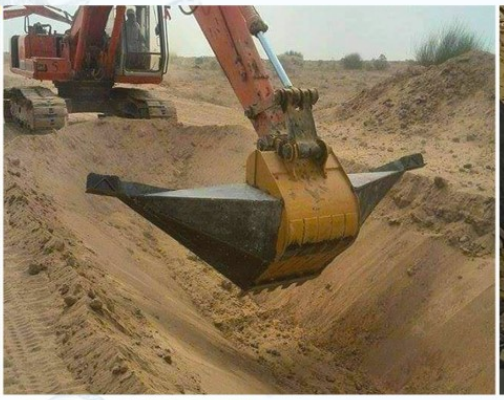
MINISTRY OF WATER RESOURCES OF THE REPUBLIC OF UZBEKISTAN

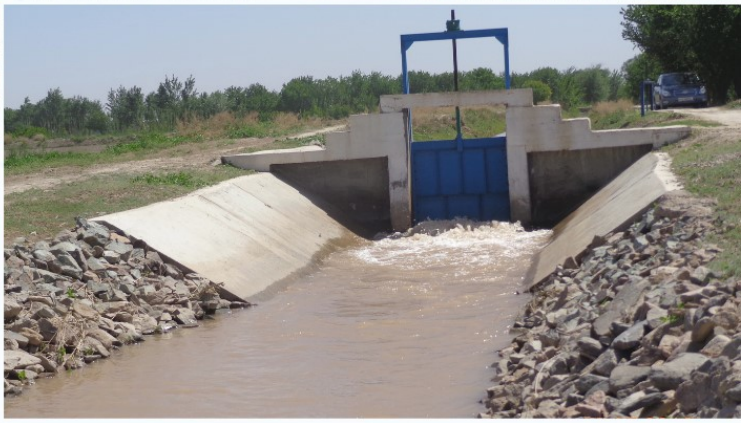
CENTER FOR IMPLEMENTATION OF FOREIGN INVESTMENT PROJECTS IN WATER SECTOR

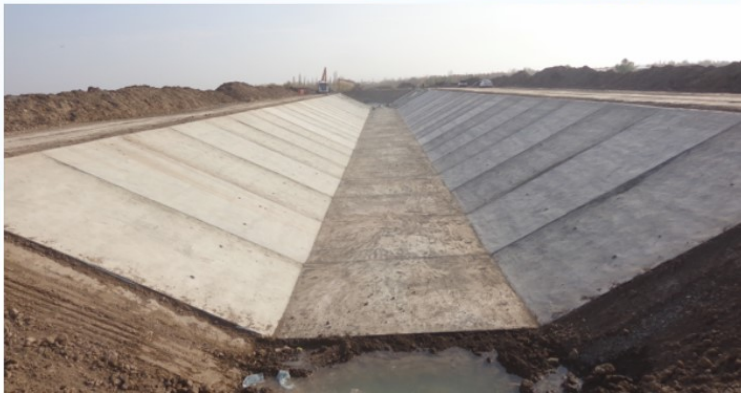
NATIONAL IRRIGATION AND ENERGY EFFICIENCY IMPROVEMENT PROJECT: (P504600)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

SEPTEMBER, 2024 TASHKENT, UZBEKISTAN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

Objectives

The Environmental and Social Management Plan (ESMP) compiles the comprehensive information gathering a summary of impacts identified during impact assessment; the actions required to mitigate those impacts in accordance with the laws of Uzbekistan and the ESS guidelines of the World Bank; and the monitoring activities that are to be undertaken as part of the Project to confirm that they have been effective in reaching their objectives.

Proposed mitigation and management measures are targeted to avoid, reduce, mitigate or compensate identified significant adverse impacts. The ESMP consists of the following key components:

(i) Environmental and social mitigation measures;

(ii) Environmental and social monitoring.

The principal purpose of an ESMP is to provide a guide for the PIU and contractors in the formulation of appropriate management systems, plans and procedures to ensure compliance with national and WB safeguards requirements. The requirements set out in this section and the subsequent ESMP should be included within contractual documentation with the relevant parties, as appropriate, to ensure there is clarity and commitment regarding contractor obligations related to environmental, health and safety management of the Project.

The ESMP also details the institutional arrangements and capacities that currently exist, or that will be put in place during Project implementation, to ensure that the ESIA (including the ESMP) has (i) comprehensively considered both Uzbek and World Bank requirements for environmental protection, (ii) identified likely environmental impacts, (iii) proposed appropriate mitigation measures, and (iv) put in place the necessary systems to ensure that effective procedures for environmental monitoring and control of the project impacts, and mitigation measures are implemented throughout the life of the project.

Mitigation Measures

The steps of mitigation hierarchy are to avoid, minimize and reduce, and mitigate all the impacts including the residual impacts remain compensate/ offset if financially and technically feasible to manage adverse impacts and, where appropriate, to incorporate these into an Environmental and Social Management Plan or System.

Mitigation measures required to address the impacts identified by this ESIA have been consolidated in the following ESMP (Table 1). The table provides information on anticipated significant impacts during the pre-construction, construction, and operation phases with proposing mitigation measures, defining responsible party(s) for their implementation.

Responsible Party for Implementing ESMP

The full lifecycle of the Project components (1 to 3) will have considerable impacts on the environment and social status in the project and surrounding area. To manage and mitigate these, an ESMP has been designed.

Table 1. Environmental and Social Management Plan (ESMP)

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS RELATED TO ESS-2				
Planning and Pre-construction stage				
• Preparation of detail design; • Identification of borrow pits; • Construction of temporary access roads; • Set up construction camps; • Survey work and geotechnical investigation; • Survey of project facilities on presence of hazardous; materials/wastes) (asbestos, PBCs); • Preparation of Labor Management Plan; • Preparation of site specific	Occupational health and safety	• Plan setting construction camps in accordance with requirements of Labor Code of Uzbekistan (30.04.2023) and standards on work and health safety;[1] • Bids evaluation will be done with consideration of capacity of bidders to meet EMP requirements, proposing adequate budget efficient for EMP implementation, existence of good practice in environmental performance within other similar projects. • Prior to commencing any physical works, SSEMPs including TSEMPs will be developed by the Contractors under the guidance of the ISC and be endorsed by ISC before submission to PIU for approval. TSEMPs will have to be prepared for the following activities: ✓ Traffic Management Plan (TMP); ✓ Asbestos-Containing Materials Management Plan (ACMMP); ✓ Wastes Management Plan; ✓ Spill Response Plan; ✓ Construction Camp Management Plan (CCMP); ✓ Occupational Health and Safety Plan (OHSP); • Prior to commencement of construction works ISC will conduct vision observation of demolishing buildings on presence of asbestos materials. In case of presence of asbestos materials, the Contractor will develop	PIU with support of ISC	Included in PIU and ISC budget

1 Construction Norms and Rules # 3.01.01-03. Organization of Construction works. 2003

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
environmental and social management plans; • Approval of construction works schedule with relevant Ministries agencies		ACMMP that includes identification of hazards, the use of proper safety gear and disposal methods. (Sample ACMMP is provided in **Ошибка! Источник ссылки не найден.**) Any activities involving asbestos materials will be prohibited until the ACMMP is approved by the PIU and the PMC; • Prior to civil works, the Contractor will get non-objection from all utility agencies such as gas supply, telecommunications, electricity etc.		
Construction stage				
(i) Works on canals: Clearing of vegetation along the canals; improvement of anti-seepage lining; removal of sediments and overgrown aquatic vegetation; concrete lining of the canals; rehabilitation and asphalt coating of inspection road along the canals; (ii) Works on pump stations: Modernization of existing PSs/ construction of new PSs, replacement of existing pumps with a	Working conditions on construction sites	• Organize construction camps in accordance with requirements of Labor Code of Uzbekistan (30.04.2023) and standards on work and health safety;[2] • Provide adequate working facilities on construction camps (portable toilets, rest rooms, dining rooms, etc.); • Ensure proper working Grievance Redress Mechanism (GRM) on construction site	• Contractors with assistance of ISC develop Occupational Health and Safety Plan (OHSP); • ISC will review and endorse and the PIU will approve it • Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

2 Construction Norms and Rules # 3.01.01-03. Organization of Construction works. 2003

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
low energy consumption pump; (iii) Work on construction/ rehabilitation of the hydrotechnical structures and bridges: replacement of outdated gates and lifting mechanisms of cross regulators and outlets; construction of new hydroposts (gauging stations); construction of stormflow and mudflow inlet structures; rehabilitation of large siphons; construction of new bridges/footbridges, etc. (iv) Introducing smart technology: Introduction of smart water, laser land levelling, deep ripping	• Noise pollution	• Establish limits on speed for vehicles inside of settlements (30 km/h); • In the settlement areas, construction works generating noise will be undertaken during period from 8:00 in the morning and until 8:00 in the evening; • Avoid construction works in front of schools during the period from 8:30 until 15:00 during the weekdays and Saturday. Apply additional mitigation measures (installation of acoustic screens, mufflers for machinery, etc.) in case of urgency or technical needs of such works; • Schedule construction to minimize the multiple use of noisier equipment near sensitive receptors (houses, schools); • Use of PPE by workers involved in demolishing and construction works in conditions of increased noise level is mandatory; • Inform population about anticipated works at least one week before; • Conduct regular (daily by Contractor and weekly by PMC) in case of grievance from population noise measurements at several points close to sensitive sites (schools, kindergartens, clinics) in accordance with national legislation[3]. In case of exceeding standards, apply additional measures	• Contractors implement measures • PIU and ISC monitor implementation. • Contractor (on daily base) and ISC (on weekly base) will conduct regular noise measurements.	Included in Contractors, PIU and ISC budget
	• Air pollution	• Apply watering of construction sites and roads inside settlements during dry season; • Cover transported bulk materials; • Control speed limitation for vehicles during movement inside of settlements - no more than 30 km/h;	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

[3] 1. SanR&N №0120-01 "Sanitarian Norms of allowed level of noise at the construction sites"; 2. SanR&N No.0267-09 Sanitarian Rules and Norms on providing allowed noise level in the living building, public building and territory of living areas.

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		• All vehicles and equipment will comply with technical requirements and will pass regular inspection as indicated in the national standards[4]; • Restrict demolition activities during the period of the high winds or under more stable conditions when winds could direct dust towards adjacent houses; • Conduct regular monitoring of air quality as it is indicated in Table 30	• ISC will hire certified laboratory to conduct monitoring analysis	
	Occupational Health and Safety Issues (OHS)	• Develop Worker Safety Plan that is compliant with national regulations • Contractor to implement workplace safety awareness program and regular safety trainings. Tentative training program is provided in Table 31 • Workers to be provided with safety equipment and instructed in its use. • Contractor will develop emergency accident -contingency plan. • Carry out regular awareness campaigns among workers, including specific hazards associated with the spread of HIV/AIDS. • Prepare a Code of Conduct that should be followed by labour force with regards to work site and surrounding community. • Prohibit forced labour, target to local workers where possible, and prohibit child labour.	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
	Gender-based violence (GBV)	• Guarantee equal rights of women and men workers in accordance with the legislation of the Republic of Uzbekistan; • Conduct worker and community awareness sessions on GBV; • Establish GBV-sensitive grievance redress mechanism	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

[4] "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
Operation stage				
(i) Irrigation infrastructure regular technical maintenance;	Working conditions on sites	Provide adequate staff facilities on pumping stations (toilets, furbished rest rooms, dining rooms, etc).	O&M departments of relevant branches of Ministry of Water Resources (MWR)	Included in O&M departments budget
	Air quality	Use techniques which comply with national standards – not less than class "Euro-4"		
	Noise pollution	Avoid usage of techniques during night time		
	Occupational Health and Safety	Ensure proper implementation of HSE requirements by workers		
(ii) Maintenance of PSs;	Working conditions on pumping stations;	• Provide adequate staff facilities on pumping stations (toilets, furbished rest rooms, dining rooms, etc.).	Department of Pumps station under the MWR	Included in O&M departments budget
	Air quality and noise level	• Ensure proper maintenance in operation of pumps		
	Occupational Health and Safety	• Ensure proper implementation of OHSP • Develop and implement emergency situation plan		
(iii) Regulation of water flow in irrigation canals; maintenance of SCADA system		N/a	N/a	N/a
E&S RISKS AND IMPACTS RELATED TO ESS 3: RESOURCES EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT				
Planning and Pre-construction stage				

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
• Pre-construction activities	<u>Pollution prevention and management</u> Air pollution	Set up location of construction camps and internal layout (including warehouse, sanitarian facility and etc.) camp's facility in a way ensuring disturbance of local population	PIU with support of PMC	Included in PIU and ISC budget
	Chemicals and hazardous materials	Ensure that chemicals purchasing under the project are not included in prohibited list		
	Hazardous and non-hazardous wastes	• Conclude contract with waste disposal organization for the timely transportation and disposal of non-recyclable wastes, prior to the commencement of any civil works; • A Waste Management Plan will be developed by Contractor, endorsed by ISC and approved by PIU for the construction sites with demolishing works. The Plan will include information about type of generating wastes, amount, procedure of their collection and disposal. The plan also will include information about responsible person, training, action plan for emergency		
	• Pesticide management	N/a	N/a	N/a
Construction stage				
<u>(i) Works on canals:</u>	<u>Resources efficiency:</u>			
	• Energy use	Ensure that energy efficient techniques and machinery which is not lower than "Euro 4" standards are purchased and used in the project		Included in Contractors, PIU and ISC budget
	• Soil Quality/ Raw materials use	• Store removed soil materials in stockpiles ≤2m in height to minimise losses by erosion and compaction. In case of wind erosion of the soil stockpiles: cover or keep wet.	• Contractors implement	

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		• Where viable, use existing tarmac roads and existing dirt track networks as construction and borrow pit access roads after upgrade as appropriate. • Ensure the ground in the areas designated for storage of hazardous materials and fuels is impervious, flat and hard, where necessary these materials should be stored under cover. • Servicing of the construction equipment should be carried out in designated areas, equipped with means to prevent spills and leakages. • Re-fuelling should be strictly controlled and subject to formal procedures. Drip pans and spill response kits should be used at all times during refuelling in the field and in sites without drainage system. • Timely remediation of any hydrocarbon or other contamination leakages should be performed, and any wastes disposed of appropriately to prevent contamination. • Sanitary wastewater generated at operational sites should be collected. The wastewater from septic tanks should be transported by special vehicles for further appropriate treatment and disposal by licensed contractors approved by Company. • Appropriate waste management procedures should be in place for all construction and related wastes, and licensed contractors utilised for reuse / recycle / disposal. • Rain and snowmelt water in the Project sites should be collected by a drainage system; if necessary, retention ponds should be used to accommodate excess rainwater and meltwater run off to allow settlement prior to discharge alternatively silt traps should be used before discharging of the drainage water.	• PIU and ISC monitor implementation	
	• Water use (surface)	• Construction camp will have to be located at a safe distance from water courses (no closer than 100 meters);	• Contractors implement	Included in Contractors,

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		• Water abstraction and wastewater management should be managed via an on-site water resource management plan to reduce the pressures on local water resources and maintain aquatic habitats at levels to support local ecology. • Engagement with local water supply agency to ensure water levels are not depleted to unacceptable levels from the construction activities. Contingency measures should be in place to temporarily stop works involving water usage should levels drop below acceptable levels to allow for water resources to replenish. This risk will be relatively higher during periods of low rainfall. • Water resource management plan should also contain measures to control contaminated water runoff from construction activities into local watercourses. Physical barriers should be in place to avoid contaminated surface water runoff into nearby watercourses. • Contractors will be required to avoid water leakage and formation of permanent surface water at construction sites that can attract birds and mammals. As part of this, the roadbed should not have depressions where rainwater is accumulated. • Pre-start checks should be carried out for all machinery and equipment involved in water usage during construction by an authorised and competent person. Service and inspection records should be kept on site to demonstrate the machinery is fit for purpose. • Ensure that refueling, oil replacement or repairing works of the machinery will be conducted in the specially equipped places. Prohibit conduct these works in the area within 50 m from water streams; • Management and storage of fuel, waste oil, hazardous waste will be planned in accordance with EHS General Guidelines on Hazardous Materials Management.	• PIU and ISC monitor implementation	PIU and ISC budget

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		• Topsoil stripped material will not be stored where natural drainage will be disrupted; • Ensure presence on the construction site spoil collection kits. • For sites servicing a small number of employees (less than 150), septic tanks may be used. • For the works implemented remotely from the construction camps, Contractor will use bio toilets. • The Contractor will conclude the agreement with local agency responsible for the collection wastewater from the toilets and its disposal.		
	• Water (groundwater)	• It is necessary to conduct the project area study. The study should include identification of the sources of groundwater supply in the AoI and assessment of how the Project activities affect them. • Special attention should be paid to local communities identified and any other isolated dwellings where groundwater may be the only source of water supply. • Engagement with the local water supply agency to ensure water levels are not depleted to unacceptable levels from the construction activities. • Contingency measures should be in place to temporarily stop works involving water usage should levels drop below acceptable levels to allow for water resources to replenish. This risk will be relatively higher during periods of low rainfall. • Ensure strict and regular control of the implementation of all measures intended for environmental protection in the Project.	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
	<u>Pollution prevention and management</u>			

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
	• Air quality	• Apply watering of construction sites and roads inside settlements during dry season; • Cover transported bulk materials; • Control speed limitation for vehicles during movement inside of settlements - no more than 30 km/h; • All vehicles and equipment will comply with technical requirements and will pass regular inspection as indicated in the national standards[5]; • Restrict demolition activities during the period of the high winds or under more stable conditions when winds could direct dust towards adjacent houses; • Conduct regular monitoring of air quality at several points close to sensitive sites (schools, kindergartens, clinics) on dust, NOx, SO2, CO in accordance with national legislation[6]. In case of non-compliances with standards or grievance from the population, apply additional mitigation measures, such as more frequent watering.	• Contractors implement • PIU-ESS and PMC-NESs monitor implementation • ISC will hire certified laboratory to conduct monitoring analysis	Included in Contractors, PIU and ISC budget
	Management of chemicals and hazardous materials •	• Develop and implement spill response plan; • Refuelling vehicles and replacement oils also will be conducted in special designated and properly equipped places. Emergency facilities will be at the place for elimination of accident of oil spills; • Used oil from vehicles and machinery will be collected into containers placed at the concreted sites and disposed to national oil company designated for accepting and handling of used oils	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

5 "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

6 Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the RUz included Annex 1. SanR&N RUz No.0179-04

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
	Management of hazardous and non-hazardous wastes	*Hazardous wastes* • A Waste Management Plan will be developed by Contractor, endorsed by ISC and approved by PIU for the construction sites with demolishing works. The Plan will include information about type of generating wastes, amount, procedure of their collection and disposal. The plan also will include information about responsible person, training, action plan for emergency; • Used batteries will be collected separately and transferred to the local branches "Cvetmet"[7] for further disposal. *Asbestos containing materials waste* • Prior to commencement of construction works, ISC will conduct visual observation of demolishing buildings on presence of asbestos materials. • In case of presence of asbestos materials, the Contractor will develop Asbestos-Containing Materials Management Plan (ACMMP) that includes identification of hazards, the use of proper safety gear and disposal methods. (Sample ACMMP is provided in ESIA, Volume 2, **Ошибка! Источник ссылки не найден.**). Any activities involving asbestos materials will be prohibited until the ACMMP is approved by ISC and the PIU; • Conduct all works on demolishing in accordance with approved ACMMP; • Conduct awareness program on safety during the construction work. *Non-hazardous wastes* • Conclude contract with waste disposal organization for the timely transportation and disposal of non-recyclable wastes, prior to the commencement of any civil works	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

7 Local entity responsible for collection and treatment non-ferrous metals.

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
		• Put proper waste bins at a related areas of construction sites and workers camps; • Segregation of wastes on recyclable and non-recyclable wastes; • Selling recyclable wastes to relevant organizations (paper, scraps, accumulators) and timely disposal of non-recyclable wastes to the municipal landfill. • Undertake the construction work stretch-wise; excavation, pipe laying and trench refilling will be completed within no longer than five days; • Waste disposal will be done in accordance with agreement concluded between Contractor and waste disposal organization in timely manner (no more than 3 days) only on official landfills; • Burning of waste on any construction site is forbidden.		
	Management of pesticide	N/a	N/a	N/a
(ii) Works on pump stations	**Resources efficiency:**			
	Energy use	The same as for works type (i) - construction	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
	Water use	• Potentially polluting activities should be minimised at all times. • All sewage and wastewaters generated in the Project sites should be collected and treated as appropriate before discharging. • Formal solid and liquid waste management, collection and disposal procedures should be in place, and the waste disposal sites used by the project should be agreed with the authorities. • Wastewater from the washing of construction vehicles should be collected and reused after treatment		

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
	Raw materials	N/a	N/a	N/a
	<u>Pollution prevention and management</u>			
	• Air pollution • Management of chemicals and hazardous materials • Management of hazardous and non-hazardous wastes	The same as for works type (i) - construction	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
	Management of pesticide	N/a	N/a	N/a
<u>(iii) Work on construction/ rehabilitation of the hydrotechnical structures and bridges</u>.	**<u>Resources efficiency:</u>**			
	Energy use	The same as for works type (i) - construction	• Contractors implement • PIU and ISC monitor implementation	Included in O&M departments budget
	Water use	• Potentially polluting activities should be minimised at all times. • All sewage and wastewaters generated in the Project sites should be collected and treated as appropriate before discharging. • Formal solid and liquid waste management, collection and disposal procedures should be in place, and the waste disposal sites used by the project should be agreed with the authorities.		

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
		• Wastewater from the washing of construction vehicles should be collected and reused after treatment		
	Raw materials	N/a	N/a	N/a
	<u>Pollution prevention and management</u>			
	Air pollution Management of chemicals and hazardous materials Management of hazardous and non-hazardous wastes	• The same as for works type (i) - construction	• Contractors implement • PIU and ISC monitor implementation • ISC will hire certified laboratory to conduct monitoring analysis	Included in Contractors, PIU and ISC budget
	Management of pesticide	N/a	N/a	N/a
<u>(iv) Introducing smart technology</u>	**<u>Resources efficiency:</u>**			
	Energy use	The same as for works type (i) - construction	The same as above	Included in Contractors, PIU and ISC budget
	• Water use (surface)	• Potentially polluting activities should be minimized at all times. • All sewage and wastewaters generated in the Project sites should be collected and treated as appropriate before discharging. • Formal solid and liquid waste management, collection and disposal procedures should be in place, and the waste disposal sites used by the project should be agreed with the authorities.	• Contractors implement • PIU and ISC monitor implementation	

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
		• Water abstraction and wastewater management should be managed via an on-site water resource management plan to reduce the pressures on local water resources and maintain aquatic habitats at levels to support local ecology.		
	Raw materials	N/a	N/a	N/a
	<u>Pollution prevention and management</u>			
	• Air pollution • Management of chemicals and hazardous materials • Management of hazardous and non-hazardous wastes	• The same as for works type (i) - construction	• Contractors implement • PIU-ESS and PMC-NESs monitor implementation • ISC will hire certified laboratory to conduct monitoring analysis	Included in Contractors, PIU and ISC budget
	Management of pesticide	• N/a	N/a	• N/a
Operation stage				
<u>(i) Irrigation infrastructure regular technical maintenance</u>	**<u>Resources efficiency</u>**			
	Energy use	• Ensure that energy efficient techniques and machinery which is not lower than "Euro 4" standards are used in the project	O&M departments of relevant branches of MWR	Included in
	Water use (surface)	• Arrange maintenance training programs.		

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
		• Arrange budgets for maintenance. • Check that oil and water separators are being properly maintained		O&M departments budget
	Water use (ground)	• Ensure maintenance of canals in accordance with instructions/manual		
	Raw materials	• For raw material use only official borrow pits		
	Pollution prevention and management			
	Air pollution	• Ensure that technique and machinery are in good conditions and comply with national regulations	O&M departments of relevant branches of MWR	•
	• Management of chemicals and hazardous materials	• Conduct all refuelling and maintenance works only in specially designated areas. • If some emergency repairing works are required on the site, to prevent soil contamination, use special techniques to avoid oil spills		•
	• Management of hazardous and non-hazardous wastes	• Conduct all refuelling and maintenance works only in specially designated areas. • If some emergency repairing works are required on the site, to prevent soil contamination, use special techniques to avoid oil spills		•
(ii) Maintenance of PSs;	**Resources efficiency**			
	• Energy use	• Mitigation measures are not needed	N/a	N/a
	• Water use (surface)	• No impact		

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
	Pollution prevention and management			
	Air pollution	• Minimize use of diesel equipment; • In case of often use of diesel equipment, conduct measurement of air quality on the territory of adjusted settlements. In case of exceeding allowed concentration – apply additional mitigation measures - install filters	• Relevant departments of pump station under MWR	•
	• Management of chemicals and hazardous materials • Management of hazardous and non-hazardous wastes	• The same as for activity (i)		
(iii) Regulation of water flow		• N/a	• N/a	• N/a
E&S RISKS AND IMPACTS RELATED TO ESS 4: COMMUNITY HEALTH AND SAFETY				
Planning and Pre-construction stage				
• Pre-construction activities	• Community Health and Safety	• Contractor will inform population about anticipated works in the settlement in advance. Prior to starting construction works, Contractors will share work plan with indications timeline and places. The works will be planned in the way, ensuring that trenches will not stay open more than 5 days; • Contractors will be required to develop a Traffic Management Plan (TMP)[8] as part of the SSEMPs with clear indication routes of vehicles'	• Contractors implement • PIU and PMSC monitor implementation	Included in PIU and ISC budget

[8] The template is in ESIA Volume 3, Appendix 7. Template for Traffic Management Plan

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		movements, placement special signs, and speeding allowance inside of the settlements and schedule transportation activities by avoiding peak traffic periods. Agreement on the TMP will be obtained from Traffic Police. The TMP will be disclosed to local community prior to commencement of construction works on respective sites		
Construction stage				
(i) Works on canals:	• Community Health and Safety	• A Community Health, Safety and Security Plan will outline health and safety procedures for the protection of the local community. Procedures will include the prevention of unauthorised access to the construction sites, construction compounds and the construction workers' accommodation. The plan will also outline a health and safety campaign for the local communities, with measures to target the safety and risk education of children. The Community Health, Safety and Security Plan will cross reference the Air Quality Management Plan. • The Contractor should provide information to the local communities about the scope and schedule of construction activities, expected disruption and access restrictions at least 24 hours before commencement. Construction site access roads which are also used by local traffic shall include safe passing places every 200 m where the roads are narrow. • A Construction Traffic Management Plan will provide details of safety measures which will be put in place to reduce effects associated with construction traffic. The plan will cover both on-site and off-site traffic movements. The Plan will identify traffic diversions and management provisions, traffic schedules, signalling modifications, necessary closures, signage, lighting, and other provisions to ensure adequate and safe access for all traffic users within the Project area.	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
(ii) Works on pump stations:	• Community Health and Safety	• A Construction Traffic Management Plan will provide details of safety measures which will be put in place to reduce effects associated with construction traffic. The plan will cover both on-site and off-site traffic	• Contractors implement	Included in Contractors,

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	**Cost**
		movements. The Plan will identify traffic diversions and management provisions, traffic schedules, signalling modifications, necessary closures, signage, lighting, and other provisions to ensure adequate and safe access for all traffic users within the Project area. • Selection routes based on the truck load; division of load to prevent damages to local roads and bridges; observe speed limits and maintain in the good condition; transport material under cover; avoid peak hours in roads with moderate to high traffic. • Contractor attends to repair all damaged infrastructure/ roads, if needed, with relevant local authorities (Hokimiyat);	• PIU and ISC monitor implementation	PIU and ISC budget
	• Security personnel	• Ensure that pump stations existing personnel is properly trained on health and safety topics. • Provide regular trainings on H&S		Included in Contractors, PIU and ISC budget
(iii) Work on construction/ rehabilitation of the hydrotechnical structures and bridges:	Community Health and Safety	• The same as for activities (i) – construction. • For settlements located less than 100 meters to rehabilitated bridges Contractor will conduct visual observation of integrity of the building. • In case of presence sensitive with low integrity building vibration prevention measures will be developed by Contractor or technique with lower level of vibration will be used	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
(iv) Introducing smart technology:	Community Health and Safety	• The same as for activities (i) – construction.		
Operation stage				

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
(i) Irrigation infrastructure regular technical maintenance;	• Community Health and Safety	• Ensure that technique and machinery move within designated routes and allowed speed. • If works will be conducted inside or close to settlements – inform local population in advance (at least) one week before about planning works: types and their durations	• Contractors implement • PIU and ISC monitor implementation	Included in O&M departments budget
(ii) Maintenance of PSs;	• Community Health and Safety	• Ensure that all pumping stations are properly fenced and have experienced security		
	• Security personnel	• Ensure that pump stations existing personnel is properly trained on health and safety topics. • Provide regular trainings on H&S		
(iii) Regulation of water flow	• Community Health and Safety	Not needed	• N/a	•
E&S RISKS AND IMPACTS RELATED TO ESS 5: LAND ACQUISITION, RESTRICTIONS ON LAND USE, AND INVOLUNTARY RESETTLEMENT				
• Detailed description is provided in RPF				
E&S RISKS AND IMPACTS RELATED TO ESS 6: BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES				
Planning and Pre-construction stage				

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
• Pre-construction activities	• Risks and impacts • Conservation of biodiversity and habitats • Modified habitats • Natural habitat	• In the technical design of the reconstructed canal bed should be provided the installation of unloading filters along the canals Shokhrud, North-West branch of the canal, Romitan and Khairobod (Bukhara region), Kuanish-Jarma and Esimuzak canals (Republic of Karakalpakstan), Pakhtabad canal (Kashakadarya region), Zang Canal (Surkhandarya region) with special attention to the areas with dense vegetation. • Cutting and replanting procedure has to be implemented with all national regulations relevant to topic. Detailed description of requirements and procedures are presented in ESIA Volume 3, Appendix 6. • This is necessary to ensure replant of vegetation in the territory adjacent to the canal.	• PIU with support of ISC	Included in PIU and ISC budget
	• Critical habitat	• During details design ensure that no project facilities are located within the legally protected areas	• Contractors implement • PIU and ISC monitor implementation	
	• Legally protected areas	• During details design ensure that no project facilities are located within the legally protected areas		
Construction stage				
(i) Works on canals: (iii) Work on construction/ rehabilitation of the hydrotechnical structures and bridges:	Risks and impacts • Conservation of biodiversity and habitats • Modified habitats • Natural habitat	• Start construction works only after receiving approval from local branches of MEEPCC. • Biodiversity awareness will be included within the Contractor's site induction training. This will include roles and responsibilities, inventory of all critically endangered, endangered, and protected species using photographs, behaviour training including bans on hunting, foraging, and trapping, national regulatory requirements, activities that should be observed in specific sections or periods/months to avoid or minimise the risk of disturbance, injury, or death of critically endangered and	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
		endangered, and protected wildlife species, and reporting and protection activities during chance encounter with specific mammals, reptile, amphibian, and bird species (if any). • Mark the felling route along the reconstructed canals Shokhrud, North-West branch of the canal, Romitan and Khairobod (Bukhara region), Kuanish-Jarma and Esimuzak canals (Republic of Karakalpakstan), Pakhtabad canal (Kashakadarya region), Zang Canal (Surkhandarya region), make an inventory of trees to be felled; • Install markers on trees, marking where felling will take place; • Obtain permission to cut down trees and shrubs in accordance with the relevant legislation of the Republic of Uzbekistan (Chapter 2); • Carry out all required procedures for cutting or replanting of plants in accordance with the requirements of the legislation of the Republic of Uzbekistan; • Ensure strict control of the procedure to prevent over felling; • Minimise the need for refuelling of construction equipment and its repair on the adjacent territory. Where necessary, provide for the use of spill control measures; • Use of pallets, adsorbents, etc.; • Ensure waste is collected and disposed of in accordance with the Waste Management Plan; • Contract with appropriate organisations to remove waste from the construction camp; • Categorically prohibit campfires in vegetated areas; • Include flora and fauna protection issues in training materials for contractors.		

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
	• Critical habitat	• N/a	N/a	• N/a
	• Legally protected areas	• Ensure that project works are being implemented within the project area	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
(ii) Works on pump stations:	• Risks and impacts	• Avoid any negative impacts or damage to the trees and bushes within the territory of PS; • Conduct inventory of existing trees and bushes and monitor their conditions during construction period		
	• Modified habitats	• Ensure that all construction works are implemented withing the territory of PSs		
(iv) Introducing smart technology:	Risks and impacts	• Ensure that all works are being implemented within the agricultural lands defined for smart technology; • Apply all mitigation measures indicated for ESS-3 on soil, surface and ground water protection		
Operation stage				
(i) Irrigation infrastructure regular technical maintenance;	• Risks and impacts • Modified habitats • Legally protected areas	• Ensure proper operation of canals with timely cleaning of sediment and prevention of clogging of discharge filters; • In cases where new trees have been planted as compensation for felled trees; • Ensure that they are maintained for a period of three years.	• O&M departments of relevant branches of MWR	Included in O&M departments budget
(ii) Maintenance of PSs;	Modified habitats	• Ensure that all O&M works are being implemented within the territory of PSs and in fully compliance with mitigation measures indicated in ESS-3	• Pumping departments of	

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
(iii) Regulation of water flow in irrigation canals; maintenance of SCADA system	Risks and impacts	• Ensure proper operation of devises for infiltration from and into canal • For the canal with permanent flow ensure presence of environmental flow as minimal	relevant branches of MWR	
E&S RISKS AND IMPACTS RELATED TO ESS 8: CULTURAL HERITAGE				
Planning and Pre-construction stage				
• Selection sites for construction sites • Defining location of new borrow pits	Cultural heritages	• Consult with Ministry of Culture and check presence of cultural heritages within the area planning for construction camps and new borrow pits • Consult with makhalla committee to check presence of cultural heritage which are not included in state registry	•	Included in PIU and ISC budget
Construction stage				
(i) Works on canals: (ii) Works on pump stations: (iii) Work on construction/ rehabilitation of the hydrotechnical structures and bridges: (iv) Introducing smart technology:	Cultural heritages	• In case of finding artefacts, which could be considered as cultural heritages, suspend the works and apply Chance find procedure (Volume 2, Appendix 5)	• Contractors implement • PIU and ISC monitor implementation	Included in Contractors, PIU and ISC budget
Operation stage				

Project Activity	Env./ Social, Health and Safety component likely to be Affected	Mitigation Measures	Responsibility	
			Responsibility	Cost
(i) Irrigation infrastructure regular technical maintenance; (ii) Maintenance of PSs; (iii) Regulation of water flow in irrigation canals; maintenance of SCADA system	• Cultural heritages	• No impacts	• N/a	N/a

Environmental and Social Monitoring Plan

In order to ensure the implementation of the environmental measures specified in the ESMP, the monitoring will be carried out as follows:

- ***Visual monitoring*** - *during the construction stage of the sub-projects* the national environmental specialists (NES) of the Project Implementation Unit (PIU), together with Implementation Support Consultant (ISC) national environmental specialist, will continually monitor the performance of ESMP by Contractors. This will be achieved through monthly inspections of construction / reconstruction projects by specialists throughout the whole construction period. The Environmental Specialists of the PIU has the right to suspend work or payments if the Contractors breach any obligation on ESMP implementation. For monitoring, it is recommended to use special checklists, that can be compiled on the basis of ESMP with the attachment of photos from the monitoring site.
- ***Instrumental monitoring of environmental quality***, such as air, water, soil quality and noise level. Taking into consideration the types of activities that will be implemented within the framework of this Project, instrumental monitoring may not be carried out. However, in the case of complaints of violations or inconveniences from the local population, instrumental measurements of air, water, soil quality or noise level will be carried out by the ISC through the hiring of a certified laboratory. In case of national standards being exceeded, the sub-borrower will be obliged to take additional measures to reduce the detected exceedances to meet the standards.

Separately, the World Bank experts will also annually visit certain sites to monitor the compliance. As has been mentioned above, in the case of non-compliance, the PIU will investigate the nature and cause(s) of the non-compliance and, if necessary, decide what is necessary to ensure the compliance with the sub-project or financing will be suspended.

Besides instrumental environmental monitoring indicated in Table 2, monitoring of EMP's implementation will be carried out. For efficient implementation of this activity, several levels of supervision activities will be undertaken: (i) daily inspection by Contractor's EHS, (ii) monthly inspection by ISC NES, and (iii) periodic audit (quarterly) by PIU NES.

Results of environmental performance including monitoring activity will be properly documented and reported. Each Contractor will perform a book logbook with information about conducted training on Environmental, Health and Safety for workers and another book for registration accidents during the civil works. Original records on results of required instrumental environmental monitoring (air and water quality) will also be kept in the separate file for records.

Prior to commencement of the civil works, Contractors with assistance of ISC will develop a format for site inspection to optimize a process of environmental supervision. The format could be in form of checklist with list of mitigation measures to be implemented at the construction sites, their performance status and some explanations as required.

Table 2. Environmental and Social Monitoring Plan

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards
Pre-Construction and Construction Stage					
1. Air quality	NO_x, SO_2, CO	At several points close (less than 50 meters) to sensitive sites (schools, kindergartens, clinics.)	Weekly and additionally in case of grievance from population	ISC will hire certified laboratory to conduct analysis	Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the RUz included Annex 1. SanR&N RUz No.0179-04
	Dust	At several points close to sensitive sites (schools, kindergartens, clinics.)	Weekly and additional in case of grievance from population	ISC	Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the RUz including Annex 1. SanR&N RUz No.0179-04
2. Noise level	Noise level	At several points close to sensitive sites (schools, kindergartens, clinics.) during the ESIA preparation stage	Daily (by contractor) and weekly (by PMSC) in case of grievance from population	Contractor – on daily base ISC – on weekly base	1. "Sanitarian Norms of allowed level of noise *at the construction sites*" SanR&N №0120-01 2. SanR&N No.026709 Sanitarian Rules and Norms on providing allowed noise level *in the living building, public building and territory* of living areas
3. Water quality	Oil products, dry residual, BOD, COD, pH, ammonia, SO_4	Waterways next to construction sites (excluding rehabilitated canals) and construction camps, Location: before and after construction site and construction camps. Measurements should be done during the ESIA preparation stage	1. Baseline – before construction works 2. During construction works– twice per month	ISC will hire certified laboratory to conduct analysis	"Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters". SanR&N No 0088-99

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards
4. Soil quality	1. Check liquid waste is carried out by experienced personnel and in proper way. Careful and proper handling of oil and other hazardous liquids 2. Heavy metals, oil and petroleum products	1. Construction sites and areas close to workshops in construction camps) 2. Areas with observed pollution	1. Daily – During construction works 2.As per identification visual pollution	1. Contractor EHS specialist 2. ISC will hire certified laboratory to conduct analysis	Sanitarian Norms. "Sanitary maximum permitted concentrations (MPC) and tentatively acceptable concentration of exogenous pollutants in the soil" SanR&N RUz No.0191-05
5. Vegetation	Cutting down or replanting vegetation – fully compliance with procedure	Along the project canals	Once, before construction	PMC, local MEEPC representatives	Received permits on cutting down or replanting vegetation
Operation Stage					
6.	Amount of water in canals with permanent water	Canals with permanent water flow	Once in a year	MWR	As per O&M manual for the project's canals