of SEE is prohibited.
- ✓ **Law "On Atmospheric Air Protection"** (1996, amended on 10.10.2006). It describes regulations on atmosphere protection and its objectives. It specifies standards, quality and deleterious effect norms, requirements on fuels and lubricants, production and operation of vehicles and other transport means and equipment, ozone layer protection requirements, obligations of enterprises, institutions and organizations toward atmospheric protection, and compensations for damages from atmospheric pollutions.
- ✓ **Law "On water and water use"** (1993). It regulates the water relations, rational use of water by the population and economy. The Law regulates the protection of waters from pollution and depletion, and prevention and liquidation of harmful effects of water, improvement of water bodies and the protection of the rights of enterprises and institutions, organizations and dehqan farms and individuals in the field of water relations.
- ✓ **Law "On Plant World Conservation"** (1997), regulates relations in the field of protection and use of plant world growing in natural conditions, as well as wild plants contained in the conditions of culture for their reproduction and conservation of genetic resources.
- ✓ **Law "On Protection and Use of the Wildlife"** (1997) regulates relations in the field of protection, use, restoration and reproduction of the wildlife in order to ensure the conditions of its existence, conservation of species diversity, integrity of natural communities and habitat.
- ✓ **Land Code of the Republic of Uzbekistan** (1998). It aims to regulate land relations to ensure that present and future generations have science-based, sustainable use and conservation of land, breeding and improvement of soil fertility, conservation and improvement of the environment and creating conditions for equitable development of all forms of management, the protection of individuals and legal entities' right for land, as well as strengthening the rule of law in this area.

- ✓ **Law “On Ecological Expertise”** (2001) provides for conducting a mandatory expert assessment of impacts on the environment and human health, as well as a legal basis for conducting expert assessments.
- ✓ **Law “On Protected Natural Reserves”** (2004). The purpose of this Law is to regulate relations in term of organization, protection and use of protected natural territories. The main tasks of this Law are the preservation of typical, unique, valuable natural objects and complexes, the genetic fund of plants and animals, the prevention of the negative impact of human activities on nature, the study of natural processes, the monitoring of the environment, the improvement of environmental education.
- ✓ **Law “On Wastes”** (2002, as amended on 2011). It addresses waste management, exclusive of emissions and air and water pollution, and confers authority to the State Committee for Ecology and Environmental Protection (SCEEP or Goskomecologiya) concerning inspections, coordination, ecological expertise and establishing certain parameters regarding the locations where waste may be processed. Enterprises are responsible for their waste, but, if they recycle, they may be provided with assistance from the state budget, the National Fund for Nature Protection or voluntary payments. The principal objective of this law is to prevent negative effects of solid wastes on people’s lives and health, as well as on the environment, reduce wastes generations, and encourage rational use of waste reduction techniques in household activities.
- ✓ **Law “On environmental control”** (2013). The purpose of this Law is to regulate relations in the field of environmental control. The main objectives of environmental control are: (i) prevention, detection and suppression of violation of the requirements of legislation in the field of environmental protection and rational use of natural resources;(ii) monitoring the state of the environment, identifying situations that can lead to environmental pollution, irrational use of natural resources, create a threat to life and health of citizens; (iii) determination of compliance with the environmental requirements of the planned or ongoing economic and other activities; (iv) ensuring compliance with the rights and legitimate interests of legal entities and individuals, performing their duties in the field of environmental protection and rational use of natural resources.

### 3. Administrative Framework

46. **The State Committee for Ecology and Environmental protection (SCEEP)** (Goskomecologiya) is the body of state administration in the sphere of ecology, environmental protection, rational use and reproduction of natural resources. The committee is accountable to the Cabinet of Ministers of the Republic of Uzbekistan.

47. The activity of the committee is regulated by President Resolution No. 5024 “On Improving the System of State Management in the sphere of Ecology and Environmental Protection” on 21 April 2017.

48. The structure of the SCEEP takes the form of a central body in Tashkent with regional branches and agencies providing scientific and technical support. Regional environmental authorities are structured similarly to the SCEEP.

49. Other state bodies within administrative framework with relevant environmental responsibilities are:

- **Ministry of Water Resources (MWR)** is responsible for water allocation among different users within Republic of Uzbekistan. Based on forecast and limits provided by Interstate

Commission for Water Coordination, water is allocated among users with the priority given to drinking water supply sector.<sup>6</sup>

- **The Ministry of Agriculture** is responsible for the implementation of a unified technical policy in agriculture, based on (i) in-depth study and implementation of advanced farming systems; (ii) ensuring stable production of the most important agricultural products; (iii) ensuring the introduction of new farming systems, highly efficient agricultural technologies, modern types of agricultural machinery for agriculture and livestock breeding; (iv) implementation of measures for reclamation of irrigated land; and (v) ensuring the expansion and rational use of forest resources, and monitoring the compliance with forest legislation and others.
- **State Committee for Geology and Mineral Resources:** (i) carries out, together with Geological Survey Services of the neighbouring countries, work on identifying and studying the focal points of radioactive and toxic pollution within transboundary territories, prepare geological maps and atlases reflecting specially hazardous zones and sections; (ii) in accordance with the procedure established by legislation, exercises control over protection of geological and mineralogical facilities as well as underground water from pollution and depletion.
- **Uzhydromet** establishes and maintains the State Hydro-meteorological Fund of Data, the State Fund of data on environment pollution, state accounting of surface waters; systematic observations of air, soil, surface water, as well as formation and development of disastrous hydro-meteorological phenomena.
- **Ministry of Health** – develops and approves sanitary regulations, rules, and hygienic standards, carries out state sanitary supervision over their observance as well as methodological supervision of the work of sanitary and epidemiological services, regardless of their departmental subordination.
- **Sanoatgeokontekhnazorat** (State Inspectorate for Supervision of Subsurface Resources Geological Investigation, Safe Work in Industry, Mining, Utilities and Household Sector) – works together with the SCEEP of the Republic of Uzbekistan and carries out control in the field of geological investigation, use and protection of subsurface resources.
- **The Sanitary and Epidemiological Services** – monitors the sanitary and hygienic status of environments. It is mandated for example to prohibit the use of stimulants and growth regulators of agricultural plants and animals, pesticides and others in the event of a harmful effect on human health.
- **Ministry of Culture** - is a body of the Government of Uzbekistan that is responsible for state policy in cultural spheres, Art, Cinematography, archives and inter-nations issues.

#### 4. National Environmental Impact Assessment Rules and Procedures

50. The national EIA procedure is regulated by Law on Environmental Expertise and the Regulation on SEE approved by Cabinet of Ministry Decree No.541 dated 7 September 2020. The regulation defines the legal requirements for EIA in Uzbekistan. SEE is a review process conducted by the Center for SEE under SCEEP (Goskomecologiya) at either the national or the regional level, depending on the project category.

51. Goskomecologiya on SEE is a uniform system of Center for SEE, methodological guidance of which implemented by Center for SEE.

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<sup>6</sup> Law of Republic of Uzbekistan “On water and water use” (1993), chapter 8, para 25

52. According to Section 21 of the Regulation on SEE, an application for the submission of EIA ('OVOS' is the national acronym) materials to the SEE is submitted by the customer through the personal account of the SCEEP on the Internet in the Global information network of the State Environmental Committee.

53. The types of activities of I and II categories of environmental impact are pre-project and are subject to SEE, if the project documentation is confirmed in the prescribed manner at public consultations. The procedure for holding public consultations is given in Appendix 3 of this Resolution of the Cabinet of Ministers No. 541 of 7 September 2020.

54. Section 24 of the Regulation on SEE outlines the information that should be within the documentation at each of these stages. The three EIA stages and their required deliverables are summarized as follows:

- **Stage I:** The 'Draft Statement of the Environmental Impacts (DSEI)', to be conducted at the planning stage of the proposed project prior to development funds being allocated.
- **Stage II:** The 'Statement of the Environmental Impacts (SEI)', to be completed where it was identified by the Center for SEE/Regional Center for SEE at Stage I that additional investigations or analyses were necessary. The Statement must be submitted to the Center for SEE/Regional Center for SEE before approval of the project's Feasibility Study, and therefore before construction.
- **Stage III:** The 'Statement on Environmental Consequences (SEC)' represents the final stage in the SEE process and is to be conducted before the project is commissioned. The report details the modifications to the project design that have been made from the Center for SEE/Regional Center for SEE review at the first two stages of the EIA process, the comments received through the public consultation, the environmental norms applicable to the project and environmental monitoring requirements associated with the project and principal conclusions.

55. SEE approval (Center for SEE/Regional Center for SEE opinion) is a mandatory document for project financing by Uzbek banks and other lenders (Section 24) at Stages I and II and for project commissioning at Stage III of the national EIA procedure.

56. All economic activities subject to SEE are classified into one of four categories:

- Category I — "high risk of environmental impact" (SEE is conducted by the national SCEEP within 10 days, all EIA materials are required);
- Category II — "medium risk of environmental impact" (SEE is conducted by the national SCEEP within 7 days, all EIA materials are required);
- Category III — "low risk of impact" (SEE is conducted by regional branches of SCEEP within 5 days, all EIA materials are required); and
- Category IV — "low impact" (SEE is conducted by regional branches of SCEEP within 3 days, only a questionnaire form is required).

57. Categorization is based on the scale of the proposed activities of the project and the significance of the potential environmental impacts. The project does not foresee the construction of new reservoirs or dams as well as construction/rehabilitation of national level conveyance canals. Therefore, it is expected the subprojects under the CAWRMP will be either Category II or III depending on the capacity of the canals, rivers or collectors.

## 5. Environmental Regulations, Standards and Guidelines

58. Uzbekistan has a large set of specific standards that refer to emissions, effluent discharge, and noise standards, as well as standard to handle and dispose specific wastes ranging from sewage to hazardous wastes. The following summarizes these laws and standards along with other international best practice standards.

### a) Air Quality and Emissions

59. National Standards – Air quality in Uzbekistan is measured against Maximum Permissible Concentrations (MPC) and Maximum Permissible Emissions (MPE).

60. Ambient Air Quality Standards, or MPCs, are established by SanPiN 0293-11 (May 16, 2011). According to the United Nations Environment Program (UNEP), Uzbek national ambient air quality standards meet World Health Organization (WHO) standards.<sup>7</sup> The MPCs relevant to the Project are shown in **Table 2**.

**Table 3: National Air Quality MPCs**

| Parameter                           | Uzbekistan MPC (mg/m <sup>3</sup> ) |         |         |          |
|-------------------------------------|-------------------------------------|---------|---------|----------|
|                                     | 30 min                              | 24 Hour | Monthly | Annually |
| Nitrogen Dioxide (NO <sub>2</sub> ) | 0.085                               | 0.06    | 0.05    | 0.05     |
| Nitrogen Oxide (NO)                 | 0.6                                 | 0.25    | 0.12    | 0.06     |
| Sulphur Dioxide (SO <sub>2</sub> )  | 0.5                                 | 0.2     | 0.1     | 0.05     |
| Dust                                | 0.15                                | 0.1     | 0.08    | 0.05     |
| Carbon Monoxide (CO)                | 5.0                                 | 4.0     | 3.5     | 3.0      |

61. Emission standards are stipulated by The Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 14 of January 21, 2014 “On Approval of the Regulation on the Procedure for Developing and Coordinating Environmental Draft Projects”. It states that the main criterion for establishing MPE are quotas for pollutants.

62. EHS Guidelines<sup>8</sup>– According to EHS Guidelines, WHO Air Quality Guidelines (Table 4) applies in the absence of national legislated standards.

**Table 4: Ambient Air Quality EHS Guidelines<sup>9</sup>**

| Parameter                            | Averaging Period | EHS Guidelines Value (mg/m <sup>3</sup> ) |
|--------------------------------------|------------------|---|
| Sulphur Dioxide (SO <sub>2</sub> )   | 10 minutes       | 20  |
|                                      | 24 Hour          | 500                                       |
| Nitrogen Dioxide (NO <sub>2</sub> )  | 1 Hour           | 40  |
|                                      | 1 Year           | 200                                       |
| Particulate Matter PM <sub>10</sub>  | 24 Hour          | 20  |
|                                      | 1 Year           | 50  |
| Particulate Matter PM <sub>2.5</sub> | 24 Hour          | 10  |
|                                      | 1 Year           | 25  |

63. **Project Air Quality Standards.** Any air quality monitoring during the rehabilitation phase will be undertaken against national standards. This is based on the criteria adopted by EHS Guidelines which state that: ‘Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines.’<sup>10</sup>

<sup>7</sup> <https://wedocs.unep.org/bitstream/handle/20.500.11822/17141/Uzbekistan.pdf?sequence=1&isAllowed=y>

<sup>8</sup> See footnote 5.

<sup>9</sup> Not including interim targets.

<sup>10</sup> Environmental, Health and Safety Guidelines. Air Emissions and Ambient Air Quality. WBG. 2007

64. As noted above, Uzbekistan has their own national legislated standards and as such they will be applied to the Project.

### b) Water quality

65. Ambient river water quality standard is given as Maximum permissible concentration (MPCs) in Uzbekistan established by “SanPiN №0172-06 The main criteria for the hygienic assessment of the degree of pollution of water bodies on the danger to public health in the conditions of Uzbekistan”. MPC has two categories. The first is for centralized or non-centralized drinking water supply, and the second for cultural and everyday purposes of the population, recreation, and sports. Table 5 shows MPCs by SanPiN №0172-06.

**Table 5: Maximum permissible concentration of pollutants in surface water (mg/m<sup>3</sup>)**

| Indicators                     | Purpose of water use  |                         |   |                         |
|--------------------------------|---|-------------------------|---|-------------------------|
|                                | Domestic use  | Cultural and service    | Fishery needs   |                         |
|                                |   |                         | Highest and first category  | Second category         |
| Suspended solids               | Compared with the natural conditions the content of suspended solids at wastewater discharge shall not be increased by more than  |                         |   |                         |
|                                | 0.25 mg/dm <sup>3</sup>   | 0.75 mg/dm <sup>3</sup> | 0.25 mg/dm <sup>3</sup>   | 0.75 mg/dm <sup>3</sup> |
|                                | For reservoirs and watercourses containing at low water above 30 mg/dm <sup>3</sup> suspended solids, there may be an increase to 5%. Suspensions with fallout rate of more than 0.4 mm/s for watercourses and more than 0.2 mm/s for discharge reservoirs are prohibited |                         |   |                         |
| Floating matter                | There shall not be a film of oil products and concentrations of other contaminants on the water surface   |                         |   |                         |
| Color                          | Shall not be detected in the column of height   |                         | There shall be no foreign colour  |                         |
|                                | 20 sm   | 10 sm                   |   |                         |
| Smell and test                 | Intensity of more than 1 point is not permitted   |                         | Water must not give extraneous odours and flavours to fish meat   |                         |
| Temperature                    | Temperature of water at the discharge point must not exceed 3°C in comparing with average monthly temperature of the hottest month  |                         | Temperature of water at the discharge point must not exceed 5°C in comparing average monthly temperature of the hottest month. Increasing of temperature more than 28 °C in summer and till 8°C in winter is not allowed  |                         |
| Hydrogen exponent (pH)         | Shall not beyond 6.5...8.5 pH   |                         | Shall not beyond 6.5...8.5 pH   |                         |
| Mineralization                 | Shall not exceed by dry residue 1000 mg/dm <sup>3</sup> , including chlorides - 350mg/dm <sup>3</sup> and sulphates - 500 mg/dm <sup>3</sup>  |                         | Rated according to water bodies intoxications   |                         |
| Dissolved oxygen               | No less than 4 mg/dm <sup>3</sup> in any period of the year in a sample taken by 12 a.m. on the same day  |                         | In winter shall be no less than   |                         |
|                                |   |                         | 6 mg/dm <sup>3</sup>  |                         |
|                                |   |                         | No less than 6 mg/dm <sup>3</sup> in any period of the year in a sample taken by 12 a.m. on the same day  |                         |
| BOD                            | At 20°C must not exceed   |                         | At 20 ° C shall not exceed 3.0 mg/dm <sup>3</sup> if in winter the dissolved oxygen content in the water of the first* category fishing water bodies fell to 6.0 mg/dm <sup>3</sup> , and in the second** – to 4 mg/dm <sup>3</sup> , then discharge in them is only permitted to wastewater that does not change the BOD |                         |
|                                | 3.0 mg/dm <sup>3</sup>  | 6.0 mg/dm <sup>3</sup>  |   |                         |
| COD                            | Shall not exceed  |                         |   |                         |
|                                | 15.0 mg/dm <sup>3</sup>   | 30.0 mg/dm <sup>3</sup> | -   | -                       |
| Causative agent (of a disease) | Not allowed   |                         |   |                         |
| Chemicals (pollutants)**       | Shall not be contained in concentrations exceeding the MAC  |                         |   |                         |

### c) Noise

66. National Standards - SanPiN No. 0267-09 is used to ensure the rules of acceptable noise levels for residential areas in Uzbekistan. These rules and regulations establish permissible noise parameters in residential, public buildings and residential buildings of populated areas created by external **and** internal sources, as well as general requirements for measurements, measurement methods and hygienic noise assessment at research sites. Evaluation of the sound level at the calculation point is performed for the day and night period of the day (from 7 to 23 hours and from 23 to 7 hours) and takes into account the maximum intensity of the sound source level during the half-hour period. Table 6 presents the permissible noise levels in the territories that are most significant for the project. The levels are almost identical to EHS Guidelines<sup>11</sup> shown below, with the exception of the periods where EHS Guidelines are slightly more stringent. As such EHS Guidelines limits will be used for the Project.

**Table 6: Noise limits from SanPiN No. 0267-09**

| Purpose of premises or territories   | Time               | SanPiN No. 0267-09 |
|--|--------------------|--------------------|
| Territories adjacent to homes, clinics, dispensaries, rest homes, boarding houses, nursing homes, childcare facilities, schools and other educational institutions, libraries. | From 7 am to 11 pm | 55 dB(D)           |
|  | From 11 pm to 7 am | 45 dB(A)           |

67. EHS Guidelines – To meet EHS Guidelines requirements noise impacts should not exceed the levels presented in Table 7 or result in a maximum increase in background levels of 3 dB at the nearest receptor location off site.

**Table 7: Noise Level EHS Guidelines**

| Receptor                                | One-hour $L_{aeq}$ (dBA) |                             |
|---|--------------------------|-----------------------------|
|   | Daytime<br>07.00-22.00   | Night-time<br>22.00 – 07.00 |
| Residential; institutional; educational | 55                       | 45                          |
| Industrial; commercial                  | 70                       | 70                          |

68. Workplace Noise - In order to protect the health of staff in the workplace Uzbekistan, utilizes the law (SanPiN) No. 0120-01 - “Sanitary norms and rules to ensure acceptable noise levels in the workplace”. This document provides acceptable noise levels for various types of work, the most significant of which are listed below in **Table X**. In addition, EHS Guidelines<sup>12</sup> provides noise limits for various working environments, which are also illustrated in **Table X**.

**Table 8: Working environment Noise Limits**

| Type of work, workplace   | SanPiN No. 0120-01 | EHS Guidelines                        |
|---|--------------------|---------------------------------------|
| Performance of all types of work at permanent workplaces in industrial premises and at enterprises operated since 12 March 1985 | 80 dB (A)          |                                       |
| Heavy industry  |                    | 85 Equivalent Level $L_{aeq}$ , 8h    |
| Light industry  |                    | 50-65 Equivalent Level $L_{aeq}$ , 8h |

\*  $L_{aeq}$ - equivalent average sound pressure level

69. Project Noise Standards. For construction phase monitoring, EHS Guidelines limits will be followed as the nighttime period is slightly longer than Uzbek standards. For workplace noise, national guidelines will be followed.

<sup>11</sup> See footnote 5.

<sup>12</sup> See footnote 5.

#### d) Vibration

70. International Standards – The German Standard DIN 4150-3 – Vibration in Buildings – Part 3: Effects on structures provides short term and long-term limits<sup>13</sup> for vibration at the foundation for various structures. This standard is considered international best practice and will be followed as part of the Project.

**Table 9: Guideline Values for Vibration Velocity to be Used When Evaluating the Effects of Short-term and Long-term Vibration on Structures**

| Group | Type of structure  | Guideline Values for Velocity (mm/s) |                |              |                 |                 |
|-------|--|--------------------------------------|----------------|--------------|-----------------|-----------------|
|       |  | Short-term                           |                |              |                 | Long-term       |
|       |  | At foundation                        |                |              | Uppermost Floor | Uppermost Floor |
|       |  | Less than 10 Hz                      | 10 Hz to 50 Hz | 50 to 100 Hz | All frequencies | All frequencies |
| 1     | Buildings used for commercial purposes, industrial buildings and buildings of similar design   | 20                                   | 20 to 40       | 40 to 50     | 40              | 10              |
| 2     | Residential dwellings and buildings of similar design and/or use   | 5 (105 dB)                           | 5 to 15        | 15 to 20     | 15              | 5 (105 dB)      |
| 3     | Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g., buildings that are under a preservation order) | 3 (100.5 dB)                         | 2 to 8         | 8 to 10      | 8               | 2.5 (99.0 dB)   |

Source: DIN 4150-3, Structural Vibration, Part 3: Effect of vibration on structures

71. DIN 4150-3 notes that “experience has shown that if these values are complied with, damage that reduces the serviceability of the building will not occur. If damage nevertheless occurs, it is to be assumed that other causes are responsible. Exceeding the value in the table does not necessarily lead to damage”.

72. Project Vibration Standards. German Standard DIN 4150-3 will be followed during the rehabilitation phase.

#### e) Waste

73. National Standards - The Law on Waste No.362-II of April 5, 2002 (modified January 4, 2011) regulates solid waste treatment procedures and defines the authority of various institutions involved in solid waste management. The law also provides rules for the transport of solid waste. Hazardous wastes that are transported must undergo environmental certification and be transported by special vehicles.

74. The rules for management of medical waste and other waste generated in laboratories and medical institutions are set out in SanPiN No. 0317-15<sup>14</sup>. Sanitary rules and norms for the collection, storage and disposal of waste in medical institutions of the Republic of Uzbekistan.

#### f) Hazardous material

75. National Standards - The order to place hazardous chemicals and hazardous materials in special landfills, their protection and disposal, approved by the State Committee for Nature

<sup>13</sup> short-term vibrations are defined as those that do not occur often enough to cause structural fatigue and do not produce resonance in the structure being evaluated and long-term vibrations are all the other types of vibration.

<sup>14</sup> <https://www.minzdrav.uz/documentation/detail.php?ID=46918>

Protection, the Ministry of Emergency Situations, the Ministry of Finance, the Ministry of Health No. 2438 of March 20, 2013. The provision identifies hazardous chemicals, toxic materials, special landfills and special vehicles. The state organization “Kishlokkime” (Agricultural Chemicals) is responsible for the transportation and disposal of hazardous materials.

76. Transportation of such materials should be carried out in accordance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 35 dated February 16, 2011 “On rules of transportation of hazardous materials in the territory of Uzbekistan”. The Ministry of Health and the State Committee for Nature Protection approves proper performance of work.

#### **g) Asbestos management**

77. Handling of asbestos materials should be in accordance with SanPiN No 0158-04 sanitary rules and standards for the collection, transportation and disposal of asbestos-containing waste in the conditions of Uzbekistan. This requirement include:

- Small particles and debris accumulating on the floor near the mechanisms must be removed in ways that exclude dust formation; in the case of manual cleaning, it is necessary to use personal respiratory protection equipment (respirators). Bulk materials collected by other methods should be placed in impermeable bags (containers). The change and unloading of containers should be carried out in a mechanized way.
- Solid waste containing asbestos should be stored in an area where it will not deteriorate pending disposal. Bags (or other containers) that contain loose asbestos fibres should be removed by shredding or packing in tight transportable bales in a designated area. It is not allowed to reuse asbestos-free bags as wastepaper or containers for any materials.
- All asbestos waste awaiting disposal in containers, bags or containers must be appropriately labelled.
- Work related to loading and transportation, unloading and disposal of waste must be mechanized; transportation of waste should exclude the possibility of losses along the route and environmental pollution. Transportation of unpackaged asbestos in open bodies of cars and on railway platforms is not allowed. In case of spillage of waste during transportation, immediate actions should be taken on the measures appropriate to its scale.

78. In addition, the sanitary norms and rules SanPiN NO 233-07 Labor hygiene and environmental protection in the production and application of asbestos containing products should be followed.

#### **h) Sanitary Protection Zones**

79. According to sanitary and epidemiological rules and regulations (SanPiNs) Sanitary Protection Zones and Sanitary Classification of Facilities, Structures for the project are established<sup>15</sup>.

#### **i) Policies, Protocols & Programs Specific to COVID-19**

80. In order to stimulate the employees of the Sanitary and Epidemiology Service during the coronavirus pandemic, the following were approved: Decree of the President of the Republic of

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<sup>15</sup> Applicable SanPins are listed on the website of the Ministry of Health: [http://minzdrav.uz/documentation/list.php?SECTION\\_ID=141](http://minzdrav.uz/documentation/list.php?SECTION_ID=141)

Uzbekistan dated March 19, No. UP 5969, resolution of the President of the Republic of Uzbekistan dated April 24, 2020 No. PP 4695<sup>16</sup>.

81. The Ministry of Health of the Republic of Uzbekistan, together with WHO, developed the National COVID Guideline 19<sup>17</sup>.

82. Guidelines on labor protection and safety are reflected in SANPIN No.0372-20 “Temporary sanitary rules and standards for organizing the activities of government bodies and other organizations, as well as business entities in the context of the COVID 19 pandemic”.

83. In order to introduce and organize a system and a unified approach for the diagnosis and treatment of coronavirus infection (COVID 19) in pregnant women, by the Ministry of Health, with the technical support of USAID, developed and approved an interim clinical guideline.

### **C. International Environmental Agreements and Applicability to the Project**

84. Republic of Uzbekistan has ratified several international conventions, including, among others:

- Convention on Long-Range Transboundary Air Pollution (Geneva, 1979);
- Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985);
- Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987);
- Convention on the Control of Movements of hazardous wastes and their Disposal (Basel, 1989);
- Convention on EIA in Transboundary Context (Espoo, 1991);
- Convention on the Protection and Use of Transboundary Water Courses and International Lakes (Helsinki, 1992);
- Convention on the Transboundary Effects of Industrial Accidents (Helsinki, 1992);
- United Nations Framework Convention on Climate Change (New York, 1992);
- Convention on Biological Diversity (Rio de Janeiro, 1992);
- United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa (June 17, 1994);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, Washington, 1997);
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (1995), signed in the Hague in the framework of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1998);
- Convention on the Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 2001);
- Agreement under the United Nations Framework Convention on Climate Change (Paris Agreement, 2016).

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<sup>16</sup> <https://lex.uz/docs/4798007>

<sup>17</sup> [http://minzdrav.uz/openData/csv/nation\\_rukovodstvo\\_COVID-19.pdf](http://minzdrav.uz/openData/csv/nation_rukovodstvo_COVID-19.pdf)

### III. ANTICIPATED ENVIRONMENTAL IMPACTS OF SUBPROJECTS

85. This section briefly discusses and lists types of activities. In case any identified subproject or activity is likely to result in any of the concerns listed in the following subsection without appropriate mitigation measures such as design changes to ensure that no such impact occurs, the activity should not be undertaken. This section also addresses the environmental procedures for selection of subprojects. Selection Criteria are also included in this section.

#### A. Potential Impacts from Subproject Activities

86. Details of possible environmental impacts from project activities are given in Appendix 2. These are the most likely impacts and could be used to guide the assessment process for future subprojects of the CAWRMASBP. However, an assessment of activities and subprojects as planned must be undertaken to ensure that all relevant environmental impacts are identified and the EMP is developed for the project. This section can be used as guidelines alongside the impact assessment for each subproject. Appendix 2 gives potential environmental impacts during preconstruction, construction and operation phases, possible mitigation actions and suggests authorities responsible for each action. This could guide the development of EMP for activities and subprojects. Table 10 shows summary of potential environmental impacts due to project activities. In case there is a secondary or a minor impact, it is not highlighted here, but will be discussed in Appendix 2 that details project related impacts.

87. Mitigation measures should be developed and applied in compliance with the following:

- ADB SPS 2009
- EHS Guidelines<sup>18</sup>
- EHS Guidelines: Annual Crop Production<sup>19</sup>
- Republic of Uzbekistan laws and regulations including those relating to health, safety and labour protection.

**Table 10: Summary of Potential Environmental Impacts from Project Activities**

| No. | Project Activity              | Environmental Impacts  | Extent             | Magnitude | Period     |
|-----|-------------------------------|--|--------------------|-----------|------------|
| 1.  | Site Clearance                | (i) Increase in soil erosion<br>(ii) Disposal of construction debris can cause land and water pollution.<br>(iii) vegetation clearance including tree removal<br>(iv) Impacts on cultural heritage   | Within 5 km radius | Medium    | Short Term |
| 2.  | Desilting and Silt Management | Improper disposal leads to:<br>(i) polluting nearby farmlands affecting environmental quality and human health<br>(ii) altering the drainage pattern in the area and/or water quality of the surface water bodies in the region and odour impact to nearby households. | Site-Specific      | Medium    | Short Term |
| 3.  | Transport of Machinery,       | An increase in air pollution, noise levels, traffic congestions and possible accidents.  | Site-Specific      | Low       | Short Term |

<sup>18</sup> See footnote 5.

<sup>19</sup> World Bank Group's EHS Guidelines: Annual Crop Production (2016), Washington D.C. [https://www.ifc.org/wps/wcm/connect/766c4c6e-e4b1-41ef-a980-3610bce404e8/Annual+Crop+Production+EHS+Guidelines\\_2016+FINAL.pdf?MOD=AJPERES&CVID=lfe82iC](https://www.ifc.org/wps/wcm/connect/766c4c6e-e4b1-41ef-a980-3610bce404e8/Annual+Crop+Production+EHS+Guidelines_2016+FINAL.pdf?MOD=AJPERES&CVID=lfe82iC)

| No. | Project Activity                          | Environmental Impacts  | Extent             | Magnitude | Period      |
|-----|---|--|--------------------|-----------|-------------|
|     | Equipment and Material                    |  |                    |           |             |
| 4.  | Material Sourcing                         | Impact from ready-mix-concrete sourcing include increased levels of air emissions and noise levels in the area where the ready-mix-concrete plant is established and operated.   | Site-Specific      | Medium    | Short Term  |
| 5.  |   | Sand mining (for concrete batching) has significant environmental impacts including on the river ecosystem.<br>Operating quarries also has an ecological cost including altering the drainage pattern in the area and land use change. | Site-Specific      | Medium    | Short Term  |
| 6.  | Storage and Handling of Materials         | Contamination of land and water.<br>Generation of dust.  | Site-Specific      | Medium    | Short Term  |
| 7.  | Rehabilitation Activities at sites        | Impact on air quality and noise due to increased vehicle and equipment operations.   | Site-Specific      | Medium    | Short Term  |
| 8.  |   | Impact on water quality and land caused by improper disposal of weed, silt, oil and other debris encountered at construction sites.  | Within 5 km radius | Medium    | Short Term  |
| 9.  |   | Impact on the nesting, breeding, food availability, recreational habitats of the wildlife if the pollution levels are beyond acceptable limits.  | Within 5 km radius | Medium    | Medium Term |
| 10. |   | Disturbance of community by operation of heavy construction machinery as well as movement of construction vehicles (noise, dust, vibration, accidents). Social tensions and potential conflict with workers from other regions.        | Site-Specific      | Medium    | Short Term  |
| 11. |   | Occupational and community Health and Safety Risk  | Site-Specific      | Medium    | Short Term  |
| 12. | Construction Campsite Facility Management | Improper management of campsites' wastes results in contamination of land and water.   | Site-Specific      | Medium    | Short Term  |
| 13. | Borrow Area Rehabilitation                | Improper management of borrow areas might cause soil degradation and removal of all floral and faunal species of that area. Improperly managed borrow areas may also lead to stagnation of water leading to vector proliferation.      | Site-Specific      | Medium    | Short Term  |
| 14. | Removal of asbestos containing pipeline   | Risk of lung diseases due to inhaling of asbestos dust (During the rehabilitation works, the Contractor may have to dismantle asbestos pipes or asbestos containing materials.)  | Site specific      | Medium    | Long term   |
| 15. | Closure Activities                        | Contamination of land and groundwater quality and nearby surface water.  | Site-Specific      | Medium    | Short Term  |

Note: Long term (more than 15 years) / Medium term (5-15 Years) / Short term (Confined only to project construction period; less than 5 years)

## B. Subproject Selection Criteria

88. The project is following a sector approach in which the government proposes a list of candidate subprojects for investment with the option of adding or deleting any project from the list at any time. The following selection criteria were tentatively agreed between the government of Uzbekistan and ADB:

- (i) Subprojects to be located in agreed provinces of Amu Darya River Basin,
- (ii) Subproject command area to be greater than 10,000 ha,
- (iii) Water resource: Sites selected should have assured surface supply and be able to use water saving for expanded irrigation area. Only limited (backup) groundwater development as part of modernization will be considered,
- (iv) Pumping: Subproject with total lifts less than 100m are preferred. Schemes involving high total lift (>150m) of large volumes should be avoided because of energy costs and future CO2 emissions policy,
- (v) Climate change: Subproject where summer temperatures are already affecting productivity negatively should be avoided as this is likely to become a more severe issue in future,<sup>20</sup>
- (vi) Whole system approach: Projects with a whole-of-system approach consistent with the ADB Irrigation Sub Sector Guidance Note are preferred. Subproject with institutional strengthening including of WCA; and modernising water allocation and supply; main canal, inter-farm and on-farm canals and their O&M; field irrigation (e.g., field canal networks and whole farm plans, precision land levelling, drip irrigation etc) and increased crop production and water productivity; improving salinity and irrigation water salinity,
- (vii) Modernization: (a) the subproject upgrades or replaces the original system infrastructure to provide better control, level of service for the water user (reliability, frequency, flow rate, supply level) throughout the system including for the tail end; and, (b) there is good opportunity for increased energy efficiency, water productivity and reduced O&M requirements. Subproject where focus is only on main canal rehabilitation are unlikely to be accepted,
- (viii) O&M: MOM responsibilities for water supply infrastructure should be clear. Where Agri-clusters have asset management responsibilities these (where and the requirements) should be stated and unambiguous. Clusters should not be responsible for O&M of canals that also supply downstream users due to conflicts of interest. Financing of O&M for all levels of canal should be clear and sustainable and include volumetric based ISF,
- (ix) Water savings: Subproject with demonstrated low water use efficiency and where significant water savings that will be used productively are encouraged, e.g., by including improved irrigation technologies such as pressure pipe supply, drip/micro sprinklers, precision land levelling,
- (x) Salinity: Subproject where there are major challenges related to salinization and insufficient scope for its mitigation and reduction of impacts on agriculture and water quality should be avoided,
- (xi) High Value Cropping: Systems that include substantial (25% or higher) areas of high value crops and farmer interest in increasing the area of such crops are preferred,

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<sup>20</sup> Uzhydromet, Government of Uzbekistan and UNEP (2016) Third National Communication under the United Nations Framework Convention on Climate Change. Tashkent 2016. pp 221.

- (xii) Institutions: Presence of functional Water Consumer Associations and/or newly created water services agencies, and interest of all stakeholders to participate. A plan to strengthen and support development and sustainability of WCAs should be apparent,
- (xiii) Economics: An expected economic internal rate of return more than 9%,
- (xiv) ADB safeguard criteria: A detailed list of ADB's SPS (2009) criteria (Environment Policy, Involuntary Resettlement Policy and Policy on Indigenous Peoples) to be followed.
- (xv) Schemes without large acquisition and resettlement issues or environmental impacts are preferred, and
- (xvi) Schemes without large acquisition and resettlement issues or environmental impacts are preferred.

89. **Environmental Criteria for Subproject Selection.** Subprojects proposed for funding under the Project shall meet the following criteria:

- (xvii) Subprojects shall not include activities listed on the ADB Prohibited Investment Activities List in Appendix 5 of ADB SPS (2009)<sup>21</sup>
- (xviii) Highly complex & sensitive subprojects shall be excluded.
- (xix) Subprojects located inside a legally protected area are not eligible.
- (xx) Subprojects adjacent to or within critical/natural habitat and subprojects that could lead to significant conversion or degradation of such sensitive ecosystems will not be eligible.
- (xxi) Subprojects with measurable adverse effects, or likelihood of such, on critical habitat or natural habitat areas or that could lead to a reduction in the population of any Endangered (EN) or Critically Endangered (CR) species supported, or with significant negative impacts on cultural heritage sites of national and international significance are not eligible.
- (xxii) It is anticipated that the subprojects proposed for funding under the Project will meet the criteria for ADB Category B. Therefore, if the subprojects do not meet the criteria for Category B, the subproject locations should be changed to avoid impacts. This includes sensitive locations such as subprojects that fall in part or in whole within an area supporting high biodiversity value, including critical habitats under ADB SPS 2009.<sup>22</sup>

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<sup>21</sup> ADB. 2009. Safeguard Policy Statement. Appendix 5: ADB prohibited investment activities list (p. 76).

<sup>22</sup> Key Biodiversity Areas as defined in the World Database of Key Biodiversity Areas; Critical habitats under ADB SPS Appendix 1, Section 8. See also Appendix 2.

## IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

### A. Screening and Classification

90. In order to ensure that identified project activities follow required legal procedures and regulatory procedures of ADB and the Republic of Uzbekistan, and ensure proper implementation of the identified EMP, a set of environmental procedures have been identified. Table 11 indicates the environmental procedures and actions required to be undertaken at each stage of the project. These have been categorized according to responsibilities of different agencies of Uzbekistan and ADB, and at project stage, and can be used as guidelines for activities to be planned under subprojects and activities.

**Table 11: ADB and Uzbekistan environmental procedures**

| Project Stage                         | ADB Procedures   | National Procedures  |
|---------------------------------------|--|--|
| Subproject Identification             | Identification of project Category A/B/C, and screening of environmental impacts through the Rapid Environmental Assessment Checklist (Appendix 1)             | <p>In Uzbekistan, the EIA system is based on the SEE, which is regulated by Law # 73-II on Ecological Expertise (25 May 2000) and by DCM # 541 On the further improvement of the Environmental Impact Assessment mechanism (7 September 2020).</p> <p>The category of the project is defined in accordance with Appendix 1 to DCM # 541.</p> <p>The Regulation stipulates 4 categories for development:</p> <ul style="list-style-type: none"> <li>• Category I (High Risk),</li> <li>• Category II (Middle Risk),</li> <li>• Category III (Low Risk),</li> <li>• Category IV (Local Impact).</li> </ul> <p>The types of activities subject to SEE, not included in this list, are determined by the category of this type of activity on the basis of materials submitted by the Expert Council under the SCEEP or based on the results of field research.</p> <p>If the materials submitted by one customer for the SEE are complex and consist of several objects of different categories that affect the environment and are located in the same production zone, their impact on the environment is determined according to the highest category.</p> |
| Feasibility study and Detailed Design | EIA/IEE (EMP for Category A and B) Based upon project category environmental assessment undertaken for project on ADB processes, as outlined in ADB SPS (2009) | <p>DCM # 541 (2018) defines content of national EIA report for project belonged to categories I-III. The report has to include: (i) baseline data, (ii) project description, (iii) anticipated environmental impacts, (iv) waste management, (v) analysis of emergency situation, and (vi) and anticipated changes due to project implementation. Information on applicable laws and regulation usually is presented in "Introduction" part.</p> <p>For the project's Category IV, the EIA report more simplified in the form of a questionnaire.</p> <p>As required, undertake environmental assessment report (Draft Statement of Environmental Impacts) - and obtain required Positive Environmental Conclusion Report.</p>   |

| Project Stage | ADB Procedures   | National Procedures  |
|---------------|--|--|
|               | <p>If special surveys etc. are required given specific project location - by SPS 2009 they need to be commissioned. All identified issues from these studies should be incorporated in the environmental assessment and identified issues incorporated in the project design and EMP.</p> <p>Submit EIA/IEE for ADB's review and obtain clearance.</p>   | <p>Tree survey to be carried to meet the national legislation requirements.</p> <p>As required, obtain necessary clearances, carry out design modification and identify project activities to be carried out to ensure that notified areas are conserved.</p> <p>As required, take permission, clearance and design modification to ensure sensitive cultural and archaeological sites sanctity is preserved.</p> <p>Include any identified actions in the project design.</p> |
| Construction  | <p>Include EMP in contract documents and ensure compliance through Contractor clauses, training activities etc. in place and appropriate monitoring system in place and monitoring is undertaken by: Instrumental monitoring and Observational monitoring.</p> <p>Where unanticipated environmental impacts become apparent during project implementation, update the IEE and EMP or prepare a new IEE and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.</p> <p>SAEMRs to be prepared and uploaded on ADB's website.</p> | <p>Environmental authority to ensure monitoring of indicated parameters in Environmental Conclusion Report.</p> <p>SEC has to be developed for Categories I-III and obtain Positive Environmental Conclusion Report (Stage III) before O&amp;M stage.</p>  |
| O&M           | <p>Same as above.</p> <p>SAEMRs to be prepared and uploaded on ADB's website until ADB's Project Completion Report is issued.</p>  | <p>Suggest changes in implementation if any new issue, not identified in the assessment is found at the implementation stage.</p>  |

DCM = Decree of the Cabinet of Ministries, EIA = Environmental Impact Assessment, EMP = Environmental Management Plan, IEE = Initial Environmental Examination, SAEMR = Sem-Annual Environmental Monitoring Report, SCEEP = State Committee for Ecology and Environmental Protection, SEC = Statement on Environmental Consequences, SEE = State Environmental Expertise, SPS = Safeguard Policy Statement, O&M = Operation and Maintenance

## B. Preparation of Environmental Assessment

### 1. Environmental Assessment Requirements

91. Environmental assessment for each subproject will be prepared in accordance with the Safeguard Requirement 1 (Environment) of ADB SPS 2009. An IEE will be prepared for Category B subproject. This will include identification of potential direct, indirect, cumulative and induced environmental impacts on and risks to physical, biological, socio-economic, and physical cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people, women, and concerned non-governmental organizations. For subprojects with potentially significant adverse impacts, the PIU will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The "no action" alternative will be also considered.

92. Impact assessment will cover risks that may arise due to implementation of subprojects that encompasses: (i) local ecology and associated biodiversity; (ii) areas and communities potentially affected by cumulative impacts of the subproject; and (iii) areas and communities potentially affected by impacts from unplanned but predictable developments in the foreseeable future caused by the subproject that may occur later or at a different location.

93. The PIU should ensure that ADB be given access to undertake environmental due diligence for all subprojects. However, the PIU has the main responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation measures for all subprojects. The due diligence report as well as monitoring reports on implementation of the EMP needs to be documented systematically and be available to the public in the local language.

## **2. Preparation of IEE**

94. On commencement of the environmental assessment, the PIU will obtain prior confirmation of specific environmental safeguard requirements from ADB as needed. The IEE including EMP will be prepared by the PIU following the guidance provided in ADB SPS 2009, Appendix 1 (Safeguard Requirements 1: Environment. Pages 30-40).

95. The IEE format should be in accordance with ADB Safeguard Requirements 1: Environment, Annex to Appendix 1 (ADB SPS 2009 pages 41-43). Site-specific information including environment baseline on physical, ecological and socio-economic resources (including physical cultural resources) is required for all subprojects. The information should be collected by relevant experts through site visits and surveys within the subproject's area of influence.

96. An assessment of subproject impacts and risks on biodiversity and natural resources will also be undertaken. Issues regarding modified, natural and critical habitats (ADB SPS 2009, Appendix 1, Section 8) will be covered in the IEE report. Care will be taken during selection of subproject sites to ensure they will not encroach on or affect biodiversity sensitive areas.

97. Pollution prevention for conservation of resources, particularly technology for management of dredging materials and other wastes will be addressed in the IEE report. Each subproject should apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as EHS Guidelines.<sup>23</sup> Occupational health and safety and community health and safety will be properly addressed in the EMP section of the IEE report. In case subprojects are likely to have adverse impacts on physical cultural resources, appropriate mitigation measures will be planned and reflected in the IEE. The IEE will also reflect meaningful consultation and disclosure process with a provision of GRM.

## **3. Preparation of Environmental Management Plans (EMPs)**

98. An EMP, which is to be developed as part of an IEE, should describe the environmental management measures that will be carried out to mitigate identified negative impacts. Environmental monitoring will be conducted to ensure that mitigation is effective in reducing impacts, or to determine the actual impacts of a subproject. The EMP should outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the subproject is designed, constructed, and operated in compliance with applicable laws and regulations of Uzbekistan and meets the requirements specified in this document and ADB SPS 2009. The PIU will be responsible for the internal quality control of IEE and EMP. The draft documents should be presented to relevant stakeholders<sup>24</sup> for consultation.

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<sup>23</sup> See footnote 5.

<sup>24</sup> The primary stakeholders will be affected people, local communities, local government and local community organizations and non-government organisations. Comprehensive summaries of the IEE or EIA shall be translated into Uzbek and Russian languages.

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

### **A. Consultation**

99. MWR will consult with persons and groups likely to be affected by the proposed project, plus local non-governmental organizations and other stakeholders. For Category B projects, at least one consultation should be conducted, when the draft IEE are being prepared respectively, with the aim of informing stakeholders about the project, its potential impacts and likely mitigation.

100. Consultation and information disclosure would be needed at various stages of the project. These are outlined below.

- (i) At the time of identification of the project, undertake consultation to ensure that all concerns of the project stakeholders are incorporated in the project design. Consultations should help inform project design and therefore there is a need to ensure that consultations are undertaken at the time of identification of project feasibility and before finalization of design.
- (ii) Depending upon the assessment needs of the project, such as whether it is a Category A, B, C as per ADB guidelines or Uzbekistan, Category I-III under Decree of the Cabinet of Ministries # 541, 2020, consultations must be undertaken.
- (iii) Consultations must be documented and made a part of the final environmental report.
- (iv) Any issues identified during consultations should be considered during the final project design.

### **B. Information Disclosure**

101. Environment Assessment documents should be available on ADB website and on MWR website<sup>25</sup> within two weeks after ADB's clearance of each document. For the document disclosed on UZAIFSA website, executive summaries should be available in Uzbek language and full reports in Russian language. Hard copies of the executive summary translated into Uzbek language and full reports in Russian language will also be made available at the offices of MWR, PIU, Project Implementation Consultant (PIC) and contractors. There will also be a notice on UZAIFSA website displaying the documents stating where the hard copies are available.

### **C. Grievance Redress Mechanism**

102. Grievance redress needs to be considered for the purpose of ensuring that any unintended consequences, or violations of planned actions and activities are brought to the notice of the authorities to ensure compliance and resolution of problems and issues faced by the local population. The GRM must:

- (i) Be an understandable and transparent process that is gender responsive, culturally appropriate readily accessible to all segments of the affected people at no costs and without fear of retribution.
- (ii) Be accessible to the local population and therefore should be present close to the area where project activities are under implementation.
- (iii) Ensure fairness and transparency in any grievance system planned. This could include making information on project activities available at the impacted areas itself, keeping a register of complaints and a system to identify progress of complaint and resolution

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<sup>25</sup> See footnote 2.

- undertaken, providing for a higher-level authority for problem resolution, ensure that contact information on the existing GRM is available at project implementation/construction sites.
- (iv) Ensure that time limits are set for solving all issues at each level of the system and adhered to.
  - (v) If any adverse impact is identified by the local population, they need to be immediately addressed and the GRM should be able to include any such complaints into project design.
  - (vi) Records on how grievances are addressed should be maintained at a central place where the public could access these records.
  - (vii) It must be a dynamic process that is able to help correct any adverse impact that may occur due to project activities.

103. The following paragraphs describes the flow of the GRM for CAWRMASB project. The IEE should outline a detailed procedure for community complaint and GRM. Every affected person shall have three options to get the grievance redressed. Option 1 is established under the Project; Option 2 is accessing through the country's legal system, and Option 3 is for the affected person to access through the ADB Accountability Mechanism.

### 1. Option 1

104. Option 1, which is the Project-level GRM shall consist of the following stages:

- (i) **First Stage:** At the first stage, the person with any form of grievance would approach the contractor (proposed as the agency responsible for implementation of the EMP). A copy of the grievance may also be provided by the affected person to the Project Implementation Unit (PIU). A Grievance Redress Register must be maintained by the contractor and PIU for all such complaints. The contractor shall register the complaint and make efforts to resolve the grievance within 1-5 working days at that level in a consultative manner.
- (ii) **Second Stage:** If the affected person is not satisfied or the grievance is not redressed within 5 working days, the contractor will be responsible for assisting the concerned person for getting the grievance registered with the Canal-Level Grievance Redress Committee (CL-GRC) who shall comprise representatives from the contractor, PIU, Irrigation System Authority (ISA) and Basin Irrigation System Authority (BISA). The CL-GRC shall make efforts to resolve the grievance of the complainant within 5-7 working days after the matter is brought to the Committee notice. A Grievance Redress Register shall be maintained by the contractor for all complaints. The contractor shall share the information on such complaints with the executing agency on a monthly basis. Additionally, the PIU shall be instructed to maintain a Complaint Register.
- (iii) **Third Stage:** If the affected person is not satisfied or the grievance is not redressed within 7 working days, the contractor shall assist the affected person to register the complaint with the Project Manager at the CAWRMASB PIU. At the third stage, the Project Manager will ensure that the aggrieved person is heard, and the grievance redressed in the best possible manner and in a consultative manner within 10 working days from the date of registering the grievance.
- (iv) **Fourth Stage:** If the affected person is not satisfied or the grievance is not redressed within 10 working days, the Project Manager will be responsible for getting the grievance registered for the hearing by the Project-Level Grievance Redress Committee (PL-GRC). The PL-GRC comprises PIU Chief Engineer as Chairman, one member from the MWR, a representative of BISA, contractor, a representative from ISA, members and representatives of affected persons, including women and vulnerable people. The PL-GRC will conduct a hearing on the grievance within 3 weeks from the date of registration of

grievance. Other than disputes relating to ownership rights under the court of law, the PL-GRC will review grievances involving all environmental and social impacts arising from the project implementation. All costs incurred in resolving the complaints will be borne by the Project. A comprehensive record will be maintained by executing agency for all grievance proceedings organized at different stages and reported within the Safeguard Monitoring report, submitted to ADB.

105. The flow chart of the Option 1 GRM process is provided in Figure 1.

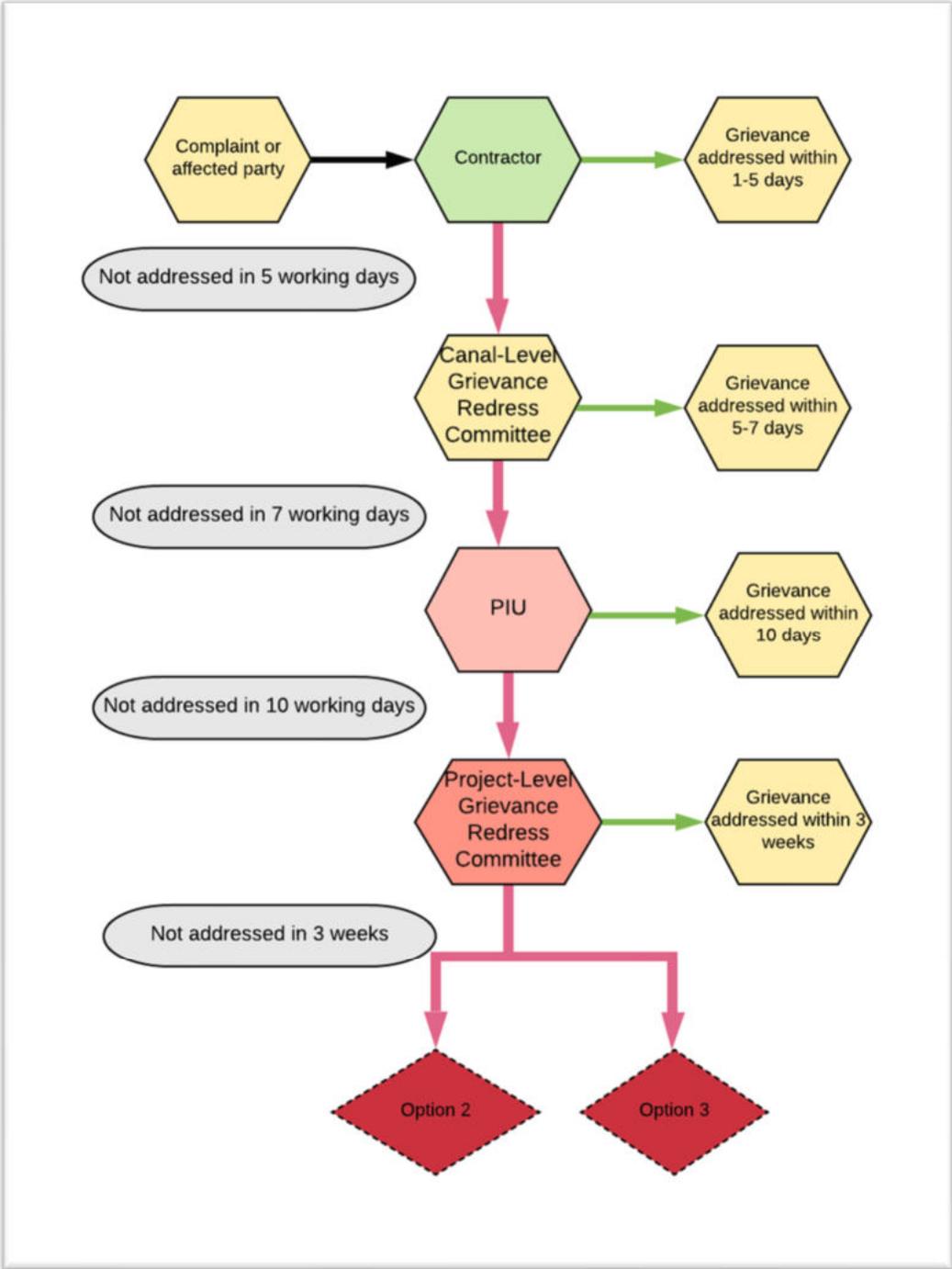


Figure 1: Flow chart of the Option 1 GRM process

## **2. Option 2:**

106. An aggrieved person is free to access the country's legal system and that this is not conditional upon the perceived unsatisfactory outcome of the CL- or PL-GRM.

## **3. Option 3:**

107. In the event that the established GRM is not in a position to resolve the issue, the affected person can also use the ADB Accountability Mechanism by directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or ADB Uzbekistan Resident Mission (URM). The complaint can be submitted in any of the official languages of ADB's developing member countries. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make a good faith effort to resolve their problems by working with the concerned ADB operations department (in this case, URM). After doing that, and if they are still dissatisfied, they could approach the Accountability Mechanism. ADB Accountability Mechanism information will be included in the project-relevant information booklet to be distributed to the affected communities, as part of the project GRM.

## **4. Record Keeping**

108. Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, status and agreed corrective actions will be kept by the contractor. PIU (with the support of PIC) will collect the data from the contractor and submit to MWR (state level). This information will be reported to ADB by the MWR through the Semi-annual environmental monitoring reports (SAEMRs).

## **5. Information Dissemination Methods of the Grievance Redress Mechanism**

109. The PIU, assisted by the PIC, will be responsible for information dissemination to affected persons and general public in the project area on the options for filing a grievance, including easy to understand detail of the first option. A public awareness campaign will be conducted at the individual canal-level, at the start of the project to ensure awareness on the project and its grievance redress procedures. The campaign will ensure that the poor, vulnerable (farmers, women etc.) and others are made aware of grievance redress procedures. The information campaign will also provide details on whom to contact and when, where/ how to register grievance, various stages of grievance redress process, time likely to be taken for redress of minor and major grievances, etc. Grievances received and responses provided will be documented and reported back to the affected persons. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the PIU offices as well as reported in the SAEMRs. Contractors must display details of the CL-GRM on their notice board at every site.

## **6. Periodic Review and Documentation of Lessons Learned**

110. The PIU will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the PIU's ability to prevent and address grievances.

## **7. Costs**

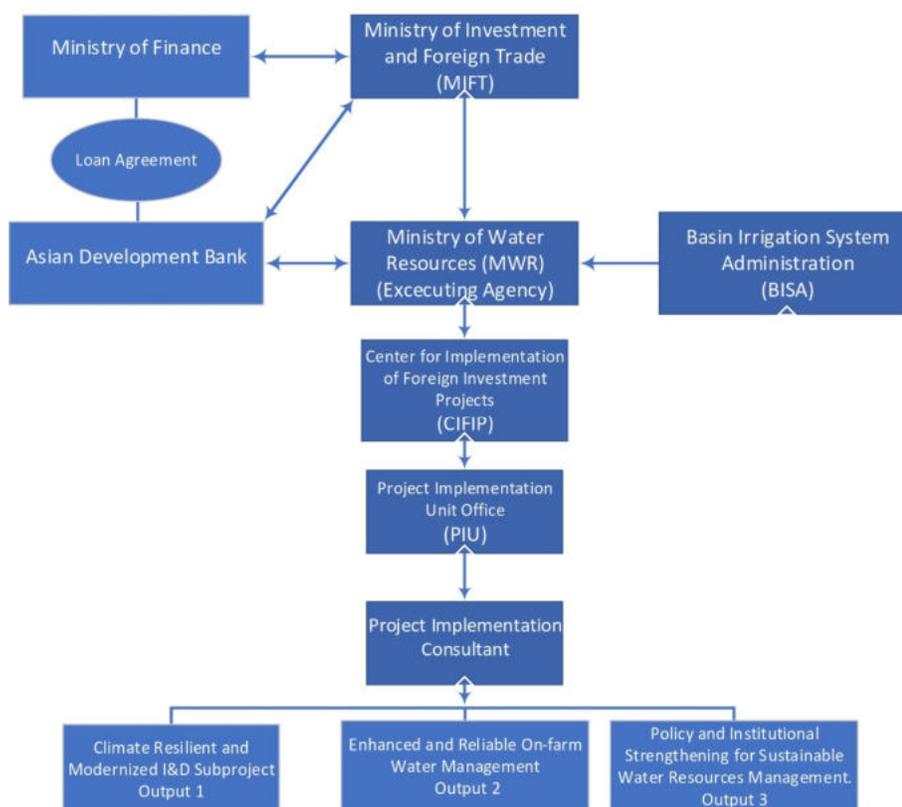
111. All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the respective PIU.

## VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

112. This section looks at the possible institutional responsibilities of various agencies for implementation of activities and capacity building needs.

### A. Institutional Responsibilities

113. The MWR will serve as the Executing Agency and a newly established Center for Implementation of Foreign Investment Projects in Water Sector (CIFIPWS)<sup>26</sup> through the existing Project Implementation Unit (PIU) for ADB projects will be designated the implementing agency of (i) ongoing ADB loan for Amu Bukhara Irrigation System Rehabilitation Project (L3025/3026);<sup>27</sup> and (ii) proposed Climate Adaptive Water Resources Management in Aral Sea Basin Sector Project. The existing PIU will be supervised by a Director of CIFIPWS, coordinated by a Deputy Director of CIFIPWS (responsible for implementation of foreign investment and grant aid projects). The project implementation organization structure is given in Figure 2.



**Figure 2: Project Implementation Organization Structure**

114. The project implementation organization structure together with the roles and responsibilities are in Table 12 below.

<sup>26</sup> Resolution of President of Uzbekistan Republic No PD-5055 dated 6 April 2021 “on measures towards improvement of operation of the ministry of water resources.”

<sup>27</sup> ADB. Uzbekistan: Amu Bukhara Irrigation System Rehabilitation Project. <https://www.adb.org/projects/44458-013/main?terms=Amu+Bukhara+Irrigation+System+Rehabilitation+Project#project-overview>

**Table 12: Project Implementation Organizations**

| Project Implementation Organizations   | Management Roles and Responsibilities  |
|--|--|
| Ministry of Water Resources (MWR)  | <p>Executing Agency</p> <ul style="list-style-type: none"> <li>• provide overall guidance to project implementation. Staff members from the Operating Authority of BISA will provide support in the field. Efficient project implementation will be supported by consultants contracted by PIU under MWR to assist with of project implementation and supervision.</li> <li>• provide policy guidance and review project performance;</li> <li>• overall responsibility for implementation;</li> <li>• overall responsibility for reporting on both physical and financial progress of project activities;</li> <li>• overall responsibility for assuming direct responsibility for all civil works;</li> <li>• overall responsibility for ensuring safeguards compliance; and</li> <li>• overall responsibility for developing the government's project completion report and its submission to ADB.</li> </ul>   |
| Center for Implementation of Foreign Investment Projects in Water Sector (CIFIPWS) | <p>Implementing Agency</p> <ul style="list-style-type: none"> <li>• regular monitoring, support and coordination of the project implementation, including coordination of PIU work;</li> <li>• submit project's annual budget (drafted by PIU) to MWR for approval purposes and monitor the execution of MWR-approved annual budget as well as annual work plan;</li> <li>• organize procurement process for selection of contractors and timely payment of executed contracts from loan proceeds by ADB directly.</li> </ul>  |
| Project Implementation Unit (PIU) under CIFIPWS                                    | <p>Focal point for communication with ADB on project-related matters</p> <p>The Central PIU will facilitate coordination, with other agencies involved in design, construction management and supervision. It will facilitate coordination with CIFIPWS/MWR staff, PIU, contractors, design institutes, local administration, the beneficiaries and PIC. Its main tasks will be as follows:</p> <ul style="list-style-type: none"> <li>• assist MWR in coordinating all matters related to project implementation with relevant ministries of the Government of Uzbekistan (Ministry of Finance, State Committee on Nature Protection, Ministry of Investments and Foreign Trade and others), PIU, design institutes, PIC, the local administration, ADB, and other organizations related to project implementation;</li> <li>• provide EA staff with on-the-job training in implementing the ADB guidelines and procedures, efficient project management and scheduling techniques;</li> <li>• assist MWR in programming project activities, estimating the financial requirements for these activities and the release of funds on time;</li> <li>• assist MWR to ensure that the procurement of works, services, equipment and materials is in line with ADB procedures, and that all steps are taken expeditiously and in a transparent manner;</li> </ul> |

| Project Implementation Organizations | Management Roles and Responsibilities  |
|--------------------------------------|--|
|                                      | <ul style="list-style-type: none"> <li>• work with MWR, BISA, DID and WCA in the selection of on-farm irrigation (drip, precision grading) according to selection criteria, monitor implementation and audit completed works, including cleaning of collector drain networks;</li> <li>• prepare the project M&amp;E system, including (i) long-term environmental and social safeguards monitoring programs; and (ii) quantifiable indicators to monitor and measure the performance, level of maintenance and efficiency of the rehabilitated system;</li> <li>• assist MWR in ensuring that all periodic reports are prepared systematically, submitted on time, and reflect the real picture of project implementation; that major issues relating to project implementation are brought to the attention of the concerned parties; and that necessary remedial measures are implemented.</li> <li>• prepare, update and implement an overall implementation plan, establish financial management and procurement system, and prepare annual project budget;</li> <li>• guide the planning, feasibility and technical studies and endorse reports including safeguards documents;</li> <li>• prepare the feasibility study and due diligence reports for subsequent subprojects with the support from PIC, and submit for ADB's approval;</li> <li>• guide the plans, surveys, studies, detailed designs, capacity development activities, and workshops to be prepared or implemented by the consultants;</li> <li>• monitor and guide all planning, implementation, and O&amp;M activities;</li> <li>• conduct economic analysis at the midterm of the project implementation;</li> <li>• implement required loan and grant covenants including the development of O&amp;M plan;</li> <li>• monitor project progress and evaluate project benefits and social impacts with the management information system;</li> <li>• ensure environment safeguards compliance:             <ul style="list-style-type: none"> <li>•conduct non-core subprojects' environmental screening and classification following EARF;</li> <li>•prepare non-core subprojects' IEEs (including EMPs) following EARF and ADB SPS (2009), and submit to ADB for clearance and disclosure;</li> <li>•conduct meaningful consultation<sup>28</sup> during the preparation of the non-core subprojects' IEEs;</li> </ul> </li> </ul> |

<sup>28</sup> Meaningful consultation is a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

| Project Implementation Organizations | Management Roles and Responsibilities  |
|--------------------------------------|--|
|                                      | <ul style="list-style-type: none"> <li>•prepare non-core subproject’s environmental safeguards documents following national relevant regulation and ensure their timely approval;</li> <li>•disclose environmental safeguards documents (including IEEs and SAEMRs);</li> <li>•ensure inclusion of EMPs in bid and contract documents;</li> <li>•review and clear contractor’s SSEMPs;</li> <li>•ensure that the SSEMPs contain COVID-19 health and safety management plan following international good practice and relevant national/local requirements;</li> <li>•carry out public consultation during subprojects implementation;</li> <li>•conduct environmental monitoring and ensure that the day-to-day construction activities are carried out following the EMPs and SSEMPs and in an environmentally-sound and sustainable manner;</li> <li>•ensure corrective actions are implemented when necessary;</li> <li>•prepare SAEMRs and submit to ADB for disclosure, within 30 days after a completion of the monitoring period, until ADB’s PCR is issued;</li> <li>•disclose relevant information from environmental safeguards documents (including the SAEMRs) to affected persons;</li> <li>•report in a timely manner to ADB of any non-compliance or breach of ADB safeguard requirements;</li> <li>•update the subproject’s IEE in case of unanticipated impacts;</li> <li>• finalize the LARP for Babatag subproject based on the detailed design;</li> <li>• prepare SDDR confirming components and subprojects without IR impacts, assess if there are legacy issues on the lands that would benefit from the project;</li> <li>• screen non-core subprojects for IR/IP impacts and prepare LARP based on detailed design, if needed;</li> <li>• oversee the implementation and reporting of LARP preparation, monitor and report for any unanticipated IR impacts during construction and prepare/implement corrective active plans to address such impacts;</li> <li>• establish GRM, monitor and promptly address complaints, and ensure their effective and adequate resolution, and keep the relevant records;</li> <li>• ensure compliance of contractors and subcontractors to core labor standards and report in the semi-annual social monitoring reports;</li> <li>• make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons;</li> <li>• carry out monitoring and public consultation during implementation to ensure the proper implementation of the project’s EMPs and land acquisition and resettlement plans;</li> <li>• monitor and promptly address complaints, and ensure their effective and adequate resolution;</li> </ul> |

| Project Implementation Organizations          | Management Roles and Responsibilities  |
|---|--|
|   | <ul style="list-style-type: none"> <li>• monitor and supervise works conducted by contractors, and the delivery of goods procured by suppliers with the support of the consultants;</li> <li>• implement the gender action plan, monitor, and update on the progress of the implementation of the plan, as necessary;</li> <li>• update procurement plan, as necessary;</li> <li>• arrange necessary training programs for staff and other providers;</li> <li>• manage procurement, consulting, service provider and NGO/training services, and loan disbursement;</li> <li>• manage loan disbursement and maintain financial accounts;</li> <li>• prepare and submit withdrawal applications to ADB;</li> <li>• manage and be accountable for advance account and statement of expenditure procedures;</li> <li>• prepare supporting documents for replenishment of advance account, financial statements, and arrangement of the annual audit report in close consultation with concerned government agencies;</li> <li>• reconcile project accounts and ensure timely requests and release of funds; and</li> <li>• prepare periodic implementation progress reports.</li> </ul> |
| Basin Irrigation System Administration (BISA) | <ul style="list-style-type: none"> <li>• over-all responsibility for implementation of all civil works contracts</li> <li>• responsible for providing access to the site for contractors, and acceptance of works at completion</li> <li>• responsible for O&amp;M of the civil works</li> </ul>   |
| Ministry of Finance (MOF)                     | <p>Designated representative of the Borrower (Government of the Republic of Uzbekistan)</p> <ul style="list-style-type: none"> <li>• sign the loan agreement;</li> <li>• review and endorse feasibility study reports for non-core subprojects</li> <li>• endorse to ADB the authorized staff with approved signatures for withdrawal applications processing;</li> <li>• process and submit to ADB any request, when required, for reallocating the loan proceeds, extension of the loan closing date, and other changes in the project; and</li> <li>• review use of savings, if any, requested by MWR.</li> </ul>   |
| Ministry of Investments and Foreign Trade     | <p>Government counterpart agency for cooperation with ADB;</p> <ul style="list-style-type: none"> <li>• undertake annual and quarterly country portfolio review jointly with ADB;</li> <li>• review and endorse feasibility study reports for noncore subprojects;</li> <li>• register contracts for imported goods and works with foreign contractor</li> </ul>   |

| Project Implementation Organizations | Management Roles and Responsibilities   |
|--------------------------------------|---|
|                                      | <ul style="list-style-type: none"> <li>• monitor project implementation and facilitate the resolution of implementation challenges if they arise</li> <li>• ensure compliance with ADB loan covenants and applicable government laws, regulations and requirements.</li> </ul>  |
| ADB                                  | <p>Financier</p> <ul style="list-style-type: none"> <li>• assist the MWR, CIFIPWS and its PIU in providing timely guidance at each stage of the project for smooth implementation in accordance the agreed implementation arrangements;</li> <li>• review all the documents that require ADB approval upon submission by the PIU;</li> <li>• conduct periodic loan review missions, a mid-term review, and a completion mission;</li> <li>• ensure compliance of all loan and grant covenants;</li> <li>• timely process withdrawal applications and release eligible funds;</li> <li>• ensure the compliance of financial audit recommendations;</li> <li>• regularly update the project performance review reports with the assistance of MWR and PIU;</li> <li>• regularly post on ADB website the updated project information documents for public disclosure, and also the safeguards documents as per disclosure provision of the ADB SPS, 2009; and</li> <li>• review and approve detailed design for the project upon the submission by the PIU.</li> </ul> |

ADB = Asian Development Bank, BISA = Basin Irrigation System Administration, CIFIPWS = Center for Implementation of Foreign Investment Projects in Water Sector, COVID-19 = coronavirus disease, EARF = environmental assessment and review framework, EMP = environmental management plan, GRM = grievance redress mechanism, IEE = initial environmental examination, IR = involuntary resettlement, IP = indigenous person, LARP = land acquisition and resettlement plan, M&E = monitoring and evaluation, MOF = Ministry of Finance, MWR = Ministry of Water Resources, O&M = operation and maintenance, PCR = project completion report, PIC = project implementation consultants, PIU = project implementation unit, SAEMR = semi-annual environmental monitoring report, SDDR = social due diligence report, SPS = Safeguards Policy Statement (2009), SSEMP = site-specific environmental management plan

#### 1. Executing Agency: Ministry of Water Resources (MRW)

115. **The MWR** shall ensure that the PIU is staffed with personnel, each of whom is fully qualified to carry out his assigned responsibilities and familiar with and knowledgeable about the details of the project, and all of whom together are familiar with and knowledgeable about the applicable policies, rules and regulations of ADB including, but not limited to, the Procurement Policy (2017), Procurement Regulations (2017), Safeguards Policy Statement (SPS) (2009), Policy on Gender and Development (2003), and Loan Disbursement Handbook (2017), throughout the project implementation period. The MWR shall ensure that the TOR, recruitment, evaluation, and appointment of all key PIU staff identified in the Project Administration Manual (PAM) have the prior approval of ADB. MWR shall cause the PIU to be fully functional and operational, with staff, financial and other resources as required and contemplated by the PAM and adequate to carry out the project a throughout the duration of the project.

116. The MWR shall also provide adequate office space with basic facilities for the PIU and the project implementation consultants (PIC) throughout the duration of the project.

117. MWR will be the Executing Agency for the subproject and will oversee overall project implementation and management activities to ensure smooth and timely implementation and completion of subproject activities. The MWR has overall responsibility for the project and therefore is ultimately responsible for ensuring that the preparation, design, construction, implementation, operation and decommissioning of the project and all project facilities comply with (a) all applicable national laws and regulations relating to environment, health and safety; (b) the ADB SPS (2009); and (c) all measures and requirements set forth in the IEE, and any corrective or preventive actions set forth in Semi-Annual Environmental Monitoring Reports (SAEMRs). The MWR will guide and coordinate closely with other government agencies and the ADB for timely resolution of any issues.

## **2. Project Implementation Unit (PIU) under Center for Implementation of Foreign Investment Projects in Water Sector (CIFIPWS)**

118. PIU will have immediate and direct supervision over daily EMP implementation, monitoring and reporting, covering all core and non-core subprojects. The PIU is tasked with specific responsibility to ensure environmental safeguards compliance of civil works, with particular emphasis on the monitoring of implementation of the EMP through the contractor's SSEMP and related aspects of the project. The PIU will include a full-time Environment Protection Officer (PIU-EPO), who will be responsible for supervising the contractor's environmental performance, coordinating the public consultations and project GRM, and submission to ADB the SAEMRs. The PIU-EPO will be engaged to undertake periodic audit (at least monthly) and monitor the contractor's activities. S/he will be assisted by the PIC who will provide intermittent inputs.

119. The PIU will ensure the implementation of the Project's EMP, which is part of this IEE report, and also part of the contract documentation. The PIU will (i) ensure the Project meets ADB safeguards requirements; (ii) ensure the Project complies with applicable laws, rules, and regulations on environment, health and safety; (iii) ensure that all the environmental mitigation measures required to be implemented are incorporated into the contract documents; (iv) review and endorse SSEMPs prepared by the contractors; (v) ensure that the contractors (and its subcontractors, if any) comply with the relevant measures and requirements set forth in the IEE and the EMP, and any corrective or preventative actions set out in SAEMRs or Corrective Action Plan; (vi) conduct environmental monitoring and ensure that the construction activities are carried out in an environmentally-sound and sustainable manner; (vii) prepare SAEMRs within 30 days after a completion of the monitoring period; (viii) resolve project related complaints or grievances as per the GRM; (ix) organize and conducting consultations and awareness-raising activities; and (x) conduct trainings, workshops, and other knowledge sharing sessions on lessons and good practices on safeguards and health and safety. Upon completion of the works, the PIU-EPO will, with PIC's assistance, also prepare a report on the project's environmental compliance performance; including lessons learned that may help MWR in their environmental monitoring of future projects. This report will be part of the input to the overall Project Completion Report (PCR).

## **3. Basin Irrigation System Administration (BISA)**

120. Basin irrigation system administration (BISA) is a regional office of the MWR. BISA will be responsible for monitoring of groundwater levels, mineralization of irrigation water, waterlogging and soil salinization, application of improved irrigation system operation and management plan. BISA is also responsible for regular operation and maintenance of the irrigation and drainage network at the project area during the operation stage.

#### 4. Design Institute

121. Design Institute will be hired (subcontracted through the main contracts) to prepare detailed design of the subproject, incorporating IEE/ EMP into their EIA (OVOS) process, and acquiring SEE clearance for design documentation package. Design institute will provide designer supervision for construction period.

#### 5. Project Implementation Consultant (PIC)

122. The PIC will include international environmental specialist (PIC-IES), national environmental specialist (PIC-NES), international biodiversity specialist (PIC-IBS), national biodiversity specialist (PIC-NBS), who will assist PIU (especially PIU-EPO) on environmental safeguards tasks.

123. **PIC-IES.** The PIC-EIS will have at least master's degree in environmental science or natural resource management or the equivalent, with at least 15 years of continuous experience working in the field of environmental management, for internationally funded infrastructure development projects. The expert should have considerable experience in environmental assessment and monitoring and be familiar with ADB SPS (2009) as well as having experience in ADB-financed infrastructure development projects as an environmental specialist. The expert should be guided by the government's procedures on environmental management, ADB SPS (2009), EARF, IEEs and environmental management plans (EMPs) of each subproject. Training skills would also be an advantage. The international environmental specialist, with the support of the national environmental specialist, will be responsible for preparing IEEs of non-core subprojects, supervising the contractor's environmental performance, coordinating the public consultations and project GRM, and reporting to the PIU management for submission to MWR and ADB through the periodic project progress reports and Semi-Annual Environmental Monitoring Reports (SAEMRs). The specialist will:

- (i) Assist the PIU (especially the PIU's environmental specialist) and the PIC's team leader in managing and implementing the project and ensuring compliance with the project implementation plan, the loan agreement, and the project agreement(s), particularly with ADB SPS (2009) requirements, EARF, IEE of relevant/respective subproject, and project environment-related legal covenants;
- (ii) Review the EARF and IEEs for two core subprojects conducted during the feasibility study stage to understand the project/subprojects' environmental safeguards requirement, and assist the PIU in updating the IEEs in case of unanticipated impacts;
- (iii) Assist PIU in screening non-core subprojects following the EARF, and in preparing the IEE reports (including EMP) for noncore subprojects as a part of the feasibility study report;
- (iv) Conduct trainings, workshops, and other knowledge sharing sessions on lessons and good practices on safeguards, health and safety, etc. to the PIU staff (including PIU's environmental specialist) and contractor's staff (relevant to environment, health and safety), and build capacity of relevant staff to undertake their tasks in EMP monitoring. One of the trainings should be conducted prior to the start of construction to develop the knowledge and understanding of the environmental, health and safety aspects of the project;
- (v) In coordination with the other PIC team members and PIU staff, and with regards to EMPs, contribute to the preparation of bidding documents for the civil works contracts, and assist PIU in bid evaluation when required;

- (vi) Ensure that all the environmental mitigation measures required to be implemented are incorporated into the contract documents;
- (vii) Assist PIU in reviewing the site-specific environmental management plans (SSEMPs) prepared by respective contractors and provide clearance;
- (viii) Ensure that the contractors (and its subcontractors, if any) comply with the relevant measures and requirements set forth in the IEE and the EMP, and any corrective or preventative actions set out in SAEMRs;
- (ix) Assist PIU in supervising and monitoring the EMP/SSEMPs implementation and in preparation of SAEMRs for further submission to MWR and ADB; and
- (x) Support PIU in resolving project-related complaints/grievances;
- (xi) Assist PIU in organizing and conducting consultations and awareness-raising activities;
- (xii) Contribute inputs to the quarterly progress reports for project management and supervision and the brief monthly summary reports, highlighting potential and actual issues and/or problems related to EMP and recommending corrective measures for PIU's actions;

124. Upon completion of the civil works, prepare a report on the project's environmental compliance performance; including lessons learned that may help MWR and the PIU in their environmental monitoring of future projects. This report will be part of the input to the overall PCR.

125. **PIC-NES.** The PIC-NES will have at least bachelor's degrees in environmental science or natural resource management or the equivalent, with at least 10 years of experience working in the field of environmental management, for internationally funded infrastructure development projects. The expert should have considerable experience in environmental assessment and monitoring and be familiar with ADB SPS (2009) and the laws and regulations of Uzbekistan related to environmental safeguards as well as having experience in ADB-financed infrastructure development projects as environmental specialist. The expert should be guided by the government's procedures on environmental management, ADB SPS (2009), EARF and the project environmental management plan (EMP) for each subproject. Training skills would also be an advantage. The national environmental specialist will support the international environmental specialist in conducting his/her tasks. The national environmental specialist will undertake periodic audit (at least quarterly) and monitor the contractor's activities.

126. **PIC-IBS.** The PIC-IBS will have at least degree or diploma in Wildlife Conservation or Ecosystem Management and related subjects, with at least 15 years of working experience in wildlife conservation related activities. S/he must have adequate experience and knowledge in designing and implementing wildlife conservation features to mitigate negative environmental impacts of agricultural projects on wildlife and be able to bring in relevant international best practices for incorporation in the project. The international biodiversity specialist, with the support of the national biodiversity specialist, will (i) assist international and national environmental specialists in preparing non-core subprojects' IEEs by providing inputs related to biodiversity; and (ii) provide technical oversight and support in the implementation of the environmental mitigation measures relevant to biodiversity, as necessary.

127. **PIC-NBS.** The PIC-NBS will have at least bachelor's degree in Wildlife Conservation or Ecosystem Management and related subjects, with at least 10 years of working experience in wildlife conservation related activities. The national biodiversity specialist will support the international biodiversity specialist in conducting his/her tasks.

## 6. PIU-EPO

128. The expert should have considerable experience in environmental monitoring and be familiar with the laws and regulations of Uzbekistan related to environmental safeguards as well as having had experience in ADB-financed infrastructure development projects as environmentalist. The expert should be guided by the government's procedures on environmental management, ADB's Safeguards Policy Statement (2009), and the project environmental management plan (EMP) for each subproject.

PIU-EPO should implement and monitor the EMPs for all project sites and ensure all is complied with ADB's and the government's laws and regulations. Provide inputs, data, and information related to environmental management to the PPMS and to the monthly briefs, of bi-annual environmental monitoring reports, quarterly progress reports, and annual progress reports.

## 7. Contractor

129. Contractor will be responsible for development of SSEMPs, and implementation, monitoring and reporting of all environmental mitigation measures during construction period. Contractor will prepare monthly monitoring reports on implementation of EMP. The Contractors are required to appoint a full-time and qualified environment officer and a full-time and qualified health and safety officer.

## B. Training and Capacity Building

130. Training and capacity building of various stakeholders involved in the implementation and monitoring of project activities is essential and should be undertaken to ensure that all identified environmental concerns are properly implemented and adequately monitored. Aside from the capacity development activity carried out through subcomponent 3d under Output 3 (See Chapter I.C.3.d)), training and capacity building on environmental safeguards summarized in Table 13 will be conducted by the PIC environmental specialists.

**Table 13: Training and Capacity Building Activities**

| No. | Capacity Building Activity   | Frequency                                    | Type of training  | Who will be trained  |
|-----|--|--|-------------------|--|
| 1.  | Awareness on ADB SPS (2009), EARF, EMP implementation and its monitoring                             | Once - at the time of each subproject starts | Half day workshop | All key stakeholders involved in project design and implementation such as BISA's, ISA's, ameliorative authority and DID, PIU and Contractors. |
| 2.  | Refresher programme awareness training - on ADB SPS (2009) and EMP implementation and its monitoring | Annual                                       | Half day workshop | Same as above.   |

ADB = Asian Development Bank, ADB SPS (2009) = ADB Safeguard Policy Statement (2009), BISA = Basin Irrigation System Authority, DID = District Irrigation Department, EARF = Environmental Assessment Review Framework, EMP = Environmental Management Plan, ISA = Irrigation System Authority, PIU = Project Implementation Unit

## C. Staffing Requirements and Budget

131. The subprojects' environmental costs need to incorporate a budget and resources to (i) implement the environmental review and screening procedure, (ii) undertake the IEE study for the project, (iii) conduct stakeholder's consultations, (iv) monitor the implementation of SSEMPs, and (v) undertake environmental mitigation measures as required.

132. The costs of conducting training, undertaking monitoring, procuring laboratory equipment for instrumental monitoring, hiring environmental consultants, and implementing the SSEMP also needs to be incorporated in the Project budget.

## VII. MONITORING AND REPORTING

133. Since it is planned to have a PIU housed with the MWR in place at the time of project implementation, most monitoring and guidance activities would be undertaken by the PIU itself. The PIU would support MWR as the executing agency with required implementation of environmental safeguards. Therefore, the PIU would acquire the PIC services to perform the tasks of environment monitoring/supervision activities.

134. The extent of monitoring activities by the PIU, with the support of PIC, will be commensurate with the subprojects' risks and impacts. The PIU is responsible for supervision and monitoring of the contractors' implementation of the EMP. To ensure that potential environmental problems are detected and addressed promptly and appropriately, supervision and monitoring will take place during project implementation (pre-construction, construction and operation phases). The PIU will conduct periodic site visit (at least weekly for all construction sites) and environmental compliance monitoring of subproject activities. More frequent monitoring will be needed when there are problems with EMP implementation. Contractors will also carry out regular monitoring and report to PIU on a monthly basis. The PIU will ensure the implementation of safeguard measures and relevant safeguard plans, as provided in the legal agreements, and to submit SAEMRs on their implementation performance during pre-construction, construction and operation phase until ADB's Project Completion Report (PCR) is issued.

135. The PIU should notify and identify in writing to MWR and ADB any breaches of its obligations or other performance failures or violations of the environmental permit and the EMP as soon as reasonably possible and in any event, in respect of any breach which would have a serious impact or where the urgent attention of the MWR and ADB is or may be required, within not later than twenty-four (24) hours, and in all other cases within 7 days of the PIU becoming aware of such incident. This requirement will be reflected in the contracts to require contractors to immediately notify the PIU of any breach.

136. The PIU will be required to:

- (i) Establish and maintain procedures to monitor the implementation of EMPs;
- (ii) Verify the compliance with environmental measures and their progress toward intended outcomes;
- (iii) Document and disclose monitoring results and identify necessary corrective and preventive actions in the SAEMRs (until ADB's PCR is issued);
- (iv) Follow up on these actions to ensure progress toward the desired outcomes; and
- (v) Submit SAEMRs to ADB.

137. The PIU will prepare SAEMRs (with the support of PIC) and submit these to MWR and ADB, every six months until ADB's PCR issuance.

138. The SAEMRs should include:

- documentation of compliance with all conditions;
- progress made to date on implementation of the EMP against the submitted implementation schedule;
- difficulties encountered in implementing the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties;
- number and type of non-compliance with the EMP and proposed remedial measures and timelines for completion of remediation;
- accidents or incidents relating to the occupational and community health and safety, and the environment;
- number and type of grievances/complaints received, and status of their resolution; and

- monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required.

139. The SAEMRs will be disclosed on ADB's website and on MWR website.<sup>29</sup> In addition, relevant information from the SAEMRs will also be translated into Uzbek and Russian languages and disclosed to affected persons, as soon as the reports are submitted to ADB.

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<sup>29</sup> See footnote 2.

## **APPENDICES**

## Appendix 1. Rapid Environmental Assessment (REA) Checklist

### Instructions:

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

Subproject Title:

| 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?  |     |    |         |
| ▪ 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...  |     |    |         |
| ▪ loss of precious ecological values (e.g., result of encroachment into forests/swamplands or historical/cultural buildings/areas, disruption of hydrology of natural waterways, regional flooding, and drainage hazards)? |     |    |         |
| ▪ conflicts in water supply rights and related social conflicts?   |     |    |         |
| ▪ impediments to movements of people and animals?  |     |    |         |
| ▪ potential ecological problems due to increased soil erosion and siltation, leading to decreased stream capacity?   |     |    |         |
| ▪ Insufficient drainage leading to salinity intrusion?   |     |    |         |
| ▪ over pumping of groundwater, leading to salinization and ground subsidence?  |     |    |         |
| ▪ impairment of downstream water quality and therefore, impairment of downstream beneficial uses of water?   |     |    |         |
| ▪ dislocation or involuntary resettlement of people?   |     |    |         |
| ▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?   |     |    |         |

| Screening Questions   | Yes | No | Remarks |
|---|-----|----|---------|
| ▪ potential social conflicts arising from land tenure and land use issues?  |     |    |         |
| ▪ soil erosion before compaction and lining of canals?  |     |    |         |
| ▪ noise from construction equipment?  |     |    |         |
| ▪ dust during construction?   |     |    |         |
| ▪ waterlogging and soil salinization due to inadequate drainage and farm management?  |     |    |         |
| ▪ leaching of soil nutrients and changes in soil characteristics due to excessive application of irrigation water?  |     |    |         |
| ▪ reduction of downstream water supply during peak seasons?   |     |    |         |
| ▪ soil pollution, polluted farm runoff and groundwater, and public health risks due to excessive application of fertilizers and pesticides?   |     |    |         |
| ▪ soil erosion (furrow, surface)?   |     |    |         |
| ▪ scouring of canals?   |     |    |         |
| ▪ clogging of canals by sediments?  |     |    |         |
| ▪ clogging of canals by weeds?  |     |    |         |
| ▪ seawater intrusion into downstream freshwater systems?  |     |    |         |
| ▪ introduction of increase in incidence of waterborne or water related diseases?  |     |    |         |
| ▪ dangers to a safe and healthy working environment due to physical, chemical and biological hazards during project construction and operation?   |     |    |         |
| ▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?   |     |    |         |
| ▪ social conflicts if workers from other regions or countries are hired?  |     |    |         |
| ▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?  |     |    |         |
| ▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., irrigation dams) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? |     |    |         |

## Appendix 2. Anticipated Environmental Impacts and Mitigation Measures

| Issue/Subject   | Potential Issues/ Important Factors/ Impacts                   | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
|---|--|--|------------------------------|----------------------------|---|
| <b>A. Project Preparation and Initial Environmental Examination (IEE) Development</b> |  |  |                              |                            |   |
| Project Preparation   | IEE Preparation  | 1. Submit IEE for review and comments by ADB   | MWR with TRTA /PIC support   | PIU-EPO                    | Clearance of IEE by ADB   |
|   | Public Consultations   | 2. Conduct public consultations in target districts of Surkhandarya province   | Same as above                | PIU-EPO                    | Report on public consultation results in IEE  |
|   | GRM  | 3. Prepare GRM   | Same as above                | PIU-EPO                    | Clearance of IEE including GRM by ADB   |
| <b>B. Detailed Design</b>   |  |  |                              |                            |   |
| Detailed Design   | Incorporating IEE results and EMP into detailed design process | 4. Planning and design of all irrigation schemes components will be based on international standards under due consideration of local guidelines where available such as SniP and GOST<br>5. A preference to nature-based solutions should be promoted during design <sup>30</sup> | Design institute, Contractor | PIC/PIU-EPO                | Approval of detailed design by MWR  |
|   | Obtain clearance of national environmental assessment (OVOS)   | 6. Review, (update if necessary), and ensure incorporation of this IEE and measures defined in current EMP into subproject detailed design, decision-making, and national EIA (OVOS) process.  | Design institute, Contractor | PIU-EPO                    | Approval of subproject EIA (OVOS) by Center for SEE<br>Clearance of updated IEE/EMP (if necessary) by ADB |
|   | Consideration of seismicity at the subproject area             | 7. Incorporate into detailed design adequate considerations and provisions for structural integrity of hydraulic structures against potential earthquakes based on seismicity zoning and Uzbekistan construction standards   | Design institute             | PIC/PIU-EPO                | Approval of detailed design by MWR  |

<sup>30</sup> Bioengineering can have a myriad of potential benefits when applied as mitigation measures options, for example: i) to capture and treat pesticides; ii) to improve canal bank stabilization; iii) or to reduce evapotranspiration.

| Issue/Subject                    | Potential Issues/ Important Factors/ Impacts | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
|----------------------------------|--|--|------------------------------|----------------------------|---|
|                                  | Climate change impacts                       | 8. Incorporate into detailed design adequate considerations and provisions in relation to climate change aspects in subproject area through recommended climate change adaptation measures and good engineering design practices                   | Design institute             | PIC/PIU-EPO                | Approval of detailed design by MWR  |
|                                  | Physical cultural resources                  | 9. Archaeological research will be undertaken during detailed design as required by laws   | Design institute             | PIC/PIU-EPO                | Archaeological report to be cleared by PIC<br>Approval of the subproject from State Expertise |
|                                  | GRM  | 10. Establish GRM<br>11. Appoint GRM coordinator for subproject<br>12. Conduct training for coordinator and affected people on GRM procedures  | PIU-EPO                      | PIU-EPO                    | GRM established as intended   |
|                                  | Public consultations on detailed design      | 13. Conduct public consultations on decisions made in regard to detailed design, present (updated) IEE/ EMP, and get feedback to consider in final subproject design<br>14. Explain established GRM, disseminate information including contacts    | Design institute, PIU-EPO    | PIU-EPO                    | Report on public consultations cleared by PIC   |
| Bidding documents                | IEE and EMP requirements                     | 15. Include EMP obligations in tender documents and specifications, referencing to the subproject IEE and EMP  | PIC                          | PIC/PIU-EPO                | Bidding documents approved by MWR and ADB   |
| <b>C. Pre-Construction Stage</b> |  |  |                              |                            |   |
| Pre- construction arrangements   | Contractor's Staffing                        | 16. Contractor will hire a full-time environmental officer and a full-time health and safety officer with relevant background and sufficient experience to (i) prepare SSEMPs in reference to EHS Guidelines <sup>31</sup> based on the subproject | Contractor                   | PIC/PIU-EPO                | Environmental Officer and health and safety officer   |

<sup>31</sup> World Bank Group, *Environmental, Health, and Safety Guidelines*, April 30, 2007, Washington, USA. <http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines>.

| Issue/Subject   | Potential Issues/ Important Factors/ Impacts          | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---|---|---|------------------------------|----------------------------|--|
|   |   | EMP) and (ii) ensure compliance with all applicable national laws and regulations, obtain all necessary environmental licenses and permits, and implement EMP requirements  |                              |                            | of Contractor hired<br>All licenses and permits obtained   |
|   | Roles and responsibilities                            | 17. Assign roles and responsibilities related to subproject's Environmental Monitoring and Reporting System   | PIU-EPO                      | PIU-EPO                    | Roles and responsibilities assigned  |
|   | Environmental Protection Training                     | 18. Conduct environmental protection training on implementation and supervision of subproject's environmental mitigation measures for MWR, PIU-EPO and Contractor   | PIC                          | PIU-EPO                    | Training delivered   |
|   | SSEMP   | 19. Prior to commencement of any construction works, prepare SSEMPs for construction site based on requirements set forth in bidding documents, design package IEE/ EMP actual on-site conditions and decisions on work arrangements.   | Contractor                   | PIU-EPO                    | SSEMPs will be approved by PIC and MWR/PIU-EPO   |
| Non-compliance with national environmental regulation | Non-compliance with national environmental regulation | 20. Obtain necessary permission on the use of spoil area.<br>21. Make contract with licensed waste collection/ transportation/ disposal facilities.   | Contractor                   | PIU-EPO                    | Necessary permissions obtained<br>Necessary contracts made   |
| Baseline monitoring                                   | Baseline monitoring                                   | 22. Conduct initial baseline monitoring of air quality and noise level prior to commencement of construction works, to track changes due to consequent subproject implementation.   | Contractor                   | PIU-EPO                    | Baseline monitoring results to be included in the SAEMR  |
| Site Clearance  | Vegetation clearance                                  | 23. Avoid cutting more trees than needed.<br>24. If possible, consider transplanting of tree to be removed.<br>25. The felling of trees will be carried out in accordance with the DCM No. 43 dated 17 January 2019 and No. 255 dated 31 March 2018.<br>26. For all trees cut/removed, plantation will be at 10 trees for every tree cut. | Contractor and PIC           | PIU-EPO/PIC                | All work sites<br>Trees removed only after PNPC approval obtained.<br>Verify the adherence to recommenda |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts  | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---------------|---|--|------------------------------|----------------------------|--|
|               |   | 27. All plantation activities will consist of appropriate species for the area to be planted, in consultation with the forest department and also after understanding the local ecological needs.<br>28. Ensure minimum damage to site during detailed design stage itself Where possible identify appropriate re-plantation activities with appropriate species.<br>29. Identify, demarcate and protect sites where small animals, reptiles, and birds of common species live, such as vegetated roadside areas, tree belts, inner areas of bridges, canal riparian zones, etc. |                              |                            | tions in sites where clearance is performed  |
|               | Accidents among local population due to faulty design and improper construction practices | 30. Conduct community awareness / consultation to reduce the risk of accidents or health and safety incident<br>31. Ensure design has safety measures to reduce accidental falling of children or adults in canal or their getting trapped in.   | PIC                          | PIU-EPO                    | Detailed designs<br>Plans and bid documents show that required provisions have been included |
|               | Human - animal conflict   | 32. Ensure design is such that animal's - wild or domestic, do not accidentally fall in and get trapped in the canal.  | Contractor                   | PIU-EPO                    | Detailed designs<br>Plans and bid documents show that required provisions have been included |
|               | Impact on local fisheries and fish spawning and aquatic fauna                             | 33. Do not undertake any construction/ quarrying activity during the spawning period of the different fish species. <sup>32</sup>  | Contractor and PIC           | PIU-EPO/PIC                | Monitoring reports.  |

<sup>32</sup> The spawning period of fish in the area will be examined prior to the construction.

| Issue/Subject | Potential Issues/ Important Factors/ Impacts  | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---------------|---|---|------------------------------|----------------------------|--|
|               |   | 34. Discuss with local population before starting any construction activity to ensure minimum disturbance.  |                              |                            | Complain records   |
|               | Chance finding of an archaeologically or culturally important site  | 35. Clearly identify all required actions - such as stopping work in case of a chance finding and who to contact are clearly understood by the construction consultants Ensure that the construction company and supervising consultants understand archaeological concerns in the area.  | Contractor                   | PIU-EPO/PIC                | Detailed designs<br>Plans and bid documents show that required provisions have been included   |
|               | Reduced aesthetics due to quarries on canal bed, hills among others.  | 36. Rehabilitation of all sites must be undertaken once work is completed and plans developed well in advance of construction activities and will be in the construction company contract to ensure it is taken up and appropriate budget will be made for the activity.<br>37. Avoid identifying any quarrying work in an aesthetically important/significant place. | Contractor                   | PIU-EPO/PIC                | Material removed from sides of canals.<br>Borrow pits closed.<br>Materials properly stockpiled,<br>Site landscaped and<br>All old pipes and other used materials |
|               | Reduced access of water for domestic, livestock and other purposes from canal system due to design changes and increased water use efficiencies | 38. Identify water needs for different users and in consultation with them develop appropriate design changes to ensure access to identified groups.  | Contractor                   | PIU-EPO/PIC                | Detailed designs<br>Plans and bid documents show that required provisions have been included   |

| Issue/Subject                                  | Potential Issues/ Important Factors/ Impacts   | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|--|--|--|------------------------------|----------------------------|--|
|  | Disruption of traffic routes - especially navigation due to sighting of infrastructure | 39. Identify any landing and other sites along the planned infrastructure site. Where possible consider design changes to ensure there are no problems faced by the local population.<br>40. Where not possibly create alternate facilities in consultation with the local population.   | Contractor                   | PIU-EPO/PIC                | Detailed designs<br>Plans and bid documents show that required provisions have been included |
| <b>D. Construction Stage</b>                   |  |  |                              |                            |  |
| Soil erosion/contamination and sediment runoff | Soil erosion   | 41. Apply nature-based solutions for slope stabilization to prevent spoil loss, improve water retention and biodiversity and can act as a food source.<br>42. Any deep excavations in unstable soils will be shored, and below grade construction brought to grade quickly, then excavations closed.<br>43. Surface soils will be temporarily graded-to-drain and protected as necessary to reduce erosion and sediment runoff.<br>44. Minimize unnecessary encroachment onto adjacent lands to reduce area of disturbance to vegetation and soil.<br>45. Fertile topsoil layer will be cut and stockpiled separately from spoil material to be readily available for later use in slope stabilization and land reinstatement works.<br>46. Where possible, surplus soil will be used for earth filling works at approved locations.<br>47. Canal excavation width and depth will be kept to a feasible minimum to reduce extra spoil generation.<br>48. When excavating canals, silt curtains, water diversion structure, and/or settling ponds will be provided as a comprehensive system to prevent sediment transport in the water courses.<br>49. Intercepting ditches and drains will be organized to prevent runoff entering construction | Contractor                   | PIC/PIU-EPO                | Visual inspection  |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
|---------------|--|---|------------------------------|----------------------------|---|
|               |  | <p>sites and to divert runoff from sites to existing drainage.</p> <p>50. Works and material handling will be limited during heavy rains and high winds to minimize soil erosion.</p>   |                              |                            |   |
|               | Soil contamination                           | <p>51. Petroleum products, hazardous materials and wastes will be stored covered against precipitation, on an impermeable surface, and secured from acts of vandalism.</p> <p>52. All fuel and chemical storage (if any) will be sited on an impervious concrete base within a bund and secured by fencing. The storage area will be located at least 500 m away from any watercourse or wetlands. The base and bund walls will be impermeable and of sufficient capacity to contain 110% of the volume of tank (or one tank if more than one tank is located in the bund).</p> <p>53. Avoid soil contamination with petroleum products, lubricants, or hazardous materials during equipment maintenance and repair, field refueling, and hazardous material handling.</p> <p>54. Filling and refueling will be strictly controlled and subject to formal procedures. Drip pans will be placed under all filling and fueling areas. Waste oils will be stored and disposed of by a licensed contractor.</p> <p>55. Disposal of lubricating oil and other potentially hazardous liquids onto the ground or water bodies will be prohibited.</p> <p>56. Should any accidental spills occur immediate cleanup will be undertaken, and all cleanup materials stored in a secure area for disposal. Disposal of such will be undertaken by a waste management company contracted by the contractor. The waste management company must have the required licenses to transport and dispose of hazardous waste before any such waste is removed from the site. The contractor will keep copies of the company's licenses and</p> | Contractor                   | PIC/PIU-EPO                | Visual inspection<br>Soil quality measurement result (when necessary) |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts  | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators    |
|---------------|---|---|------------------------------|----------------------------|--------------------------|
|               |   | <p>provide waste transfer manifests at its camp site for routine inspection by the engineer.</p> <p>57. All valves and trigger guns will be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.</p> <p>58. The contents of any tank or drum will be clearly indicated. Measures will be taken to ensure that no contaminated discharges enter any soils.</p> <p>59. No bitumen drums or containers, full or used, will be stored on open ground. They will only be stored on impervious hard standing.</p> <p>60. Areas using bitumen will be constructed on impervious hard standing to prevent seepage of oils into the soils.</p> <p>61. The construction camp maintenance yard will be constructed on impervious hard standing with adequate drainage to collect spills. There will be no vehicle maintenance activities on open ground.</p> <p>62. Organize spill response kit at each construction site for collection and storage of contaminated soil and provide training for workers on use of spill response kit.</p> <p>63. In case of spillage of waste during transportation, immediate actions should be taken on the measures appropriate to its scale</p> <p>64. Measure soil quality in case of need (complaint etc.)</p> |                              |                            |                          |
|               | <p>Compaction of soil/soil erosion for access to various sites and to quarries - such as quarries for gravels and sand mining areas</p> | <p>65. Plan site prior to starting excavation activities, including slope stabilization, identify and developing appropriate slope aspect during excavation and contouring to ensure slope stability after earth borrowing activities are completed.</p> <p>66. Clear vegetation that must be removed.</p> <p>67. As far as possible, use already identified roads and routes to access various sites.</p>  | <p>Contractor</p>            | <p>PIC/PIU-EPO</p>         | <p>Visual inspection</p> |

| Issue/Subject                  | Potential Issues/ Important Factors/ Impacts                       | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
|--------------------------------|--|--|------------------------------|----------------------------|---|
|                                | Sediment runoff and deposition near sites or during transportation | 68. When excavating canals, silt curtains, water diversion structure, and/or settling ponds will be provided as a comprehensive system to prevent sediment transport in the water courses.<br>69. Avoid work in high wind condition.<br>70. During soil excavation, ensure slope aspect is maintained.<br>71. No driving in canal water.<br>72. No quarry work in running water of canals and minimize need to work in water.<br>73. Fence off in-stream work to reduce disturbance.   | Contractor                   | PIC/PIU-EPO                | Visual inspection   |
|                                | Loss of fertile topsoil layer                                      | 74. The topsoil will be stored separately and reused for site landscaping and gardening where possible.<br>75. The contractor will reinstate the field where topsoil is removed.<br>76. Erosion will be prevented by minimizing any removal of trees and green cover vegetation.<br>77. Revegetation measures will be applied where appropriate.   | Contractor                   | PIC/PIU-EPO                | Visual inspection   |
| Impact on Surface/Ground Water | Surface water contamination  | In addition to the measures against "Soil contamination";<br>78. Preparation/implementation of a Spill Response Plan (for the management of any spills over 10 liters and provide spill kits at all work sites) and a Construction Camp Site Plan as part of the SSEMP. The plan will indicate the system proposed and the locations of related facilities in the site, including latrines, holding areas, and septic tanks.<br>79. No construction camp, permanent or temporary, will be located within 500 m of any river, canal or reservoir.<br>80. No equipment washing is allowed in any surface water bodies throughout the subproject implementation period. | Contractor                   | PIC/PIU-EPO                | Spill Response Plan and Construction Camp Site Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented<br>.<br>Visual inspection |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts       | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---------------|--|---|------------------------------|----------------------------|--|
|               |  | <p>81. When excavating canals, silt curtains, water diversion structure, and/or settling ponds will be provided as a comprehensive system to prevent sediment transport in the water courses.</p> <p>82. No wastewater will be dumped into any ditches or streams. Wastewater arising on the site will be collected, removed from the site via a suitable and properly designed temporary drainage system and disposed of at a location and in a way that will cause neither pollution nor nuisance.</p> <p>83. Liquid material storage containment areas will not drain directly to surface water.</p> <p>84. Discharge of sediment-laden construction water directly into surface watercourses or wetlands will be forbidden. Sediment-laden construction water will be discharged into settling lagoons or tanks prior to final discharge.</p> <p>85. Lubricant and fuel oil spills will be cleaned up immediately and spill cleanup materials will be maintained (including spill kits) across the contractor's construction camp.</p> <p>86. Spill cleanup equipment will be maintained on-site. The following conditions to avoid adverse impacts due to improper fuel and chemical storage.</p> <p>87. Fueling operations will occur only within containment areas. Fuel storage, equipment maintenance and repair workshops, and vehicle washing areas will be stationed at least 500 m away from any water body.</p> <p>88. Measure surface/ground water quality in case of need (complaint etc.).</p> |                              |                            | Surface/ground water quality measurement result (when necessary)     |
|               | Surface water contamination by domestic wastewater | 89. There will be no direct discharge of sanitary or wash water to surface water, including the surface water courses identified in the subproject IEE and their tributaries. Disposal of materials such as, but not limited to, lubricating oil and onto the ground or water bodies will be prohibited.  | Contractor                   | PIC/PIU-EPO                | Visual inspection<br>Surface/ground water quality measurement result |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts                               | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---------------|--|---|------------------------------|----------------------------|--|
|               |  | 90. Construction and work sites will be equipped with sanitary latrines that do not pollute surface waters. Wastewater from labor camps and construction sites will be canalized into septic tanks without contacting ground. Septic tanks will be timely emptied by a hired septic truck and transported to legally approved treatment facility or dumpsite.<br>91. Measure surface/ground water quality in case of need (complaint etc.).   |                              |                            | (when necessary)   |
|               | Waterlogging from poor site planning and management                        | 92. Ensure proper site planning takes place and site management is adequate - to be put into construction contractor's clauses.   | Contractor                   | PIC/PIU-EPO                | Visual inspection  |
| Air pollution | Dust generation caused by transportation of materials and vehicle movement | 93. Air Quality Management Plan will be prepared as part of the SSEMPs and implemented by the contractor.<br>94. Construction materials (sand, gravel, and rocks) and spoil materials will be transported by trucks covered with tarpaulin or other acceptable type cover (which will be properly secured) to prevent debris and/or materials from falling from or being blown off the vehicle(s).<br>95. All dust generating lands will be watered to suppress dust formation during movement of vehicles, as frequent as necessary depending on circumstances. During hot dry summer days and active construction works, it is a usual practice to water access roads every two hours.<br>96. All vehicles (e.g., trucks, equipment, and other vehicles that support construction works) will comply with the national vehicle regulations and international emission standards. Regular exhaust emissions tests will be conducted. | Contractor                   | PIC/PIU-EPO                | Air Quality Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented<br>.<br>Dust related complaints<br><br>Visual inspection |
|               | Stockpiles of materials and spoil:   | 97. Air Quality Management Plan will be prepared as part of the SSEMPs and implemented by the contractor.<br>98. All stockpiles will be managed to reduce dust emissions.   | Contractor                   | PIC/PIU-EPO                | Air Quality Management Plan prepared as part of SSEMP, approved by   |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
|---------------|--|---|------------------------------|----------------------------|--|
|               |  | <p>99. Stockpiles will be located downwind of sensitive receptors, such as residential areas, schools, hospitals, kindergartens.</p> <p>100. If a stockpile is within 300 m of residential area, precautions will be taken to avoid dust generation, including using of a reusable stockpile cover and fencing to form a high barrier to prevent wind lifting and dispersing.</p> <p>101. The contractor will ensure that material stockpiles will be located in sheltered areas and be covered with tarpaulins or other such suitable covering to prevent material becoming airborne.</p> <p>102. Stockpiles emitting dust will be sprayed with water prior to moving.</p> <p>103. Effective use of water sprays will be implemented: carrying out watering for dust control at least three times a day: in the morning, at noon, and in the afternoon during dry weather with temperatures of over 25°C, or in windy weather specifically in or near villages. Avoid overwatering as this may make the surrounding muddy. All water used for controlling dust will be free of odor and pollution.</p> |                              |                            | <p>PIC and MWR/PIU-EPO, and implemented</p> <p>Dust related complaints</p> <p>Visual inspection</p>  |
|               | <p>Dust generation at construction site</p>  | <p>104. Air Quality Management Plan will be prepared as part of the SSEMPs and implemented by the contractor.</p> <p>105. Water will be sprayed on construction sites and material handling routes, where fugitive dust is generated.</p> <p>106. No equipment using any fuel that may produce air pollutants, including mobile generators, will be installed without consent of the PIC.</p> <p>107. Construction equipment will be maintained to a good standard and fitted with pollution control devices which will be regularly monitored by the engineer.</p> <p>108. Monthly air quality monitoring at sensitive receptors.</p>  | <p>Contractor</p>            | <p>PIC/PIU-EPO</p>         | <p>Air Quality Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> <p>Dust related complaints</p> <p>Visual inspection</p> |

| Issue/Subject       | Potential Issues/ Important Factors/ Impacts                                    | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
|---------------------|---|--|------------------------------|----------------------------|---|
|                     |   |  |                              |                            | Air quality measurement result  |
|                     | Exhaust gases and Emissions   | <p>109. Air Quality Management Plan will be prepared as part of the SSEMPs and implemented by the contractor.</p> <p>110. No burning of any waste is allowed on any construction sites throughout the subproject implementation period.</p> <p>111. Construction vehicles and machinery will be maintained to a high standard to minimize emissions and will avoid unnecessary idling to save fuel and reduce emissions.</p> <p>112. Batching plant's locations will be agreed with the PIC and will be downwind and at least 500 m from nearest residential area.</p> | Contractor                   | PIC/PIU-EPO                | <p>Air Quality Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> <p>Visual inspection</p> |
|                     | Increased particulate matter on transport route of raw material and at quarries | <p>113. Ensure vehicles are properly maintained.</p> <p>114. Reduce blasting and other similar activities that may create dust to the extent possible</p> <p>115. Use sprinklers to settle dust where needed</p>   | Contractor                   | PIC/PIU-EPO                | <p>Air Quality Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> <p>Visual inspection</p> |
| Noise and vibration | Noise   | <p>116. Noise Management Plan will be developed as part of the SSEMPs. They will contain procedures and plans to ensure that the mitigation measures and monitoring requirements are implemented during the construction period. All civil works will be designed and implemented in accordance with environmentally sound engineering practices</p>   | Contractor                   | PIC/PIU-EPO                | <p>Noise Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and</p>  |

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|               |  | <p>and governed by the relevant environmental standards.</p> <p>117. Time and activity constraints. In case if construction sites will be within or in proximity to villages, operations will be scheduled to coincide with periods when people would least likely be affected; work hours and workdays will be limited to less noise-sensitive times. Hours-of-work will be approved by the engineer having due regard for possible noise disturbance to the residents or other activities. Construction activities will be strictly prohibited between 9 PM and 7 AM in the residential areas. When operating close to sensitive areas such as medical facilities and schools, the contractor's hours of working will be limited to 8 AM to 6 PM.</p> <p>118. Noise generating equipment will be located at least 300 m from any sensitive areas.</p> <p>119. Noise generating equipment at construction sites will be isolated and, where possible, will be faced away from most sensitive directions.</p> <p>120. Use temporary noise barriers while working in sensitive locations in case exceedance of allowable limits is expected and in case of relevant complaints. Placing the barrier close to the source proves to be effective.</p> <p>121. Measures will be taken to reduce any noise disturbance to community, including giving notice on timing of noisy activities as early as possible to sensitive receptors for periods of noisier works such as excavation. Describe the activities and how long they are expected to take. Keep affected neighbors informed of progress and seek suggestions from community members to reduce noise annoyance, and dissemination of procedure on handling complaints through GRM.</p> |                              |                            | <p>implemented</p> <p>·</p> <p>Noise related complaints</p> <p>Noise level measurement result</p> |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators |
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|               |  | <p>122. Within normal working hours, where it is reasonable to do so:</p> <p>123. schedule noisy activities for less sensitive times.</p> <p>124. provide periods of respite from noisier works.</p> <p>125. The weekend/evening periods are important for community rest and recreation and provide respite when noisy work has been conducted throughout the week. Accordingly, work will not usually be scheduled during these times.</p> <p>126. All mechanical plant is to be silenced by the best practical means using current technology. Mechanical plant, including noise-suppression devices, will be maintained to the manufacturer's specifications. Internal combustion engines are to be fitted with a suitable muffler in good repair.</p> <p>127. Fit all pneumatic tools with an effective silencer on their air exhaust port.</p> <p>128. Install less noisy movement/reversing warning systems for equipment and vehicles that will operate for extended periods, during sensitive times or proximity to sensitive sites. OHS requirements for use of warning systems must be followed.</p> <p>129. Turn off equipment when not being used.</p> <p>130. All vehicular movements to and from the site to only occur during the scheduled normal working hours unless approval has been granted by the PIC.</p> <p>131. Where possible, no truck associated with the work will be left standing with its engine operating in a street adjacent to a residential area.</p> <p>132. All construction workers will be provided with PPE such as ear plug, earmuff. The</p> |                              |                            |                       |

| Issue/Subject                  | Potential Issues/ Important Factors/ Impacts     | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators        |
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|                                |  | <p>workers must use them against high noise and/ or lengthy exposure.</p> <p>133. Monthly noise level monitoring at sensitive receptors.</p>   |                              |                            |                              |
|                                | Vibration  | <p>134. Subproject area and vehicle movement routes will be inspected for sensitive structures.</p> <p>135. Pictures and precautions will be taken to avoid vibration impacts on sensitive structures near subproject sites and roads, prone to cracking and breaking caused by vibration from construction activities.</p>  | Contractor                   | PIC/PIU-EPO                | Vibration related complaints |
| Impact on Ecological Resources | Impacts on flora and fauna, reduction of habitat | <p>136. Acquire tree cutting permit from local department of biological control for any trees to be cut under the subproject.</p> <p>137. For any tree cut or valuable grassland area disturbed for subproject needs, replant the same species trees or re-vegetate areas at other approved locations; according to DCM No. 43 (17 January 2019), ten trees planted for one cut (i.e., 10 saplings planted for each tree felled).</p> <p>138. Use only native plants for re-vegetation of disturbed areas.</p> <p>139. Identify, demarcate and protect sites where small animals, reptiles, and birds of common species live, such as vegetated roadside areas, tree belts, inner areas of bridges, and canal riparian zones.</p> <p>140. Strictly prohibit poaching of wildlife and damaging plants.</p> <p>141. Ensure that canal rehabilitation activities such as concrete batching plants, construction camps, labor camps and other ancillary features are properly sited.</p> <p>142. Supply appropriate and adequate fuel in construction camps to prevent fuel-wood collection.</p> | Contractor                   | PIC/PIU-EPO                | Visual inspection            |

| Issue/Subject                               | Potential Issues/ Important Factors/ Impacts   | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators                   |
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| Disturbance on local community              | Disturbance to local population  | 143. Identify appropriate access routes, speed limits and timings with community.<br>144. Identify appropriate material storage areas to ensure least possible disturbance. Provide signage, demarcate and cordoning of areas to reduce access to construction site and to avoid accidents. Ensure appropriate site drainage.<br>145. Restore areas after work is over.<br>146. Minimize transportation of material through heavily populated areas.<br>147. Use roadworthy vehicles only. | Contractor                   | PIC/PIU-EPO                | Monitoring reports.<br>Complain records |
|   | Damage to telecommunication lines  | 148. Identify possible telecommunication lines in the area prior to starting work to ensure that they are not damaged due to any construction work.<br>149. In case of damage, repair them immediately.  | Contractor                   | PIC/PIU-EPO                | Monitoring reports.<br>Complain records |
|   | Reduced access to sites for local population, construction sites or material procurement sites | 150. Identify alternate routes for subproject construction activities where possible.<br>151. If not possible, in consultation with the local population, identify appropriate alternatives for them and provide required facilities.  | Contractor                   | PIC/PIU-EPO                | Monitoring reports.<br>Complain records |
|   | Damage to infrastructure   | 152. Vehicles will take pre-identified routes.<br>153. Do not overload vehicles beyond limits.<br>154. If damage to infrastructure occurs, plan for any maintenance that maybe required.   | Contractor                   | PIC/PIU-EPO                | Monitoring reports and records          |
| Impact from the operation of worker's camps | Workers/labor camps and facilities   | 155. Construct and maintain a camp/camps following IFC and the EBRD's guidance note on Workers' accommodation: processes and standards (2009). <sup>33</sup><br>156. Provide appropriate shelter and other facility for any labor brought from outside.  | Contractor                   | PIC/PIU-EPO                | Monthly Monitoring reports              |

<sup>33</sup> [Workers' Accommodation: Processes and Standards \(ifc.org\)](http://www.ifc.org)

| Issue/Subject                       | Potential Issues/ Important Factors/ Impacts | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
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|                                     |  | <p>157. Do not use hazardous materials like asbestos for construction of shelters or temporary housing.</p> <p>158. Ensure no conflict with local population due to labor camp.</p>  |                              |                            |   |
|                                     | Conflict with labor camps on resources       | <p>159. Select labor camp sites to ensure least possible conflict with local population - e.g., at a distance from where population density is high.</p> <p>160. Ensure labor camps have required infrastructure like water supply, sanitation facilities and energy.</p> <p>161. Develop appropriate waste management system and rehabilitate the site after construction is over.</p> <p>162. Labor camps will be located close to settlement areas but not near sensitive water resources. In such cases, the contractor will provide a detailed design of each labor camp including infrastructure planning (water supply, electricity supply, waste management, wastewater treatment and disposal). Workers will be trained how to behave and to handle waste and wastewater according to national environmental management requirements and international good practices.</p> <p>163. Do not develop any construction site - material storage, labor camps etc. without consultation with the local population. Also, where possible do not use grazing lands etc. for labor and material storage.</p> | Contractor                   | PIC/PIU-EPO                | Monthly Monitoring reports  |
| Occupational Health and Safety Risk | Occupational Health and Safety               | <p>164. An OCHS Plan including COVID-19 Health and Safety Management Plan and Emergency Response Plan will be prepared by the Contractor as part of the SSEMPs to manage worker safety on-site during the construction phase of the Subproject.</p> <p>165. A full-time health and safety officer will be hired by the contractor to develop, implement,</p>   | Contractor                   | PIC/PIU-EPO                | OCHS Plan including COVID-19 Health and Safety Plan and Emergency Response Plan |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
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|               |  | <p>and supervise the OCHS Plan subject to approval by the PIC.</p> <p>166. The health and safety officer will conduct initial and regular refresher training for all workers on labor rights, occupational health and safety matters, safety precautions, and their responsibilities for the safety of themselves and others.</p> <p>167. Ensure provision and distribution of PPE including hard hats, and protective footwear, and keep record and report any health and safety incidents.</p> <p>168. OCHS Plan will follow national legislation requirements and include among others requirements to: (i) norms on provision of fresh water at all sites; (ii) adequate hygienic and sanitation facilities; (iii) labeling, warning, storage, and handling procedures for hazardous liquid materials; (iv) emergency response procedures; (v) records of occupational accidents, diseases, and incidents; (vi) OHS publications, such as brochures, leaflets, posters in Uzbek and Russian languages at relevant construction sites; (vii) monthly reporting on labor profile, including information on workers' place of origin, gender, ethnicity, type of contract (full-time/ part-time, unskilled/ semi-skilled/ skilled, management, administration) (viii) ensure all workers have officially signed contracts, correct and timely pay, no excessive use of overtime.</p> <p>169. All legally required permits will be acquired for construction and/or rehabilitation.</p> <p>170. Contractor will allocate sufficient budget for OHS measures.</p> <p>171. Ensuring plant and vehicle operators are properly licensed and trained.</p> <p>172. Arranging for the provision of first aid facilities, readily available trained paramedical</p> |                              |                            | <p>prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators |
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|               |  | <p>personnel, and emergency transport to the nearest hospital with accident and emergency facilities. Health and safety officer is responsible for ensuring that these arrangements are continually in place.</p> <p>173. Arranging for regular safety checks of vehicles and material, and allocation of responsibility for this.</p> <p>174. All civil works will be designed and operated in accordance with environmentally sound engineering practices and governed by the relevant environmental standards. The works will require the use of heavy machinery (i.e., excavators, bulldozers) but will be small in scale and will not take place on lands already under agricultural use.</p> <p>175. Movable sanitary facilities will be provided at each work site and kept clean, free of odors and usable.</p> <p>176. Carry out the routine inspection of the machinery and equipment for purpose of the trouble shooting and observance of the time of repair, training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work.</p> <p>177. Special attention will be paid to welding operations. It is prohibited to distribute the faulty or unchecked tools for work performance as well as to leave off hand the mechanical tools connected to the electrical supply network or compressed air pipelines; to pull up and bend the cables and air hose pipes; to lay cables and hose pipes with their intersection by wire ropes, electric cables, to handle the rotating elements of power-driven hand tools.</p> <p>178. Child labor is prohibited by national laws with minimum full 16 years of age.</p> <p>179. Signage, site plan, lighting and restricted entry.</p> |                              |                            |                       |

| Issue/Subject                    | Potential Issues/ Important Factors/ Impacts    | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
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|                                  |   | 180. Vaccination and preventive health measures as required.<br>181. Facilities for handling emergencies at site.<br>182. Restricted access to hazardous materials.<br>183. Personnel handling hazardous material will be properly trained, licensed and with sufficient experience.<br>184. Drinking water facilities at construction sites.  |                              |                            |   |
|                                  | risks associated with working near water bodies | 185. Workers will not be allowed to enter trenches deeper than waist height unless they are properly shored.<br>186. Provide rescue equipment such as life buoy, personal flotation device, lifeline, life jackets, adequate boat that is available for a safe and timely rescue, at every construction site near water body.<br>187. An appropriate number of workers will be trained for rescue operations and designated to perform the rescue tasks<br>188. Workers are informed about appropriate rescue procedures, and trained in rescue procedures and use of rescue equipment | Contractor                   | PIC/PIU-EPO                | Number or accident near water bodies  |
| Community Health and Safety Risk | Community Safety                                | 189. Ensure all working areas (including construction camps and labor camps) have safety barricades to prevent access by local population.<br>190. Provide hazard warning signs around construction sites including access roads, if any.<br>191. Excavated areas will be fenced and equipped with warning sign.<br>192. Clear signs will be installed in view of public, warning people of potential dangers, such as moving vehicles and hazardous   | Contractor                   | PIC/PIU-EPO                | Traffic Management Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented<br>.<br>Visual inspection |

| Issue/Subject                                  | Potential Issues/ Important Factors/ Impacts   | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators |
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|  |  | <p>materials; all dangerous sites will be secured from unauthorized access.</p> <p>193. Ensure appropriate signage at construction sites.</p> <p>194. Locally contracted workers will be prioritized for recruitment.</p> <p>195. The Contractor will prepare and strictly follow its Traffic Management Plan as part of the SSEMPs, which will outline haul routes and safety measures. The Traffic Management Plan will also describe the method for provision of access in roads where trenches are being excavated. If any diversions are required, they will be outlined in the Traffic Management Plan.</p> <p>196. Temporary traffic management and road safety awareness measures will be taken to ensure safety of nearby residents, community and visitors.</p> <p>197. Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.</p> <p>198. Adjustment of working hours to local traffic patterns, e.g., avoiding major transport activities during rush hours or times of livestock movement.</p> <p>199. In case of accident ensure required first aid is given immediately and till the person is transported to the nearest medical facility.</p> |                              |                            |                       |
| Impact at dumpsites and impact from stockpiles | Risk of soil erosion from the dumpsites during wet weather, especially during the heavy rains. | <p>200. Waste and Spoil Management Plan will be developed as part of the SSEMP and implemented.</p> <p>201. Stockpiling separately in designated areas. Spoil randomly compacted to the maximum extent practicable by routing the</p>   | Contractor                   | PIC-EPO                    | Visual inspection     |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators |
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|               |  | <p>haulage traffic over the area and will be graded to prevent the ponding of water. Slopes will be formed and protected such that they remain stable and will be compacted with appropriate to the particular type of material being spoiled. Where spoil tips will be exposed to varying water levels, rock toes and/or rip-rap protection to exposed slopes will be incorporated in the construction of the tip.</p> <p>202. Pipe or conduit outlets will be suitably constructed to prevent erosion. When excavating canals, silt curtains, water diversion structure, and/or settling ponds will be provided as a comprehensive system to prevent sediment transport in the water courses. An earth mound will be constructed along the contour immediately below the spoil tip to collect fine material washed off the spoil tip. These collector drains will be regularly maintained until sufficient vegetation has been established on the spoil tips to prevent the washing out of fine material</p> <p>203. Most of the spoil will be coarse grained (mostly medium to very fine sand and coarse silt) and is not suitable for deposition on farmers' fields. Spoil disposal will be regulated through specific clauses in standard contract documents. Most areas adjacent to the irrigation scheme, which are not irrigated, are unproductive desert lands, where the spoil can be disposed of without negative environmental impacts. Where large quantities are excavated, and the space near the canal is limited, it is recommended to dispose of the spoil further away from the canals. The specific locations will be determined during the detailed design. All construction sites will be properly cleaned up, leveled and re-planted if required. All corresponding costs are included in the Subproject estimates</p> |                              |                            |                       |

| Issue/Subject                         | Potential Issues/ Important Factors/ Impacts | Mitigation Measures  | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
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| Impact on Physical cultural resources | Impacts on Physical cultural resources       | <p>204. Chance find procedure will be prepared as part of the SSEMPs and implemented.</p> <p>205. If any paleontological fossils, archaeological finds or other important objects (including human bones, which may have criminal background) are encountered during construction, all activities at that location will stop and local authorities will be notified; works can restart only after fulfillment of prescribed measures and permission received to resume works.</p> <p>206. Stop all work that may be underway or planned in the area and discuss with Regional Department of Ministry of Culture for further action.</p> <p>207. Ensure that the construction company and the PIC understand archaeological concerns in the area.</p> <p>208. Ensure that any important archaeological area is well identified and demarcated and required actions are demarcated in a detailed management and mitigation plan so that no damage takes place to it.</p> | Contractor                   | PIU-EPO/PIC                | Chance find procedure developed as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented   |
| Waste generation                      | Waste and spoil management                   | <p>209. Preparation and implementation of the Waste and Spoil Management Plan including Hazardous Waste/Materials Management Plan – The Waste and Spoil Management Plan will be developed for handling, storage and disposal of all kinds of wastes including hazardous waste, construction waste, household waste, and canal sediment spoil based on actual situation at subproject sites and selected dumpsites. The Waste and Spoil Management Plan will indicate approved spoil disposal sites, which will not be on slopes or near pasture lands and will have further plans for rehabilitation.</p> <p>210. Recycling and Reuse – Where possible, surplus materials will be reused or recycled – this will include wood, plastic, metal and glass. Trees and bushes cut under the subproject</p>   | Contractor                   | PIU-EPO/PIC                | Waste and Spoil Management Plan (including Hazardous Waste/Materials Management Plan) and Spill Response Plan prepared as part of SSEMP, approved by PIC and |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
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|               |  | <p>works can be provided for use to local households. A plan for the recycling of materials will be included in the Waste and Spoil Management Plan.</p> <p>211. Waste Disposal – No wastes will be burned throughout the subproject implementation period. Waste, both hazardous and non-hazardous, will be collected, transported and disposed of by a licensed waste management contractor, and disposed in a licensed facility. The contractor will keep copies of the waste management company’s licenses on file at its site office. The contractor will also keep a record of the waste volumes and types removed from the site and the waste transfer notes provided by the waste management contractor.</p> <p>212. No dumping in canal, or labor camps/temporary or material storage sites on canal bed.</p> <p>213. Stockpiling of construction material will be avoided if possible. If not, construction material will be stored within the premise of fenced construction sites and protected from weathering.</p> <p>214. All construction wastes and debris will be disposed at authorized locations.</p> <p>215. All household wastes will be segregated by kinds and collected into confined waste containers equipped with covers installed away from sensitive areas.</p> <p>216. Use waste management hierarchy: (i) avoid waste generation at source; (ii) minimize waste generation, where it is inevitable; (iii) reuse or recycle if possible; (iv) dispose at authorized locations.</p> |                              |                            | <p>MWR/PIU-EPO, and implemented</p> <p>Visual inspection</p> |
|               | Hazardous waste management                   | 217. Contractor will be responsible for preparation and implementation of hazardous waste management plan as part of the SSEMPs.  | Contractor                   | PIU-EPO/PIC                | Hazardous Waste/Materials Management                         |

| Issue/Subject | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators   |
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|               |  | <p>218. Storage of hazardous wastes – Oils, fuels and chemicals are substances which are hazardous to human health. They will be stored properly in correctly labeled containers within the premise of fenced construction sites.</p> <p>219. Temporarily storage on-site of all hazardous or toxic substances (including bitumen, bridge deck waterproofing agents) will be in safe leak-proof containers to prevent spillage and leaching, labeled with details of composition, properties and handling information. Oil and fuel will only be kept in small quantities on-site.</p> <p>220. Hazardous materials like paints, oils, enamels and others will be kept on impermeable surface, and adsorbents like sand or sawdust will be kept for handling small spillage.</p> <p>221. Paints with toxic ingredients or solvents or lead-based paints will not be used.</p>              |                              |                            | <p>Plan and Spill Response Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> <p>Visual inspection</p>                                      |
|               | Asbestos containing material                 | <p>During the rehabilitation works, the Contractor may have to dismantle asbestos pipes or asbestos containing materials. Due to the potential health impacts that may arise from the handling and disposal of asbestos, Contractor should prepare Asbestos Management Disposal Plan as part of the SSEMPs.</p> <p>Measures against asbestos containing materials include:</p> <ul style="list-style-type: none"> <li>• removal of asbestos materials without dust formation;</li> <li>• use of personal respiratory protection equipment.</li> <li>• use of impermeable bags or containers.</li> <li>• solid asbestos waste pending disposal should be stored in an area where it will not deteriorate.</li> <li>• Bags (or other containers) that contain loose asbestos fibers should be removed by shredding or packing in tight transportable bales in a designated area.</li> </ul> | Contractor                   | PIU-EPO/PIC                | <p>Hazardous Waste/Materials Management Plan and Spill Response Plan prepared as part of SSEMP, approved by PIC and MWR/PIU-EPO, and implemented</p> <p>Visual inspection</p> |

| Issue/Subject   | Potential Issues/ Important Factors/ Impacts | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators                                  |
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|   |  | <ul style="list-style-type: none"> <li>• Reuse asbestos-free bags as wastepaper or containers for any materials is not allowed.</li> <li>• All asbestos waste awaiting disposal in containers, bags or containers must be appropriately labeled and labeled.</li> <li>• work related to loading and transportation, unloading and disposal of waste must be mechanized;</li> <li>• transportation of asbestos waste should exclude the possibility of losses along the route and environmental pollution.</li> <li>• transportation of unpackaged asbestos in open bodies of cars and on railway platforms is not allowed.</li> </ul> |                              |                            |  |
| Impacts on land use                                   | Land acquisition during construction         | <p>222. Mitigation measures will be implemented as specified in the Land Acquisition and Resettlement Plan of the subproject.</p> <p>223. Farmers affected by seasonal crop loss will be compensated by the subproject.</p> <p>224. The contractor will be instructed to schedule his works considering minimum impact on land acquisition.</p> <p>225. All construction works will be implemented within allocated lands.</p>  | Contractor                   | PIU-EPO/PIC                | Construction reports                                   |
| Impact of site clearance after civil works completion |  | <p>226. Rehabilitate all sites after construction/quarrying activities are completed such as ploughing and plantation.</p> <p>227. All disturbed sites prior to subproject completion and commissioning will be reinstated at least to pre-project conditions by (i) cleaning area from wastes and debris, (ii) mechanical remediation and (iii) biological re-vegetation with native plants.</p>   | Contractor                   | PIU-EPO/PIC                | All areas used for subproject activities rehabilitated |
| Grievances  | Grievance redress mechanism (GRM)            | <p>228. GRM will be established, and focal point will be appointed to implement GRM.</p> <p>229. GRM will be implemented as prescribed in the subproject IEE.</p>   | Contractor, PIC and PIU-EPO  | PIU-EPO                    | GRM established  |
| E. Operation Stage                                    |  |   |                              |                            |  |

| Issue/Subject  | Potential Issues/ Important Factors/ Impacts   | Mitigation Measures   | Institutional Responsibility | Supervision Responsibility | Monitoring Indicators  |
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| Sedimentation in canals<br>Conflicts in water supply rights<br>Change of groundwater level | Potential waterlogging in downstream areas     | 230. Implement integrated management plan which will be developed by the Project.   | Farmers, BISA and MWR        | PIU-EPO                    | Waterlogging   |
| Disproportionate impacts on the poor and women   | Reduced income of women and poor               | 231. Implement gender action plan.  | BISA, PIU                    | PIU                        | Gender action plan implemented                                       |
| Impairment of downstream water quality   | Negative impacts of pesticides and fertilizers | <p>232. Farmers to use pesticides only as a last resort and only after trying other methods. Farmer must be sure that pest problem is serious enough to warrant a pesticide treatment and also use the least toxic, yet effective, materials available and use them in ways that reduce human and pet exposure and protect the environment; and</p> <p>233. Farmers to maximize the use of organic fertilizer and minimize the use of chemical fertilizer, and minimize the use of insecticides and pesticides in the area;</p> <p>234. Farmers to take account of specifications produced by FAO and WHO for highly hazardous agricultural pesticides. These specifications detail the appropriate pesticide, formulation, rate of application and suitable equipment for specific pest control;</p> <p>235. Farmers to avoid use of pesticides classified as Persistent Organic Pollutants (POPs) under the Stockholm Convention and pesticides regarded as obsolete under the WHO classification scheme;</p> | Farmers                      | BISA                       | Amount and kind of pesticides and fertilizers used by farmers.       |
|  |  | <p>236. BISA to provide farmers with training on the above mitigation measures and the proper use of pesticides, appropriate dose and timing of use;</p> <p>237. BISA to encourage the farmers to use more specific chemicals, such as growth regulators and pheromones that attract</p>  | BISA                         | BISA                       | Training and information dissemination activities conducted by BISA. |

| Issue/Subject                                     | Potential Issues/ Important Factors/ Impacts                   | Mitigation Measures   | Institutional Responsibility      | Supervision Responsibility        | Monitoring Indicators  |
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|   |  | insects. They tend to be more selective and have less impact on the agricultural ecosystem;<br>238. BISA to conduct regular monitoring of the water quality including the hill streams and ponds, ground water to understand the problem and take adequate measures.        |                                   |                                   | Water quality (including the hill streams and ponds, ground water) |
| Occupational and Community Health and Safety Risk | accidental and natural hazards causing injury to the community | 239. Ensure the safety of hydraulic structures and provide regular monitoring and maintenance.<br>240. During the maintenance of canals, silt curtains and/or settling ponds will be provided as a comprehensive system to prevent sediment transport in the water courses. | BISA, ISA, Melioration Expedition | BISA, ISA, Melioration Expedition | Number and kind of accidents                                       |
| Flooding and natural disasters                    | Risk of flooding and natural disasters                         | 241. Regular maintenance and repair of canals and water infrastructure to ensure operational capacity.<br>242. Taking preventive measures during flood periods to maintain normal water table level   | BISA                              | PIU-EPO                           | Visual inspection  |
| Waste generation                                  | O&M waste – sediment spoils from drainage system and canals    | 243. Identify appropriate waste management plan for cleaning of collector drains.<br>244. Weeds and sediment can be used as construction material of fertilizer by farmers.   | BISA                              | PIU-EPO                           | Visual inspection  |

ADB = Asian Development Bank, BISA = Basin Irrigation Systems Authority, DIN = Deutsches Institut für Normung, EMP = Environmental Management Plan, GOST = State standard, GRM = Grievance redress mechanism, IEE = Initial Environmental Examination, ISO = International standard organisation, MWR = Ministry of Water Resources, OCHS = Occupational and community Health and Safety, OHS = Occupational Health and Safety, OVOS = national environmental impact assessment, PIC = Project Implementation consultant, PIU-EPO = Project Implementation Unit Environment Protection Officer, PPE = Personal Protective Equipment, SAEMR = Semi-annual Environmental Monitoring Report, SSEMP = Site-Specific Environmental Management Plan, TRTA = Transaction Technical Assistance. PNPC = Provincial level of State Committee for Nature Protection (Oblkomprroda)

Construction sites = include all access roads, areas around canals, water regulating devices, material storage, labor camps, borrow pits, dumpsites, and any other physically affected areas.