KYRGYZ REPUBLIC

MINISTRY OF WATER RESOURCES, AGRICULTURE AND PROCESSING INDUSTRY OF THE KYRGYZ REPUBLIC

WATER RESOURCES SERVICE

CLIMATE RESILIENT WATER SERVICES PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE «KURSHAB» IRRIGATION AND DRAINAGE SYSTEM

BISHKEK
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TABLE OF CONTENTS

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LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-containing materials
BMP	Biodiversity Management Plan
BOD	Biological oxygen demand
CDN	Collector-drainage network
CERC	Contingent emergency response component
CRWSP	Climate Resilient Water Services Project
DRB	Daily regulation basin
DWA	District Water Authority
EIA	Environmental Impact Assessment
EPHS	Environmental protection, health and safety of life activity
ESCP	Environmental and Social Commitment Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social-Standard
FS	Feasibility study
GRM	Grievance redress mechanism
GWL	Groundwater level
HTS	Hydrotechnical structures
HWS	Headworks
ISL	Illegal Sexual Behavior
KR	Kyrgyz Republic
KSAb	Karadarya-Syrdarya-Amudarya basin
LA	Local authorities
LGA	Local Government
LMP	Labor management procedures
LSG	Local Government
M&A	Monitoring and Assessment
MC	Main canal
MES	Ministry of Emergency Situations

MFM	Feedback mechanism
MNRETS	Ministry of Natural Resources, Environment and Technical Supervision
MPACM	Management Plan for Asbestos Containing Materials
MWMD	Main Water Management Directorate/OWC
MWRAPI	Ministry of Water Resources, Agriculture and Processing Industry
PAP	Project Affected Persons
PDO	Project Development Objective
PED	Project Design and Estimate Documentation
PIU	Project Implementation Unit
PRA	Statement of work scope
RAP	Resettlement Action Plan
RP KR	Resolution of the Government of the Kyrgyz Republic
RPF	Resettlement Policy Framework
SE	Social environment
SEP	Stakeholder Engagement Plan
SH	Stakeholder
SLR	State Land Reclamation Cadastre
SPNA	Specially Protected Natural Areas
SPZ	Sanitary Protection Zones
TRB	Ten-day regulation basin
WB	World Bank
WB OP	World Bank Operational Policy
WHO	World Health Organization
WRSMA	Water Resources Service of the Ministry of Water Resources, Agriculture Processing Industry
WUA	Water Users Association

EXECUTIVE SUMMARY

This Environmental and Social Management Plan (ESMP) is prepared for the «Kurshab»-Sai irrigation and drainage (I&D) system's subprojects modernization under Climate Resilient Water Services Project.

ESMP aims to identify the environmental and social management and mitigation actions required to implement the project in accordance with the World Bank Environmental and Social Standards (ESS) and Kyrgyz Republic's applicable national legislation.

It provides an overview of the environmental and social baseline conditions on the «Kurshab»-Sai I&D system, summarizes the potential impacts associated with the proposed modernization works and sets out the management measures required to mitigate any potential impacts in the system.

This ESMP is to be utilized by the contractors commissioned by PIU for the project and will form the basis of site-specific management plan that will be prepared by the contractors as part of their construction methodology prior to works commencing.

It's also serves as a management tool to ensure that the preventive and mitigation measures are properly implemented and that the recommended measures are monitored and institutionally reinforced during implementation of the project. The ESMP also establishes the necessary institutional commitments, proposes timelines for the implementation of such activities, and estimates their costs within the proposed project budget.

The potential impacts and associated mitigation measures and management procedures presented in this ESMP are based on the baseline information provided in the Project ESF Documents.

This ESMP will be guided by the Environmental and Social Management Framework (ESMF), which has been prepared and endorsed by the World Bank in 2022. The purpose of the ESMF is to identify the expected environmental and social risks and impacts of the project, and to provide a system for monitoring and managing such impacts during project implementation.

The project according to the World Bank's environmental and social risk qualification system is categorized as a project with Substantial environmental and social risks that may arise as a result of the implementation of the subprojects. No irreversible process with significant risk of environmental impacts is expected. Project impacts will be local in location and limited in time. Therefore, preventive measures will mitigate the impacts of the project on both the environmental and social environment.

The objective of the environmental and social assessment is to identify the significant environmental and social impacts (positive and negative) of the proposed project, identify appropriate preventive and mitigation measures to avoid, minimize or eliminate any anticipated irreversible impacts.

The Project Implementation Unit (PIU) of the Water Resources Service is responsible for the environmental and social risk management (assessment, preparation of documents and assignment of E&S specialists to oversee, monitor and enforce environmental and social measures and ESS).

The PIU has hired E&S Specialists who oversee the overall coordination of the implementation of specific ESMPs, reports to the Executive Agency and the WB on E&S mitigation measures, and on the integration of E&S requirements into procurement and contract documents. The E&S Specialists

are also responsible for liaison with environmental authorities, local implementing agencies to ensure effective implementation of safety measures documents and will conduct environmental and social supervision and monitoring, assess compliance with environmental and social standards in the workplace, provide advice to the public, local government authorities (LGAs) and other stakeholders on environmental and social issues.

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1. Project development objective

The project development objective is to

(i) improve access to climate-resilient water services in selected river basins and
(ii) strengthen institutional capacity for climate-resilient water management at local and national levels.

1.2. Purpose of the Environmental and Social Management Plan

The ESMP serves as a management tool to ensure that the preventive and mitigation measures are properly implemented and that the recommended measures are monitored and institutionally reinforced during implementation of the project. The ESMP also establishes the necessary institutional commitments, proposes timelines for the implementation of such activities, and estimates their costs within the proposed project budget.

1.3. Scope of the Environmental and Social Management Plan

The ESMP covers the complete implementation cycle of the subproject, which can be categorized into the following phases: planning and design, construction, and operation.

Planning and design phase

This is the first phase of the project. At this stage, various aspects of the project will be determined, including geodesy, site selection, technical feasibility, environmental and social screening, preparation of technical drawings and ESMPs. It also includes preparation of design and estimate documents, environmental protection section, and obtaining a positive state opinion on them.

Construction phase

The main activities to be carried out during this phase of the project are site clearance and preparatory works, construction - earthworks and concrete works, other works - additional buildings and materials, ancillary works including access roads, Contractor's work site, workers' quarters, communications during construction.

All work should be performed only after the necessary permits and approvals have been obtained. *Organizational arrangements.* Prior to commencement of construction works, local construction supervision and environmental inspectors and the public shall be informed of the forthcoming activities through the media and/or at sites open to public access (including worksites) by disclosing the site-specific ESMP for each subproject. All activities required to implement environmental protection and monitoring safeguards shall be planned and budgeted in the work plans of the Client, contractors and subcontractors. All works shall be carried out in a safe and disciplined manner that minimizes impacts on the public and the environment.

Operation phase

Upon completion of the construction work, the District Water Management Organization (RVK) will be responsible for carrying out the operational activities. The project will provide training for the operating organization. The repair and maintenance of the systems will be the responsibility of the RVK.

In addition, the ESMP describes the institutional roles and responsibilities for environmental and social risk management within the project, as well as feedback and grievance mechanisms. Through these tools, citizens and other stakeholders can interact with the project implementation agency.The

project is expected to have a positive impact as the implementation of the project activities (i) improved access to services, (ii) strengthened institutional capacity to provide climate resilient irrigation services and water management will generally contribute to improved livelihoods and food security in the project area.

1.4. Environmental and Social Management Plan Methodology

The ESMP has been prepared in accordance with a standard methodology consisting of the steps listed below:

- Reviewing the project's particulars and organizing a meeting/discussion involving the WRS management, the PIU, RVK representatives, and the World Bank team;
- Overview of Policy and Regulatory Requirements;
- Collect and analyze baseline environmental and social data through secondary literature review and field data collection;
- Assessment of potential and likely impacts of project activities;
- Conduct a reconnaissance site visit by a team of experts from the Consultant and the PIU, and initial review and screening to identify key environmental and social parameters and aspects likely to be affected by project activities;
- Consultations with stakeholders, including beneficiary/affected communities;
- Preparation of Environmental and Social Management Plan in accordance with ESS requirements;
- Compilation of selected thematic reports.

1.5. Gaps and Limitations of the Study

Gaps and difficulties were identified in the preparation of the ESMP and the SDDR based on the following factors:

- Compressed timelines for preparation of DEDs affected the quality of document preparation;
- Insufficient level of knowledge and experience of design engineers in terms of WB requirements on social and environmental standards, which led to difficulties in timely identification, minimization and elimination of social risks at the sites, which in turn affected the timing of document preparation;
- Lack of new engineering solutions;
- The site assessment findings indicated that the design engineers for a number of sites did not go to the locations themselves and were not knowledgeable about the on-site conditions, instead utilizing drone-captured visual data;
- The RVK and local authorities have failed to exercise proper oversight and management of the protected irrigation zone.

CHAPTER TWO: PROJECT DETAILS AND DESCRIPTION

2.1. Project design

The Project aims to improve, in a selected river basin(s), the coverage, quality and efficiency of water supply, sanitation and irrigation services, including strengthening of capacity to improve integrated water resources management, and the capacity of relevant service providers in a selected basin.

The nationwide, the Project will strengthen the institutional capacity for comprehensive water supply and water management services.

The Project will perform an integrated water and landscape management approach to improve water security, and support social and economic development in a selected river basin.

The Specific investments identified based on the draft River Basin Management Plans and the priorities specified in state programs. The Karadarya-Syrdarya-Amudarya (KSAb) and the Issyk-kul-Tarim (ITb) river basins selected based on priority needs in irrigation, water supply and sanitation sectors. KSAb covers Osh, Batken and (partially) Jalal-Abad oblasts.

Due to climatic variability, climate change and faulty condition of on-farm irrigation infrastructure, the irrigation specialists in KSAb have an experience on water shortages, especially between June and August.

Description of irrigation and drainage subprojects:
It is proposed to modernize subprojects/structures of 3 irrigation systems under project, which are:

1. Irrigation infrastructure in Kara-Suu rayon, Osh oblast on «Kurshab»-Sai River: «Kurshab»-Sai headwork with «Otuz-Adyr» off-farm canal with the tunnel, and other off-farm and WUA on-farm canals.
2. Irrigation infrastructure in Bazar-Korgon rayon, Jalal-Abad oblast, on the Kara-Ungur-Sai river. Bazar-Korgon dam with headwork, Levaya Vetka off-farm canal and WUA on-farm canals.
3. Irrigation infrastructure in Kadamjai rayon, Batken oblast, on the r. Shakhimardan: headwork with Nurgaziev canal and WUA on-farm canals.

According to the Irrigation Fund data of Batken, Osh and Jalal-Abad oblasts, the length of irrigation canals - 1857.5 km, of which 82% is lined in Batken oblast, 6% in Osh oblast and 39%[1] in three rayons of Jalal–Abad oblast. Mostly, all the listed facilities were commissioned into operation in the second half of last century and at an earlier date, therefore, there is the need to execute the major repair works and upgrade pumping stations. As of the 1970-80s, the irrigation systems throughput efficiency was estimated to be 0.4-0.5, with the efficiency of off-farm canals in 0.7-0.8. Currently, these indicators

[1]Plan for development, use and protection of water resources of the Karadarya-Syrdarya-Amudarya basin, National Water Resources Management Project – Additional Financing, 2020.

have decreased, resulting in sufficient water losses, part of which replenishing groundwater, causing groundwater rise and soil salinization, flooding of residential areas.

2.2. Project location

The project is designed to ensure consistent policy, investment, and institutional approaches to deliver climate resilient water services. The project includes national-level activities, basin-level activities (Kara-Darya-Syr-Darya-Amu-Darya (KSA) basin and Issyk-Kul-Tarim River basin), and rural level activities. The KSAb covers (partially) the Jalal-Abad, Osh and Batken regions.

2.3. Project components and activities

Component 1: Infrastructure Investments and Service Improvements

This component contributes to the implementation of high priority investments aligned with the river basin management plans[2] and with the country's climate change adaptation and mitigation agendas. It finances civil works, goods, equipment, and related services to reduce climate risks in the provision of I&D services, and resource utilization efficiency. These investments will be designed with the intent of minimizing GHG emissions through reductions in energy consumption by (i) prioritizing gravity-based solutions for irrigation and drinking water supply, (ii) increasing pumping efficiency for service delivery, (iii) promoting water conservation through water metering and on-farm interventions. Hence, this component is climate co-benefit intensive.

- **Sub-component 1.1. Water supply and sanitation infrastructure**

This subcomponent covers investments to increase the climate resilience of drinking water supply and sanitation services, and to enhance wastewater treatment capacity.

- **Sub-component 1.2. Irrigation and Drainage Services Improvement**

This subcomponent covers modernization of three existing I&D schemes (Kara-Unkur in Jalal-Abad, Shakhimardan in Batken and «Kurshab»-Sai in Osh) located in the KSA basin covering 28,000 ha. At the level of infrastructure assets, the project finances rehabilitation and modernization of I&D canals (234 km) and appurtenant structures[3]. The rehabilitation and modernization are based on the World Bank's Resilient Water Infrastructure Design principles[4]. These activities support adaptation to drought risks through improved conveyance efficiency and control of water use with modern structures, and to flood and mud-flow risks through improved bypass and protection structures. Modernized and well-functioning I&D schemes also help avoid maladaptation and land-use change related emissions that arise from (a) utilization of diesel pumps to withdraw groundwater to substitute for unreliable canal water supplies and (b) expansion of cropland – with related emissions associated in land-use change - to recoup losses caused by drought and lack of irrigation water supplies. At the farm level, the project will promote climate-smart irrigation practices and resource utilization through (i) improved on-farm water management practices, (ii) deep ripping, and (iii) laser land levelling. This will address the rising impact of drought, high temperature and extreme

[2] River basin management plans for the Issyk-Kul and KSA river basins were developed under the World Bank executed National Water Resources Management Project (NWRMP) and identified improvements in water service delivery as a key priority area for investment.
[3] Note: structures include water control/distribution; outlets; mudflows, tunnels, small bridges and volumetric measurement structures.
[4] World Bank. 2020. Resilient Water Infrastructure Design Brief. World Bank, Washington, DC.

heat risks related to climate change on crop yields and agricultural production. This will also help reduce soil erosion while enhancing soil carbon sequestration and fertility. Under this subcomponent, the project also finances technical assistance for preparation of the engineering studies and designs, as well as construction supervision for the above activities.

Sub-component 1.2 directly addresses mitigation and adaptation co-benefits. Mitigation co-benefits are linked with (a) rehabilitation and upgrade of the three gravity-fed I&D schemes to minimize dependence on groundwater abstractions that rely on GHG emitting diesel pumps and (b) promotion of climate-smart agriculture at the farm level to enhance soil carbon sequestration and fertility, reduces soil erosion, and improves water and energy efficiency.

Component 2. Institutional Strengthening for Climate Resilient Service Delivery, Water Resources Management and Dam Management

This component finances the acquisition and installation of equipment and services to facilitate the uptake of innovations and best-practices for water management based on climate resilience and low-carbon principles. The focus is on improving the institutional knowledge and preparedness with regards to aspects of IWRM and climate resilience, including (a) regulatory and oversight capacity at the national level, (b) operational capacity for service delivery at local level, (c) water and soil quality, and (d) dam management. Activities under this component are grouped into four subcomponents.

- **Sub-component 2.1 Institutional Strengthening for WSS Service Delivery.**

- **Sub-component 2.2 Institutional Strengthening for Irrigation Service Delivery**

This activity builds WRS's tools and capacity for irrigation service delivery, with a focus on digitalization. It finances equipment and services to improve data collection, storage, and processing into the existing Digital Water Information System (DWIS). This digitalization is expected to significantly strengthen WRS's ability to identify and prepare for droughts or floods and their impact on I&D infrastructure. This subcomponent will support (a) integration of surface water abstraction data for the irrigation sector within the DWIS; (b) uptake of remote sensing for irrigation water management and water accounting and their integration into the DWIS; (c) expansion of the data visualization functionalities of the DWIS; and (d) support to WUAs including trainings, asset management, operating budget, and climate smart irrigation. The project will prioritize capacity building of female farmers to improve their technical, leadership, and communication skills to build their confidence and increase their voice and role in WUA decision-making bodies. This subcomponent supports climate adaptation because the integration of surface abstraction data and remote sensing in the DWIS and expansion of DWIS data visualization functionality increase WRS's ability to control and monitor water use during drought. In addition, WUAs training in climate-smart agriculture helps farmers adapt to water stress.

- **Sub-component 2.3 Water and soil quality monitoring system**

This subcomponent finances goods, works and services to strengthen the country's soil and surface water quality monitoring system. It invests to improve water and soil quality data collection, storage, and processing to help WRS and DEM better prepare and respond to the impacts of climate extremes (floods and droughts) on soil and water quality. It includes two main activities. First, the improvement/establishment of biochemical laboratories at the central level in Bishkek and in the

three oblasts of the KSA basin (Osh, Jalal-Abad, and Batken) and capacity building of relevant specialists in the State Ecological Laboratory under the DEM. This activity finances repair of existing laboratory buildings, provision of equipment, support in accreditation of laboratories, and the upgrade of IT systems in the DEM. Second, this subcomponent finances institutional strengthening of the DEM to (a) improve staff capacity in chemical surface water and soil quality monitoring techniques, including data collection and analysis, and (b) develop a country-wide water and soil quality monitoring plan. This subcomponent supports climate adaptation because it improves capacity and knowledge to monitor and respond to the impacts of droughts and floods on water quality and of erosion on soil quality.

- **Subcomponent 2.4 Dam Management**

This subcomponent finances services and equipment to: (a) establish a dam management unit within WRS, tasked with providing oversight on dam management across the country; (b) formulate guidelines for the elaboration of dam management plans; (c) develop dam management plans for four dams located in the KSA basin (Papan, Naiman, Tortgul and Bazar-Korgon); and (d) develop a dam information module within the DWIS, including introduction of remote monitoring tools such as drone applications and remote sensing. Activities under this subcomponent will increase the resilience of dams – and their related services including low-carbon hydropower production – to flood and drought shocks. This subcomponent supports climate adaptation because dam management involves, by definition, management of climatic risks (floods and droughts).

Component 3: Project Management, Monitoring and Evaluation (M&E) and Professional Development

This component will finance the required staff, consultant services, professional development and operating costs that will allow the Project Implementation Units to carry out their responsibilities for implementation. These responsibilities include project management and coordination, procurement, and financial management, monitoring and evaluation, social and environmental standards management and oversight, communications, and outreach. This component will also finance the preparation of a feasibility study for future investments aimed at improving water services. Finally, this component includes professional development and other interventions to promote gender diversity in water sector entities. For example, the project will support, among others, review of human resources policies on recruitment, promotion and retention in water sector entities, development of guidelines for a safe and comfortable work environment including sexual harassment reporting mechanism.

Component 4: Contingent Emergency Response Component (CERC)

Providing immediate response to an Eligible Crisis or Emergency, as needed. This component allows the Government to request the World Bank to recategorize and reallocate uncommitted financing from other project components to cover emergency response and recovery costs.

2.4. Project components and activities for the project construction/modernization phase

Implementation of the Project requires involvement and cooperation with stakeholders: governmental organizations, local self-government bodies, population, public and other parties affected by the Project.

To this end, a Stakeholder Engagement Plan (SEP) was developed and approved in 2022 to fully and openly engage stakeholders in the implementation of this Project, allowing for the identification of different stakeholders and the development of an approach to reach out to each of the sub-groups, establishing a constructive dialog between them.

The PIU in cooperation with local authorities, the RVK and the Consultant's specialists shall carry out environmental and social monitoring of activities during the construction and operation phases.

During implementation of the measures, the PIU will have overall responsibility for providing oversight to ensure that the measures specified in the ESMP are properly implemented.

2.5. Project components/activities for the project demobilization and operation phase

An integral part of the strategy is to inform and take into account the opinions of communities and people affected by the project. Thus, one of the main tools for preventing social and environmental risks/conflicts is the Grievance Redress Mechanism, through which information is exchanged and community opinions are taken into account at all stages of the project. The activities planned under the subproject will have mostly positive social and environmental impacts.

In addition to information provision, the PIU will cooperate with aiyl okmotu and local community-based dispute resolution organizations, such as AO.

2.6. Labor requirements for project activities

All requirements indicated in the project's LMP need to be followed in this ESMP and project activities carried out by the Contractor will be fully monitored by the PIU social and environmental staff. PIU staff is responsible for supervising and monitoring of all environmental (including Occupational Health and Safety (OHS)) and social issues, such as environmental and social assessment, supervising preparation of site-specific Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plan (ESMPs), monitoring, and reporting to be carried out by the Contractor.

Project promotes sound worker-management relationships and provides safe and healthy working conditions. All below requirements need to followed as per the ESS2 and project's LMP:

- Promote safety and health at work;
- Promote the fair treatment, nondiscrimination and equal opportunity of project workers;
- Secure protection of project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate;
- Prevent the use of all forms of forced labor and child labor;
- Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and
- Provide project workers with accessible means to raise workplace concerns.

CHAPTER THREE: DESCRIPTION OF PROJECT ACTIVITIES

The irrigation system is located on the territory of Osh province (east of Osh city) and supplies irrigation water to the lands of Kara Suu and Uzgen districts. The source of irrigation is the «Kurshab» River. A head water intake structure (HWS) of dam type was built on the «Kurshab» River, distributing water to two irrigation canals: left-bank - «Otuz-Adyr» and right-bank - Kochkor-Ata.

At present, 15,400 ha of irrigated lands are under the HWS, including 12163 ha of lands in Karasu district (under «Otuz-Adyr» canal) and 3237 ha of lands in Uzgen district (Kochkor-Ata canal). According to the passport of the waterworks was put into operation in 1954 with water intake capacity of 15 m^3/s.

The left-bank «Otuz-Adyr» canal at the 12th kilometer cuts into the hilly spurs of the Alai ridge, where a 442m long box-type tunnel was built. The existing tunnel is lined with monolithic reinforced concrete. The tunnel is in satisfactory condition. The throughput capacity of the tunnel is about 15 m^3/s.
In 1965, a project was developed to increase the canal capacity to 25 m^3/s to feed the Akburinskaya system. According to this project, the «Otuz-Adyr» canal widening was started in some sections, but this project was not fully realized. Currently, the canal capacity remains 14-15 m^3/s due to tunnel capacity and poor condition of the canal. In 2000s, the head intake structure on the «Kurshab» River was modernized to increase the capacity of the «Otuz-Adyr» canal to 20 m^3/sec.

3.1 Technical condition of the irrigation system

The present project envisages modernization of the system by increasing water intake into the «Otuz-Adyr» canal up to 25m^3/s, increasing the canal capacity and construction of an additional tunnel branch. The existing canal in the earthen bed will be laid in monolithic reinforced concrete lining. In the head section of the canal an additional water intake is envisaged with irrigation water supply to the new sedimentation tank and its inclusion in the existing modernized canal. A new maintenance house is also envisioned at the headrace.
The project will include modernization of canals and irrigation infrastructure:

- Modernization of the headworks on the River «Kurshab»;
- Modernization of the «Otuz-Adyr» canal with a total length of 35 km, including structures;
- Modernization of the K-9 (K-9.1) canal with a length of 5.6 km;
- Construction of the MKS feeding canal, 2.1 km long;
- Construction of a protective dam above the headworks;
- Reconstruction of the automobile bridge at PK 144+94;
- Replacement of existing hydromechanical equipment at the water intake;
- Overhaul of electrical equipment with replacement of electric motors;
- Construction of an additional water intake structure and a settling tank to increase the capacity at the head intake structure from 20 m^3/s to 25 m^3/s;
- Construction of a new settling tank (single-chamber);
- Construction of an operational building;
- Construction of a new tunnel;
- Construction of gauging stations for installation of water metering sensors on inter-farm canals.

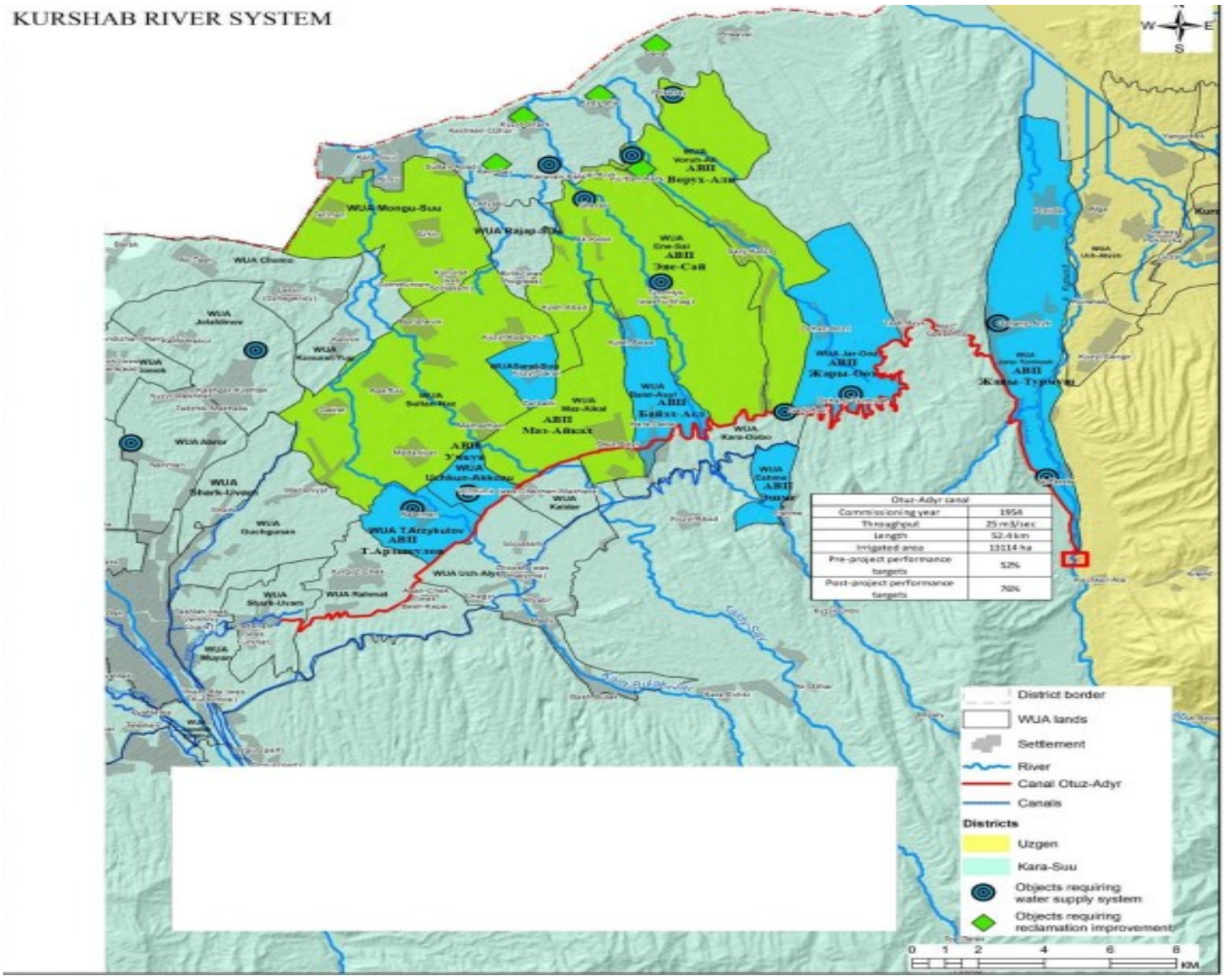


Image 1. Map of the «Kurshab»-Sai Irrigation and Drainage System

3.2. Canal modernization

The «Otuz-Adyr» main canal route originates from the sump chamber. The total length of the «Otuz-Adyr» canal is 52.4km. The main part of the «Otuz-Adyr» canal passes in an earthen bed for about 48.8 km and 3.6 km in concrete lining. The right slope of the canal is lined in some places.
For the current period, a detailed design has been prepared for a 40 km section of the canal (from PK0+00 to PK400+00), 5.6 km of the K-9 (and K-9.1) canal reconstruction, and 2.1 km of the ISS feeder canal construction. This social due diligence report covers these sections.
Losses of irrigation water by filtration, due to unlined irrigation canals, can cause water shortages on the one hand and drainage problems on the other. In addition, high standing water is associated with salinization of land by groundwater.

«Otuz-Adyr» Canal from PK0+00 to PK400+00
To prevent these losses, the earthen bed of the «Otuz-Adyr» main canal will be lined with monolithic concrete along its entire length from PK0+00 to PK400+00. It is envisaged to dismantle sections of old deteriorated concrete and install a new lining of the canal section.

On the canal section from PK0+00 to PK400+00 the project provides for reconstruction of 46 structures and construction of 17 new structures. 22 existing structures are in good condition.

Canal K-9

The off-farm canal K-9 originates from the main canal «Otuz-Adyr». The total length of the canal is 4.3 km. Under existing conditions, the canal passes in w/concrete blocks LR-10 with a length of 2.48 km. This section of the canal is in poor condition. Judging by the damage and condition of the trays, the canal has been in operation for more than 20 years. There are leaks through the seams, chips and damage on the concrete blocks.

Under design conditions, the canal's capacity, according to data from the Kara-Suu District Water Resources Administration, is 1.0 m³/s. Reconstruction of the canal consists of replacing the lining of the existing blocks with new LR-10 blocks. And also in lining the earthen section of the canal with LR-10 blocks. Along the canal on the left side there is a 4.5 m wide operational passage.

Canal K-9.1

At PK 41+17 of the off-farm canal K-9, the second-order canal K-9.1 branches off in the northern direction. The total length of the canal is 1,206 km. The canal is made of parabolic trays LR -8. The condition of the canal is poor. There are leaks and destruction of the cladding. According to the Kara-Suu RWMU, the canal's capacity is 0.8 m³/s. The canal's reconstruction involves replacing the lining with new LR-8 trays.

Canal MKS

The MKS canal originates from the main «Otuz-Adyr» canal. In the current conditions, the canal passes in an earthen bed. The canal bed is overgrown with vegetation and requires clearing. The total length of the canal is 2.09 km. The canal capacity, according to the data of the Kara-Suu RWMU, under design conditions is 0.4 m³/s. Reconstruction of the canal consists in lining the earthen canal with parabolic flumes LR-8.

Image 3. Location plan of K-9 and MKC canals

3.3. Head water intake structure

Image 4. Head water intake structure

1) Discharge facility. There is a repair discharge on the upper embankment of the DWSS, where the old equipment will be replaced by reinforced gate shields GS100*250 -6 pieces.

2) Right bank protection dam. In addition, it is envisaged to construct a right-bank dam with the length of 250.8 m, on both sides of the given structure on the trunk. The total height of the dam will be 4.9 meters, construction height of 3.5 meters, apron height of 1.4m. The dam will be anchored on the bottom and slope with d=70cm stone in 2 layers.

3) Water intake structure with canal. Currently, the maximum flow capacity of the HWS is about 20m³/s, it is planned to increase the flow rate to 5m³/s. Therefore, the construction of an additional canal L = 451 meters with a head intake of 5m3 / s, with a connection to the existing canal bypassing the HWS. This canal consists of the following parts: a supply canal, a single-chamber settling tank and a diversion canal, in addition, 1pc slug-discharge structure and 1pc transition structure from the existing 3-chamber settling tank are envisaged. The canal will be equipped with a bridge crossing where it crosses an existing road.

4) Feeder canal, length L=255 meters. The canal will be made of reinforced concrete G-blocks, the project provides for the installation of 170 blocks G150. The base under G-blocks will be concrete preparation t=10 cm, on gravel-sand preparation t=10 cm, the bottom between G-blocks will be concreted with hydraulic concrete B15 F150 W6 with reinforcement. The canal width is 2.5m, construction height is 1.35m.

5) Bridge crossing. At the intersection of the feeder canal with the existing road it is envisaged to build a bridge crossing, which will be made of bridge slabs PM-4,0 - 4pcs and PMK-4,0 -2pcs.

6) Single-chamber settling tank: length L=131,9 meters. In addition to the existing three-chamber sedimentation tank, the project provides for the construction of a single-chamber sedimentation tank with a design capacity of up to 5m3 / s, which will be made of monolithic hydraulic reinforced concrete.

7) Diversion canal: length L=64 meters. It will be made of monolithic hydrotechnical reinforced concrete.

8) Replacement of gates. The replacement of mechanical equipment (gates) is envisaged at the HWS, namely dismantling and installation of: flat gates on sluice-regulators to «Otuz-Adyr» canal and Kochkor-Ata canal, flat surface-sliding gate on shugosbros (HTS for passing sludges), flat

depth gate on left and right flushing holes, depth wheel gate on river opening, depth flushing gate, in addition, partial replacement of water dissectors at the outlet and cast iron slabs along the bottom.

9) Replacement of existing electrical equipment. Provision is made to replace all existing electrical equipment at this facility. The gates will be operated electrically through a control panel.

10) Construction of a new maintenance cabin. HWS has an old maintenance house, built with HWS, that is in disrepair. Provision is made for the construction of a new maintenance hut on the site of the old one and a restroom.

11) Dismantling of obsolete equipment and old operational house.

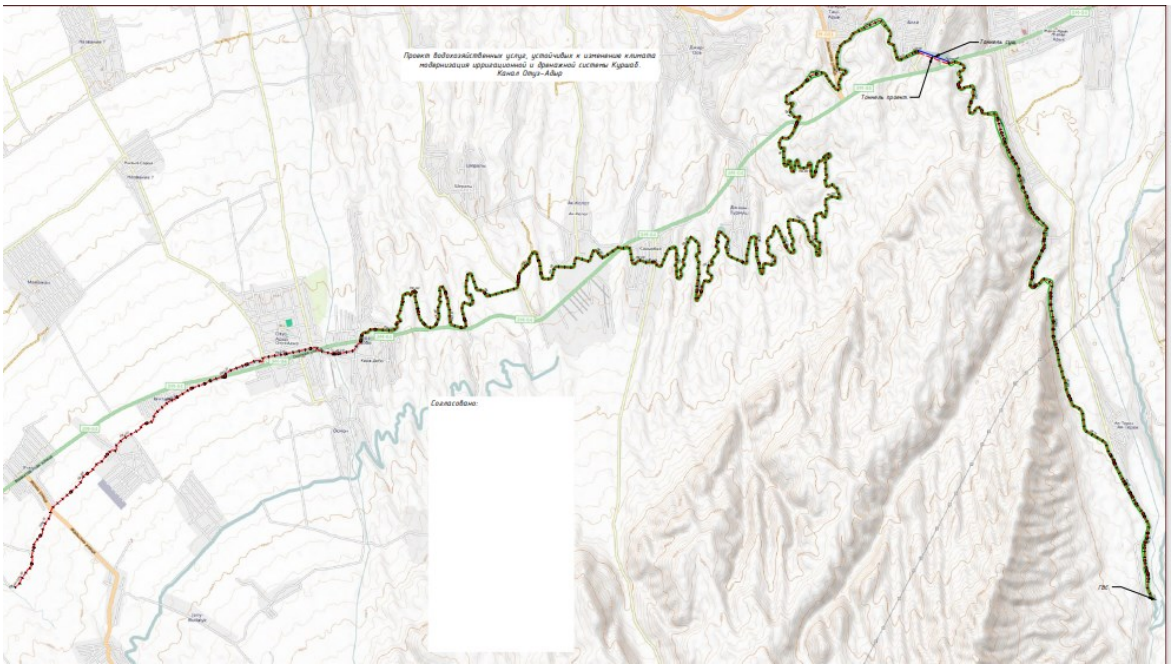


Image 5. Overview plan of the «Otuz-Adyr» main canal

3.4. Hydroposts

There is an existing gauging station on the PK6+20 canal, the concrete parts of which have been destroyed due to years of operation and all the metalwork has rusted.

The project envisages dismantling of the old gauging station and in its place a "fixed canal" type gauging station will be constructed along the canal bed. The same gauging station will be constructed on the canal bed at PC 348+15. The gauging stations will be equipped with metal bridges for crossing and measuring, will be equipped with control and measuring devices, special metal boxes will be provided for their placement. Besides, it is envisaged to construct 16 more gauging stations on the «Otuz-Adyr» canal diversion. All gauging stations will be equipped with control and measuring devices for convenient water accounting.

Image 6. Hydropost at PC6+20

3.5. Culvert

The intake part on the canal bed is destroyed, the structure does not fulfill its function in full. In this regard, the amount of sand and gravel that should be discharged back into the river falls on irrigated lands. The project envisages rehabilitation of the structure, namely restoration of the receiving chamber made of monolithic reinforced concrete and replacement of the steel structure.

The existing outlet structure at PK25+62 (Kyzyl-Senir) is almost completely destroyed. The metal structure is rusted and warped; the existing concrete part is destroyed. The barrier structure is primitive, made of improvised materials (fragments of concrete and tree branches).

The project envisages construction of a new structure with replacement of the entire metal structure, and construction of concrete supports with a gap for regulating water supply by shandors (type of gate).

Due to long-term operation almost all outfall structures have fallen into disrepair. In this connection the canal section from PK0+00 to PK400+00 will be equipped with new culverts in place of the old ones.

The project envisages construction of 4 pipe culverts. Along with this, 4 sluice-regulators will be constructed on the canal.

Image 7 and 8. Culverts

3.6. Mudflow ducts

The existing canal was in an earthen canal, and small debris flows into the canal on the left bank of the canal along the slope due to rainfall. Each year in spring before the growing season, the MWMD cleaned the canal and there was no need to construct mudflow protection structures.

Since the rehabilitation of the canal involves lining the canal, it is necessary to protect the canal from all kinds of situations that contribute to the destruction of the canal lining. For this purpose, the project envisages construction of 2 debris diversions at PK 68+90 and PK60+54. The mudflow outlet wall will be made of box gabion 1*1*2,0m with total height h=10m.

Image 9. Mudflow duct at PC68+90

3.7. Pedestrian Bridges

The canal has pedestrian bridges of different types, different designs, and different construction times. There are new bridges, which have enough clearance for water to pass under the bridge, and which are built in accordance with the requirements of norms and rules and safety engineering.
Rehabilitation envisages construction of 6 new pedestrian bridges of 2 types in place of the old ones. The bridges differ only by the length of the bridges, type 1-16m, type 2-12m, everything else is similar.

Image 10. Pedestrian Bridge

Image 11. Pedestrian Bridge

3.8. Pipe under the canal

On the PK348+06 canal there is an existing structure, the under-canal pipe, which is designed to divert mudflows coming from the upper fields. The existing 1000mm diameter pipe did not pass through and the upstream canal was constantly covered with sediment and had to be cleaned frequently. In addition, the poured concrete above the pipe created a backwater on the canal. Since the canal is being lined, it was necessary to provide for the construction of a debris-removal structure. The project envisages dismantling of this structure and construction of a new pipe under the canal from ZP10.100 (rectangular link). The total length of the structure together with inlet and outlet

parts is 41.5m, the length of the structure without them is 34m. The inlet and outlet parts will be made of a rock pile with d=30mm stones.

Image 12. Pipe under the canal, top view from the canal

Image 13. Pipe under the canal, view from the bottom of the canal

3.9. Bridge crossing

There is an on-farm bridge at PK144+94. The clearance width under the bridge is 5 meters and the maximum height is 2.1 meters. According to the project under the bridge it should be possible to pass 22m³/s of water flow, which requires a height of 2.3 meters. In addition, the existing base of the bridge is made of torn stone embedded in concrete, which shows significant damage. The project envisages the dismantling of the old and construction of a new bridge crossing.

Image 14. Bridge crossing

3.10. Tunnel

As described above, the «Otuz-Adyr» Left Bank Canal cuts into the hilly spurs of the Alay Ridge at kilometer 12, where a 442m long box-type tunnel has been constructed. The existing tunnel is lined with monolithic reinforced concrete. The tunnel is in satisfactory condition. The throughput capacity of the tunnel is about 15 m³/s. The project envisages construction of one more tunnel on the left side of the existing tunnel with a capacity of up to 5m³/sec, which will give additional water flow in the canal, which was insufficient for irrigation of irrigated lands in the tail part of the canal. The length of the entire tunnel complex with supply and diversion canals and structures is 640m.

Image 15. Entrance portal of the active tunnel

Image 16. View of the exit portal and the slope above it.

Image 17. Section of the entrance portal of the projected tunnel

CHAPTER FOUR: POLICY, REGULATORY AND ADMINISTRATIVE FRAMEWORK

4.1. National Policy, Regulatory and Administrative Framework

The fundamental principles of natural resource and environmental management are set forth in the Constitution of the Kyrgyz Republic. As per article 16, the Land, its resources, airspace, waters, forests, flora and fauna, as well as other natural resources shall be the exclusive property of the Kyrgyz Republic.

The land may also be in private, municipal and other forms of ownership, except for pastures that may not be in private property. The Law defines guarantees of protection of the rights of landowners. According to the article 49, everyone shall have the right to environment favorable for life and health.

Current legislation regulates the protection and use of all types of resources: land, water, air, biodiversity, mineral resources. The Legislation provides procedures and mechanisms for their management, such as: basic norms and rules for the use of resources, including norms and rules for charging fees for natural resource use and pollution, environmental monitoring, impact assessment, environmental standards, environmental expertise, environmental control, etc.

4.2. Legislative acts in the field of environmental protection

The core laws regulating environmental protection activities in the Kyrgyz Republic:

- Constitution of the KR (2021):
- Law of KR "On Environmental Protection" (1999);
- Water Code of KR (2005);
- Law of KR "On Environmental Expertise" (1999);
- Law of KR "General technical regulations to ensure environmental safety in the Kyrgyz Republic" (2009);
- Law of the KR "On Protection of Atmospheric Air" (1999);
- Land Code of the Kyrgyz Republic (1999);
- Law of the Kyrgyz Republic "On the Procedure for Considering Citizens' Appeals" dated May 4, 2007 No. 67 (as amended on July 27, 2016 No. 151);
- Law of KR "On Production and Consumption Waste" (2001);
- Law of the Kyrgyz Republic "On the Protection and Use of the Flora" (2001);
- Law of KR "On specially protected natural territories" (2011).

4.3. Legislation of the Kyrgyz Republic in the field of land acquisition and labor management

The national legislation regarding land acquisition, citizen engagement, information disclosure policies in the Kyrgyz Republic consists of the following laws and regulations.

- The Constitution of the Kyrgyz Republic (2021);
- Civil Code of the Kyrgyz Republic, Part I (1996, amended in 2023);
- Civil Code of the Kyrgyz Republic, Part II (199, amended in 2023);
- Land Code of the Kyrgyz Republic (1999, amended in 2022);

- Labor Code of the Kyrgyz Republic Legislation of the Kyrgyz Republic on Stakeholder Engagement and Information Disclosure (2004);
- Resolution «On approval of property valuation standards mandatory for application by all entities engaged in valuation activities in the Kyrgyz Republic» (2006, amended in 2016);
- Standard of basic concepts and principles of evaluation (2006, amended in 2016);
- Law of the Kyrgyz Republic "On state registration of real estate rights and related transactions (1998);
- Law of the Kyrgyz Republic "On the Procedure for Considering Citizens' Appeals" (2007, amended in 2016);
- Law on right to access of information (2023).

4.4.The World Bank Environmental and Social Framework

The World Bank is committed to supporting Borrowers in the development and implementation of projects that are environmentally and socially sustainable, and to enhancing the capacity of Borrowers' environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects. To this end, the Bank has defined specific Environmental and Social Standards (ESSs), which are designed to avoid, minimize, reduce or mitigate the adverse environmental and social risks and impacts of projects. ESSs define the material standards of protection, procedural requirements, and individual rights of the project-affected communities, which borrowers must comply with and whose fulfilment the World Bank supports and works with borrowers to ensure compliance during implementation. The standards carry over numerous environmental and social requirements.

The Environmental and Social Framework enables the World Bank and Borrowers to better manage environmental and social risks of projects and to improve development outcomes. It was launched on October 1, 2018[5]. The ESF offers broad and systematic coverage of environmental and social risks. It makes important advances in areas such as transparency, non-discrimination, public participation, and accountability—including expanded roles for grievance mechanisms. It brings the World Bank's environmental and social protections into closer harmony with those of other development institutions.

The ten WB Environmental and Social Standards (ESSs) establish the standards that the Borrower and the project will meet through the project life cycle, as follows:

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts;
- ESS 2: Labor and Working Conditions;
- ESS 3: Resource Efficiency and Pollution Prevention and Management;
- ESS 4: Community Health and Safety;
- ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;

[5] *https://www.worldbank.org/en/projects-operations/environmental-and-social-framework*

- ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;
- ESS 8: Cultural Heritage;
- ESS 9: Financial Intermediaries; and
- ESS 10: Stakeholder Engagement and Information Disclosure.

The ESSs relevant to the proposed project activities are: ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8 and ESS 10.

In addition, the OP/BP 7.50 "Projects on international Waterways" is relevant to the project, particularly Component 2 activities that are expected at the transboundary rivers.

The environmental and social risk rating is considered *substantial*. Accordingly, an overall risk of the project is considered substantial. Based on the initial assessment of the environmental and social impacts, the project will apply following ESSs: project activities will launch ESS 1, ESS 2, ESS 3, ESS 4, ESS 5, ESS 6, ESS 8, and ESS 10.

For each subproject, it is recommended to take into account the WB Environmental, Health, and Safety (EHS) Guidelines[6].

The EHS guidelines applicable to the Project include the following:

• General EHS Recommendations (2007);

• EHS Guidelines for Water Supply and Sanitation (2007).

[6] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

4.5.Occupational Health and Safety (OHS) Requirements

OHS requirements must be adequately included in the sub-project ESMPs and implemented by the contractor. To ensure the labor protection, safety and health of workers at construction sites of subprojects, the requirements of the WB Environmental, Health, and Safety (EHS) Guidelines and the requirements of the Building Code SN 12-01:2018 "Labor Safety in Construction" will be applied. The OHS requirements need to be followed as per Project LMP.

Basic requirements for labor protection and safety include:

1) The sites will be equipped with appropriate information boards and signs informing workers about the rules and regulations of work;

2) Conducting an introductory briefing for employees on labor protection and safety;

3) Conducting repeated briefing of workers on labor protection and safety;

4) At each construction site, a log will be kept of instructing workers on safety at the workplace;

5) Availability of first aid equipment at the construction site in case of damage;

6) Provision of workers with personal protective equipment (helmets, protective shoes, gloves);

7) Fencing of construction sites in order to prevent unauthorized persons and the population;

8) Availability of equipped fire shields at construction sites in order to ensure fire safety of construction sites and workers.

9) Other OHS risk-management measures that may be applicable to each subproject.

Labor protection, safety, and health measures during the operation of the facilities built under the project are individual for those working in the water supply and sanitation system and the irrigation system. Each enterprise should develop a Regulation on labor protection and an individual safety instruction for each specialist, depending on the type of work performed.

PIU will also need to cover related OHS issues in all supervision and monitoring activities. That means specifically asking whether there have been any incidents, checking logs and the availability and use of protective and preventative equipment. Respectively, the ESF sections of all progress reports include statements indicating that the PIU have checked occupational health and safety issues, and existing procedures in this regard, and asked if there have been any serious incidents or fatalities. Similarly, the PIE will ensure that at the project launch workshop and in the operational manual contain adequate provisions for occupational health and safety.

The relevant text on OHS to be included in the progress reports might be as follows*: The project has reported **X** Occupational Health and Safety (OHS) incidents since its start. Of these, **X** are classified as SEVERE, **X** as SERIOUS, and **X** as INDICATIVE. All incidents are confirmed accounted through the Environment and Social Incident Response Toolkit (ESIRT) (see below). During this mission period, the PIE checked with all contractors and consultants if any OHS incidents occurred, either reported or not yet reported. The PIE found (EITHER) (i) no new incidents occurred during this*

supervision period, or (ii) ***X*** *incidents occurred (include classification, a brief description of event and follow-up actions, and confirmation event was reported via SIRT)].*

The World Bank Environment and Social Incident Response Toolkit helps to manage incidents consistently by providing clear guidance on how to classify the incident's severity, how to provide a proportional response according to severity and clarifies roles and responsibilities. ESIRT also requires a root cause analysis to be done by the Borrower when there is a severe incident.

"Incident" is defined as an accident, incident, or negative event resulting from failure to comply with identified E&S measures OR conditions that occur because of unexpected or unforeseen E&S risks or impacts during project implementation. Examples of E&S incidents include: fatalities, serious accidents, and injuries; social impacts from labor influx; sexual exploitation and abuse (SEA) and Sexual Harassment (SEA/SH); major environmental contamination; child labor; forced labor; risks and adverse impacts from temporary project induced labor influx; loss of biodiversity or critical habitat; loss of physical cultural resources; and loss of access to community resources. In most cases an incident is an accident or a negative impact arising if the contractor does not comply with the WB security policy or unforeseen events which occurred during the Project implementation.

CHAPTER FIVE: DESCRIPTION OF ENVIRONMENTAL AND SOCIAL SETTING

5.1. Physical conditions for the project site

The rehabilitated sites of the «Kurshab» system are located in Kara-Suu and Uzgen districts of Osh region.

Kara-Suu district occupies an area of 3616 km^2. Kara-Suu district is mostly located in the Osh-Karasu region oasis. Kara-Suu district is located around the regional center - the city of Osh. The territory of the rayon stretches from north to south in the central part of the region and is located within the eastern edge of the Fergana Valley and in the mountain spurs of the Alai Range. Near the district center, Kara-Suu town, the state border with Uzbekistan passes along the main canal.

Image 18. Map of the Kara-Suu district

5.1.1. Climatic conditions

The climatic conditions of the region are defined by its geographical location in the subtropical zone, remoteness from large-volume water bodies, proximity to the vast deserts of the Central Asian region. All these factors determine the continentality and aridity of the climate and clearly defined seasons.

In general, the climate of the region is moderately continental: with hot summers, humid springs and autumns, and relatively cold winters.

According to long-term data from the nearest meteorological station "Osh": the Climate specifics, according to the meteorological station "Osh", ((re)construction climatology SNiP KR 23-02-00) observation periods 1961-1990 (abs. maximum and minimum temperatures for 1881-1995) Average annual air temperatures - 11.5-13.4˚C. Absolute minimum temperatures in January, the coldest month, reach -9.9˚C-31.0˚C, in July the air warms up to +40+41.8˚C. Below are the calculated climate parameters:

- the temperature of coldest five-day period with 1% probability - minus 16ºC;
- the temperature of coldest day with 1% probability -minus 20ºC;
- the weight of snow cover on 1m² of horizontal ground surface - 48 kgf/m²;
- the maximum depth of penetration of the zero isotherm under natural snow cover - 80 cm (at an absolute mark of 1100.0 m);
- the standard depth of seasonal freezing: loams and clays - 52 cm, sandy loams, fine and dusty sands - 63 cm, gravelly, coarse and medium-sized sands - 69 cm, coarse-grained soils - 77 cm.
- the average duration of e frost-free period - 220-230 days.

The prevailing wind direction is south-east and south. The wind speed is relatively low up to 2-3 m/sec. Air humidity reaches its maximum values in winter, and decreases to 44% in summer.

The last spring frosts end in the second decade of March, and the first autumn frosts occur in late October – early November. The maximum depth of penetration of the zero isotherm into the soil with 2% probability - 80 cm. The annual amount of precipitation is within 170-325 mm. The maximum precipitation in spring (up to 40%), slightly less in winter (30%) and autumn (25%). The soils are least provided with moisture in the summer. Up to 35% of precipitation falls during the vegetation season. The Evaporation during vegetation season is 1250-1300 mm, which significantly exceeds the volume of precipitation for the same period. In connection with the above, the successful cultivation of agricultural crops is possible only with artificial irrigation.

Table 1. Average monthly air temperature, ºC.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
-3	-0.7	6.3	14.0	19.0	23.9	25.4	23.1	18.4	11.9	5.1	0.2

Table 2. Frequency, % and average wind speed by direction, m/s.

	January								July							
	C N	CB NE	B E	ЮB SE	Ю S	Ю3 SW	3 W	C3 NW	C N	CB NE	B E	ЮB SE	Ю S	Ю3 SW	3 W	C3 NW
%	4	6	10	8	12	9	14	7	7	6	7	9	33	6	20	12
m/s	1.8	1.9	2.2	2.1	1.8	2.2	2.5	2.0	2.6	2.9	2.8	2.8	3.1	3.6	3.2	2.7

Table 3. Average monthly enthalpy values, kJ/kg.

Month												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
	3.1	7.2	18.9	31.1	39.5	45.9	50.9	48.5	37.4	26.1	15.5	7.5

Table 4. Number of days with air temperature crossing zero values

Month												
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
20	16	8	0,5					0.02	2.0	13	20	80

Table 5. Temperature fluctuation amplitude

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
9.3	9.2	9.3	10.8	11.8	12.5	13.5	13.5	13.9	12.6	10.2	9.5
20.4	19.7	19.1	19.4	20.1	18.7	20.7	20.7	20.5	20.5	19.8	17.8

Table 6. Total solar radiation (direct and diffuse) covering on a horizontal surface under cloudless skies for each month of the year, mJ/m²

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
312	409	633	752	890	896	896	797	648	503	351	288	7369

Table 7. Total solar radiation (direct and diffuse) covering on a vertical surface under cloudless skies for each month of the year, mJ/m²

Orientation	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
C/N	-	-	-	117	165	195	213	135	-	-	-	-
CB/NE	-	-	188	257	322	344	325	280	214	173	-	-
B/E	233	271	389	432	472	462	453	442	378	336	237	209
ЮB/SE	511	482	546	489	449	404	395	458	475	524	472	453
Ю/S	687	618	619	450	331	258	293	387	440	612	636	651
ЮЗ/SW	511	482	546	489	449	404	395	458	475	524	472	453
З/W	233	271	389	432	472	462	453	442	378	336	237	209
СЗ/NW	-	-	188	257	322	344	325	280	214	173	-	-

The Maximum depth of penetration of zero isotherm under natural snow cover - 65 cm.

5.1.2. Geo-Engineering conditions

The reinforced concrete head water intake structure (HWS) and canals “Kochkor-Ata (right-bank) and «Otuz-Adyr» «(left-bank)” are located in the r. «Kurshab-Sai» 11 km south of the bridge on highway “Karasu-Uzgen”, at an absolute elevation of 1039.85 m.

Alluvial deposits of the r. «Kurshab-Sai» valley in the lower reaches of the water intake structure were explored by pits No. 1-3 at depth - 3.0 m.

The current alluvium is represented by pebble soil with more than 10% boulders and gravel-sand filler.

The fractional composition of pebble soil, the inclusion of boulders (larger than 200 m) increases from north to south (upstream) from 12.21 to 15.89%, pebbles (200-10 mm) - 66.15-69.6%, coarse gravel (10-5 mm) - 4.63-5.55%, filler (smaller than 5 mm) - 14.49-16.09%. The average diameter of the detrital material is 78-80 mm. The heterogeneity coefficient - 81.7-100. The petrographic

composition of alluvial pebbles is represented by limestones, sandstones, shales, including siliceous-carbonaceous, less often igneous rocks.
The natural density of modern alluvium - 2.13-2.18 g/cm³ with the natural moisture content of 4.78-7.49%. The bulk density of the soil skeleton - 2.02-2.03 g/cm³. The bulk density of loose (bulk) pebbles - 1.93-2.01 g/cm³, the loosening coefficient - 1.08-1.10.
The deposits of the River valley "«Kurshab»" can be used as an engineering filler for concrete. According to the difficulty of manual development, they belong to group IV. Within the explored area, groundwater occurs at depth - 0.59-0.93 m.
The lithological section from the surface is represented by brown sandy loam, hard, with plant roots and gravel inclusions up to 20%.
The thickness of the cover layer is equal to 0.1-0.2 m.
Deeper are pebble soils with boulder inclusions up to 5%.
The fractional composition of pebbles (Table 2, pit 4) in the interval of 0.5-4.7 m:

- boulders (larger than 200 mm) – 3.37%,
- pebbles (200-10 mm) – 79.86%,
- large gravel (10-5 mm) – 5.69%,
- filler (smaller than 5 mm) – 11.08%.

The filler contains uneven-grained sand and clay particles (from depth - 0.7-1.7 m), which are in a plastic state, since from depth - 0.9-1.2 the soils are wet.
In the intervals - 1.0-1.2 and 0.8-1.0 m, carbonate-clay cementation is observed.
Along the axis of designed flushing sluice (PK 6+03.5) there are pebbles. According to the difficulty of manual development, the soils that make up the canal "«Otuz-Adyr»" bed in the explored area belong to group III.

5.1.3. Soils[7]

The diversity of natural conditions and landscape has defined the development of following soil types and subtypes within the territory of Kara-Suu rayon, Osh oblast:

1. Mountain-valley sierozems typical, Turanian;
2. Mountain-valley dark sierozems;
3. Mountain gray-brown light;
4. Mountain gray-brown dark;
5. Mountain brown typical;
6. Mountain brown dark;
7. Intrazonal soils.

In the research region, mainly old-irrigated ordinary sierozems, Turanian, are widespread. They are formed in arid climate conditions, where the average annual precipitation - 386 mm, and evaporation

[7] Kazakanov T. J. Investigation of the soil–reclamation condition of lands and ways of their reclamation improvement (on the example of the Kara-Sui district of the Osh region)

- 1850 mm, with moisture coefficient - 0.25. They are formed on carbonate loess-like loams and have thick anthropogenic agro-irrigation layer (1.0-1.5 m).
Due to the aridity of the climate, Turanian sierozems belong to the soils of desert-steppe type of soil formation.
In spring, physicochemical weathering occurs according to the siallitic type and is accompanied by enrichment with silica, leaching of carbonates, removal of easily soluble salts into the lower horizons of the soil, with a weak accumulation of sesquioxides, i.e. weak claying
In hot and dry summer months, soil processes in unplowed virgin areas are fading and mineralized groundwater is makes its way to the surface of earth through soil capillaries, which contributes to the salinization of the upper soil horizons, and activates the processes of gypsum and carbonate formation in soils.
Thus, the formation of carbonate minerals (gypsum and carbonates) prevents the active formation of sodium carbonate (soda) and the soil alkalinization process occurrence.
In cultivated, irrigated arable land, there is always increased moisture created by regular irrigation, and when irrigation and groundwater merge, mineralized groundwater is intensively wedging out to the surface.
Currently, influenced by infiltration water losses from irrigation structures (the main canals "«Otuz-Adyr», Savay, Yuzhny"), which are located higher up the mountainous relief, there is a sharp increase in pressure and a rise in the level of mineralized groundwater. Under their influence, massive water logging and salinization of cultivated lands is observed. The combination of natural and anthropogenic causes, arising from the geomorphological and climatic conditions of Fergana Valley (high summer temperatures, high evaporation, shallow occurrence of mineralized groundwater, lack of natural drainage), and the impact of irrigation structures, determine the widespread development of hydromorphic salinization processes
In all types of hydromorphic soil salinization, SO4 anions clearly predominate, and among the accumulated salts, the bulk is made up of sulfuric acid salts - CaSO4 (gypsum), NaSO4 and MgSO4. In the upper layer (0-24 cm) of highly saline sierozems, 21.37 t/ha of salts accumulate, which necessitates the radical melioration, i.e. the (re)construction of a collector-drainage system, washing-off salts, and rehabilitation of soil fertility with introduction of organic fertilizers, and sowing of alfalfa, including introduction of the crop rotations.

5.1.4. Topography

Osh oblast occupies the territory of Alai, the northern slopes of Trans-Alai, and the southeastern part of Fergana ridges, which are the eastern frame of Fergana Depression. The Alai mountain system has an almost latitudinal extension and is characterized by a relatively gentle northern slope, complicated by a series of sharply expressed foothill ridges; the southern slope - facing the highly elevated Alai Depression, is relatively short and steep.
The northern slopes of the Zaalai Ridge belong to the high-mountain zone with absolute marks from 2200 to 7134 m (Lenin Peak). The south-eastern part of Fergana Ridge is characterized by a well-defined zonal relief structure. The Fergana Depression, which is part of the Osh oblast with its eastern part, is a flat part with absolute marks of 800-1000 m, followed by a zone of adyrs (up to 1500 m), then a zone of high foothills and front ridges (up to 2000 m) and, finally, a high-mountain zone (up to 3500-5000 m). Such a relief structure, in turn, generates vertical climatic and, in general, physical and geographical zonality. Among the mountain systems there are small depressions of tectonic origin: Karavan-Kok-Zharskaya, Nookatskaya, flat areas of the Osh-Kara-Suu oasis, Uzgen «Kurshab»skaya trough. The Alai Valley is located between the Alai and Zaalai ridges, stretches in

the latitudinal direction and at length about 130 km, width of 3 - 27 km, occupies the main part of the Kyzyl-Suu river basin area. Kara-Suu rayon occupies the Osh-Kara-Suu oasis, the northern spurs of Alai ridge and partly the adyr zone of Kichik-Alai ridge. The altitude marks of the oasis vary from 800 - 1200 m. The relief of rayon, in the northern part, is flat (22%), which is replaced in the southern direction by the adyr zone (20%), higher up are the mid-mountain and high-mountain zones. Mountain and foothill zones occupy 78% of the rayon's territory and 22% are flat areas.

5.1.5. Air quality and noise

The release of pollutants into the atmosphere depends mainly on the economic condition of the industries that have the greatest impact on the environment. The main sources of air pollution in the Kyrgyz Republic are the energy, mining and processing industries, (re)construction materials, utilities, private sector, and motor transport. There are no industrial enterprises near the project site. The main source of impact is motor transport. There is no regular air quality measurement directly at the (re)construction site of planned work. The nearest stationary air quality monitoring post is located in Osh. Due to absence of industrial enterprises near the irrigation canals, the noise level is caused by motor vehicle traffic and does not exceed the maximum permissible level (MPL).

5.1.6. Hydrology of r. «Kurshab»-Sai"

The "«Kurshab»-Sai" river is the last left tributary of the "Kara-Darya" river. It occupies the second largest catchment area in Fergana Valley. In the upper reaches, the river is called "Gulcha". The basin of its upper part for 35-40 km directly adjoins to the main ridge of Alai ridge, where the latter has a relatively low altitude, about 3700 - 4100 m, and only in some areas rises to 4500-4700 m. In its length from the source to the estuary, about 40 tributaries inflow into the river. The river originates from the northern slope of Alai ridge, natural landmark "Agachart" with absolute mark - 4267 m. It belongs to the category of snow-glacier fed rivers. The total length of river - 155 km with average catchment altitude - 3010 m, and area -2010 km² in the "Gulcha" v., and 3240 km2 in the "Kochkor-Ata" v.

Average long-term discharges during the low-water period - 10-23.7 m³/sec. The speed and depth of the flow in the river from low-water to flood vary within 1.5-5 m/sec and 0.4-1.7 m. The high-mountain catchment area of the basin receives quite a lot of precipitation 600-1000 mm per annum. The river basin deviates significantly from the general trend of increasing the degree of glaciation. This is explained by the fact that in the basin of this river the area located above the snow line occupies only 0.5-5.5% of the total catchment area, whereas in the basins of other rivers with the same height of the snow line (about 4200 m) - 8-20% are above its level. The area of glaciation is 10.3 km². The number of glaciers per degree of glaciation in the catchment - 0.67%. In the upper reaches there are also 7 lakes with total area - 0.9 km².

Atmospheric processes covering the large area of Central Asia have a significant impact on the formation of basin's climate. Cold air intrusions are observed in the rearward of cyclones from the west and north, but due to their small power they do not affect the general background in the mountainous regions. When clear anticyclonic weather sets in, a significant decrease in temperature is observed, especially in closed valleys and depressions. Anticyclonic weather is often observed in the warm period of the year, creating an elevated temperature background. In summer, a decrease in temperature with altitude is observed inside the mountain ranges, and in winter such a pattern is not observed. The annual flow rate of the r. «Kurshab-Sai», in the section of the water intake dam, was adopted based on observations at the gauging station "Kochkor-Ata" for the period 1928-47 and with

consideration of a long-term period using observations at the gauging station “Gulcha” of the r. «Kurshab-Sai», located 46 km upstream of the dam.

Table 8. Estimated annual water flow of the r. «Kurshab-Sai», gauging station “Kochkor-Ata” (dam)

F, km^2	H_{av}, m	Q_{av}, m^3/s	C_v	C_s	Estimated flow, m^3/s		
					50	75	90
3240	2700	26.2	0.25	3 C_v	25.4	21.5	18.6

Table 9. Average, largest and smallest monthly water flow of the r. «Kurshab-Sai», “Kochkor-Ata” village, based on actual observations (m^3/s)

Water content	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annum average
Average	11.4	11.2	12.4	20.4	47.3	58.6	45.3	28.8	19.4	16.2	15.3	12.6	25.6
Most	14.8	14.9	16.6	39.9	133.0	103.0	73.1	42.7	25.5	19.6	19.9	16.1	-
Least	8.65	8.37	8.92	10.0	25.0	30.1	26.3	17.5	13.5	9.74	10.7	9.35	-

Table 10. Intra-annual distribution of runoff by real years

year	Water content, %													
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Ave, flow m^3/s
1934	50	8.65	9.49	10.3	(18.2)	(41.1)	(66.6)	48.1	38.8	23.4	17.0	15.1	13.5	(25.9)
1932	75	11.6	11.8	12.1	14.0	40.8	52.2	39.6	24.5	19.0	17.7	13.9	11.5	22.4
1940	90	9.38	8.37	9.34	10.4	25.0	43.6	26.6	20.9	14.7	13.8	13.8	11.2	17.3

Maximum water flow. Maximum water flow on the r. «Kurshab-Sai» is observed during the flood period in May-June, when seasonal high-mountain snow in the river basin melts most intensively.

The average date of passing the maximum is 7/VI. In rare years, the annual maximums can be in April (7/VI-1979) and July (3/VII-1944). The highest maximum, equal to 197 m^3/s, was noted on 18/5 1936. 18/V. Significant discharges equal to 192,178,171 and 170 m^3/s were observed, respectively, in 1983, 1990, 1979 and 1992. The average maximum discharge for the observation period (n=32 years) - 96.3 m^3/s. The estimated maximum water discharges were calculated using the maximum likelihood method.

Table 11. Estimated maximum water flow rates of the r. «Kurshab-Sai», “Kochkor-Ata” v.

F, km^2	H_{av}, m	Q_{av}, m^3/s	C_v	C_s	Estimated flow, m^3/s			
					1	3	5	10
3240	2700	96.3	0,51	5 C_v	272	212	185	155

Since the gauging station “Kochkor-Ata” is located below the water intake dam, the estimated flows given were increased by the maximum monthly water intake by the canals “«Otuz-Adyr»” and

"Kochkor-Ata" during floods over the past 5 years, equal to 25.0 m³/s. The resulting water flow should be taken into account for further calculations.

5.1.7. Sediments load

The Observations of suspended sediment runoff on the r. «Kurshab-Sai», were conducted from 1976 to 1992. The average long-term suspended sediment runoff - 8.24 kg/s, the maximum - 19 kg/s, which corresponds to 220x103 m³/year. The main suspended sediment runoff occurs in the period III-VI, up to 80% of the annual runoff.

Table 12. Estimated volumes of suspended sediment from the r. «Kurshab-Sai», "Kochkor-Ata" v.

F, km^2	W_{av}, m^3x10^3	C_v	C_s	Estimated volumes W, m^3x10^3			
				1%	5%	20%	50%
	220	0,76	3 C_v	817	531	375	173

Table 13. Average monthly turbidity in typical years of the r. «Kurshab-Sai», "Kochkor-Ata" v.

Year	Flow specs	Month												Annum average
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1983	Max	7,1	8,3	45,0	1270	3150	1250	641	235	9	12	1,0	1,0	1180
1988	Average	10	63	180	870	1800	920	430	630	150	30	160	54	660

Table 14. Granulometric composition of suspended sediments

Regime phase	Sediments specs	Number of measurements	Particle content (% by weight) diameter, mm					
			1-0.5	0.5-0.2	0.2-0.1	0.1-0.05	0.05-0.01	0.01-0.005 (<0.01)
Annum	Large	45	11.9	22.2	18.2	22.2	25.5	
	Average		4.7	11.1	12.4	9.6	62.2	
	Small		0.1	0.1	2.0	2.0	19.1	78.5

The flow of traction sediments has not been studied. According to the dependence of the latter on the river slope, it can be taken as 20% of the flow of suspended sediments, equal to 44x103m³. In high-water years, due to the high coefficient of variation of solid runoff, it can be 4-5 times higher than the given average value.

5.2. Specially Protected Natural Territories (SPNT)

In Uzgen rayon, Osh oblast there is the natural park "Kara-Shoro", which was established by the Decree of the Government of the Kyrgyz Republic, dated 08.02.1996 № 353 to preserve the unique natural complex of spruce forests, natural source of mineral waters with total area -14,340.2 hectares. The (re)construction sites are located outside the natural park, therefore, the SPNT will not be affected.

5.2.1. Flora of the project area [8]

The nature of vegetation layer varies depending on the altitude of the area, soil cover, slope exposure, and the degree of their moisture by precipitation. The main flora of the vertical zones characteristic of a given territory is: 1) desert, 2) steppe, mountain meadow, 3) alpine and subalpine, 4) forests, sparse forests, and shrubs, 5) rocky ridges, screes, moraines, snowfields with rare flora and (6) woody, and shrubby vegetation, on agricultural, and arable lands. Deserts are widespread mainly in the foothill zone and occupy vast areas, which are characterized by ephemerals, wormwoods, steppes are characterized by drought-resistant species of various cereals and some spring-autumn ephemerals. Mountain meadows, subalpine and alpine flora are mainly represented by mesophytes: narrow-leaved bluegrass, basilisk, northern bedstraw, bluegrass, various species of cobresia, sedges, caraganas, low-growing juniper shrubs. Forests, sparse forests and shrubs are found in separate small areas, groves: spruce, spruce-fir, juniper and nut-bearing. Rocky areas of ridges and slopes, screes and modern moraines in the area of glaciers have sparse vegetation in the form of individual specimens of alpine grasses, cushion-shaped plants - mountain ash, chorispora, etc. Cultivated lands: arable lands, gardens, vegetable gardens are widespread mainly in the flat, foothill part of the territory, as well as in high-mountain valleys and depressions.

5.2.2. Fauna of the project area [9]

The landscape features of the region have determined a great diversity of the animal world. The region is home to: voles, jerboas, gerbils, gophers, marmots, hamsters, tolai-hares, badgers and porcupines. Predators include: weasels, ermines, stone martens, snow leopards, lynxes, wolves, foxes and bears; ungulates include: roe deer, mountain goats, argali and wild boars. Bird species include: bearded vultures, mountain finches, alpine choughs, juniper grosbeaks, painted titmice, rock sparrows, Tien Shan woodpeckers, nutcrackers, long-eared owls, and redstarts. The previously exterminated pheasants and bearded partridges have been reacclimatized. The subproject area is located in the zone of active anthropogenic activity, which leads to the presence of synanthropic animals. There are no species of plants and animals listed in the Red Book of the Kyrgyz Republic in this area.

[8] Plan for the development, use and protection of water resources in the Karadarya-Syrdarya-Amu Darya basin, National Water Resources Management Project F2, 2020

[9] internet resources: http://www.kirghiz.ru/enc/administrativnoe_delenie_786/oshskaya_oblast_804/zhivotnyy_mir_812/index.htm

5.3. Socio-economic conditions of the project area

5.3.1. Population

The number of permanent populations according to the National Statistical Committee of the Kyrgyz Republic data as of January 1, 2024 is 488.2 th.people. Population of the Kara-Suu rayon is 28,4 th.people, in total 516,6 th.people.

5.3.2. General characteristics of Kara-Suu rayon of Osh oblast

Kara-Suu rayon established in October 28, 1935. The rayon area – 2589,32 km². Kara-Suu rayon is a territory partially surrounded by the northern ridges of the Alai and Kichi-Alai ranges. The altitude of the rayon varies from 800 to 1200 meters, the relief in the northern part of the district is flat (22%), in the southern direction there is a hilly zone (20%), in the upper part there is a mid-mountain and high-mountain region. Mountainous and foothill zones occupy 78% of the rayon's territory, flat - 22%. Altitude of the rayon is 720-2400 meter above sea level.

The climate of the rayon depends on the altitude, summer is bright, plain, winter is moderately cold in the foothills of the rayon. In January, the air temperature in the plains is -3.3C, in the mountains - 6.9C. The average annual air temperature is 12.1C. Precipitation falls unevenly and amounts to 300-500 mm. The summer season lasts 200-225 days.

Rayon center is Kara-Suu. The main canal Sharakansay located near the Kara-Suu rayon center passes along state border with Uzbekistan.

The territory of the rayon stretches from north to south in the central part of the region, and is located within the eastern outskirts of the Fergana Valley and in the mountain spurs of the Alai range.

The district has the greatest weight in the economy of the region compared to other districts. The district center has the largest wholesale and retail market in the Fergana Valley, which is called Kara-Suu.

The border position has led to strong interaction between Uzbeks and Kyrgyz, who have long conducted joint trade. As a result, there is a large Uzbek population near the state border.

There are 60,953 households in the rayon. Near the rayon center there is an international road checkpoint Dostuk. There are 137 rural residential area belonging to the 10 aiyl aimaks.

5.3.3. Waterways

The main waterways are the middle and lower reaches of the Ak-Buura River, the lower reaches of «Kurshab» and Taldyk rivers. The Papan reservoir and the southern part of the Andijan reservoir are located on the territory.

9 WUAs are commanded under «Otuz-Adyr» main canal - «Kurshab» irrigation and drainage system, according to the WUA database for 2020[10]. Table 3 with the data on WUAs, irrigated area, service areas and Table 4 with data on WUAs members.

10 WUA report – I&D system – Levaya Vetka Canal, AF NWRMP, Bishkek 2021.

Table 15. WUA service area

WUA name	Size of irrigable area (ha)	Number of zones	Planned irrigated area		Actual irrigated area	
			Size (ha)	% irrigable area	Size (ha)	% irrigable area
Zhar-Ooz	485	12	485	100%	485	100%
Maz-Aikal	1.830	46	1.830	100%	1.830	100%
Sultan-Naz	4.412	110	4.412	100%	4.412	100%
Mongu-Suu	2.137	53	2.137	100%	2.137	100%
Vorukh-Ali	1.731	43	1.731	100%	1.731	100%
Zhany-Turmush	2.404	60	2.404	100%	2.404	100%
Ene-Say	1.281	32	1.281	100%	1.281	100%
Uchkun-Akkozu	220	6	220	100%	220	100%
Bayel-Asl	315	8	315	100%	315	100%
T. Arzykulov	550	14	550	100%	550	100%
Total	**15.365**		**15.365**		**15.365**	

Table 16. WUA members

WUA name	Individual Farmers		Peasant Farmers	Collective Farm Unit
	Total	Female		
Zhar-Ooz	1 377	119	0	0
Maz-Aikal	546	82	0	0
Sultan-Naz	121	19	0	0
Mongu-Suu	175	23	0	0
Vorukh-Ali	358	54	0	0
Zhany-Turmush	235	49	0	0
Ene-Say	1 058	159	0	0
Uchkun-Akkozu	1 714	136	0	0
Bayel-Asl	255	16	0	0
T. Arzykulov	924	59	0	0
Total	6 763	716		

There are 60,953 households in the area. The Bishkek-Osh, Osh-Khorog, Osh-Uzgen, Osh-Nookat, Osh-Aravan international and national highways and the Kara-Suu–Jalal-Abad railway pass through the territory of the rayon. There is also the airport in c. Osh within the rayon territory.

5.3.4. Water use

Total volume of water intake is about 2.50 km^3, including 0.70 km^3 in Karadarya basin, 1.61 km^3 in left-bank tributaries of the river Syrdarya, and 0.05 km^3 of water intake from the r. Kyzylsu.

The highest level of wateruse is observed from left-bank tributaries of the r. Syrdarya, which has reached almost 50% of the river runoff. Out of the total amount of water resources taken 94% are used for irrigation, 5% for household and drinking needs and 1% for production.,

The irrigated lands area of KSAb is 260.4 th.ha, of which 244.8 th.ha are in good condition, 6.88 th.ha are in satisfactory condition and 8.78 th.ha are in unsatisfactory condition. Thus, 3% of irrigated lands are in unsatisfactory condition. At the same time, the largest areas of poor condition irrigated lands are located in Osh oblast and Suzak rayon of Jalal-Abad oblast.

An arid climate of the concerned territory and especially in valley areas, determines a development of agricultural production under artificial irrigation condition. The valleys of the KSA basin rivers in plain zone are ancient centers of irrigation. A network of irrigation canals, hydraulic structures, reservoirs, pumping stations, etc. was built on considered territory. About 65% of irrigation canals of the basin are in satisfactory condition, the rest require major and routine repairs.

5.3.5. Water supply and sanitation

The level of sustainable access of the KR population to safe drinking water has reached 92%, but the same indicator in Osh and Batken oblasts is only 77% on average over the past five years.

Due to lack of water supply networks, open water and water management facilities are used for drinking in rural areas, which are not disinfected, and leads to a high level of gastrointestinal diseases, hepatitis C. Condition of the water treatment facilities is deteriorating, as a result, most of the piped water does not undergo regulatory treatment. Percentage of housing stock's equipping with water pipes in Batken and Osh oblasts remains one of the lowest in the Republic.

The level of samples that do not meet the requirements of the Kyrgyz Republic Law on "Technical Regulations on safety of drinking water is high in Jalal-Abad oblast – up to 28.3%, in Osh – up to 17.6% and in Batken -6%.

A proportion of population with stable access to sewage is only 0.5- 9.1%, which is 3.5-6.3 times lower than the national indicator. The volume of wastewater passing through a sewage system is very low, in recent years there has been a decrease in the Jalal-Abad and Batken oblasts.

In a number of rayon centers, there are no sewage treatment plants and sewage systems at all and wastewater is discharged into terrain depressions, rivers, drainage canals or storage pits, septic tanks built without compliance with environmental legislation, which leads to pollution of the air basin, surface and groundwater.

Only 20 treatment facilities are working satisfactorily out of 43 existing. The problem is a lack of accounting and control of wastewater discharges into storage facilities, diversion and use of mine water, agricultural activities, both from livestock and irrigation.

5.3.6. Industry

There is extraction of minerals, industrial production processing, mainly food products, are concentrated in KSA basin. Mineral resources of the rayon are gold, silver, copper, iron, mercury, fluorite, tin, wolfram, bismuth, lead, antimony, zinc, arsenic, molybdenum and etc.

5.3.7. Agriculture

More than 60% of the Kyrgyz Republic's population, living in rural areas, directly depends on the use of natural resources as a source of livelihood and strongly impact on them. The main natural resource is mountain pastures, which is 40% of the country's territory and 85% of agricultural land.

A crop production share in the region in the national volume of gross output is 23.0-25.0% and livestock 28.0-29.0%. In recent years, there has been an increase in production volumes of crop production sector in Osh and Jalal-Abad oblasts. There is a steady increase in a number of bovine (8%), horses (9%) and goats and sheep (4%).

Area of agricultural lands is 132095 ha, out of them irrigated area – 25523,74 ha, dry lands – 15375,6 ha, gardens – 2366 ha, perennials lands – 9474 ha, pastures – 69620,8 ha and unused lands – 292 ha.

The cultivated crops in rayon are wheat – 9564 ha, barley – 7650 ha, maize – 11105 ha, rice – 103 ha, sugar beet – 347 ha, potato – 1528 ha, cotton – 5191 ha, orchards – 1257 ha, vegetables – 3629,62 ha, perennials – 8255 ha, fruits and vegetables – 2442 ha and grapes – 500 ha.

About 30% of rural residents are forest users and make their living on forest resources. The expanding population broadens the boundaries of a residential area in the forests' zones causing deforestation, and a number of livestock.

5.3.8. Education and Literacy

There are 137 schools in the Kara-Suu rayon, of which 127 are state and 10 are private schools. The total number of students is 87822, teachers - 6404. The number of kindergartens is 126.

5.3.9. Health services

There is 1 family medicine center, 28 groups of family doctors, 65 paramedic-midwifery centers, 1 rayon hospital, 1 rayon children's hospital, Nariman rayon hospital, dental polyclinic, anti-tuberculosis hospital, sanitary-epidemiological supervision center, 7 points of emergency medical care.

5.3.10. Land uses

Area of agricultural lands is 132095 ha, out of them irrigated area – 25523,74 ha, dry lands – 15375,6 ha, gardens – 2366 ha, perennials lands – 9474 ha, pastures – 69620,8 ha and unused lands – 292 ha.

CHAPTER SIX: IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS

The project is expected to have positive impacts as the implementation of the project activities (i) improved access to services, (ii) strengthened institutional capacity to provide climate resilient irrigation services and water management, will generally contribute to improved livelihoods and food security in the project area.

6.1. Environmental Risks and Impacts

The works to be undertaken involve the construction and modernization of existing irrigation and drainage systems.

During the construction phase, the following risks will be observed:

a) Clearing of woody and shrub vegetation during the rehabilitation of irrigation infrastructure;
(b) Emission of air pollutants during excavation works, from construction equipment;
(c) Generation of construction waste (hazardous and non-hazardous);
(d) Noise and vibrations from traffic and machinery;
(e) Possible soil erosion and hence sedimentation in water bodies,
(f) Associated risks due to improper disposal of construction debris and potential asbestos-containing materials that may be discovered during the course of the works,
(g) Operational or accidental spills of fuels and lubricants from construction equipment;
(h) Health, safety, and security issues related to the conduct of the work;
(i) Public health and safety;
(j) Poor quality restoration of construction sites after completion of the works.

These potential adverse environmental impacts are easily identifiable and can be effectively avoided, minimized, or mitigated. The EMP proposes management and mitigation measures and implementation mechanisms relevant to all investment activities to be identified during project implementation.

6.1.1. Climate Impacts

Irrigation systems rehabilitation will improve water management in farming and logistics practices, land tenure to enhance productivity, climate change adaptation of the agriculture and sustainable use of natural resources.

6.1.2. Impacts on biodiversity

Tree Felling/Cutting Down. In the process of canal rehabilitation, it is necessary to remove trees that hinder the works and are located in the right-of-way of water management facilities. According to the requirements of the Water Code of the Kyrgyz Republic, article 80, paragraph 3, during repair and rehabilitation works, cutting of shrub vegetation and forest plantations within the right-of-way of water management facilities and canals, as well as sanitary cutting and cutting of deadwood does not require permission from specially authorized state bodies.

If the works are to be carried out in areas not belonging to the right-of-way of water management facilities, cutting of woody and shrubby vegetation shall be carried out in accordance with a permit issued by a specially authorized environmental protection authority.

Prior to commencement of construction works, an inventory of the growing vegetation will be made, and an Act will be drawn up, which will be submitted to the territorial environmental protection authority for approval. The cutting of trees will consider compensation measures of cut green spaces in the ratio of 1:3 of at least of 5-6 years old saplings.

Movement and storage of construction materials, removal of surplus land may affect the natural habitat. To minimize potential risks, mitigation measures are presented in the EMP.

Natural habitat in the vicinity of the proposed activity will not be damaged or utilized, all personnel will be strictly prohibited from hunting on animals and birds, gathering of herbs, logging of timber, or other harmful activities. Adjacent wetlands and streams shall be protected from construction site runoff by appropriate erosion and sediment controls. Adjacent areas, especially in the landscape protection zone, shall be free of unlicensed quarries, pits, and landfills.

6.1.3. Soil and groundwater contamination

As a result of fuel and lubricant leaks from construction machinery and equipment and improper waste storage, petroleum products and chemicals can contaminate soil, seep into groundwater or enter surface waterbodies. Servicing equipment and machinery near natural waterways can lead to water pollution. The use of hazardous materials and pesticides during both construction and operation and maintenance of facilities will affect soil and water quality. If temporary developer camps are established at the construction site, sanitary facilities constructed in these camps, as well as equipment cleaning, material storage, and spills could result in contamination of soil and ground, surface waters. Inadequate management and operation of sanitation facilities may result in contamination of river and groundwater. In the event of an accidental spill, immediate cleanup will be undertaken. All fuels, lubricants and cleaning materials shall be stored on graveled ground and in impermeable pallets on site.

6.1.4. Air Pollution

Air pollution will be associated with dust emissions from (1) excavation activities, (2) transportation of construction materials and waste, and (3) exhaust emissions from vehicle and equipment operations. The risk of dust pollution will increase in dry and windy weather. When construction works are carried out in the vicinity of settlements and residential areas, the population will be affected.

Given the nature of most of the works, these impacts are expected to be short-term, low risk and can be mitigated by measures recommended in the EMP (Table 4). Dust generation at the rehabilitation site in dry seasons can be minimized by watering the ground, while in hot seasons, it is necessary to spray the roads along the excavated trenches at least four times a day.

Particular caution should be exercised in the event of exposure to toxic asbestos dust, which may occur during HWS renovations and other works that may contain asbestos (building slates, drinking water piping at HWS, if present, etc.).

Thus, proper measures to ensure safe removal and disposal of asbestos-containing pipes should be carried out in accordance with the requirements of the Kyrgyz Republic established by SanPiN 2.2.3.013-03 "Work with asbestos and asbestos-containing materials". (e.g. wetting ACMs before their removal and disposal in a licensed landfill). Personnel must wear protective masks. Adverse impacts can be prevented by applying good construction practices and appropriate mitigation measures. in strict compliance with the CR requirements set out in SanPiN 2.2.3.013-03 "Working with Asbestos and Asbestos Containing Materials".

6.1.5. Noise and vibration pollution

A strong increase in noise and vibration is expected during transportation of materials, operation of construction machinery, especially during excavation, pneumatic drilling and operation of construction cranes during the construction phase, and use of pumps/motors during installation works.

If works are carried out close to residential areas, noise and vibration will cause disturbance to local residents. Noise levels should not exceed the prescribed limits during project activities. Works will be carried out only during daylight hours from 8.00 to 18.00. Noise pollution can be mitigated using the recommended mitigation measures in the ESMP. Given the specific nature of the project, vibration is not expected to affect human health as there will be no significant vibration generation activities. KR Government Resolution No. 201 dated 11.04.2016. Sanitary rules and norms "Noise at workplaces, in residential buildings, public buildings and residential premises" establish sanitary and epidemiological requirements, standardized parameters and maximum permissible noise levels at workplaces, noise classification, permissible noise levels in the premises of designed, under construction, reconstructed and operated residential and public buildings and in residential areas.

6.1.6. Waste management

In the course of works, construction and domestic wastes will be generated. During construction of irrigation canals, all types of waste may be generated, including hazardous waste containing asbestos. Construction waste will be removed in a timely manner and properly disposed of in designated areas at landfills authorized by local authorities. Non-hazardous construction waste will be disposed of in authorized landfills, which are available in all municipalities of Kara-Suu and Uzgen districts.

Secondary waste such as wood, paper, used fuel and lubricants will be recycled (paper and fuel and lubricants, wood will be used by the population for household needs.
Solid waste collection containers will be installed at the construction camp.
Construction debris and municipal solid waste will be temporarily stored at the construction site and properly disposed of at designated sites at local permitted landfills.

Hazardous waste will be removed and disposed of according to safety requirements to avoid further health impacts to workers and surrounding communities. The ESMP presents measures to mitigate the environmental impacts of construction and domestic waste.
For asbestos-containing waste, an Asbestos Waste Management Plan will be developed. Sanitary norms and rules No. 2.2.3.013-03 "Work with asbestos and asbestos-containing materials" shall be observed when handling asbestos-containing waste. Asbestos-containing materials shall be disposed of in authorized landfills.

6.1.7. Management of asbestos-containing waste

Asbestos cement waste and materials can be in the form of slate covering the roof of a building and possibly asbestos cement pipes or parts thereof.

Risk in handling asbestos

Asbestos is a naturally occurring fibrous material that has been widely used in buildings and other infrastructure in the 20th century because of its strength and resistance to fire and heat. Asbestos is commonly used in corrugated roofing sheets and asbestos cement pipes.

All types of asbestos fibers have risks to human health. Generally, a major risk occurs when working directly with asbestos or when asbestos-containing material fractures occur, such as broken edges of asbestos cement pipes or broken roofing sheets. Therefore, certain precautions are required.

The most likely risk in the project is possible in the removal and transportation of waste roof slate and possibly asbestos cement pipes or parts thereof, which will be handed over by the Contractor for disposal. Personnel who will be involved in the disposal of ACM will be at risk of asbestos exposure.

The World Bank Guidelines for the Management of Asbestos and Asbestos Containing Materials state that the repair or removal and disposal of asbestos-containing materials should only be carried out by specially trained personnel.

- In accordance with Kyrgyz Republic Government Resolution No. 885 "On the Management of Hazardous Waste in the Kyrgyz Republic, dated December 28, 2015," asbestos-containing waste must be disposed of as follows:The process of hazardous waste management (waste life cycle) consists of the following stages: generation, accumulation (collection, temporary storage, stockpiling), transportation, neutralization, recycling, reuse of recycled products and disposal/disposal.
- If asbestos is present on a construction site, it should be clearly labeled as a hazardous material. Asbestos-containing materials should not be cut or demolished as this will generate dust. During renovation, all workers should avoid crushing/demolition of asbestos-containing waste, store such waste in designated locations on the construction site, and properly dispose of it afterward in a designated location or landfill.
- When asbestos-containing waste is to be temporarily stored at a location/construction site, it should be properly placed in sealed containers and appropriately labeled as hazardous material. Precautions should be taken to prevent unauthorized removal of such waste from the location/construction site.

Safety requirements for working with asbestos-containing materials

When asbestos is present on a project site, it must be clearly labeled as a hazardous material. Asbestos-containing materials should not be cut or disturbed as this will result in dust generation. During renovation, all workers should avoid crushing/disturbing waste containing asbestos, store such waste in designated areas within the construction site, and dispose of it properly at a designated location or disposal site.

If asbestos-containing waste is to be temporarily stored on site, it should be properly contained in sealed containers, and appropriately labeled as hazardous material. Precautions shall be taken to prevent any unauthorized removal of such waste from the site.

All asbestos-containing materials should only be disposed of by qualified and experienced personnel. Personnel should wear appropriate personal protective equipment (masks, protective gloves and overalls). When handling asbestos waste, employees must wear special protective clothing, gloves and respirators. Before removing (if necessary) asbestos from an area, it should be treated with a wetting agent to minimize the release of asbestos dust. Removed asbestos should never be reused.

People not directly related to the work are prohibited in the work area.

- All those working in the production and use of asbestos must be informed about the health hazards of asbestos.
- All workers must be provided with personal protective equipment: respirators, helmets, goggles, protective footwear.
- When loading and unloading work with old roofing (slate), do not allow the use of hooks and other sharp devices to avoid destroying roofing sheets.
- Do not allow roofing sheets to be dropped from any height during roof dismantling and handling operations.
- If roofing sheets are destroyed during work, the resulting waste must be moistened to prevent dust generation.
- Small asbestos-cement waste should be collected in a container and stored in a closed form until removal from the construction site.
- Transportation of asbestos-cement materials to the place of their utilization or storage in vehicles should be carried out, excluding their fall and damage;
- In case of falling and destruction of asbestos-containing materials on their way to the place of utilization or storage, it is necessary to clear the territory from parts and remove them to the place of utilization or storage.
- After unloading at the landfill, asbestos-containing waste should be covered from above with a layer of earth not less than 2m.

6.1.8 Chance finds. Discoveries of historical value may be discovered during construction activities. To solve this problem, the ESMP presents measures for the "Chance finds".

6.2. Social Risks and Impacts

Based on the results of social screenings, several (re)construction areas were identified to be located within the allotment boundaries for the planned (re)construction work, and were identified with associated social risks related to resettlement.

Social risk areas identified on canal "«Otuz-Adyr»":

- on section from PK117+70 to PK119+50, the boundaries of drafted (re)construction works affect the land plots allotment and fences of four households. On PK119+00, the building of the old mill (currently a barn) is also subject to demolition;
- on PK124+00, light fences (tree branches, wire and mesh) installed on municipal land to restrict animal access to the cultivated agricultural plot are adjacent to the canal within the boundaries of drafted (re)construction works;
- on PK332+64, a canopy of a pumping unit for supplying water to the cultivated agricultural plot is affected by the subproject, close to the canal within the boundaries of drafted (re)construction works;
- On PK399+40 there is an old water wheel structure that is subject to dismantling. Rusty metal structures are not in use subject to dismantling.

In accordance with the World Bank ESS5, a Resettlement Plan (RP) must be prepared for the specified social risk areas.

Image 19. «Otuz-Adyr» canal section from PK117+70 to PK119+50

Image 20. «Otuz-Adyr» canal section at PK119+00

In some areas, there are isolated cases of light fencing near the canal (tree branches, wire and mesh). Local residents install these fences to restrict animal access to their areas and to protect green spaces and vegetable gardens from livestock.

Image 21. Pumping unit shed PK332+64 on the «Otuz-Adyr» canal

Image 22. Old water wheel on PK399+40 on canal «Otuz-Adyr»

The section of c-l “MKS” from PK8+00 to PK PK8+70 is located near a shopping mall. The owner reinforced the canal’s lining, and also concreted the adjacent area for installing a container and a light open canopy. The container and canopy are used to store a small amount of household items.

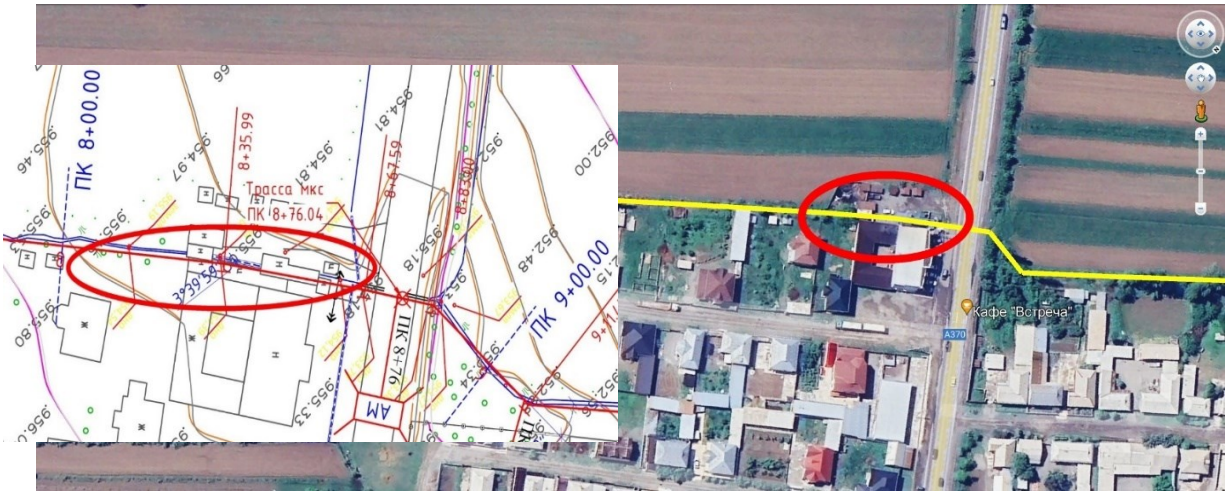


Image 23. “MK**S**” canal section from PK8+00 to PK PK8+70

Images 24 and 25. “MK**S**” canal section from PK8+00 to PK PK8+70

As the follow-up work stage, an additional survey of these areas was performed and the necessary measures were taken to minimize the impact under subproject.

On the section of canal «Otuz-Adyr» from PK117+70 to PK119+70, during the (re)(re)construction period, the profile of canal cross-section will be changed from trapezoidal to rectangular. This measure completely eliminates the impact on these objects.

Also, as part of minimizing the impact under this subproject, the following decisions were made:

- The light fences on PK124+00, installed on municipal land, adjacent to the canal within the boundaries of drafted (re)construction works, will be moved by the Contractor, and restored in agreement with the household. After completion of the construction work, the restored fences will be of the same or better quality than the previously existing ones, and they will be restored in consultation with the AHs.
- If necessary, a light small canopy for installing a pump and supplying water to the cultivated agricultural plot on PK332+64, during the (re)(re)construction works will be temporarily dismantled and upon completion of drafted works, restored in agreement with the household, and in accordance with the regulatory protection zone of canal.
- Dismantling of the metal structures of old water mill on PK399+40 is associated with certain costs and therefore the Owner did not have the opportunity to dismantle it for several years. Small-sized and efficient electric pumps have long been used to supply water for irrigation of agricultural plots. At the stage of subproject implementation, the metal structures of old irrigation mill will be dismantled by the Contractor, as an aid to the household. This aid needs to be documented in a written document signed by the AH.

The section of canal “MKS” from PK8+00 to PK PK8+70 has already been concrete lined and connected to the culvert through the Bishkek-Osh highway. No (re)(re)construction work is required on this section.

Possible social risks during Subproject implementation:

- Possible occupational injuries to the local population and workers;
- Involvement of people under the age of 18 in the work;
- Involvement of women in heavy work;

- Unauthorized access of the local population to the production sites;
- Public dissatisfaction due to disruption of existing communications;
- Public dissatisfaction due to disruption of habitual lifestyles;
- Actual delays in Subproject implementation, etc.

Table 177. Possible impacts on the social environment

Estimated impacts	(Re)construction phase	Operational phase
Public health and safety	Temporary minor impact/risks*	No impact
Household assets	No impact	No impact
Access to objects	Temporary minor impact/risks*	No impact
Children's safety during construction works	Temporary minor impact/risks*	No impact
Traffic safety	Temporary minor impact/risks*	No impact

* There are some potentially moderate social risks indicted in the Table 1, which project might be faced during the construction phase. See paragraph below.

In order to minimize social risks at the stage of (re)construction works, it is necessary to comply with measures to mitigate the impacts under the subproject. Measures to mitigate the impacts on the health and safety of the population are prepared in the ESMP. Measures to ensure working conditions and occupational safety are prepared in the Labor Management Plan (LMP). A Stakeholder Engagement Plan (SEP) has been prepared for consultations and complaint management.

The specified social risks are possible only at the stage of (re)construction works. Similar impacts under the subproject at the stage of operation are not expected.

Organizational measures. Prior to the commencement of (re)construction works, the local building inspectorate, environmental inspectorate and the public shall be informed of the forthcoming Project activities through the media and, in areas accessible to the public (including (re)construction sites), through disclosing the ESMP, LRMP, SEP and GRM. All activities required to implement environmental and social safeguards and monitoring measures shall be planned and budgeted in the work plans of the promoter, contractors and subcontractors. All work shall be carried out in a safe and disciplined manner that minimizes impacts on the public and the environment.

Child labor. Child and forced labor shall not be used in the sub-Project. The Contractor shall undertake to refrain from the use of child labor and forced labor and to take measures to prevent gender-based violence. The Consultant's staff responsible for supervision of the Contractor will monitor the Contractor's works and report on the monitoring to the PIU and the WB.

Women's labor in difficult and hazardous working conditions. It is prohibited to employ women in heavy work and work with harmful and/or dangerous working conditions. The list of industries, jobs, professions and positions with harmful and/or hazardous working conditions, in which the use of women's labor is prohibited, as well as the maximum permissible load standards for women when lifting and moving heavy objects, shall be approved in accordance with the procedure established by the Government of the Kyrgyz Republic.

Health and safety of (re)construction workers. The Contractor's personnel shall be provided with personal protective equipment (PPE), including protective clothing and footwear, safety helmets, safety goggles, safety harnesses, etc., as appropriate to the work to be performed. Workers must be

trained and instructed in health and safety rules before (re)construction begins. It is necessary to carry out continuous inspections of machinery and equipment in order to identify and eliminate malfunctions, to observe the periodic repair of equipment and to strictly comply with the applicable national regulations for the safe operation of machinery and equipment.

Minimizing community concerns. Local communities should be informed of the timing and extent of planned works. Information boards are placed near (re)construction sites in convenient and visible locations for the community.

Working hours should be strictly limited to daylight hours. (re)construction should be accompanied by special measures to prevent dust generation. Parking of (re)construction equipment should not block or restrict residents' access to their property and public areas or, if unavoidable, alternative locations and temporary access routes should be organized. Access roads and material and waste storage areas should be identified and clearly marked in the design of the works.

Where unanticipated impacts are identified during (re)construction, social due diligence shall include the following activities

(i) Immediate notification to the PIU of identified unanticipated impacts on households during (re)construction;

(ii) A team comprising the PIU, the Consultant and the Contractor will review the situation and relevant Project documents and consider options to stop the development of the identified unintended impacts, taking into account their minimization;

(iii) the consultant's engineers will prepare a plan to address the identified unintended impacts and agree it with the PIU.

1. Subsequent Subproject implementation measures will be taken based on an assessment of the magnitude of the identified unintended Subproject impacts. If unintended impacts of the Subproject on households cannot be avoided, a Corrective Action Plan (CAP) will be prepared. The CAP will be reviewed and approved by the PIU and the WB and published on their respective websites.

2. During the mobilization phase, the contractor will recruit labour from outside for more skilled trades. Skilled workers will be recruited on a competitive basis. Local residents will be given priority for employment opportunities if they meet the skill requirements.

3. Prior to the commencement of works, the PIU and the Consultant's specialists shall provide training to inform scientific and technical staff, workers and all interested parties about compliance with WB standards, including, but not limited to, the use of demonstration and illustrative material where possible.

4. All staff working on the Subproject must sign the Code of Conduct.

These social and environmental risks are grouped in the following table.

Table 188. Social and environmental risks during the project construction phase

Anticipated impacts	Construction phase
Health and safety of workers	Temporary minor impact/risks
Public health and safety	Temporary minor impact/risks
Households' property	No impact
Access to facilities	Temporary minor impact/risks
Children's safety during construction works	Temporary minor impact/risks
Traffic safety	Temporary minor impact/risks

Such potential environmental and social impacts can be effectively avoided, minimized or mitigated by including specific measures in civil contracts for implementation by contractors, with clear oversight and control by the PIU.

CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

7.1. Environmental and Social Management Plan

This section describes the potential impacts of proposed activities and their mitigation under subproject phase: design, (re)construction and operation.

The impacts are entirely grouped by environmental and social entities: physical environment, biological environment and social environment. Within these groups, the impacts are discussed by subjects such as: air, water, waste, health, population etc. Together with the related mitigation measures.

The potential impacts of the Project can be classified as:

- **Direct impacts** – i.e. impacts directly caused by the Project. The (re)construction location.
- **Indirect impacts** – i.e. impacts arising from activities caused by the Project but not directly related to it.
- **Cumulative impacts** – i.e. impacts in combination with other activities. The Project itself cannot have a significant impact on the environment.

Impacts in all three categories may be as follows:

- **Short-term** – i.e. impacts that occur during (re)construction and affect land use, air quality and other factors. However, many of these impacts will be short-term and will not have long-term consequences. Many potential short-term negative impacts can be avoided or otherwise mitigated through proper engineering design, and requirements for contractors to use environmentally sound (re)construction practices.
- **Long-term** – i.e. impacts that may, for example, affect regional land use and development patterns and regional hydrology. Long-term negative impacts may also result from the loss of agricultural land to other types of land use, and air and water pollution.

Both short-term and long-term impacts can be positive or negative. Short-term positive impacts will include, for example, the creation of employment opportunities during the (re)construction period. The project is expected to have a positive impact because the implementation of project activities will lead to: (i) improved access to services, (ii) strengthened institutional capacity to provide climate-resilient irrigation services, and water management, will generally contribute to improved livelihoods and food security in the subproject area.

The impacts expected to arise from the subproject activities are entirely positive, as the expected negative impacts are mostly short-term in nature and all impacts are easily manageable using available, well-tested mitigation measures.

The mitigation approach used for the subproject follows standard mitigation hierarchy practices: if the impact assessment identifies a potentially significant impact, then the subproject planning and design process takes steps in the following order:

(i) **Prevention:** Change the location, design or timing of an activity to avoid a confrontation.
(ii) **Minimization**: Change the location, design or timing of activities to reduce the severity of the impact to an acceptable level.
(iii) **Indemnity**: If follow-up impacts after mitigation are still significant, compensation should be arranged. Socio-economic compensation is often financial; environmental

compensation may involve, for example, habitat improvements elsewhere to compensate for habitat damaged under subproject.

7.1.1. Design/pre-(re)construction stage

During the planning and design stage of the subproject, a number of impacts were identified and mitigation measures were taken as outlined below. The following four actions are part of the normal subproject planning and design process, but require special attention due to their importance, both in identifying and preventing negative impacts, and in ensuring that all mitigation measures are effectively implemented:

(i) **Environmental and Social Impact Assessment**: The environmental assessment process was conducted in line with the assessment of social safeguards, and preparation of relevant social safeguards documents (SDDR), in particular the integrated social assessment report. In addition, the subproject requires approval under the normal procedures of the Kyrgyz Republic, which include the State Environmental Expertise (SEE). The comprehensive impact assessment process resulted in the preparation of comprehensive environmental and social management, and monitoring plans, which list the various practical actions to be taken to manage the environmental and social risks under the subproject.

(ii) **Redress Mechanism**: Subproject preparation involved the development of a grievance redress mechanism (GRM) as described in Section 7, and also in SDDR (Social Due Diligence Report).

(iii) **(Re)construction Related Requirements**: Subproject preparation involved the identification of various environmental and social safeguards to be taken by a contractor for the (re)construction works, with the focus on development and implementation of the Environmental and Social Management Plan.

(iv) **Supervision and Monitoring Arrangements**: The final key consideration in a subproject planning was the development of environmental supervision, monitoring and reporting arrangements.

Table 19. Exposure Risk Classification System

		Effect			
		Insignificant	*Moderate*	*Significant*	*Critical*
Expectancy	*Unlikely*	Low	Low	Average	Average
	Likely	Low	Average	Average	High
	Highly likely	Low	Average	High	High

The risks at each subproject stage: preliminary design, (re)construction, and operation, are shown in Table below. Note that a risk rated as “high” is not expected to occur during the subproject implementation.

Table 2019. Risk Impact Assessment

S/ #	Potential impact	Expectancy (Unlikely, likely, most certainly)	Effect (Insignificant, moderate, significant, critical)	Risk level (Low, average, high)
Pre-(re)construction				
1	Inadequate environmental and social assessment and planning	Unlikely	Moderate	Low
2	Insufficient provision of protective resources to the PIU or consultant	Unlikely	Moderate	Low
3	Inadequate inclusion of environmental and social safeguards in (re)construction tender documents	Unlikely	Moderate	Low
(Re)construction				
1	Excessive dust from (re)construction activities	Unlikely	Moderate	Low
2	Excessive noise from (re)construction activities	Unlikely	Insignificant	Low
3	Excessive vibration from (re)construction activities	Unlikely	Moderate	Low
4	Groundwater impacts	Unlikely	Moderate	Low
5	Reduction in quality or volume of topsoil	Unlikely	Moderate	Average
6	Erosion and sedimentation	Unlikely	Insignificant	Low
7	Impacts from access roads to the site	Unlikely	Insignificant	Low
8	Impacts on public roads and bridges	Unlikely	Moderate	Average
9	Damage to or disconnection of existing utilities	Unlikely	Moderate	Average
10	Impacts of improper waste management	Unlikely	moderate	Low
11	Impacts on habitat and biodiversity	Unlikely	Moderate	Low
12	Impacts from (re)construction machinery	Most certainly	Insignificant	Average
13	Risks to livestock from (re)construction activities	Unlikely	Insignificant	Low
14	Risks of infectious diseases to the public	Unlikely	Moderate	Low
15	Accidents and injuries to workers	Unlikely	Significant	Average
16	Negative interactions between workers and local residents	Unlikely	Insignificant	Low
17	Temporary loss of land use rights	Unlikely	Moderate	Average
18	Impacts on structures (fences, support structures)	Unlikely	Moderate	Low
19	Employment of young aged people under 18	Unlikely	Moderate	Low
20	Involving women in hard works	Unlikely	Moderate	Low

S/ #	Potential impact	Expectancy (Unlikely, likely, most certainly)	Effect (Insignificant, moderate, significant, critical)	Risk level (Low, average, high)
21	Unauthorized access of local population to construction sites	Unlikely	Moderate	Low
Operation				
1	Impact on surface and ground water	Unlikely	Insignificant	Low
2	Significant attrition of access roads	Unlikely	Insignificant	Low
3	Erosion of replaced topsoil	Unlikely	moderate	Average
4	Low productivity of (re)constructed areas	Unlikely	moderate	Average
5	Inadequate emergency preparedness	Unlikely	significant	Average

The work to perform include the (re)construction and rehabilitation of existing irrigation and drainage systems (IDS). The following risks will be observed during the (re)construction phase:

(a) clearing of trees and shrubs during (re)construction of irrigation infrastructure;
(b) emissions of pollutants into the atmosphere during excavation works, from the operation of (re)construction equipment/machinery;
(c) formation of (re)construction waste (hazardous and non-hazardous);
(d) noise and vibration during transport movement and operation of machinery;
(e) possibility of soil erosion and, consequently, sedimentation in water bodies;
(f) associated risks due to improper disposal of (re)construction waste and potential asbestos-containing materials that may be found during the work;
(g) operational or accidental leaks of fuels and lubricants from (re)construction machinery/equipment;
(h) issues of labor protection, health and safety during work;
(i) public health and safety;
(j) poor quality restoration of (re)construction sites after completion of works;
(k) Impacts on structures (fences, support structures);
(l) Employment of young aged people under 18;
(m) Involving women in hard works;
(n) Unauthorized access of local population to construction sites.

Table 201. Potential environmental and social impacts and mitigation measures

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
(re)construction stage				
Atmospheric air	1) Dust from excavation work during (re)construction of irrigation canals, HWS and other structures; 2) Emissions from machinery and other (re)construction equipment.	1) machinery exhaust systems and (re)construction equipment should be in good condition, to minimize air pollution; 2) Limiting the speed of vehicles and selecting suitable transportation routes to minimize dust emissions; 3) Moisturizing the road surface while machinery driving; 4) Moistening of trenches, canals and pits during excavation work; 5) (re)construction work should be suspended in strong winds if the dust level is high. 6) All vehicles delivering dusty (re)construction materials to the site or removing garbage should be fenced or covered to prevent dusting; 7) Welding of metal structures should be done by electric welding.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment. 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Soil and groundwater	1) Possible removal of the fertile soil layer; 2) Pollution of the soil with liquid and solid household waste, spillage of fuel and lubricants	1) Storage of excavated fertile soil layer for its further use; 2) If necessary, transfer of fertile layer to local farmers for further use; 3) Installation of containers for solid waste; 4) Installation of temporary toilets of the ecological or bio-toilets type; 5) Temporary storage of (re)construction waste on protected ground; 6) Regular and timely removal of solid household waste (SHW) and (re)construction waste from a (re)construction site to municipal landfills, in accordance with the permission of local governments; 7) If fuels and lubricants get on the soil, clean the area from contamination, dispose of fuels and lubricants in sealed containers at a municipal landfill in agreement with local governments;	1) Contractor is responsible for implementation of measures to reduce the impact on the environment. 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
		8) The storage area for fuels and lubricants/chemicals must be planned, concreted (sealed) and fenced around the perimeter to prevent fuels and lubricants or chemicals from getting into the soil and water bodies.		
Surface water bodies	1) Placement of (re)construction camp; 2) Accumulation and storage of (re)construction and household waste (solid and liquid); 3) Storage and use of fuels and lubricants; 4) Placement and storage of equipment and vehicles in the water protection zone.	1) It is prohibited to locate a (re)construction site within water protection zones of rivers and canals; 2) Install temporary containers for collecting solid waste; 3) Organize an environmentally safe cesspool or bio-toilet at the (re)construction site; 4) Ensure the removal of all waste and (re)construction debris from the sites for their further disposal at a municipal authorized landfill, in accordance with the permission of local government bodies; 5) Store fuel and lubricant materials at the (re)construction site in accordance with environmental safety requirements; 6) In the event of a fuel and lubricant spill, immediately clean the contaminated area, remove contaminated soil in plastic bags to a specially equipped landfill in agreement with the local government; 7) It is prohibited to place equipment in the water protection zone.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
(re)construction waste non-hazardous waste	1) When dismantling reinforced concrete canals, buildings and structures, reinforced concrete, wooden and metal waste may be generated;	1) Prior to starting work, identify the methods of collecting and removing waste, as well as the locations of the main types of waste generated during dismantling and (re)construction work; 2) Mineral waste from (re)construction work and waste generated during dismantling of objects must be separated from organic, liquid and chemical waste at the work site, after which they must be stored in a specially designated area in compliance with environmental safety standards; site.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
		3) Reuse and recycling of waste: metal, wood, paper, used fuel and lubricants, etc.; 4) Timely removal of (re)construction waste from the (re)construction site at the expense of the contractor to their storage or burial sites under an agreement with the local government.		
Asbestos containing waste	Asbestos-cement waste and materials can be presented in the form of slate covering the roof of a building, and also possibly asbestos-cement pipes or their parts.	1) Management Plan has been developed for working with asbestos-containing waste; 2) Asbestos-containing materials/waste are to be stored in specially designated areas within the (re)construction site, with disposal and entombment; 3) Observe safety precautions when working with asbestos-containing materials; 4) Personnel must wear personal protective equipment (masks, protective gloves and special clothing); 5) If necessary, before removing asbestos-containing material from the site, treat it with a wetting agent to minimize the release of asbestos dust; 6) Prevent the reuse of asbestos-containing materials.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
			1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
Household waste	Pollution and littering of the surrounding area; soil pollution, possible pollution of water resources.	1) Sing-off an agreement for storage of household waste at an authorized landfill for household waste or purchase of a waste removal coupon; 2) Installation of containers for collection of household waste; 3) Removal of household waste for burial at a landfill determined by local government bodies; 4) Equipping an environmentally safe concrete cesspool for collection of liquid household waste.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Landscape	1) Destruction of the landscape during (re)construction of irrigation canals and HWS, other hydro-technical structures (HTS); 2) Inadequate restoration of (re)construction sites after completion of works.	1) The soil from the pipeline and reservoir (re)construction will be used for backfilling; 2) Excess soil from well drilling will be used for reclamation, planning and restoration of the water intake (re)construction site; 3) Reclamation, planning and restoration will be carried out at the work sites; 4) Cleaning the territory from (re)construction and solid household waste upon completion of (re)construction work; 5) Carrying out planning and restoration work after completion of (re)construction.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Wild animals	Destruction of the natural habitat of the animal world	1) Prohibit on hunting (sub)contractors workers.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
Tree and shrub vegetation growing in populated areas	Cutting down trees and shrubs	1) Preservation of the maximum possible number of trees and shrubs; 2) Cutting down of trees and shrubs must be carried out in agreement with the local environmental protection authority; 3) Inventory of trees and shrubs subject to cutting down; 4) PIU will send a letter to local authorities with a recommendation to plant trees in place of those cut down.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Noise and vibration	Noise and vibration from operating machinery and process equipment	1) Work only during daylight hours from 8.00 to 18.00; 2) Do not work near populated areas on weekends and holidays; 3) Exhaust systems of cars, trucks and equipment must be in good condition to minimize noise pollution; 4) If work is carried out in populated areas, it is necessary to inform populated areas about the schedule and duration of (re)construction work. 5) Work near populated areas is carried out only on weekdays.	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Chance findings	Chance findings of objects and artifacts of historical and cultural value during (re)construction work	In case of discovery of objects or artifacts, it is necessary to: 1) suspend work at the place of discovery of chance findings; 2) inform PIU about chance findings; 3) PIU will transfer information to the Institute of History, Archaeology and Ethnology of the National Academy of Sciences of the Kyrgyz Republic (NAS KR).	1) Contractor is responsible for implementation of measures to reduce the impact on the environment; 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Social environment				

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
Health and safety in the workplace, including measures to prevent the spread of COVID-19.	Risks for workers throughout the (re)construction period	1) Sites equipped with appropriate information boards and signs informing workers of the rules and regulations of work; 2) Introductory and periodic briefings prior to starting work and during the working hours. Recording in the instruction register; 3) Availability of first aid equipment for injuries on site; 4) Provide workers with personal protective equipment (helmets, special footwear, gloves); 5) Social distancing at facilities and during meals in accordance with WHO recommendations; 6) Regular cleaning of living and dining areas using disinfectants; 7) Isolation of a worker, in case of fever and other cold symptoms; 8) Comply with the fire and electrical safety requirements.	1) Ensure working conditions in accordance with the national labor legislation and ESS 2 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
Impact of subproject on the local population	1) Carrying out work on new lands.	1) Avoid land acquisition or relocation of local populations as much as possible; 2) Minimize the scale of the impact of relocation; 3) Inform the population of their rights to compensation in the event of land acquisition; 4) In case of project impact on the population, assist the local government in preparing a Resettlement Action Plan (RAP); 5) Effective interaction with local communities to minimize public discontent; 6) Effective GRM.	1) All work related to the acquisition of land is carried out with participation of local authorities, PIU and a consultant. 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft Budget for implementing RP from local government funds.

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
	Public safety, labor influx and other social measures 2) Temporary restriction of access to homes and suppliers, 3) protection of public health and safety during construction work (protection of children and the elderly from access to work sites). Traffic disruption due to construction work on municipal road sections	1) Conducting the outreach campaigns on (re)construction works and their impact on the environment and social environment; 2) Restricting public access to (re)construction sites; 3) Fencing-off (re)construction sites with warning tapes if (re)construction is carried out within populated areas; 4) Traffic control, installation of warning signs during work on (re)construction sites along highways and roads; 5) Perform (re)construction works in populated areas only during daylight hours; 6) Compliance with (re)construction schedules so as not to interfere with the activities of social facilities if they are affected; 7) Effective interaction with local communities and effective GRMs; 8) Ensuring safe and constant access to all adjacent office premises, shops and residences during (re)construction The Contractor must undertake the following: - install signs and markers warning the public of all potential hazards - ensure safe passage and crossing for pedestrians, where traffic is obstructed. - adjust working hours to local traffic flows, such as avoiding major traffic activities during peak hours or when livestock are moving.	1) PIU conducts consultations. 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body. 5) All measures taken must comply with the legislation of the Kyrgyz Republic and ESS 4 1) Contractor is responsible for implementation of measures to reduce the impact on the environment. 2) Supervision by a consulting company; 3) Monitoring of (re)construction sites will be executed by PIU; 4) State control by the authorized state body.	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
	SEA/SH risks and mitigation measures, Code of Conduct.	1. Code of Conduct shall be signed by all workers of the Contractor. 2. A GM has been created for the subproject, including at the central level, to which all employees have access and which is designed to ensure a rapid and effective response, including sensitive GM. 3. The contractor will be responsible for developing the workforce management procedure, health, and safety plans as well as SEA/SH protocols which will apply to their own and subcontractor employees who work on the Project. These procedures and plans will be submitted to PIUs for review and approval before the contractors are allowed to mobilize to the field of construction. All contractors will be required in the contract to commit against the use of child and forced labor, introduce mitigation measures against SEA/SH, and PIUs staff in charge of contractor supervision will monitor and report the absence of forced labor and cases of SEA/SH. All personal data and complaints received by the GM will be treated in a confidential manner, unless the complainant consents to the disclosure of their personal information. Specially, confidentiality of sensitive issues and complaints related to SEA/SH raised by communities will be followed.	1). Contractor is responsible for providing Code of conducts signed by its workers; 2) Supervision and monitoring GM, SEA/SH issues will be conducted by PIU and PIC's Social team.	Budget for implementation of activities on GM and SEA/SH is not required.
Operation				
Water resources	1) Threats to water quality due to soil salinity from drainage	1) Visual observation of areas where irrigation water may accumulate (prevention of waterlogged areas); 2) Training on improving pest management/pesticide application practices;	Ameliorative Hydro-geological expedition WRS (AHE WRS)	From the budget of AHE WRS and

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
	2) Threats to water quality due to contamination with agrochemicals	3) Application of agrochemicals according to recommended standards; 4) Prevention of discharge of wastewater into canals and surface water bodies.	Land and Water Supervision Service (MWRAPI)	Land and Water Supervision Service (MWRAPI)
Soil	Increased soil erosion	1) Outreach campaign among farmers, water users; 2) Rational use of irrigation water and irrigation in accordance with the irrigation regime; 3) Construction of irrigation furrows at the lowest slope (transverse furrows); 4) Shortened furrow length; 5) Introduction of progressive irrigation methods (sprinkling, drip irrigation).	Land and Water Supervision Service (MWRAPI)	From the budget of Land and Water Supervision Service (MWRAPI)
Impact on climate change	Lack of water for irrigation	1) Training on climate change mitigation measures; 2) Compliance with irrigation standards and regime.	WRS MWRAPI	
Potentially possible mudflows	1) Destruction of residential buildings, social facilities and social infrastructure (roads, canals, water supply, etc.) 2) Destruction of agricultural crops.	1) Regular and timely cleaning of mudflow aqueducts and canals; 2) Cleaning of mudflow passages located on canals and crosscut canals, administered by MWMU and RWMU.	1) MES, LSGB 2) MWMU, RWMU	Budget of MES and LSGB, MWMU and RWMU
Population, farmers, water users	Swimming in canals and water storage facilities (NSR, DSR)	Install signs/banners on the canals warning of danger and prohibiting swimming	RWMU, MWMU	Budget of RWMU and MWMU
	1) Failure to comply with the norms and regime of irrigation of agricultural crops; 2) Imperfect, outdated irrigation methods of crops.	1) Execute the uninterrupted monitoring of water intake and supply to the population, farmers and all water users; 2) Conduct training and explanatory work among farmers and the population on compliance with the norms and regime of irrigation of agricultural crops; 3) Conduct work among farmers on the need to introduce cutting-edge irrigation methods/practices.	RWMU, MWMU	Budget of RWMU and MWMU

Environmental and social parameters	Impact	Proposed actions/ mitigation measures	Institutional responsibility for mitigation actions/measures	Cost of actions/ mitigation measures
Population, farmers, water users	During the operation period, the impact will be positive on: 1) improved water management; 2) rational use of water resources; 3) reduction of water losses in irrigation systems and increase in the efficiency of canals; 4) improved sustainable access to irrigation water in the context of climate change for farmers and water users in general; 5) increased productivity of agricultural crops; 6) improved soil fertility.			

7.2. Environmental and Social Monitoring Plan

In order to ensure the implementation of environmental and social measures specified in the specific subproject ESMP, a subproject ESMP will include a site-oriented monitoring plan with defined monitoring indicators/variables, and associated constraints. The Monitoring will be performed as follows:

- **Visual monitoring:** during the (re)construction phase of subprojects, environmental and social specialists should continuously monitor the ESMP implementation. This will be achieved through monthly inspections of (re)construction sites by specialists, throughout the (re)construction period.

The results of environmental and social protection monitoring will be recorded in special checklists, which can be compiled with the addition of photographs from the monitoring site.
For all subprojects, the environmental specialists and social specialists check the timeliness of contractors' reports. Contractors shall periodically submit reports on discharges to water bodies, air emissions and solid waste to the regional committees on ecology and environmental protection. Instrumental monitoring of air quality will be executed in the event of complaints related to violations or inconveniences from the local population, with use of instrumental measurements of air, or water quality using a certified laboratory. In the event of exceeding national standards, the contractor must undertake additional measures to bring the identified excesses into compliance with the standards.

Table 21 Environmental and Social Monitoring Plan

Subproject implementation stage	What parameter is subject to monitoring?	Where will monitoring take place?	How will monitoring be carried out? Type of monitoring equipment	When? (frequency of measurements)	Cost of monitoring 13 (cost of equipment or amount of contractor expenses required to carry out monitoring?)	Institutional responsibility for monitoring
(Re)construction	Noise/vibration	At a (re)construction site	Portable sound level meters and vibration meters, in the presence of dynamic impacts	Uninterrupted	Not considered as a separate expense item	1) Supervision of SU-YAPI's ESMP compliance. PIU monitoring to ensure compliance with ESMP. Authorized state body implementing environmental supervision of the implementation of design decisions during (re)construction work
	Transport	At a (re)construction site	Visually	Uninterrupted		
	Waste disposal and storage	At a (re)construction site and soil heap	Visually	According to plan, but, at least, weekly		
	Soil pollution	At a (re)construction site	Visually	Uninterrupted		
	Dismantling of a (re)construction site	At a (re)construction site	Visually	According to plan		

Subproject implementation stage	What parameter is subject to monitoring?	Where will monitoring take place?	How will monitoring be carried out? Type of monitoring equipment	When? (frequency of measurements)	Cost of monitoring 13 (cost of equipment or amount of contractor expenses required to carry out monitoring?)	Institutional responsibility for monitoring
	Trees, Shrubs	On and around a (re)construction site	Visually	Uninterrupted		
	Worker Safety	At a (re)construction site	Visually	Uninterrupted		
	Community Health and Safety	Around a (re)construction site	Visually	Uninterrupted		
	Working Conditions and Safety	At a (re)construction site	Visually	Uninterrupted		
	Road Safety	Around a (re)construction site	Visually	Uninterrupted		
	Stakeholder Engagement and Complaint Management	Around a (re)construction site	Meetings/ Discussions	Uninterrupted		
	Access to houses/facilities	Around a (re)construction site	Visually	Uninterrupted		
	Livelihoods	Around a (re)construction site	Visually	Uninterrupted		
	Asbestos Detection	At a (re)construction site	Visually	According to the asbestos		

Subproject implementation stage	What parameter is subject to monitoring?	Where will monitoring take place?	How will monitoring be carried out? Type of monitoring equipment	When? (frequency of measurements)	Cost of monitoring 13 (cost of equipment or amount of contractor expenses required to carry out monitoring?)	Institutional responsibility for monitoring
				management plan		
Operation	Water quality	off-farm canals: "Otuz Adyr" and "Kochkor-Ata"	Field equipment for measuring parameters	Vegetation period	State budget funding	1) Regional Environmental Protection Department MNRETS KR. 2) WRS MWRAPI KP
	Soil salt content	Places of waterlogging and the landscape depressions	Soil sampling	Vegetation period	State budget funding	AHE WRS MWRAPI KP

7.3. Institutional Arrangements for Implementation of the ESMP

The overall project organizational structure is presented in Image 6-1, together with a list of the PIU staff positions. The PIU consists of the full-time environmental and social specialists. The PIU is supported by a Project Implementation Consultant (PIC). The PIC also employs E&S specialists in long-term.

The PIU, with support of PIC, is responsible for all environmental and social aspects of the subproject development, including obtaining the necessary safeguard approvals from both the World Bank and the national environmental regulator (MNRETS).

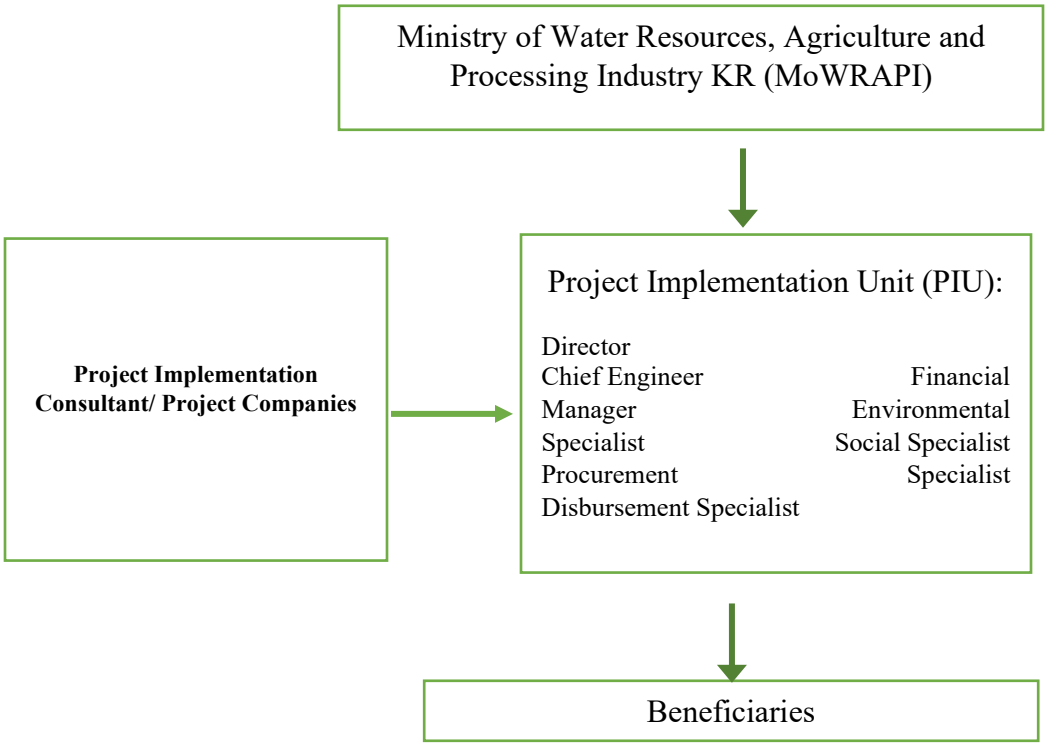


Figure 14. Organizational structure

The PIU and PIC are responsible to elaborate and implement ESMP.

7.4. Roles and Responsibilities of Contractor Personnel

Project Manager Responsibilities (PMR): Ensures that the environmental and social policies, objectives and activities defined in a subproject ESMP and industry practice are implemented, including the full implementation of all related procedures. He/she also ensures that every effort is made to prevent injuries during (re)construction and to avoid social and environmental impacts, where possible. The project manager continuously monitors the effectiveness of ESMP implementation and effectiveness of personnel under his/her control, who are responsible for social and environmental protection issues. The Project Manager is the main liaison with the PIU. In particular, he/she:

- Assigns a subproject personnel who will coordinate and implement effective project operations that comply with socially and environmentally sound practices;

- Ensures that an effective ESMP is developed and implemented within a subproject;
- Manages the effectiveness of ESMP and ensures that corrective action(s) is taken, where necessary;
- Ensures that all potential incidents involving personal injury, property damage or environmental damage are thoroughly reviewed, and reported to identify causes, trends and propose mitigation measures;
- Ensures that mitigation measures are immaculately followed;
- Ensures that all personnel are competent to perform their duties;
- Ensures that personnel are adequately trained to enable them to perform their tasks safely;
- Promotes a high degree of social and environmental awareness among all project management;
- Informs the employer and head office, in a timely manner, if issues with ESMP non-compliance arise, and communicates appropriate corrective action.

Construction Manager Responsibilities (CMR): The Construction Manager directs and coordinates the work of inspectors and provides technical assistance in operation, when necessary. The CM also ensures that the work on site is performed within the contract scope of work, in accordance with the relevant approved criteria, standards and procedures. In particular, he/she:

- Reviews a subproject proposition for field operations methods;
- Ensures that proposed methods are consistent with standard operating practice;
- Ensures that adequate risk assessments are carried out prior to commencement of activities and operations;
- Ensures that adequate consideration is given to providing safe access and egress to ensure that operations are performed safely;
- Ensures that all equipment is available, fit for purpose and certified where appropriate;
- Ensures that work under his/her supervision is performed with consideration of ESMP issues and industry practice;
- Ensures that all personnel have adequate tools and protective equipment for the job;
- Ensures that work is executed in accordance with the contract standards, statutory obligations and the Contractor's procedures; and
- Evaluates lessons learned and makes changes to the programme, if necessary.

Environmental and Social Specialists Responsibilities (ESSR). The Environmental and Social Specialists (ESSs) oversee the implementation and effectiveness of a subproject ESMP at all stages, areas and activities. In particular, they:

- Establish and monitor the environmental and social management systems;
- Coordinate the environmental and social management system at the site;
- Establishes and maintains relationships with Kyrgyz environmental authorities to obtain all relevant permits and ensure compliance with all relevant legal requirements;
- Prepare and maintain a subproject auditing schedule to assess compliance with approved subproject environmental and social plans and procedures;
- Conduct regularly scheduled staff meetings and coordination meetings with the PIU/PIC to discuss relevant issues affecting work. Provide reports and meeting minutes to the PIC;
- Ensure that environmental and social regulations, rules, procedures and work instructions are communicated, understood and implemented by site personnel;
- Ensure that all environmental and social activities associated with field operations are properly monitored;

- Inform a subproject management team of any changes in legislation that may affect a subproject;
- Review notifications and related documents, ensuring they are distributed to the relevant personnel for attention;
- Ensure compliance with the environmental and social requirements of a subproject;
- Promote and encourage the high level of environmental and social awareness among personnel;
- Ensure daily monitoring of a subproject site to ensure that all activities undertaken comply with ESMP;
- Inform all site personnel of the ESMP requirements, procedures, and implementation;
- Coordinate formal induction training on environmental and social aspects applicable to any specific work site activity;
- Regularly inform and brief the Project Manager and PIC/PIU on the status of implementation and effectiveness of environmental and social mitigation measures;
- Maintain records of all environmental and social monitoring activities.

Responsibilities of Environmental and Social Specialists: ESSs assist ESM in the following:

- Inform workers of social and environmental risks existing on site, preventive and protective measures taken;
- Educate workers on actions to be taken in the event of an environmental disaster and social issues;
- Check the application of environmental and social procedures;
- Responsible for confirming that adequate information has been collected to provide appropriate inputs for individual mitigation and monitoring measures;
- Translate mitigation requirements recorded in the ESMP and its subplans into practical measures on site;
- Ensure that all personnel are fully aware of the social and environmental sensitivity of the site and their responsibilities, as specified in the management plans (e.g. through practical discussions before construction);
- Take field notes and photographs to demonstrate compliance with the management plans;
- Monitor the site and immediately report to the Construction Manager and Environmental Manager if environmental regulations are not being followed carefully.
- Note: If the contract terms only employ an Environmental Specialist, the duties of the Environmental Field Specialist will be assigned to ES.

Project Engineer, Site Engineers, and Site Managers.

- Comply with relevant environmental and social regulations and a subproject requirement, as specified in ESMP;
- Exercise and appropriate level of diligence in ensuring that work practices are followed that minimize adverse impacts on the environment and social;
- Monitor all employees to ensure that they comply with environmental and social regulations required in their work;
- Ensure that environmental and social controls are developed in the workplace;
- Ensure that all employees comply with the environmental and social requirements in the workplace;
- Ensure that all employees report any environmental and social risks;

- Liaise with employees to ensure prompt response when environmental and social issues arise;
- Conduct weekly environmental and social audits of sites; and
- Participate in monthly environmental and social audits, as required.

Health and Safety Manager

- Conduct daily safety audits of the work area;
- Organize campaigns, competitions and other special programs to improve safety in the workplace;
- Highlight safety requirements in the toolkit meeting;
- Investigate all accidents/near misses and recommend appropriate safety measures;
- Convene a safety meeting and prepare a report for distribution and follow-up;
- Consult and coordinate the implementation of the permit to work system;
- Ensure that quality PPE and safety devices are available and inspected before use in accordance with established standards;
- Submit reports to the PIU;
- Facilitate the screening of all workers and safety induction;
- Applicate first aid, if needed;
- Maintain records of all documentation related to health and safety;
- Prepare and implement an on-site emergency response plan;
- Implement the health and safety plan;
- Provide periodic communication with on-site teams and affected parties, among other things;
- Ensuring that environmental and social issues are taken into account and addressed appropriately.

The responsibilities of all employees. All employees (including subcontractors) have assigned to the duty to protect the environment and comply to social requirements on land acquisition, resettlement and etc. by carrying out their work with due care. In particular, they must:

- Comply with the legal and a subproject requirement, as identified during induction, relevant to the type of work in which an employee is involved;
- Know the ESMP requirements, including environmental and social responsibility and measures to minimize impacts;
- Report any incidents that may result in harm to the environment and people or workers arising during working process or in connection with their work; and
- Implement practical ways of controlling environmental and social risks.

7.5. Implementation arrangement and capacity building

The proposed staffing schedule for the PIU and PIC takes into account the need for full-time specialists to ensure effective planning and implementation of all protective measures and activities:

- The PIU's full-time Environmental and Social Specialists will provide support and information for screening, subproject categorization, ESMP preparation, public meetings and disclosure, and ESMP implementation during the pre-construction and construction phases.
- The PIC will include National Environmental and Social Specialists, who will provide support and on-the-job training to the PIU Environmental and Social Specialists, prepare environmental and social documentation, establish environmental and social monitoring systems for a subproject implementation, and conduct related training(s);

- The PIU/PIC staff will conduct public consultations and monitoring visits during (re)construction phase;
- The PIU/PIC Construction Managers will oversee the implementation of ESMP by contractors on site and are the proponent's representatives at the initial GRM level.

Supervision. The supervision of environmental and social management activities of a subproject will be performed at several levels:

- **Supervision during (re)construction**: On site, the contractor's activities will be supervised by supervisory staff headed by the local engineers. The contractor must have a qualified health and safety specialist. In turn, the contractor will be supervised by the PIU (re)construction supervision specialist. He/she and his/her colleague will visit the site frequently throughout the working season to check the technical progress of works. At the same time, the specialist will document any non-conformity with the approved HSE practices and procedures defined in the approved ESMP.
- **During (re)construction** it is likely that the relevant environmental regulator office will visit the site to check compliance with any conditions established during the SEE process.
- **Implementation of the overall ESMP under a subproject**: On behalf of the PIU, the PIC will review the implementation of overall ESMP of a subproject in three stages: design, (re)construction and operation, and will report to the PIU.
- **The World Bank:** The financing agency, the WB, will conduct supervision missions of the entire project with involvement of relevant Environmental and Social Development Specialists, who will visit and check the ongoing subprojects for compliance of works conducted to applied ESS to the project.

Reporting. The Environmental and Social reporting will be carried out at several levels. During (re)construction:

- The contractor will include a specific section on a subproject's environmental and social management, health and safety, community relations, GRM in each monthly progress report submitted to the PIU.
- The data and information in a report will be compiled based on the contractor's day-to-day work on site, as well as regular weekly inspections and monitoring of safety issues.
- PIU will also conduct independent on-site audits of ESMP implementation, with a site inspection report issued for each audit.
- A subproject GRM will be in force throughout the (re)construction period. Information on the number and type of complaints, resolutions, and outstanding cases will be included in the PIU's six-monthly progress reports submitted to the WB.

7.6. The Budget for the Implementation of ESMP

A subproject's environmental and social risk management costs are listed in Table below, with notes on how costs can be allocated.

Table 23. Environmental and social Management Cost Items

№	Details	Comments	Implementation estimates, USD
(re)construction			

№	Details	Comments	Implementation estimates, USD
1	Health, Safety and Environment Engineer	Full time to prepare documentation, set up procedures and systems, and train managers and workers on site; daily monitoring of construction safety activities	Included in the specialist's remuneration
2	Dust suppression	Standard best practice	
3	Safe fuel storage	Standard best practice	
4	Waste management	Standard best practice	
5	Precipitations control	Standard best practice	The cost of mitigation measures will be determined in BOQ while elaborating on of the Working draft
6	PPE	Standard best practice	
7	First aid equipment	Standard best practice	
8	Workers' training	Standard best practice	Included in the occupational health, safety and environment specialist's remuneration
9	Monitoring by the contractor.	Normal contractor overhead expenses	Included in the occupational health, safety and environment specialist's remuneration
10	Health, safety and environment supervision by PIC	Performed as part of normal construction supervision.	
11	Soil removal	The main component of excavation; laying the final layers requires agricultural rather than civil engineering skills.	Included in the (re)construction cost
12	Site restoration	The main component of excavation; laying the final layers requires agricultural rather than civil engineering skills.	Included in the (re)construction cost
13	Aftercare of restored land	A minimum of one year of qualified agricultural management experience is required.	Included in the (re)construction cost
14	Instrumental monitoring	Standard best practice	
15	Monitoring by PIU/PIC	Part of routine supervision; no additional costs or lab testing expected	

№	Details	Comments	Implementation estimates, USD
16	Outreach campaign /awareness, consultation	The contractor will maintain communication with the community as part of normal best practice; the PIU and PIC will disseminate information and hold local meetings as necessary.	Budget is indicated in the project SEP.
17	Grievance redress	The PIU will be the main body that will coordinate all aspects of a grievance handling from the local to the national levels. This activity will be performed in close cooperation at the local level; no additional costs are expected unless investigations and meetings are required; costs to be covered by ta subproject contingency	Budget is indicated in the project SEP.
18	Fencing of the site and ensuring free passage of the public	Usual best practice	Included in the cost of construction BOQ
19	Capacity strengthening	The PIC staff will train and mentor PIU staff on an ongoing basis.	

CHAPTER EIGHT: GRIEVANCE REDRESS PROCEDURES

In accordance with the requirements of the World Bank's Social and Environmental Standard 10 (ESS 10), the WRS PIU has developed a Grievance Mechanism (GM) for the Subproject.

The GM is a process for obtaining prompt and objective information, assessing, reviewing, addressing and resolving grievances (applications, suggestions, complaints, requests and positive feedback) related to the implementation of the Project. The GM will streamline the process of receiving, reviewing and resolving complaints that may arise in relation to the implementation of Project activities. The Subproject will also implement a feedback mechanism (FbM) as one of the main tools for the prevention of social risks/conflicts.

The GM is necessary so that direct and indirect beneficiaries of the Subproject have the opportunity, at all stages of the Project implementation, to submit their requests in the form of complaints or suggestions for improving the Project activities, or proposals for eliminating problems without any costs, and with a guarantee of their timely resolution. Appeals directly related to implementation of the Subproject are subject to consideration. Appeals or complaints can be both individual and collective. This mechanism will also allow anonymous complaints to be submitted and considered. In accordance with the Law of the Kyrgyz Republic "On the procedure for citizens' appeals", citizens can send any appeals on issues related to the scope of the Subproject implementation, at all stages of implementation.

8.1.GM objectives

The objectives of GM are to:

- To record, verify, review, consider, follow up and respond to complaints or appeals received related to social, environmental and any other issues related to Subproject activities;
- To arrive at mutually agreed/agreed solutions that are satisfactory to the (sub)Project and those affected by it, and to resolve any grievances and appeals locally in consultation with the concerned party;
- Facilitate the local development process while maintaining transparency, and establish a degree of accountability to applicants;
- Establish feedback;
- Allow vulnerable individuals and/or groups to express their views.

8.2.Grievance Redress Procedure

Detailed information on the stages and timescales, and who is responsible for dealing with complaints and grievances, can be found in the Grievance Matrix.

Table 24. Grievance Matrix

Level	Grievance addressed to	Presentation form	Grievances / Governance / Procedures	Review period (from the moment of registration)
Level 1 / Local	Local commission under the AO to handle grievances.	Verbal or written	- Registration of a complaint in the complaint's registration register, indicating the date and time; - registration of the complaint is carried out by the secretary of the precinct commission; - In case of dissatisfaction with the complaint, the complaint is redirected to the central level.	5 working days
Level 2 / Central	Centralised: at the PIU level - grievance committee (established by orders of the WRS Director from among PIU staff, WRS representatives and other persons as agreed).	In writing	- Registration of the complaint in the complaint's registration register with the date and time; - The registration of the complaint is carried out by the specialist on social issues.	14 working days

GM at the local level was established by the Order of Kara-Suu rayon state administration from 07.09.2023 №172.

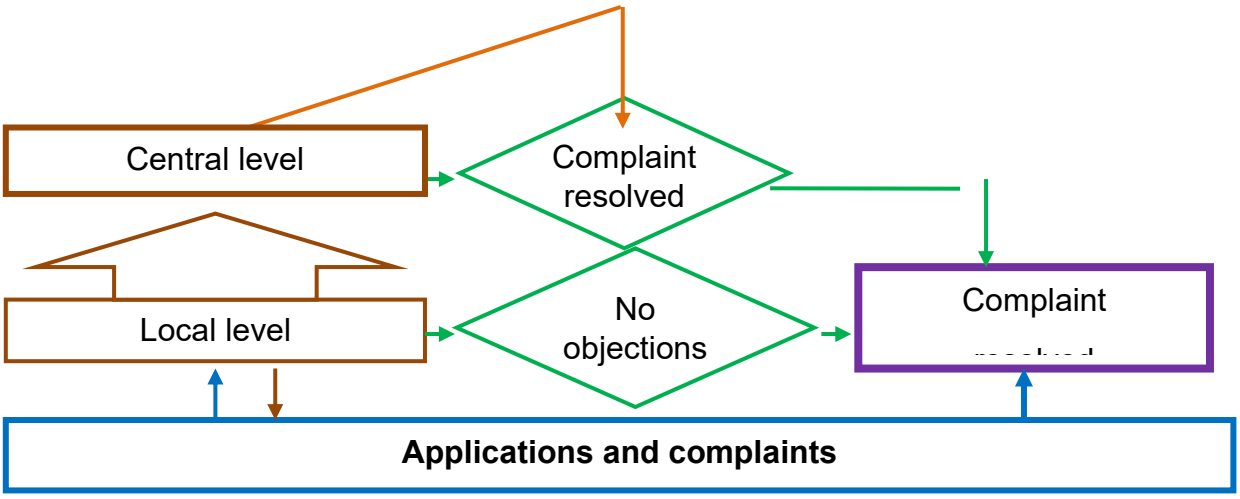
GRM at the central level is established by the WRS Order dated 01.11.2023 No. 123.

- **First/Local Level**: The first step in the grievance process will be a verbal or written complaint to the local Grievance Redress Group (GRG). The Applicant/Stakeholder has the right to submit a complaint or appeal on an issue related to the Project area, verbally or in writing, to the LSG. A grievance or an appeal is addressed to the secretary of the LSG. The period for consideration of the complaint by LSG is 5 working days. If complaints at the first level are not resolved, they will be dealt with at the central level.
- **Second/Central level**: If an applicant is not satisfied with the decision of LSG, the secretary of the local commission submits the complaint or appeal in writing to the central GRG with a conclusion and supporting documents prepared at the local level. The received documentation will be recorded in the register of complaints and appeals by the PIU social specialist. At this level, the Subproject Social Specialist will be in direct contact with affected person (AP). The Subproject will determine the validity of claim, and notify the claimant that assistance will be provided. The response will be provided within 14 working days, during which meetings and

discussions will be held with AP. The Subproject will help APs at all stages to resolve a problem, and ensure consideration in the best possible way.

- In case of objection to the decision of second-level (central) commission, the AP may apply to the court. The grievance resolution process is described in the Grievance Resolution framework.

Figure 1. Grievance Process Flowchart.



In order to promptly assist in resolving problems, complaints and grievances during the (re)construction period, a Contractor may be involved in the GRM procedures. The Contractor's representative ((re)construction foreman, engineer, social or environmental specialist) will receive and record requests and complaints in the GM register, and inform the Supervision Consultant by sending him a copy of the written complaint. The Contractor shall implement appropriate measures to address complaints arising during the execution of (re)construction work. In the event that Applicants are not satisfied with the response, they may submit a complaint to the DSC, who will monitor the Contractor's response to ensure that all mitigation measures are implemented in a timely and appropriate manner.

The Subproject 's GM is not a hindrance to going to court, in accordance with the legislation of the Kyrgyz Republic. In cases where the resolution of a complaint or appeal requires a special inspection (consideration), the request for additional materials or the adoption of other measures, the resolution period may, as an exception, be extended, but not more than by 30 calendar days, in accordance with the Law of the Kyrgyz Republic, dated May 4, 2007 No. 67: "On the procedure for considering citizens' appeals."

The Subproject will consider anonymous complaints and grievances, and take actions on them.

Appeals and grievances addressed to WRS contacts:

PIU WRS address:	Toktonaliev str., 4a street, office 104
Phone:	0312 54-49-72
Email:	CRWSP: crwsp@water.gov.kg
PIU WRS web platform by filling out the online application form:	https://www.crwsp.kg

The form of the GM information stand is presented in the Annex 4.

All incoming complaints or grievances are subject to registration in the GM register, information from which is duplicated in the electronic database. The database must contain, as minimum, up-to-date information about the date of submission, registration number, essence of the issue, person responsible, timeline for solving a problem, and feedback (positive/negative). Using the registration number, the specialist follow up the progress of the review in database.

8.3.Handling sensitive complaints

In line with the Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) Prevention Standards required by the World Bank to be met in all World Bank-financed (sub)projects, these standards and responsibilities will also be followed, whereby measures will be taken to raise awareness on SEA/SH prevention and mitigation. All subproject staff and contractors will be briefed on understanding the principles of SEA/SH risk management, and prevention at all stages of (sub)project implementation. The GM will ensure that the complaint mechanism is accessible and confidential, and will allow the complainant to have no fear of possible retaliation. These complaints will be investigated without delay and all perpetrators will be held accountable. The SEA/SH issues will require certain additional measures such as:

- Gender sensitivity will be considered when recruiting social workers who will work in the PIU.
- Social workers will be informed about SEA/SH issues.
- In addition to socio-cultural specifics and non-violent communication methods in training of workers, information about SEA/SH will also be included in the agenda. The training of workers will include the following information about SEA/SH:
  - Definition of violence against women in national and international documents;
  - Types of violence (physical, sexual, economic, emotional);
  - Legal sanctions.
- The complaints mechanism will be accessible and will ensure the confidentiality of personal information.
- The outreach campaigns will be held to inform women about the use of this mechanism. These events will provide the following types of information:
  - Women's rights;
  - Self-defense in cases of violence and sexual violence;
  - Emergency numbers;
  - Hot-line of the institutions and organizations to contact;
  - Complaints mechanism and privacy policy.
- The principle of confidentiality of the complaint’s mechanism will be highlighted/repeated in all information materials.

The Subproject will use the additional mitigation measures proportionate to the risk. The Contractor will be responsible for developing the personnel management procedures, occupational health and safety plans, and SEA/SH protocols that will apply to its own employees, and the employees of (sub)contractors mobilized under the Subproject. These procedures and plans will be submitted to the PIU for revision and approval before contractors are allowed to commence (re)(re)construction work. All contractors will be required by contract to commit to no child or forced labor, to take action to address the impacts of SEA/SH, and the PIU staff responsible for supervising contractors will monitor and report the absence of forced labor, and instances of SEA/SH. All personal data and complaints received by the PIU will be treated confidentially unless a complainant consents to the disclosure of their personal information. In

particular, sensitive SEA/SH related questions and complaints from the communities will be kept confidential.

8.4.The World Bank's Grievance Redress service

The Communities and individuals, who believe that they are being negatively impacted by the World Bank-supported Subproject may also submit complaints directly to the World Bank through the Bank's Grievance Redress Service (GRS). (https://www.worldbank.org//en/Projects-operations/products-and-services/grievance-redress-service). A complaint can be submitted in English, Kyrgyz or Russian, although complaints in languages other than English will take additional time to process. A complaint can be submitted to the Bank's Complaint Redress Service through the following canals:

- email: grievances@worldbank.org
- fax: +1.202.614.7313
- mail: World Bank, Grievance Redressal Service, MSN MC10-1018, 1818 H Street Northwest, Washington, DC 20433, USA.
- The World Bank office in the Kyrgyz Republic address: Kyrgyz Republic, Bishkek, Moskovskaya str. 120, bishkek@worldbank.org, phone: +996 312 625262

A complaint must clearly identify the adverse impact that is believed to have been caused or may be caused by the Bank-supported Subproject. It should, as far as possible, be supported by existing documentation and correspondence.

A person affected/complainant may also indicate the desired outcome of a complaint. A complaint must contain the full name of a person/complainant/designated representatives and contact information. The complaints submitted through GRS are addressed as quickly as possible so that problems related to the Subproject can be quickly resolved.

CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS

The results of the desk review and field survey confirm the absence of any Subproject impacts on households in the remaining project sections of the "«Otuz-Adyr»", "K-9" ("K-9.1") and "MKC" canals. No physical or economic resettlement is planned under the subproject implementation. All (re)construction activities will be within the boundaries of municipal land and project (re)construction boundaries. This is also confirmed by the results of social screening.

Adjacent to the canal's allotment boundaries designed for (re)construction works, light fencing, installed on municipal lands, will be relocated by the Contractor and restored in consultation with the households. Completion of these works is not grounds for paying-off a compensation.

The use of existing access roads does not have any impact on households. No permanent and/or temporary impact on household assets is expected.

No cultural heritage sites or architectural monuments were identified within the (re)construction site area.

The social due diligence is based on findings of the detailed draft, and confirms that there is no impact of the households under the Subproject.

In case of any adverse consequences, the Corrective Action Plan (CAP) will be elaborated.

Continuous daily monitoring will be executed by the Consultant and PIU specialists. The monitoring results will be submitted to the WB office for revision and approval

The proposed subproject works are not complex and do not require the use of large quantities of construction materials or any hazardous substances.

The subproject is not located in an environmentally sensitive environment and its potential negative environmental impacts are not considered high. The most important environmental and social impacts may be related to soil and air pollution, as well as noise disturbance to local residents. The identified impacts can be avoided or minimized by simple mitigation measures, most of which are common good practice in large-scale earthworks projects, and continuous monitoring of construction activities carried out by the PIC and PIU Specialists.

The PIC and PIU social, environmental, health and safety specialists shall continuously monitor construction activities and ensure compliance with this ESMP.

ANNEX 1. PLAN FOR HANDLING ASBESTOS-CONTAINING MATERIALS

Applicability

The Asbestos Containing Materials Management Plan (ACMP) applies to all construction or renovation sites and any associated areas. Contractors hired under the Project are legally responsible for their construction sites and associated areas and must follow the provisions of the Project ACMP within those areas. In particular, this procedure shall be used to ensure the safe handling, removal and disposal of any asbestos containing materials (ACM) from these areas.

Immediate Action

Upon discovery of ACM in the Project area, the Contractor shall:

a) Stop all work within a 5 m radius of the ACM and evacuate all personnel from the area;
b) Limit the 5 m radius with secure fencing, warning tape, and easily visible asbestos warning signs of fence posts;
c) If the site is in a populated area, place a guard at the edge of the site with instructions to keep people out;
d) Notify the PIU Safeguards Specialist and arrange for an immediate inspection of the facility.

Equipment

Contractors shall provide the following equipment to remove asbestos from the construction site:

a) Warning tape, sturdy fence posts, and warning signs;
b) Shovels;
c) Water supply and hose equipped with a garden type spray nozzle;
d) A bucket of water and rags;
e) Bags of clear, heavy-duty polyethylene that can be tied;
f) Containers for asbestos-containing waste (empty, clean, sealed metal drums clearly labeled as containing asbestos).

Personal Protective Equipment (PPE)

All personnel involved with ACM shall wear the following equipment provided by the contractor:

a) Disposable coveralls with a hood;
b) Boots without laces;
c) New, durable rubber gloves;
d) A respirator is not normally required if there are only a few pieces of ACM in a small area and if the ACM is wet;
e) Smoking, eating, and drinking are prohibited at the site containing ACM.

Decontamination Procedure 1: Removal of small pieces of ACMs

a) Locate all visible ACM and lightly but thoroughly spray with water;
b) Once the ACM is wet, pick up all visible ACM with shovels and place in a clear plastic bag;
c) If ACM debris is partially buried in the soil, remove it from the soil with a shovel and place it in the plastic bag;
d) Place a large label on each plastic bag clearly stating that its contents contain asbestos, are a hazard to human health, and are not to be handled;
e) Tie the plastic bags securely and place them in designated asbestos waste containers (clean metal drums) and seal each drum;
f) Soil containing ACM debris must not be used for backfilling, but instead hand backfilled into the asbestos waste containers;
g) At the end of the job, clean all shovels and any other equipment with a damp rag and place them in plastic bags for disposal in asbestos waste containers.

Decontamination Procedure 2: Removal of ACM Contaminated Backfill

a) If soil containing ACM debris has been inadvertently used for backfill, it should be lightly sprayed with water and manually excavated to a depth of 300mm and placed directly into asbestos waste containers (i.e. not stored temporarily next to the trench);
b) Any ACM found during shoveling should be placed in a clear plastic bag;
c) Once the trench has been re-excavated to 300mm, if there are no visible traces of ACM, the trench can be filled by excavator using imported clean topsoil.

Disposal

ACM should be safely disposed of at a local hazardous waste landfill, if available, or at a municipal landfill after prior arrangements have been made with the landfill operator for safe storage.

- The contractor should ensure that the landfill operator assembles sealed asbestos waste containers as soon as possible and stores them in the landfill for disposal in an undamaged condition.
- On completion of construction, contractors must arrange for the landfill operator to bury all ACM containers in a separate pit of suitable size, covered with a layer of clay at least 250mm deep.

a) Personal disinfection

At the end of each day, the following decontamination procedure should be followed by all personnel involved in ACM handling:

- At the end of decontamination, thoroughly clean boots with a damp cloth;
- Remove disposable coveralls and plastic gloves so that they are inside out and place them in a plastic cloth bag to clean the boots;
- If a disposable respirator was used, place it in a plastic bag, seal the bag and place it in an asbestos-containing waste container;
- All personnel shall wash thoroughly before leaving the site and then rinse the area with a damp cloth placed in plastic bags as described above.

b) Authorization and exit from customs control

- Decontamination activities shall be conducted under the supervision of site inspectors (engineering or environmental).
- Upon successful completion of decontamination and disposal, the Contractor shall visually inspect the area and complete the operation if the site has been satisfactorily cleaned.
- The Contractor shall send a copy of the completion notice to the ORP with photographs of the operation and the site upon completion.

TRAINING

The PIU Environmental Specialist may hire specialized companies to provide training to contractor personnel as well as the PIU on the implementation of the ACMP. The training will include sessions on ACMPs that covered the following topics:

a) Risks associated with ACM contact;
b) Responsibilities for ACM interactions at project construction sites;
c) Project ACMP and Site Cleanup Protocol;
d) Awareness raising for contractor personnel. Costs incurred by contractors in implementing the ACMP are included in their budget as part of the ESMP budget

EXPENDITURES

Costs incurred by contractors in implementing the ACMP shall be included in the Contractor's PRA.

ANNEX 2. THE MINUTES OF PUBLIC HEARINGS

THE MINUTES OF PUBLIC HEARINGS

The Climate-Resilient Water Services Project, financed by the International Development Association (the World Bank)

Project Environmental and Social Impact

Modernization of KURSHAB IDS

Kara-suu, Osh oblast **September 25, 2024.**

Attended by:

Akzholova Zh.A. – Chief engineer of Osh MWMU.
Irisaliev K.U. – Head of Kara-Suu RWMU;
Momunov R.I. - Head of EGU Kurshab.
Mamyrov A.T. – Chief engineer of CRWS PIU WRS MWAPI;
Neronova T.I. – Environmental Specialist of CRWS PIU.
Orozalieva S.M. – Social and Gender Specialist CRWS PIU.
Khurtynina T.V. – Chief Design Engineer (CDE), SU-Yapi Company.
Zinina O.V. – Environmental Consultant, United Group Company.
Dr. Deniz Itibar – Director of the SU-Yapi company for water and environmental issues.
Kanaev N.M. – Coordinator of United Group company.

The public hearings were attended by 138 people: representatives of the Osh MWMU, Kara-Suu RWMU, regional and rayon WUA support units, representatives of WUAs who abstract the irrigation water from the MC Otuz-Adyr of the Kurshab River system, heads of Otuz-Adyr canal sections, heads of reservoir departments, representatives of Kara-Suu rayon administration, the public and other interested participants (list attached). The hearings were attended by 23 women.

Chairman of the Meeting - Irisaliev K.U..

Mamyrov A.T. – introduced the information about the project, in which he described the project components and the proposed works. The project is aimed at improving water resources management at the basin level and includes four components. Component 1: Investments in infrastructure facilities and improving the quality of services to ensure water security. It consists of two subcomponents: subcomponent 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Subcomponent 1.1 will be implemented with the support of the DWWSS in the Issyk-Kul and Batken oblasts, and component 1.2. in the Osh, DJalal-Abad and Batken oblasts on the off-farm systems of the rr. “Kurshab, Kara-Unkur-Sai and Shakhimardan”. These public hearings are aimed at informing about impact of the project implementation on environment and social environment during (re)construction work related to modernization of the IDS on the r. “Kurshab”: MC “Otuz-Adyr”, HWS and other infrastructure facilities of the irrigation system abstracting the irrigation water from the r. “Kurshab”.

Khurtynina T.B. - informed about the structures/facilities that are subject to modernization under the project.

Neronova. T.I. – informed the participants of the public hearings about requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's environmental protection policy during the project implementation. The objective of environmental assessment is to identify the significant impact of proposed project on the environment (positive and negative), to determine the appropriate preventive measures and mitigation measures aimed at preventing, minimizing or eliminating any expected irreversible impact.
The proposed project is an adaptation to climate change. The implementation of the project will have a positive impact on the environment. Namely, this project is aimed at reducing water losses in irrigation systems, improving water management, increasing agricultural productivity and improving soil fertility. At the same time, during (re)construction work, some potentially negative impacts on the environment are possible in the project areas, which must be addressed, preventive actions taken and appropriate mitigation measures taken during the planning, development, construction, operation and maintenance. Potential negative impacts are relatively minor, and the positive economic, social and environmental benefits significantly outweigh them in environmental assessments. These impacts are discussed below. The main impact that may be identified as a result of (re)construction work:

1) Cutting trees and shrubs.
2) Soil pollution at a (re)construction site.
3) Groundwater pollution at a (re)construction site.
4) Landscape degradation, destruction of natural habitats of wildlife.
5) Air pollution and impact on workers/population during traffic and heavy equipment operation.

One of the serious problems is the cutting of trees and shrubs growing within the water protection zone of canals. Despite the fact that the Water Code ensures an exemption from paying compensation for damage associated with the cutting of green spaces, the World Bank requirements provide the planting of new green spaces instead of cut trees. In this regard, when designing structures/facilities, the BOQ includes the financial costs for cutting trees, purchasing seedlings and planting.

To prevent or mitigate the negative impact of (re)construction, an ESMP is elaborated for each (re)construction of structure/facility. It includes a mitigation and monitoring plan for both the construction phase and the operation and maintenance (O&M) phase. All risks of a (re)construction phase are easily controlled and eliminated. They can be minimized with proper elaboration on mitigation measures and control over the Contractor during performance of works.

Of the risks of O&M phase, the risk of landscape deterioration and destruction of the natural habitat of animal world during cleaning of earthbed canals and drains is obvious, and easily controlled. The risks of pollution of surface and groundwater with agrochemicals, due to the excessive use of pesticides and mineral fertilizers, soil erosion associated with the current practice of agricultural production, an increase in groundwater levels in the zone of their shallow occurrence due to excessive irrigation and, as a result, soil salinization, require special monitoring. The need for mitigation measures at the O&M stage is determined precisely in the process of environmental monitoring.

Orozalieva. S. - informed the participants of the public hearings about results of the comprehensive social screenings conducted on structures/facilities under IDS "Kurshab". She spoke in detail about the World Bank's social and environmental standards applicable under the project, in particular, she focused on the ESS5 standard: Land Acquisition, Land Use Restrictions, and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure. Thus, ESS 5 is considered appropriate due to potential investments under Component 1, which may require some temporary and/or permanent physical and economic displacement or cause changes in land use, or access to land in areas of certain activities, if any.

In accordance with the World Bank requirements ESS1; the Project will implement and apply the Grievance Redress Mechanism (GRM) for subcomponent 1.2. "Irrigation and Drainage Services" for individuals affected under the Project. The GRM is a process of obtaining prompt, objective information, evaluation, consideration, and satisfaction of complaints (applications, proposals, complaints, requests, positive feedback) related to implementation of the Project
Complaints or grievances can be individual or collective. The mechanism will also allow anonymous complaints to be filed and addressed. Communities and individuals who believe they are being adversely affected by the World Bank-supported project may also file complaints with the World Bank's Complaint Redress System (CRS). The CRS ensures that complaints received are addressed in a timely manner to resolve project-related issues. Affected communities and individuals may submit their complaint to the World Bank's independent review panel, which defines whether harm has occurred or is likely to occur as a result of the World Bank's failure to comply with its policies and procedures. Complaints may be filed at any time after concerns have been brought directly to the attention of the World Bank and Bank management has been given an opportunity to respond. For information on how to file complaints with the World Bank's corporate Complaint Redress System (CRS), please visit; http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service. the Information on how to file complaints with the World Bank Inspection Panel can be found on the website www.inspectionpanel.org.

Q/A:

Abdinazarov. A - How many meters is the water protection zone of the canals?
Neronova. T.I. - The water protection zone of a canal depends on the throughput of canal. According to the Regulation on water protection zones and strips of water bodies, if the capacity of a canal is from 5 to 10 m³, the water protection zone is 50 m.

Arapbaev A. - Will they monitor the water quality in the canals? If so, who will do it?
Neronova. T.I. – the Water quality monitoring is performed by the regional department of the Ministry of Natural Resources. They execute the scheduled measurements. MWMU/RWMU can contact them for information and leave a request for monitoring in this canal.

Akaeva B. - Where will construction waste and household waste be taken after construction?
Neronova. T.I. - Construction and household waste will be taken by the contractor to places agreed upon with local governments. Construction waste can be reused, which are subject to use.

Azimzhanov Zh. - Who are vulnerable groups?
Orozalieva. S. – Vulnerable groups include the elderly, disabled, female-headed households, poor households and low-income households.

Mamytov T. - Who can file a complaint?

Orozalieva. S. – the residents who have questions and comments during (re)construction work or during implementation of the project activities can file a complaint. Any resident of the area where the project is being implemented can file a complaint. Complaints can be filed at any time verbally or in writing during the preparation and implementation of the project.

Ozgonov A. - What does forced resettlement\relocation mean?

Orozalieva. S. - The forced seizure of land plots as a result of which there is a direct or indirect economic or social impact through: a) loss of benefits from the use of such land plots; b) resettlement due to loss of housing; c) loss of assets or access to assets; d) loss of sources of income or means of livelihood, regardless of whether the PAPs will be resettled elsewhere.

Head of WUA "Vorukh"; Ali Marat - Will repair works be carried out on the on-farm canals?
Mamyrov A.T. - The project will modernize the on-farm canals: MKC and K-9-1.

WUA "Eshme"; Altybaev Zh. - On the Otuz-Adyr canal, the water outlet on main canal into the on-farm canal is clogged. Will the water outlet be cleaned?
Khurtynina T.V. - It is necessary to comply with the operating rules, after the reconstruction, the water level will increase, which will improve water delivery to the on-farm water canal.

Kudayberdi. - Will a bridge be built in the upper part of village "Jany-Aryk" on the Otuz Adyr canal below the tunnel, with increase in throughput of the canal, will it pass the maximum flow under the bridge?
Khurtynina T.V. - The project plans to reconstruct the bridge.

Minbaev Z. – WUA "Eshme" deliver water to 350 hectares,the on-farm canal is in an emergency condition, will it be repaired?

Mamyrov A.T. - This project does not include the repair of this canal. Contact the a/o or Akim with this question.

In conclusion, all those present supported the implementation of this project.

Irisaliev K.U. on behalf of all those present thanked for the support and information provided.

Chairman	**K. Irisaliev.**
Chief Engineer Osh MWMU	**Zh. Akzholova.**
PIU Chief Engineer	**A. Mamyrov.**
PIU Environmental Specialist	**T. Neronova.**
PIU Social and Gender Specialist	**S. Orozalieva.**

ПРОТОКОЛ ОБЩЕСТВЕННЫХ СЛУШАНИЙ
Проект «Улучшение водохозяйственных услуг, устойчивых к изменению климата», финансируемый Международной ассоциацией развития (Всемирный банк).

Воздействие на окружающую и социальную среду

Модернизация ирригационно-дренажной системы на р. Куршаб

г. Кара-Суу, Ошская область **25 сентября 2024г.**

Присутствовали:

Акжолова Ж.А. – главный инженер Ошского ГУВХ;
Ирисалиев К.У. – Начальник Кара-Суйского РУВХ;
Момунов Р.И. Начальник ЭГУ Куршаб
Мамыров А.Т. – главный инженер ОРП УВУУИК СВР МВРСХПП КР;
Неронова Т.И. – специалист по ООС ОРП УВУУИК;
Орозалиева С.М. – специалист гендерным и социальным вопросам ОРП УВУУИК;
Хуртынина Т.В – ГИП, инженер-проектировщик, компания SU-Yapi
Зинина О.В – специалист по ООС компания «Юнайтед групп»
Др. Дениз Итибар – Директор компания SU-Yapi по водным и экологическим проблемам
Канаев Н.М. – Координатор компании «Юнайтед групп»

В общественных слушаниях приняли участие 138 человек: представители Ошского Главного управления водного хозяйства (ГУВХ), Кара-Суйского районного управления водного хозяйства (РУВХ), областной и районный отделы поддержки АВП, представители АВП, осуществляющие забор воды из магистрального канала Отуз-Адыр системы реки Куршаб, начальники участков канала Отуз-Адыр, руководители управлений водохранилищ, представители районной администрации г. Кара-Суу, общественность и другие заинтересованные участники (список прилагается). В слушаниях приняли участие 23 женщины.

Председатель собрания -Ирисалиев К.У.

Мамыров А.Т. выступил с информацией о проекте, в которой рассказал о компонентах проекта и предполагаемых работах. Проект направлен на улучшение управления водными ресурсами на уровне бассейнов и состоит из четырех компонентов. Компонент 1: Инвестиции в объекты инфраструктуры и повышение качества услуг в целях обеспечения водной безопасности. Он состоит из 2-х подкомпонентов: подкомпонент 1.1. Услуги питьевого водоснабжения и водоотведения и подкомпонент 1.2: Услуги ирригации и дренажа. Подкомпонент 1.1 будет реализован при поддержке ДРПВВ в Иссык-Кульской и Баткенской областях, а компонент 1.2. в Ошской, Джалал-Абадской и Баткенской областях на межхозяйственных системах рек Куршаб, Кара-Ункур-Сай и Шахимардан. Настоящие общественные слушания направлены на информировании о влиянии реализации проекта на окружающую среду и социальную среду в ходе строительных работ, связанных с модернизацией ирригационно-дренажной сети на реке Куршаб: межхозяйственный канал Отуз-Адыр, ГВС и другие объекты инфраструктуры ирригационной системы, питающейся из р. Куршаб.

Хуртынина Т.В. проинформировала об объектах, которые подлежать реабилитации и модернизации в рамках проекта.

Неронова Т.И. – рассказала участникам общественных слушаний о требованиях природоохранного законодательства Кыргызской Республики и политике Всемирного Банка по охране окружающей среды при реализации проекта.

Задача оценки окружающей среды заключается в том, чтобы выявить существенное воздействие предлагаемого проекта на окружающую среду (позитивное и негативное), определить соответствующие превентивные меры и меры по смягчению воздействия, направленные на предупреждение, минимизацию или устранение любого ожидаемого необратимого воздействия.

Предлагаемый проект является адаптацией к изменению климата. Реализация проекта окажет положительное воздействие на окружающую среду. А именно, данный проект направлен на сокращение водопотерь в ирригационных системах, улучшение управления водными ресурсами, повышение сельскохозяйственной производительности и улучшение плодородия почв.

Вместе с тем, при проведении строительных работ, возможны проявления некоторых потенциально негативных воздействий на окружающую среду в проектных площадях, на которые необходимо обратить внимание, принять превентивные действия и соответствующие меры по их смягчению во время планирования, разработки, строительства, эксплуатации и технического обслуживания. Потенциальные негативные воздействия являются относительно незначительными, а позитивные экономические, социальные и экологические выгоды значительно перевешивают их в оценке окружающей среды. Рассмотрение этих воздействий приводится ниже.

Основное воздействие, которое может быть оказано в результате ведения строительных работ:

1) Вырубка древесно-кустарниковой растительности.
2) Загрязнение почв на строительной площадке.
3) Загрязнение подземных вод на строительной площадке.
4) Ухудшение ландшафта, разрушение естественной среды обитания животного мира
5) Загрязнение воздуха и воздействие на рабочих/население при движении транспорта и работе тяжелой техники.

Одной из серьезных проблем является вырубка древесно-кустарниковой растительности, произрастающей в водоохранной зоне каналов. Несмотря на то, что в Водном кодексе предусмотрено освобождение от уплаты компенсации за ущерб, связанный с вырубкой зеленых насаждений, требования Всемирного банка предусматривают посадку новых зеленых насаждений вместо вырубленных. В этой связи, при проектировании объектов, в ВОР предусмотрены финансовые затраты на рубку деревьев, приобретение саженцев и посадку.

Для предотвращения или смягчения негативного воздействия строительства для каждого объекта реабилитации составляется ПУОСС. Он включает в себя план смягчающих мер и мониторинга, как для фазы строительства, так и для фазы эксплуатации и технического обслуживания (ЭиТО).

Все риски фазы строительства легко контролируются и устраняются. Они могут быть сведены к минимуму при должном проектировании смягчающих мер и контроле над Подрядчиком при выполнении работ.

Из рисков фазы ЭиТО риск ухудшения ландшафта и разрушения естественной среды обитания животного мира при чистке земляных каналов и дрен является явным и легко контролируемым. Риски загрязнения поверхностных и подземных вод агрохимикатами вследствие избыточного использования пестицидов и минеральных удобрений, эрозии почв, связанной с существующей практикой ведения сельского производства, повышения уровней грунтовых вод в зоне их не глубокого залегания в связи с избыточным орошением и, как следствие, засоления почв, требуют специального мониторинга. Необходимость в смягчающих мерах на стадии ЭиТО определяется именно в процессе экологического мониторинга.

Орозалиева С. Рассказала участникам общественных слушаний о результатах проведенной комплексной социальной проверки по реабилитируемым объектам ирригационно-дренажной системы р. Куршаб.

Подробно рассказала о применимых к проекту социально-экологических стандартах Всемирного банка, в частности остановилась на стандартах ЭСС5: Приобретение земли, ограничения землепользования и вынужденное переселение, и ЭСС10: Взаимодействие с заинтересованными сторонами и раскрытия информации.

Так, ЭСС 5 считается уместным из-за потенциальных инвестиций по Компоненту 1, которые могут потребовать некоторого временного и/или постоянного физического и экономического перемещения или вызвать изменения в землепользовании или доступе к земле в зонах определенных видов деятельности.

В соответствии с требованиями ЭСС10 Всемирного банка, Проектом будет внедрен и применен Механизм подачи и рассмотрения жалоб (МРЖ) по подкомпоненту 1.2. «Услуги ирригации и дренажа» для лиц, попадающих под воздействие Проекта. МРЖ является процессом получения оперативной, объективной информации, оценки, рассмотрения, удовлетворения жалоб (заявлений, предложений, жалоб, запросов, позитивных отзывов), связанных с реализацией Проекта.

Обращения или жалобы могут быть как индивидуальными, так и коллективными. Этот механизм также позволит подавать и рассматривать анонимные жалобы.

Сообщества и отдельные лица, которые считают, что на них проект, поддерживаемый Всемирным банком (ВБ) оказывает отрицательное воздействие, могут подавать жалобы также в Службу рассмотрения жалоб Всемирного банка (СРЖ). СРЖ обеспечивает своевременное рассмотрение полученных жалоб с целью решения проблем, связанных с проектом. Затронутые проектом сообщества и отдельные лица могут подать свою жалобу в независимую инспекционную комиссию Всемирного банка, которая определяет, был ли вред причинен или может возникнуть в результате несоблюдения Всемирным банком его политики и процедур. Жалобы могут подаваться в любое время после того, как проблемы были доведены непосредственно до сведения Всемирного банка, и руководству Банка была предоставлена возможность ответить. Информацию о том, как подавать жалобы в корпоративную службу рассмотрения жалоб Всемирного банка (СРЖ), см. на веб-сайте http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service. Информацию о том, как подавать жалобы в Инспекционную группу Всемирного банка, можно найти на сайте www.inspectionpanel.org.

Вопросы и ответы

Абдиназаров. А – Сколько метров составляет водоохранная зона каналов?

Неронова Т.И. Водоохранная зона канала зависит от пропускной способности канала. Согласно Положения о водоохранных зонах и полосах водных объектов, если пропускная способность канала от 5 до 10 м^3, водоохранная зона составляет 50 м.

Арапбаев А. – Будут проводить контроль за качеством воды в каналах? Если да, то кто это будет делать?

Неронова Т.И. – Мониторинг качества воды проводит региональное управление Минприроды. Они проводят плановые замеры. РУВХ или ГУВХ могут обратиться к ним за информацией и оставить заявку на проведение мониторинга в данном канале.

Акаева Б. –

Строительные отходы и бытовой мусор, куда будет после строительства вывезен?

Неронова Т.И. – Строительные и бытовые отходы будут вывозится подрядчиком в места, согласованные с органами местного самоуправления. Строительные отходы могут использованы повторно, которые подлежат использованию.

Азимжанов Ж.

Кто относится к уязвимым группам?

Орозалиева С. – К уязвимым группам относятся пожилые люди, инвалиды, домохозяйства, возглавляемые женщинами, бедные домохозяйства и домохозяйства с низким уровнем дохода.

Мамытов Т.

- Кто может обратиться с жалобой?

Орозалиева С. – Лица, у которых возникают вопросы и замечания в ходе ведения строительных работ или в ходе реализации проектных мероприятий, могут подать жалобу. С жалобой может обратиться любой житель, где реализуется проект. Жалобы можно подать в любой момент в устной или письменной форме в ходе подготовки и реализации проекта.

Озгонов А.

- Что означает вынужденное переселение?

Орозалиева С. – Принудительное изъятие земельных участков в результате, которого оказывается прямое или косвенное экономическое, или социальное воздействие через: a) утрату выгод от использования подобных земельных участков; b) переселение из-за утраты жилья; c) потерю активов или доступа к активам; d) потерю источников доходов или средств к существованию, независимо от решения будут ли ЛПВП переселены в другое место.

Руководитель АВП Ворух- Али Марат

-Будут ли выполнятся ремонтные работы на внутрихозяйственных каналах?

Мамыров А.Т.

- В рамках проекта реабилитируются внутрихозяйственные каналы: МКС и К-9-1 .

АВП Эшме Алтыбаев Ж.

- На канале Отуз-Адыр забился водовыпуск на магистральном канале во внутрихозяйственный канал. Будет ли происходить очистка водовыпуска.

Хуртынина Т.В. -Необходимо соблюдать правила эксплуатации, после реконструкции увеличится горизонт воды , что позволит улучшить подачу воды во в/х канал.

Кудайберди. - Будет ли строится мост в верхней части с. Жаны-Арык на канале Отуз Адыр ниже туннеля, при увеличении пропускной способности канала пропустит ли под мостом максимальный расход

Хуртынина Т.В.- В проекте планируется реконструкция моста.

Минбаев З. -АВП Эшме обеспечивает водой 350 га в/х канал находится в аварийном состоянии будут ли он ремонтироваться?

Мамыров А.Т.

- В рамках этого проекта не предусмотрен ремонт данного канала. Обращайтесь с этим вопросов в а/о или Акиму

В заключении, все собравшиеся поддержали реализацию данного проекта.

Ирисалиев К.У. от имени всех присутствующих поблагодарили за поддержку и предоставленную информацию.

Председатель **К. Ирисалиев**

Гл. инженер Ош ГУВХ **Ж. Акжолова**

Главный инженер ОРП **А. Мамыров**

Специалист по охране окружающей среды **Т. Неронова**

Специалист по гендерным и социальным вопросам **С. Орозалиева**

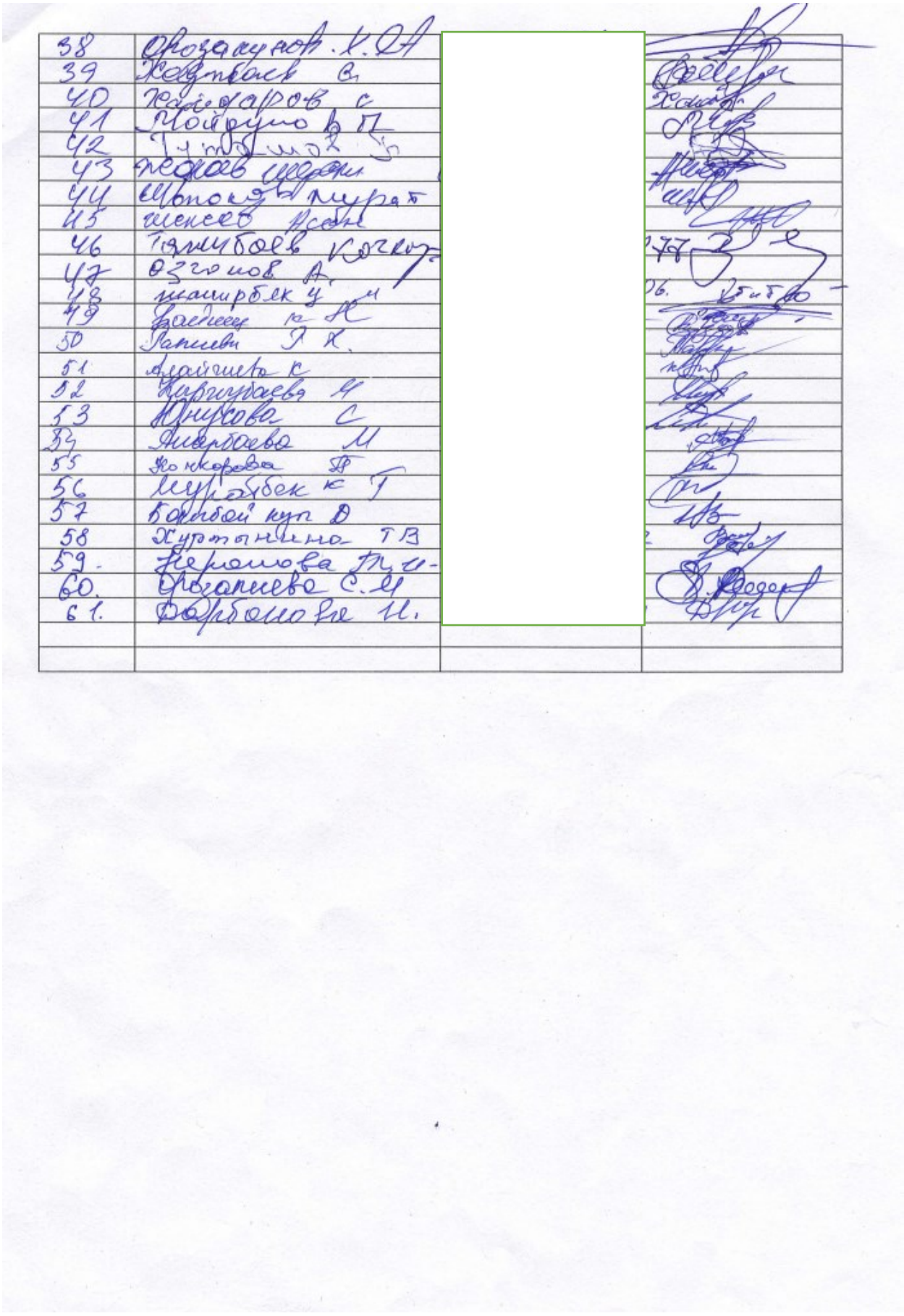
Общественные слушания
По проекту Всемирного банка «Улучшение водохозяйственных услуг, устойчивых к изменению климата на окружающую и социальную среду

25 сентября 2024г.

Ошская область Кара-Суйский район

СПИСОК УЧАСТНИКОВ

№№ пп	Участники Фамилия, имя, отчество	Телефон	Подпись
1.	Абсаламов Р.		
2.	Тамашбаев А		
3.	Тургунбаев С		
4.	[illegible] Э.		
5.	[illegible] Б		
6.	Мирсалиев К. У		
7.	Марзабаев А		
8.	Орунбаев М		
9.	Арпенова А		
10.	Султанов И		
11.	Алиев Т.		
12.	Курбанов Т		
13.	Исмаилов Р		
14	Арапов М		
15	Атанов Б		
16	Апапов И		
17	Жумусов. М.		
18	Сайидов О		
19	Саматов А		
20	Бирназаров Н.		
21	Султанов О		
22	Котнов [illegible]		
23	Ахмадов С		
24	Асанов Т.		
25	Адраев М.		
26	Мамадалиев А		
27	Абселов А.		
28	Алимбаев М.		
29	Тургунбаев К.		
30	Бекназаров Ж		
31	[illegible]		
32	Мархабаев М.		
33	Назаров Д		
34	[illegible] А		
35	Осмонов О. Б.		
36	Сейтов Жооса А.		
37	Айтабаев Эли		



Общественные слушания

По проекту Всемирного банка «Улучшение водохозяйственных услуг, устойчивых к изменению климата на окружающую и социальную среду

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Ошская область Кара-Суйский район

СПИСОК УЧАСТНИКОВ

№№ пп	Участники Фамилия, имя, отчество	Телефон	Подпись
1	Берикбаев Б. С		
2	Салиев Р.		
3	Конкошова Р		
4	Усманова Ф		
5	Шамасабирова Р		
6	Эрмеков Э.		
8	Авазов Эдиер		
8	Сафиков [illegible]		
9	Жумабаева К		
10	Жумаев А		
11	[illegible]		
12	[illegible]		
13	Абсаматов З.		
14	Бакалбаев К		
25.	Ташболов Н		
26.	Абдылов А.		
27	Шамаматбеков		
28	Масаадыков С.		
29	Эрманатов У		
30	Кыргызбаев М		
31	Момунбайева Ю		
32	Бекибаева Г.		
33.	Маматмуратова А.		
34	Жаркынбеков Ж.		
35	Турсаев Б		
36	Урманов К		
37	Садыков Ш. Ш		
38	Б. Урмонбеков Б		
39	Темебаев С		
40	Азимжанов Ж		
41	Мейманашов М.		
42	У. Камчыев		
43	М. Абдыгаев		
44	Омурова К		
45	Малабеков Т		
46	Атокуров Э		

Общественные слушания
По проекту Всемирного банка «Улучшение водохозяйственных услуг, устойчивых к изменению климата на окружающую и социальную среду

25 сентября 2024г.

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СПИСОК УЧАСТНИКОВ

№№ пп	Участники Фамилия, имя, отчество	Телефон	Подпись
1	Абдыназаров		
2	Шарасалиев К.У.		
3	Осоров Т.		
4	Атабаев		
5			
6	Рахманкул у. А		
7	Нейманов Ж		
8	Ашимбеков И		
9	Осмонов, А		
10	Турсов А		
11	Бактыбаев А.		
12	Саидиев С		
13	Арапбаев Алмаз		
14	Шамиев М.М		
15	Маматалиев А.		
16	Малытов У		
17	Молдобаев З.		
18	Алиев Айбек		
19	Кадыров Ж		
20	Эгемназар у К		
21	Эшиев Д		
22	Тойгулиев		
23	Абдрашев Т		
24	Ыстыбаев. Ф		
25	Султанбаев		
26	Жусупов		
27	Жумаилаева		
28	Шамиев		
29	Мамасадыков М		
30	Сейитназаров М		
31	Алиев Бекшемай		

ANNEX 3. POSITIVE CONCLUSION OF THE STATE ENVIRONMENTAL EXPERTISE

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
ЖАРАТЫЛЫШ РЕСУРСТАРЫ,
ЭКОЛОГИЯ ЖАНА ТЕХНИКАЛЫК
КӨЗӨМӨЛ МИНИСТРЛИГИ

ОШ РЕГИОНАЛДЫК
БАШКАРМАЛЫГЫ
723500; Ош шаары, Курманжан-Датка к.130
тел:(03222) 7-06-89, факс: (03222) 7-06-59

МИНИСТЕРСТВО ПРИРОДНЫХ
РЕСУРСОВ, ЭКОЛОГИИ И
ТЕХНИЧЕСКОГО НАДЗОРА
КЫРГЫЗСКОЙ РЕСПУБЛИКИ

ОШСКОЕ
РЕГИОНАЛЬНОЕ УПРАВЛЕНИЕ
723500; г.Ош, ул.Курманжан-Датка 130
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«27» 06 2024-ж/г. №02-1/166

Утверждаю
Начальник Ошского регионального
управления Министерства природных
ресурсов, экологии и технического надзора
Кыргызской Республики
Т.Мамашов
«27» июня 2024 г.

ЗАКЛЮЧЕНИЕ
ГОСУДАРСТВЕННОЙ ЭКОЛОГИЧЕСКОЙ ЭКСПЕРТИЗЫ
на Рабочий Проект «Головное водозаборное сооружение. Магистральный канал Отуз-Адыр. Тоннель»

Общие сведения.

На рассмотрение в Ошское региональное управление Министерства природных ресурсов, экологии и технического надзора Кыргызской Республики на государственную экологическую экспертизу представлен Рабочий Проект «Головное водозаборное сооружение. Магистральный канал Отуз-Адыр. Тоннель», разработанный в 2024 году, ОсОО «Энкон» лицензия серия КРО-1-2 №08510 от 12.03.2019года.

Заказчик: Служба водных ресурсов. Министерства, сельского, водного хозяйства и регионального развития.

Государственная экологическая экспертиза проекта проведена экспертной комиссией, созданной приказом Ошского регионального управления Министерства природных ресурсов, экологии и технического надзора Кыргызской Республики от 23.04.2024 года №27-П.

Общая часть.

Оросительная система находится на территории Кыргызской Республики Ошской области (к востоку от г.Ош), и подает оросительную воду на земли Карасуйского и Узгенского районов. Источником орошения является р.Куршаб. На вышеназванной реке было построено головное водозаборное сооружение (ГВС) плотинного типа, распределяющее воду на два оросительных канала: левобережный - Отуз-Адыр и правобережный - Кочкор-Ата. В настоящее время под ГВС подвешено 15 400 га орошаемых земель, из-них земли Карасуйского района (под каналом Отуз-Адыр) - 12163га, земли Узгенского района (канал Кочкор-Ата) – 3237га.

Согласно паспорту сооружения ГВС было сдано в эксплуатацию в 1954 году с водозаборной способностью 15 м3/с.

Левобережный канал Отуз-Адыр на 12-том километре врезается в холмистые отроги Алайского хребта, где построен тоннель коробчатого типа протяженностью 442м.

Существующий тоннель облицован монолитным ж.бетоном. Тоннель в удовлетворительном состоянии. Пропускная способность тоннеля составляет около 15 м3/с.Дорожная сеть участка работ представлена в виде асфальтовых, грунтовых и полевых дорог.

Годовое количество осадков - 300–500 мм, на склонах Ферганского хребта 900–1050 мм. В нижней и средней части территории 50–70 % осадков выпадают в холодный период года, в верхней зоне преобладают осадки теплого периода.

Основной максимум осадков приходится на март-апрель, вторичный - на ноябрь, минимум – на август-сентябрь. Снежный покров в нижней зоне невысокий, 10–25 см, залегает 1.5–2 месяца, в верхней зоне до 4 месяцев.

Среднегодовая температура воздуха: в нижней зоне - +11…+13°С; +8…+10°С - в среднегорной, и на высотах от 2500 м до 3000 м н.у.м. - 0…+2° С тепла.

Продолжительность холодного периода со среднесуточной температурой воздуха ниже 0° на высоте 600–1000 м над уровнем моря составляет 60–70 дней в году, на высотах 2000-2200 м увеличивается до 100-135 дней.

Средняя температура января в нижней и средней зоне -2…-4°С и на высотах от 2500 м до 3000 м -10…-11° С. Средняя минимальная температура в нижней зоне +5…+8°, в предгорьях +7…+10°, на высотах 2500–3000 м - +15…+17°, абсолютный минимум -21…-25°, в нижней зоне, и -24…-28° мороза в предгорьях.

Наиболее теплый период со среднесуточной температурой более 10° тепла в нижней зоне продолжается 200–210 дней, безморозный период 200–235 дней. На высоте 1800 м над уровнем моря 150–160 дней и 150–170 дней, соответственно.

Растительность. В основном растительность представлена деревьями, посаженными вдоль канала и сельскохозяйственными угодиями. На территории строительства растений занесенных в Красную Книгу КР не обнаружены.

Животный мир. Животный мир представлен в основном птицами: воробьи, голуби, дрозды, стрижи, синицы, вороны, галки и др.

Животный мир представлен небольшим перечнем млекопитающих: летучие мыши, мышевидные грызуны (домовая мышь, серый хомячок, крысы).

Часть участка строительства находится на территории жилого сектора, что определяет наличие синантропных видов животных.

Река р. Куршаб является левобережным притоком р. Карадарья, впадая в нее на 142 км от устья. Водосборный бассейн р. Куршаб (Куршабдарья, Гульча) расположен на северном склоне Алайского хребта в его крайней восточной части. Истоки прослеживаются на отметке около 3700 м. н.у.м. (наивысшая точка бассейна: г. Сугут - 4696 м.н.у.м.), характеризуется слабым развитием оледенения, <1%.

Головное водозаборное сооружение канала Отуз-Адыр расположено в 42,5 км ниже гидрометрического поста Гульча, в пределах данного участка в р. Куршаб впадают ряд небольших притоков: правобережные – Талдыбулак, Кызылсу, Ирису, левобережный – Багарчи.

Основными целями Проекта является следующее: Расширение доступа к устойчивым к изменению климата водным услугам в отдельных бассейнах рек Карадарья – Сырдарья - Амударья. Укрепление институционального потенциала для управления водными ресурсами, устойчивыми к изменению климата, на местном и национальном уровнях.

В рамках проекта улучшения водохозяйственных услуг была запланирована модернизация оросительной системы Куршаб общей площадью 15 400га, с модернизацией оросителей (магистральных, межхозяйственных и внутрихозяйственных каналов) общей протяженностью 162,62км. Данный вопрос был рассмотрен на совместном совещании ОРП Службы водных ресурсов (СВР) с инженерно-консалтинговой компанией SU-YAPI с участием руководителя проекта со стороны Всемирного Банка и директора СВР. Поскольку Контракт предусматривает модернизацию существующей системы Куршаб насколько позволяет выделенный бюджет, стороны принципиально договорились, что в первую очередь вместо частичной реконструкции и реабилитации всех каналов на различных участках Узгенского и Кара-Суйского районов, провести проектирование на полную реконструкцию и реабилитацию магистрального канала Отуз-Адыр насколько позволит бюджет. Модернизацию начать с ГВС и в зависимости от финансовых возможностей продолжить до тех участков канала, докуда позволят средства проекта. Все остальные работы, предусмотренные по модернизации межхозяйственным и

внутрихозяйственным каналам, будут исключены из строительных работ, с перераспределением финансовых средств на модернизацию магистрального канала. Проектная документация по межхозяйственным и внутрихозяйственным оросителям будет выполнена в рамках данного проекта второй очередью.

Потери оросительной воды, при фильтрации, в связи с необлицованными оросительными каналами, могут вызвать недостатки воды с одной стороны, и проблемы дренажа, с другой стороны. Кроме того, высокое стояние воды сопутствует засолению земель грунтовыми водами.

Для предотвращения этих потерь магистральные каналы необходимо облицевать бетоном. В этом плане предусмотрена облицовка канала по всей протяженности с ПК0+00 до ПК400+00 монолитным бетоном. Характеристики этой облицовки определены в проектных критериях.

Устройство новой облицовки сечения канала и восстановительные работы по ремонту бетонной облицовки существующего русла производятся после разборки локальных участков разрушенного бетона, который вывозится на специально отведенные места.

На верхнем бьефе ГВС имеется ремонтный сброс, на котором старое мехоборудование будет заменено на усиленные щиты-затворы ГС100*250 -6штук. Кроме этого, предусматривается строительство правобережной дамбы протяженностью 250,8 м, по обе стороны данного сооружения по створу. Общая высота дамбы составит 4,9метров, строительная высота 3,5 метров, фартук высотой 1,4м. Крепление дамбы по дну и откосу будет из камня d=70см в 2 слоя.

В настоящее время максимальная пропускная способность ГВС составляет около 20 м3/с, планируется увеличение расхода до 5м3/с. Поэтому на верхнем бьефе ГВС предусматривается строительство дополнительного канала L=451метров с головным водозабором на 5м3/с, с подключением к существующему каналу в обход ГВС. Данный канал состоит из следующих частей: подводящий канал, однокамерный отстойник и отводящий канал, кроме этого, предусматривается 1шт пульпосбросное сооружение и 1шт переходное сооружение от существующего 3-камерного отстойника. Канал будет оборудован мостовым переездом, где пересекает существующую дорогу.

Подводящий канал, протяженность L=255метров. Канал будет выполнен из железобетонных Г блоков, по проекту предусмотрен монтаж 170 шт Г150. Основание под Г блоками будет бетонная подготовка t=10 см, на гравийно-песчаной подготовке t=10 см, дно между Г блоками будет забетонировано гидротехническим бетоном В15 F150 W6 с выполнением армирования. Ширина канала 2,5м, строительная высота 1,35м.

Мостовой переезд: На пересечении подводящего канала с существующей дорогой предусматривается строительство мостового переезда, который будет выполнен из мостовых плит ПМ-4,0 – 4шт и ПМК-4,0 -2шт.

Однокамерный отстойник: протяженность L=131,9метров. Дополнительно к существующему трехкамерному отстойнику проектом предусмотрено строительство однокамерного отстойника с расчетной пропускной способностью до 5м3/с, который будет выполнен из монолитного гидротехнического железобетона В25 F150 W6.

Отводящий канал: протяженность L=64метров. Будет выполнена из монолитного гидротехнического железобетона В25 F150 W6.

В период строительства основным источником воздействия на окружающую среду оказывают строительно-монтажные работы:

- Автотранспорт работающий в процессе строительства. При строительстве будут использоваться: бульдозеры (1 шт), экскаваторы (1 шт), автокран (1 шт), а также грузовая машина (1 шт) для перевозки строительного материала. Автотранспорт будет использоватся при рытье каналов.
- Землянные работы. Землянные работы представляют собой рытье канала (расширение, углубление). По возможности для сокращения пылеобразования будет использоваться ручной труд и применяться обеспыливание.

- Сварочные работы. Сварочные работы в основном предвидится при сварке детелей гидропропусков. При сварочных работах будут использоваться электроды Э42 А.
- Лакокрасочные работы. При лакокрасочных работах проводимых при установке гидропропусков используются грунтовка ГФ 021, эмаль ПФ 115.
- Жизнедеятельность строителей. Жизнедетельность строителей выражается в водопотреблении и водоотведении, а также при приготовлении пищи и питьевые нужды.
- Гидроизоляционные работы. В качестве гидроизоляции используется битумная обмазка.

Источниками воздействия на окружающую среду в период строительства являются:

- строительные и транспортные машины и механизмы;
- объекты социально-бытовой и производственной инфраструктуры строительства.

Воздействие на поверхностные воды сведены к миниммуму т.к. строительные работы производятся только в пределах участков определенных стройгенпланом.

Воздействие на подземные воды:

Источниками воздействия на подземные воды в период строительства являются:

- строительные и транспортные машины и механизмы;
- объекты социально-бытовой и производственной инфраструктуры строительства.

Источниками выбросов загрязняющих веществ в атмосферу в период строительства являются:

Автотранспорт, используемый при строительстве;

-Гидроизоляционные;

-Земляные работы;

-Сварочные работы.

В процессе проведения работ по строительству ирригационной системы предусматриваются выбросы загрязняющих веществ в атмосферный воздух от землянных, буровых работ и работе строительной техники.

Земляные работы включают в себя выемочно-погрузочные, автотранспортные, планировочные работы. При производстве земляных работ на участках линейных сооружений складирование грунта производится на месте производства работ (на бровке траншей).

Общая продолжительность работ составляет 2 года (в месяцы когда отсуствует ирригация).

От стационарных источников выбросов при производстве строительных работ в атмосферный воздух будут выделятся: пыль породного материала (неорганическая пыль), оксиды железа, марганца, азота, углерода, кремния, фтороводород, винилхлорид, уайт спирит, бенз(а)пирен.

С отработанными газами двигателей строительного и автотранспортного оборудования будут выделятся: оксид углерода, оксиды азота, твердые частицы (сажа), диоксид серы, углеводороды.

Все отходы образующиеся при строительстве системы ирригации будут складироваться на площадке строительства с последующим вывозом на свалку согласно договору с МСУ.

В связи с тем ,что во время работы по реабилитациив основном образуются отходы III, IV и V класса опасности, условия их хранения соответствуют Закону КР Об отходах производства и потребления от 15 августа 2023 года № 181». Демонтируемый материал будет передан РУВХ и/или АВП и использован повторно. В случае образования отходов от демонтажа, которые не могут быть использованы повторно, они будут переданы для утилизации на санитарный полигон по согласованию с МСУ и/или организацией имеющий лицензию на этот вид деятельности.

Согласно Закону Кыргызской Республики «Общий технический регламент по обеспечению экологической безопасности в Кыргызской Республике» от 8.05.2009 №151 категория опасности по образованию отходов равна II.

Выводы.

Многолетние насаждения сохранять, деревья и кустарники попадающие под строительство получить специальное разрешение на снос и вырубку.

При проведении строительных работ необходимо выполнять с соблюдением следующих законодательных актов Кыргызской Республики принятых Жогорку Кенешем в 1999 году:

-Закон «Об охране окружающей среды»;

-Закон «О биосфере территории Кыргызской Республики»;

-Закон «Об экологической экспертизе»;

-Закон «О воде»;

-Закон «Общий технологический регламент по обеспечению экологической безопасности в Кыргызской Республике»;

-«Положение о рекультивации (восстановлении) земель и порядке их приемки в эксплуатацию, утвержденное Постановлением Правительства КР от 12 июля 1993 года, №304».

Рассмотрев представленные материалы, Ошское региональное управление Министерства природных ресурсов, экологии и технического надзора Кыргызской Республики согласовывает и выносит **положительное** заключение государственной экологической экспертизы на Рабочий Проект «Головное водозаборное сооружение. Магистральный канал Отуз-Адыр. Тоннель».

При этом Служба водных ресурсов. Министерства, сельского, водного хозяйства и регионального развития необходимо:

1. За достоверность координатных точек, объема площади и правильности составления Проекта ответственность несет - заказчик и разработчик Проекта.

2. В период деятельности обогатительной фабрики получать ежегодные разрешения на выбросы загрязняющих веществ в атмосферу, размещение отходов в окружающую среду, сброс сточных вод.

3. В период деятельности обогатительной фабрики представлять исходные данные для расчета нормативной платы за загрязнение окружающей среды.

4. Для дальнейшего контроля, перед началом работ необходимо уведомить СЭТН Ошского регионального управления (по Кара-Суйскому району) Министерства природных ресурсов, экологии и технического надзора Кыргызской Республики.

В случае невыполнения условий заключения государственной экологической экспертизы и проведения работ не по проектным решениям, заключение автоматически теряет силу, т.е. не действительна.

Председатель
экспертной комиссии:
заместитель начальника управления: А.Чынкараев

члены экспертной комиссии
комиссии: зав. Отдела ГЭЭ: Д.Аманбаева

гл. специалист отдела ГЭЭ: М.Мамажанов

вед. специалист отдела ГЭЭ: Кубанычбек кызы К.

гл. специалист Ошское главное
управление водного хозяйства: Э.Б.Абдирахманов

гражданский активист: Б.Маткеримов

ANNEX 4. CHECKLIST FOR ENVIRONMENTAL AND SOCIAL SAFETY MEASURES INTRODUCED IN ESMP

Project title _____
Subproject _____

Construction period _____

Construction section (canal, etc.) _____

Works during construction time _____

№	Activities introduced in ESMP	Completed YES/NO	Comments in work register (date)	Completed YES/NO	Comments
1.	The presence of a banner on a construction compound and information posters at a construction site indicating the project, layout of canals modernized, the contractor and the management phone numbers				
2.	The presence of information boards on a construction camp, informing workers about safety and labor protection requirements				
3.	Equipped fire shield on a construction camp				
4.	First aid supplies are available on construction compound location in case of accidents				
5.	Ensuring the supply and replenishment of personal protective equipment (PPE - helmets, safety shoes, gloves, vests) and the use of PPE by workers during (re)construction				
6.	Maintaining an induction register of workers on safety and labor protection measures (initial and periodic)				
7.	Availability of a container in the construction compound for collecting household waste				
8.	Agreement with local governments to remove solid household waste				
9.	Availability of a cesspool or bio-toilet on a construction compound premises				
10.	Watering (re)construction sites and road surfaces within the residential areas during periods of increased dust formation				

11.	Fencing-off (re)construction sites with warning tapes, while executing works within the residential areas				
12.	Install warning signs and regulating a detour road, when crossing roads				
13.	Pollution of the territory of a construction compound and sites with fuels and lubricants				
14.	Perform the planning and restoration works, as the canals completed				
15.	Complaints from local residents or workers				

Technical supervision/ environmental protection specialist _____

NAME **sign**