



KYRGYZ REPUBLIC

**Ministry of Agriculture
Water Resources Service**

and

**State Agency of Architecture, Construction and Housing and Communal
Services**

Department of Construction and Engineering Infrastructure

**CLIMATE RESILIENT WATER SERVICES
PROJECT**

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**ENVIRONMENTAL AND SOCIAL
MANAGEMENT FRAMEWORK**

October 2022

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Abbreviations and acronyms

BOD	Biological Oxygen Demand
BMP	Biodiversity Management Plan
CDN	Collector and Drainage Network
CERC	Contingent Emergency Response Component
CRWSP	Climate Resilient Water Services Project
DCEI	Department of Construction and Engineering Infrastructure of the State Agency for Architecture, Construction and Communal Services (former Department of Drinking Water Supply and Wastewater Disposal)
DG KR	Decree of the Government of the Kyrgyz Republic
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standard
FS	Feasibility study
GM	Grievance Mechanism
GWT	Groundwater Table
ITB	Issyk-Kul-Tarim
ITBb	Issyk-Kul-Tarim basin
HS	Hydraulic structures
HW	Headworks
KR	Kyrgyz Republic
KSAb	Karadarya-Syrdarya-Amudarya basin
MWMU	Main Water Management Unit/OVK
LMP	Labor Management Procedures
LSGA	Local Self-Government Authority
M&E	Monitoring and Evaluation
MNRETS	Ministry of Natural Resources, Ecology and Technical Supervision
MAWRRD	Ministry of Agriculture, Water Resources and Regional Development
MEC	Ministry of Economy and Commerce
NPO	Non-profit organizations
OHSE	Occupational Health Safety & Environment
PIU	Project Implementation Project
RAP	Resettlement Action Plan
RPADWC	Rural public associations of drinking water consumers
RF	Resettlement Framework
SE	Social Environment
SEP	Stakeholder Engagement Plan
SLRC	State Land Reclamation Cadastre
SM	Sexual misconduct
SPZ	Sanitary Protection Zones
SPNA	Specially Protected Natural Areas
US dollars	United State dollar
WB OP	World Bank Operational Policy
WUA	Water Users Association
WHO	World Health Organization
WRS	Water Resources Service of the Ministry of Agriculture
WSSH	Water supply, sanitation, hygiene

1. EXECUTIVE SUMMARY

This Environmental and Social Management Framework (ESMF) is prepared for the Climate Resilient Water Services Project. The Project is implemented by the Project implementing Agencies (WRS/DCEI) funded by the International Development Association and administered by the World Bank. The purpose of the Environmental and Social Management Framework is to outline expected environmental and social risks and impacts of the project and to provide a system for monitoring and managing such impacts during project implementation. Additionally, this framework describes institutional roles and responsibilities for managing environmental and social risks under the project, and the feedback and grievance mechanisms by which citizens and other interested parties can interact with the project implementation agency.

The Project development objective (PDO) is to (i) increase access to climate-resilient water services in selected river basins, and (ii) strengthen institutional capacities for climate-resilient water management at the local and national levels.

The project aims to improve in selected river basins the coverage, quality and efficiency of water supply, sanitation and irrigation services, and strengthen capacity for improved integrated water resources management and of relevant service providers. At the national level the project aims to increase institutional capacities for climate-resilient water management.

The Project includes four components:

Component 1: Infrastructure Investments and Service Improvements

Subcomponent 1.1: Water supply and sanitation infrastructure

Subcomponent 1.2: Irrigation and drainage services improvement

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

Subcomponent 2.1. Institutional strengthening for WSS service delivery

Subcomponent 2.2. Institutional strengthening for irrigation services delivery

Subcomponent 2.3. Water and soil quality monitoring

Subcomponent 2.4. Dam management

Component 3: Project Management, M&E and Professional Development

Component 4: Contingent Emergency Response Component

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 (KSA basin and Issyk-Kul river basins), and rural level activities. The KSA covers (partially) the Jalal-Abad, Osh and Batken regions. The r.b. the Issyk-Kul-Tarim covers the Issyk-Kul oblast.

Potential environmental risks and impacts of the Project

The Project may cause some environmental impacts and risks that may arise from implementation of subprojects. This will mainly be related to (re)construction activities under component 1. These impacts will be considered during the assessment for each a specific site location, and mitigation measures will be elaborated accordingly.

The investments under component 1 will cover (re)construction work to improve small-scale rural drinking water and wastewater treatment systems, including the rehabilitation of existing irrigation and drainage systems. These activities are expected to cause a variety of small to medium local impacts, which may include the following:

- i. increased pollution due to (re)construction waste;
- ii. formation of dust, noise and vibration due to movement of heavy (re)construction machinery and mechanisms;
- iii. associated risks from improper disposal of (re)construction waste and asbestos-containing materials that may be found in old water pipes,
- iv. operational or accidental fuel and lubricants spill-outs of from (re)construction equipment;
- v. inadequate restoration of (re)construction sites after works completed;
- vi. increased traffic and possible health and safety problems of the population and professional activities;
- vii. Potentially temporary local disturbances to biodiversity and living natural resources;

After completion of the (re)construction of facilities, in case of violation of the necessary requirements for operation, potential risks. can be:

- i. destruction of irrigation facilities and canal sides;
- ii. silting and overgrowing of irrigation channels;
- iii. flooding of irrigation facilities;
- iv. leaks from water and sewer networks in case of violation of their integrity;
- v. discharge of polluted wastewater from wastewater treatment plants in case of improper operation;
- vi. contamination of drinking water in case of non-compliance with the regime of sanitary protection zones of drinking water supply facilities.
- vii. operation and maintenance may result in accidents for workers if they do not have suitable equipment (including PPE) and knowledge for the job;
- viii. waste will be generated and disposed of during the operation and maintenance of the drinking water and irrigation infrastructure.

A detailed description of risks and mitigation measures will be described in the ESMP for each Component 1 subproject.

These potential adverse environmental impacts can be easily identified and can be effectively prevented, minimized or mitigated. The ESMF will identify and describe management and mitigation measures and implementation mechanisms related to Component 1 of the project. For activities to be developed and implemented during project implementation, an ESIA /ESMP will be prepared, disclosed and coordinated with the relevant stakeholders for specific locations, and approved by the Bank, prior to the release of relevant bidding documents or the initiation of (re)construction work. The site-specific ESIA/ESMP will also be developed in accordance with the World Bank EHS General Guidelines for Environment and OHS, with particular attention to the Water Supply and Sanitation Guidelines. All (re)construction work will be executed in accordance with World Bank guidance for construction works under COVID, as to minimize the risk of COVID-19 transmission during (re)construction (see Annex 9).

Component 2 includes strengthening the capacity dam safety management through technical assistance. This would include capacity building, establishing of a dam safety unit, and introduce innovations on remote monitoring of dams, formulate guidelines for the elaboration of dam management plans; as well as conducting dam safety assessment plans, the risk from this type of activities is assessed from low to moderate. During Project preparation, it will also be identified whether the Project will require an independent commission/panel to provide consultancy on a dam safety management. Component 2 activities will need to address potential EHS risks as part of TA

activities (per WB guidance) and only those that have potential works would require an ES screening and then development of applicable ESHS mitigation and monitoring measures.

The project also includes Contingent Emergency Response Component (CERC). Before CERC component is triggered, the ESMF will be updated by the client to include a CERC section in the ESMF, in accordance with the contingency activities foreseen. The CERC section will describe the environmental and social risk management procedures, and provide a positive list of activities that can be funded under CERC, which will be reviewed and cleared by the Bank.

Project environmental risk rating. The rating of environmental risk is assessed as Substantial. The Project may cause some environmental impacts and risks that may arise from the implementation of subprojects. This will mainly be related to (re)construction activities, planned under component 1. These impacts will be considered during the assessment of each specific site, with mitigation measures elaborated. The environmental risks and impacts are associated with (re)construction works for water wells, impoundments, storage facilities and networks, collection, treatment and disposal of sewage, (re)construction of irrigation and drainage systems. The potential negative impacts associated with this activity include dust and noise emissions, (re)construction waste, wastewater, hazardous materials and waste (oil, grease, hydrocarbons, paint, etc.), sludge and solid waste disposal, hydrogen sulfide emissions, methane. These environmental risks will be temporary in nature and specific areas and can be easily mitigated by applying best building and/or environmentally friendly methods and appropriate mitigation measures. The activities under Component 2 may also result in some risks if the EHS risks in TA studies/activities are not adequately assessed and mitigated.

During the operation of irrigation facilities, canals, water, and sewer systems and facilities, poor management could pose a significant risk to environmental and social security. Poor management during operation and insufficient attention to dam safety could also be associated with some risk/concern for the environment and the public.

Potential social risks and impacts of the Project

The expected social and economic benefits of the Project, related to irrigation, include job creation, expected reduction in migration, and improved food security. The increased access to water, sanitation and hygiene (WASH) reduces the incidence of diarrhea in young children and, in general, has a positive effect on the nutritional status of children, especially stunting. Access to WASH can also improve the school attendance as it helps to free up the time children spend collecting water before going to school. Although, the end result of the Project will benefit all people in the proposed Project area, the Project activities are likely to have social risks and adverse impacts, including potential land acquisition and involuntary relocation, accessibility issues, and equity to project benefits for disadvantaged and vulnerable groups, as well as institutionally low ability to cope with such problems. The social risks include limited access of vulnerable groups: women, people with disabilities, elderly, female-headed households and low-income households to project benefits.

The nature of impacts and scope of activities will be clarified once the subproject designs are finalized. ESIA will assess the risks and impacts, and provide recommendations on appropriate mitigation measures to be performed. Moreover, vulnerable and aggrieved groups have been identified through the SEP, and will be consulted, and their concerns and views considered in ESIA/ESMP, SEP, RF and project design. A Grievance Redress Mechanism will be established to provide an opportunity for people, affected by the Project, to file a complaint about the Project activity and receive timely resolution of problems and complaints. The Borrower will conduct meaningful and coordinated consultations with stakeholders under the project related to prepared instruments (ESIA, RF, SEP). ESMP will be prepared and provided by the Borrower, which includes appropriate measures to ensure compliance with the World Bank Environmental and Social Standards (ESSs).

The Project will avoid, as much as possible, the adverse impacts on private or privately used land and property, and will clearly document all efforts made to prevent the impacts of land constraints and resettlement. In cases where such impacts are unavoidable, they will be minimized as much as possible and the Project will follow the procedures outlined in RF to ensure adequate compensation and measures for the Project affected people. RF is prepared for the project to provide a guidance on preparation, disclosure and implementation of a site-specific Resettlement Action Plan (RAP) during Project implementation.

The risks associated with child and forced labor are considered to be low, potential risks and measures to mitigate them will be included in the Environmental and Social Management Plan and Labor Management Plan (LMP). The (re)construction activities will have some impact on the health and safety of workers within construction sites and local communities. And to mitigate the impacts, a number of measures will be elaborated to prevent impacts. The mitigating measures will be included in a bidding documentation for (re)construction.

Project social risk rating. Considering all the above impacts, the social risk is assessed as Substantial. The main social risks are: (i) land acquisition and involuntary resettlement required in due to (a) (re)construction of water supply and sewage infrastructure and (b) (re)construction and modernization of irrigation infrastructure. (ii) social exclusion risk, the interests of vulnerable and disadvantage groups will need to be considered in the project design to ensure that they have equal access to project benefits and are not disproportionately negatively impacted by the project; and (iii) low institutional capacity to deal with regulation, planning and supervision of tariffs/charges and permits.

Sexual exploitation and abuse/sexual harassment (SEA/SH) risk rating is Low. The projects financed by the Bank are required to put in place a robust grievance system to deal with all grievances, including SEA/SH. A separate dedicated privacy window is created to manage SEA/SH complaints in the projects under ESF. So far, no project has received such complaints.

The project risk rating and relevance of the World Bank Environmental and Social Standards (ESS). The environmental risk rating is *substantial*, and the social risk rating is *substantial*. Accordingly, the project overall ESF risk rating is *Substantial*. Based on the project design and initial assessment of likely social and environmental impacts, the following ESSs will be applied in the Project. These risks are covered by ESS 1, ESS 2, ESS 3, ESS 4, ESS 5, ESS 6, ESS 8 and ESS 10.

The Environmental and Social Management Framework (ESMF). As it is not possible to define all the activities to be financed under the project, the Borrower has prepared the ESMF, which defines the rules and procedures for activities and subprojects to be defined during the project implementation. ESMF will guide Environmental and Social Impact Assessment (ESIA) process and cover the following: (i) rules and procedures for environmental and social screening of project activities and subprojects to be supported under the Project; (ii) guidance on conducting of the ESIA for subprojects and/or the preparation of a simple ESMP, or checklist for ESMP, which will include monitoring plans; (iii) mitigation measures for the possible impacts of the various proposed activities and subprojects; (iv) safety precautions for pesticide use and a template for a Pest Management Plan (PMP); (v) requirements for monitoring and screening of ESIA/ESMP implementation, implementation mechanisms; (vii) review of the capacity of two PIUs under WRS and DCEI for risk operation and management related to environment and social issues, and strengthening the capacity that will involve other parties to mitigate potential environmental and social risks and conduct ESIA at a subproject level. Furthermore, ESIA indicates that the PIUs under WRS and DCEI should prepare a Social Assessment (SA) as part of the SIA process, which includes: (i) stakeholder identification/mapping; (ii) the analysis of stakeholders' expectations, problems and concerns; (iii) assessments of positive and negative impacts; and (iv) a social management plan to mitigate negative impacts and enhance positive outcomes.

The Borrower's Environmental and Social Commitment Plan (ESCP). ESCP identifies the main responsibilities and actions to be taken by the Project implementing Agencies (WRS/DCEI) to ensure that the Project is compliant with the WB ESSs and, in particular: (a) performing environmental and social screening for all project activities using the ESMP checklist covering the above aspects; (b) application of ESMP and RF for all project activities, including the need for site specific ESMPs and RAPs; (c) reporting on the environmental and social performance of all activities in the Project reports; (d) ensuring transparency in implementation of environmental and social standards for the Project, and that all ESIAs and/or ESMPs are disclosed and publicly consulted with all stakeholders; (e) maintaining human capacity throughout the Project implementation period to ensure surveillance and monitoring of ESIA and ESMP activities and to provide adequate reporting to the implementing agencies and WB; (f) preparation and commitment to the Code of Conduct on the Environment, Social, Health and Safety by contractors; and (g) implementing and reporting on (i) Stakeholder Engagement Plan; (ii) Labor Management Plans (LMPs); and Grievance Mechanism (GM).

Monitoring and reporting.

PIUs will prepare and submit to the Association regular monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project, including but not limited to, the implementation of the ESCP, status of preparation and implementation of E&S documents required under the ESCP, stakeholder engagement plan, and the grievance mechanism. The PIUs will also report on the environmental and social incidents. As required by the ESCP, notification of incidents and accidents is required and will be as follows:

- a. PIUs shall promptly notify the Association of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers. The notification shall be no later than 48 hours after taking notice of the incident or accident.
- b. PIUs shall provide sufficient details regarding the incident or accident, indicating immediate measures taken to address it, and include information provided by any contractor and supervising entity, the injured party and regulatory authority, if necessary and as appropriate. Subsequently, as per the Association's request, prepare a report on the incident or accident and propose any measures to prevent its recurrence within an agreed timeframe. An incident or accident report, acceptable to the Association, shall be submitted within 30 days after the occurrence of the incident or accident.
- c. Other incidents and accidents not subject to immediate notification and reporting in accordance with this provision, shall be included in the regular project reports and throughout the project implementation.

Compliance to ESMP should be reported by contractors to the PIU under WRS and DCEI, and then the PIU submits to the WB a semi-annual report. Environmental and social monitoring during implementation of subprojects should provide information on the key environmental and social aspects of subprojects, in particular its impact on the environment, social impacts of activities and the effectiveness of mitigation measures undertaken. This information will enable the PIU under WRS and DCEI to assess the success of mitigation measures and monitoring under the Project, and will allow to update activities, if necessary, in timely manner. The monitoring of the Resettlement Action Plan implementation will include (i) administrative monitoring to ensure that implementation is on schedule and problems are addressed in timely manner, and (ii) overall monitoring to assess the status of affected people, in terms of compensation and assistance, and an alternative land allocation with buildings, etc. The monitoring will include daily planning, implementation, feedback and troubleshooting, record keeping of affected people, community relations, dates of consultation, number of appeals and progress reports.

Incorporation of ESMP into the Project documentation. The provisions of ESMP will become the part of Project documentation and will be included in (re)construction contracts for individual subprojects, either in specifications, or in estimates. Thus, the Contractors will have to include the costs of ESMP requirements in their financial applications and will have to comply with them while implementing the Project activities. The bidding documentations for selection of contractors will include specifications that will ensure that a winner of a bidding process effectively meets the environmental, health and safety criteria.

ESMF implementation mechanisms. To ensure coordination and information sharing and timely decision-making on strategic and the program aspects at the highest level, the Project will be monitored by the CRWSP Advisory Committee. The PIU under WRS and DCEI are the agencies that implement the Project that will ensure the overall coordination of the Project. The PIU employs highly qualified specialists in environmental and social measures, who participated in trainings held by the World Bank, including training on the ESF. Based on the results of WB missions, the latest project implemented by the PIU WRS (APNIP), the PIU's environmental management performance has always been assessed as satisfactory, and recently social safeguards rating is upgraded to satisfactory level. The PIU WRS has extensive experience in implementing donor-funded projects in water management and actively coordinates activities with the sector-specific ministries on specific programs. At the same time, the PIU WRS has limited experience and knowledge to meet the requirements according to ESF, in particular those related to labor and working conditions, community health and safety, incidence reporting protocols, etc. The Project will support the necessary capacity strengthening activities. As for the capacity of DCEI, it has no experience in implementing the WB financed projects. However, the DCEI is implementing the ADB/EBRD-financed projects. The DCEI PIU is staffed with all necessary specialists, but the WB social and environmental standards and other governing documents are new for them.

The World Bank Assistance to comply with ESS. The WB's project Environmental and Social Specialists will support the PIUs under WRS and DCEI to ensure the implementation of Project activities and in accordance with applicable WB ESSs. The WB Task Team will provide guidance, review key environmental and social monitoring documents such as ESIA/ESMPs, RAPs, RAP implementation reports and semi-annual environmental and social monitoring reports and support Project implementing agencies in meeting its commitments set out in ESCP.

Citizen Engagement. The Project design and implementation will draw upon and be guided by results from consultations, citizen satisfaction surveys and grievance-redress mechanisms to ensure that citizens are engaged throughout the Project cycle. The communities within projected areas will be engaged to ensure that the needs of vulnerable households are considered, for example, through support to vulnerable groups for water supply services and/or additional incentives that can be targeted to ensure that poor and vulnerable households will be able to connect to the newly developed WSS networks. Citizen engagement will also be geared to raise awareness of climate friendly consumption and adaptation practices, in terms of domestic water use, and irrigation practices, to ensure water conservation in agriculture and efficient on-farm practices. Beneficiary satisfaction surveys will be conducted annually to receive feedbacks on the quality of citizen engagement process and program implementation. The Project will also establish a GM to record and address citizens/project affected parties complaints related to activities under the Project.

ESMF Public consultations and information disclosure. For ESMF development, some potential project sites were visited and a number of meetings with the main stakeholders were conducted, based on the draft document. Comments received during public consultation have been reflected in ESMF. This ESMF, including comments, is the final version that will be posted on the website for public information. The Stakeholder Engagement Plan (SEP) is an instrument intended to serve as a practical

guidance to support public consultation and engagement activities carried out by the WRS and DCEI in relation to the Project development and implementation. The SEP aims to ensure that the engagement activities are conducted effectively, fairly, and in a transparent manner, cover all relevant stakeholders, as well as employ consultation methods that promote active participation and are appropriate within the local context. It requires inform about the project and communicate the relevant environmental and social data; provide useful and clear information for people affected by the project; conduct public consultations; take into account the views expressed during the public consultations in the implementation of the project.

Public Consultation was held on December 7-14, 2021. During the public consultation the project's objectives, planning activities, anticipated environmental and social impacts and proposing mitigation measures, compensation measures in case of any impacts, and grievance redress mechanism were presented to participants. Based on suggestions received during the consultation workshop the ESMF, other environmental and social instruments, including RF, LMP, and SEP have been updated. Final versions of the ESF instruments mentioned are published on WRS's website and further disclosed on the external WB website.

2. PROJECT DESCRIPTION

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.

The ITb covers Issyk-Kul oblast and impacted by high water deficit, and, more importantly, this basin includes the lake Issyk-Kul, which is a biosphere zone and the main tourist attraction industry that plays an important role in development of economic corridor of tourism between Bishkek and Almaty, which requires the climate-resilient water supply and sanitation infrastructure. This high socio-economic and ecological importance of this region requires careful management of river basins to avoid excessive consumption and pollution of water resources flowing into the lake, and, in order to adapt to the effects of climate change, including potential increase in glacial melt water levels, and their evaporation.

2.1. Project Components

The Project is structured in the following four components.

Component 1: Infrastructure Investments and Service Improvements

Subcomponent 1.1: Water supply and sanitation infrastructure

Subcomponent 1.2: Irrigation and drainage services improvement

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

Subcomponent 2.1. Institutional strengthening for WSS service delivery

Subcomponent 2.2. Institutional strengthening for irrigation services delivery

Subcomponent 2.3. Water and soil quality monitoring

Subcomponent 2.4. Dam management

Component 3: Project Management, M&E and Professional Development

Component 4: Contingent Emergency Response Component

Component 1: Infrastructure Investments and Service Improvements. This component contributes to the implementation of high priority investments aligned with the river basin management plans¹ 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 drinking water and sanitation services, I&D services, and resource utilization efficiency. The infrastructure investments will also help reduce (a) environmental pollution of the Issyk-Kul lake; (b) public health risks associated with exposure to untreated wastewater in the event of flooding induced by climate change, and (c) energy and GHG footprint of service provision. These investments will be designed with the intent of minimizing GHG emissions through reductions in energy consumption by (i) prioritising gravity-based solutions for irrigation and drinking water supply, (ii) increasing pumping efficiency for service delivery, (iii) reducing nitrous oxide, methane, and carbon dioxide as well as Biological Oxygen Demand (BOD) discharges through proper wastewater and sanitation services and (iv) promoting water conservation through water metering and on-farm interventions. Hence, this component is climate co-benefit intensive.

Subcomponent 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. The subcomponent finances civil and electrical/mechanical installations for water supply production (boreholes, well-fields, intakes, as well as disinfection and energy efficient/renewable energy pumping as required), works for transmission and distribution of water to households in the project areas, along with wastewater management infrastructure, sewerage collection, conveyance, treatment, and disposal facilities. The subcomponent will also finance equipment for drinking water quality and water supply and wastewater pipes testing. These investments help small-town utilities and rural service providers to adapt to the anticipated impacts of climate change, diversify their water supply sources to better confront droughts and reduce their overall water consumption through efficiency improvements. This subcomponent will benefit (a) 95,000 people in 31 villages around Issyk-Kul lake and Batken oblast with climate resilient drinking water services; (b) 43,000 people with climate resilient sanitation services in three villages around Issyk-Kul lake through either sewers or on-site solutions. Improving sewerage and stormwater services will reduce the volume of untreated wastewater discharged into water bodies, as well as exposure to waterborne pathogens and related diseases. The project will also support reconstruction of WASH facilities in selected schools, kindergartens, rural health centers/hospitals in the project areas to ensure that they are female-friendly and disability inclusive. The potential impact of surface sewer overflows exacerbated by climate change-induced extreme rainfall events will also be reduced and thus communities' resilience to intense rainfall events under climate change will increase.

Subcomponent 1.1 is explicitly designed to achieve mitigation and adaptation co-benefits. This subcomponent achieves the following in terms of mitigation: (a) poor efficiency pumps (around 30%) will be replaced with high efficiency pumps (around 85%); (b) old, undersized and leaking (leakage is estimated at more than 40%) distribution network will be replaced with properly sized pipes to reduce both pumping energy and leakage (targeted leakage is estimated at less than 15%); (c) improved water supply quality will eliminate additional energy used in distributing water by trucks and need to boil water for drinking purposes; (d) wastewater collection and treatment will reduce GHG emission (including nitrous oxide, methane and carbon dioxide) as well as protecting the vulnerable water resources from pollution due to discharge of high BOD loads from untreated sewage; and (e) installation of water meters will promote water conservation and hence improvement of water use (and energy) efficiency, thus increasing the available volume of water for targeted communities, which will

¹ 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.

help them better withstand climate-related shocks to water supply such as droughts/water shortages and heat waves.

Subcomponent 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 (re)construction and modernization of I&D canals (234 km) and appurtenant structures². The (re)construction and modernization are based on the World Bank's Resilient Water Infrastructure Design principles³. 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 bypasses 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 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.

Subcomponent 1.2 is explicitly designed to achieve mitigation and adaptation co-benefits. Mitigation co-benefits are linked with (a) (re)construction 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 Integrated water resources management (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.

Subcomponent 2.1: Institutional Strengthening for WSS Service Delivery. This subcomponent will finance activities (goods and services) in the target areas and national level designed to strengthen policy and regulatory frameworks and institutional capacity to advance sector reform and promote sustainable service delivery. The subcomponent targets key stakeholders, including DCEI, GOSSTROY, local governments, urban and rural service providers, service sector policymakers and regulators. It will support the Government's sector development strategy and reform roadmap and is informed by previous analytical and advisory services. Support for water supply and sewerage sector reforms will finance expert advisory services and technical assistance targeting priority areas of reform and institutional strengthening. Technical assistance incorporates considerations on climate change variability and related impacts, strengthening institutional capacity to identify and design resilient water supply and sanitation systems, mainstream gender and social inclusion aspects into the national program. A more effective institutional and regulatory framework will enhance water sector

² Note: structures include: water control/distribution; outlets; mudflows, tunnels, small bridges and volumetric measurement structures.

³ World Bank. 2020. Resilient Water Infrastructure Design Brief. World Bank, Washington, DC.

governance, operational efficiency, and sustainability, thereby enhancing the provision (in terms of coverage and quality) of water services. This will in turn reduce the risk of water shortages/droughts, improve the quality of water, and enhance overall resilience.

Subcomponent 2.2: Institutional strengthening for irrigation water services 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.

Subcomponent 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.

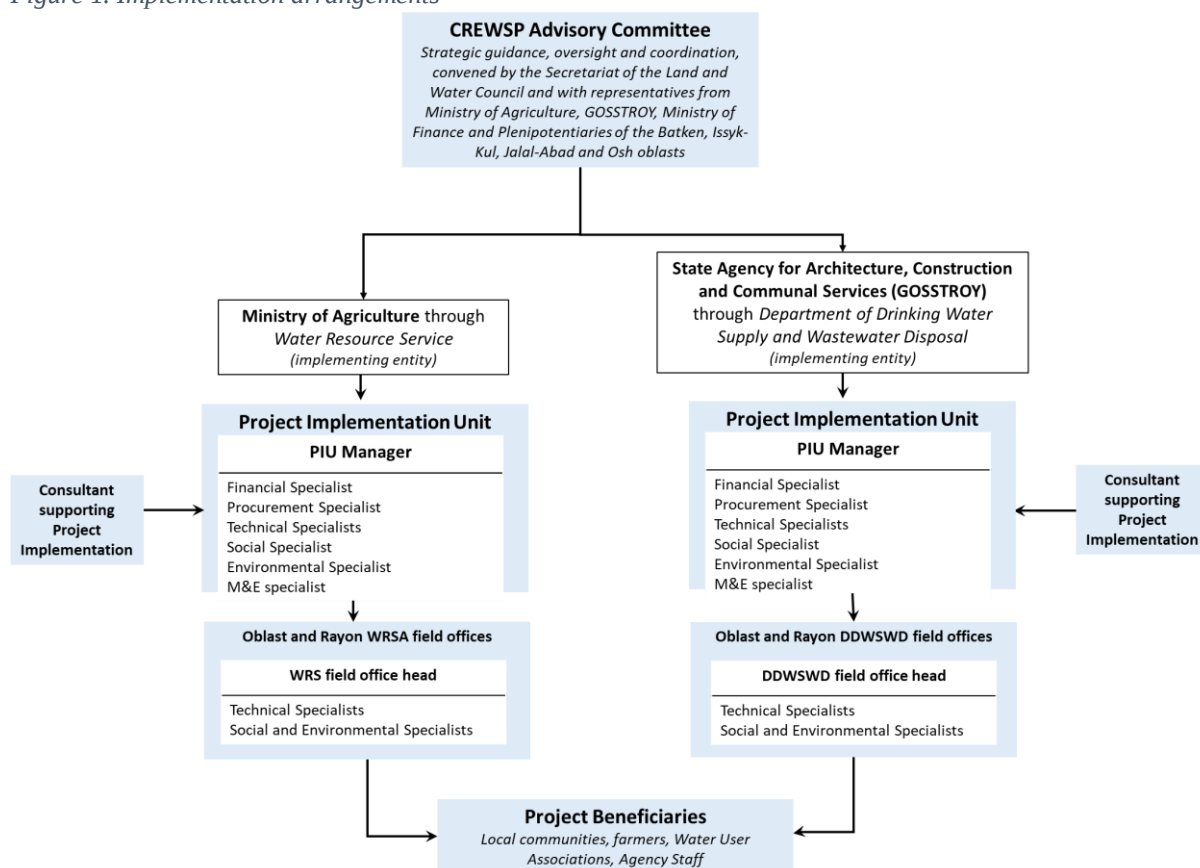
Component 4: Contingent Emergency Response Component (CERC). Providing immediate response to an Eligible Crisis or Emergency, as needed. This component allows the Government to request the World Bank to recategorize and reallocate uncommitted financing from other project components to cover emergency response and recovery costs.

2.2. Implementation Mechanisms

2.2.1. Project Implementing Entities

The Ministry of Agriculture (MoA) through the Water Resources Service (WRS) and the State Agency for Architecture, Construction and Communal Services (GOSSTROY) through the Department of Construction and Engineering Infrastructure (DCEI or Department) will share the overall responsibility for Project implementation. The WRS will be in charge of implementing activities related to irrigation water (subcomponents 1.2, 2.1, 2.2, 2.3, 2.4, and component 3 jointly with DCEI), while the DCEI will be in charge of project activities in the drinking water supply and sanitation area (subcomponent 1.1, and Component 3 jointly with WRS).subcomponents Each implementing entity will take the lead on Project elements under their respective institutional mandate and capacity. Each implementing entity will be supported through own PIU tasked to carry out the fiduciary functions (disbursement, financial management, procurement, environmental and social standards, and monitoring & evaluation). This will be done in compliance with the requirements and environmental and social policies, including occupational, health and safety standards. The PIUs will each develop separate procurement plans and manage the flow of funds on behalf of the MoA and GOSSTROY. It is envisaged that engineering consultancies will be hired under each PIU to support engineering, construction supervision and quality control. The core staff of PIUs will be based in Bishkek, while each PIU will maintain oblast and rayon level field offices managed by Field Office Heads (accountable to a respective PIU Manager) and including technical specialists, social and environmental specialists. *Figure 1* sheds more light on implementation arrangements with the organizational structure of each PIU.

Figure 1. Implementation arrangements



2.2.2. Project advisory committee

The Project Advisory Committee will provide strategic guidance, oversight, and coordination. The committee will be convened at least once a year by the Secretariat of the Land and Water Council, with the first meeting expected shortly after the Project starting date. The committee acts as a forum for (a) reviewing annual work plans prepared by the PIUs, (b) providing relevant technical inputs, especially those at a strategic and policy level or on issues related to the implementation of the Water Code, (c) reviewing progress against performance indicators, and d) continuing policy dialogue among the involved entities. The advisory committee includes representatives of the MoA, GOSSTROY, MoF and Plenipotentiaries of the Batken, Issyk-Kul, Jalal-Abad and Osh oblasts.

2.2.3. Project Management

Two PIUs – WRS PIU and DCEI PIU will have the prime implementation responsibility for CREWSP. The WRS PIU will implement activities related to Irrigation and Drainage (I&D) and also will have lead responsibility for consolidation of financial and progress reports to the World Bank and Cabinet of Ministers, including liaising closely with DCEI PIU, which will implement independent series of activities related to Water Supply and Sanitation (WSS), but will nevertheless coordinate with the WRS PIU for harmonization of Project reporting.

Two PIUs will prepare and sign a Memorandum of Understanding (MoU) stipulating the interaction, roles and responsibilities of two entities. The WRS PIU will implement Subcomponent 2.3 (water and soil quality monitoring) in close collaboration with the Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS), particularly with the Department of Environmental Monitoring (DEM), which is responsible for executing policy on environmental monitoring, including surface water and soil quality. The WRS PIU and DEM will prepare and sign a separate MoU.

2.3. Description of irrigation and drainage subprojects

The Climate Resilient Water Services Project is implemented both for irrigation and drinking water supply. This ESMF prepared for irrigation infrastructure (re)construction subprojects in the river basin Karadarya-Syrdarya-Amudarya and drinking water supply systems in the the Issyk-Kul-Tarim and Karadarya-Syrdarya-Amudarya river basins, particularly in Batken oblast.

It is proposed to rehabilitate subprojects/structures of 3 irrigation systems under CRWSP, which are:

1. Irrigation infrastructure in Bazar-Korgon rayon, Jalal-Abad oblast, on the r. Kara-Ungur-Sai: Bazar-Korgon dam with headwork, Levaya Vetka off-farm canal and WUA on-farm canals.
2. 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.
3. Irrigation infrastructure in Kadamjai rayon, Batken oblast, on the r. Shakhimardan: headwork with Shakhimardan 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%⁴ 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 have decreased, resulting in sufficient water losses, part of which replenishing groundwater, causing groundwater rise and soil salinization, flooding of residential areas.

2.4. Description of drinking water supply subprojects

The Project proposes (re)construction of drinking water supply systems in 3 villages in ITb, and in 28 villages in KSAb (Syrdarya sub-basin - Batken oblast) according to the approved list of villages of the DCEI.

1. Construction and rehabilitation of drinking water supply systems in the residential area of Zhany-Turmush (Baul) and Katran of Katran aiyl okmotu (AO), Bulak-Bashy, of Kulundu AO, Sabyrov (50th years of Kirgizia) and Aibiyke (Madaniyat) of Toguz-Bulak AO, Margun of Margun AOBatken oblast.
2. Construction and rehabilitation of drinking water supply systems in the residential area of Chek, Zhany-Zher, Kaiyndy, Kan and Sary-Talaa of Dara AO, Apkan, Boz-Adyr and Aigul-Tash of Suu-Bashy AO, Kara-Bulak of Kara-Bulak AO, Ak-Otok, Ak-Turpak, Zar-Tash, Chon-Gara and Chon-Talaa of Tort-Gul AO of Batken rayon Batken oblast.
3. (Re)construction of drinking water supply systems in the residential area of Otukchu, Kyzyl-Korgon, Tokoy, Chogorok, Ak-Turpak, Kalacha, Chon-Kara, of Ak-Turpak AO, Sovetskoye of Soviet AO of Kadamjai rayon, Batken oblast.
4. Construction and rehabilitation of drinking water supply systems in the residential area of Kyzyl-Suu of Kyzyl-Suu AO of Jeti-Oguz rayon, Bokonbaev of Kun-Chygysh AO and Kadzhy-Sai of Ton AO of Ton rayon The Issyk-kul oblast.

⁴Plan for development, use and protection of water resources of the Karadarya-Syrdarya-Amudarya basin, National Water Resources Management Project – Additional Financing, 2020.

2.5. The scope and objectives of the Environmental and Social Management Framework

As the technical evaluation (e.g., feasibility studies, detailed designs) and specific intervention locations under the project are not identified and/or ready and their specific impacts are not known by project appraisal, a framework approach is adopted. Respectively, in accordance with the ESS1, the ESMF has been prepared, which specifies rules and procedures for the activities and site-specific subprojects', including Environmental and Social Impact Assessment and preparation of Environmental and Social Management Plans. The main goal of the ESMF is to define the measures, ways and mechanism for avoiding, minimizing and/or mitigating potential negative environmental and social impacts that may occur as the result of implementation of the project. The ESMF ensures that the identified subprojects are correctly assessed from environmental and social perspective to meet the WB's ESF and EHSs requirements alongside with environmental and social legislation of the Kyrgyz Republic for adequate mitigation residual and unavoidable impacts (if any).

The ESMF provides guidelines for the development of appropriate mitigation and compensation measures for adverse impact caused by project activities. In this document the background/context, the policy and regulatory framework are described as well as environmental and social impacts of possible subprojects. This includes ESIA procedures and guidelines, institutional arrangements, consultation and disclosure procedures.

The ESMF will guide the implementation of project activities by the following:

- (a) Generic guidelines and procedures to avoid, mitigate, or minimize adverse environmental and social impacts of the potential activities.
- (b) A description of implementing arrangements including details on how environment and social risks, will be managed.
- (c) The criteria for determining acceptable environmental and social risks and pest management procedures for the proposed sub-projects.
- (d) Descriptions of the environmental and social screening processes that will help to define the required site-specific ESF instruments.
- (e) Checklists for preparing site-specific Environmental and Social Impact Assessments/Environmental and Social Management Plans (ESIAs/ESMPs).
- (f) Environmental and social monitoring and reporting requirements.
- (g) A section on proposed capacity building activities to help the implementing agencies comply with the ESF.

3. BASELINE INFORMATION

3.1. Karadarya-Syrdarya-Amudarya basin⁵

3.1.1. Physical Environment

Basin location. The KSAb territory within the Kyrgyz Republic borders with the r.b. Naryn-Syrdarya in north and northeast, it also borders with Tajikistan and Uzbekistan in north, the southern border is the state border with People's Republic of China and Tajikistan. The KSAb is located on the territories of three administrative regions - Jalal-Abad (partially), Osh and Batken and three regional cities Batken, Osh and Jalal-Abad.

The KSAb area within the KR - 52974 km². Of which, area of the Bazar-Korgon rayon, Jalal-Abad oblast, in which Bazar-Korgon irrigation infrastructure located - 1965 km², Kara-Suu rayon, Osh oblast, where the proposed (re)construction subproject headwork Kurshab-sai is located with irrigation infrastructure - 3616 km², Kadamjai rayon, Batken oblast, where located Nurgaziev canal's headworks in the r.b Shakhimardan with irrigation infrastructure - 6146 km².

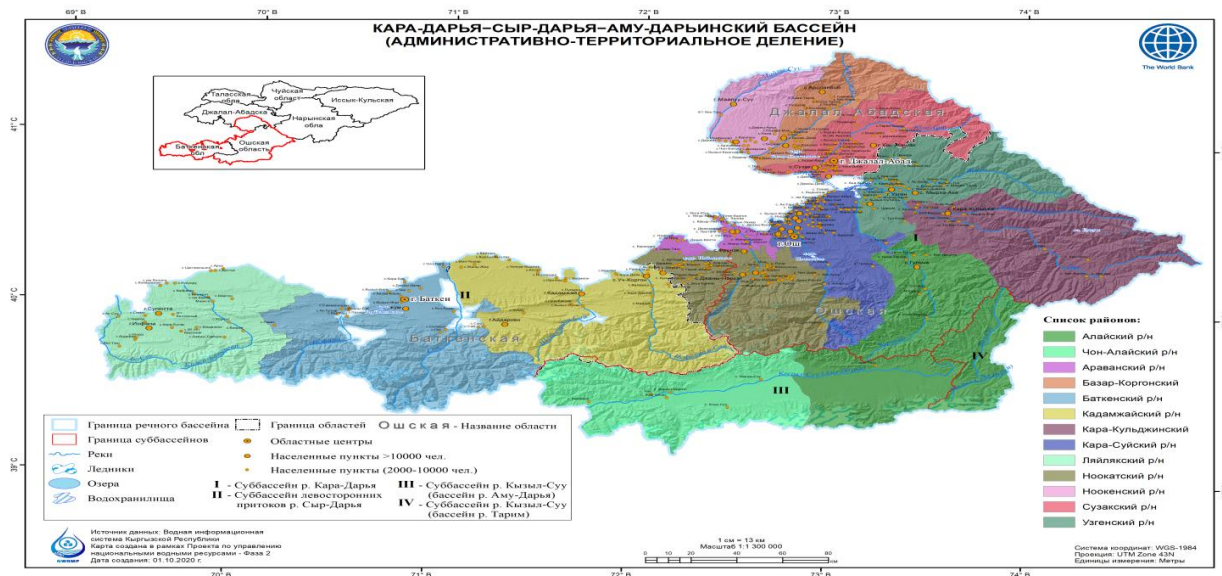


Figure 2. KSAB Administrative-territorial division

Climate conditions. Climatic specifics of the basin are introduced based on the meteorological parameters observations from the Osh, Khaidarkan and Darat-Korgon meteorological stations, characterizing climatic conditions of a valley (arid), mid-mountain (sufficiently humid) and highland zones (permafrost, tundra)⁶.

Long-term observations at meteorological stations show that the average annual air temperature at Osh meteorological station is 11.7⁰C, at the Khaidarkan meteorological station is 6.9⁰C and at the Darat-Korgon meteorological station - 2.7⁰C.

⁵ Plan for development, use and protection of water resources of the Karadarya-Syrdarya-Amudarya basin, National Water Resources Management Project – Additional Financing, 2020.

⁶ Scientific and Applied Handbook on Climate of the USSR, Parts 1-6. Issue 32 Kyrgyz SSR. Gidrometeoizdat Leningrad 1989.

Table 1. Average long-term values of air temperature T⁰CAverage multiannual air T⁰ values

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year average
Osh meteorological station												
-3,4	-0,9	5,9	13,7	18,8	23,5	25,4	23,0	18,3	11,8	4,4	-0,4	11,7
Khaydarkan meteorological station												
-5,7	-4,2	0,4	7,4	12,1	16,2	19,2	18,3	13,6	7,3	0,8	-3,2	6,9
Daurat-Kurgan meteorological station												
-13,6	-11,0	-4,3	4,3	9,3	12,9	16,2	16,0	11,7	4,9	-3,9	-10,2	2,7

The coldest months are December-January-February, the warmest July-August.

The highest summer T⁰ recorded at +40°C in June, July, August in Osh, the slightly lower data recorded within m/s Khaydarkan +36°C (August) and Darat-Korgan + 34°C (July).

The average annual precipitation volumes on three meteorological stations is 356 mm in Osh, 314 mm - Daraut-Kurgan, 533 mm – Khaydarkan (Table 2).

Table 2. Precipitation volumes (mm) with wetting adjustment for years 1951-1980.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year average
Osh meteorological station												
36	42	58	48	39	16	9	4	6	30	37	31	356
Khaydarkan meteorological station												
31	42	75	85	91	48	32	12	10	40	39	28	533
Darat-Korgan meteorological station												
32	33	39	29	46	35	27	10	7	13	17	26	314

The intra-annual precipitation is indicative by the spring and autumn highest volumes, although the spring is slightly higher comparing to the autumn. The spring's maximum is observed in March in valley zone, mid-mountain and highlands zone – May. October and November are noted with the most precipitation volumes. All three meteorological stations are also indicative with the lowest precipitation volumes in the summer period.

KSA basin landscape. The KSAb territory consists of two parts: mountainous, where the main river runoff is formed, and lowland areas. It is indicative by the presence of mountainous and high-mountainous landscape, which is the high-altitude zoning that determines the humidity conditions and a river run-off regime.

The mountain ridges such as - Fergana, Zaalaysky, Turkestan - bordering the eastern part of the Fergana Valley from the eastern and southern sides, which gradually lowering, expanding in the western direction, forming lowlands and is widespread. The basin area includes eastern and southern parts of the vast Fergana Valley. Between the spurs extending from the main valleys, a big number of a river valley is formed, open mainly to the west and southwest for the moisture-carrying air masses within these directions which contributes to the formation of more full-flowing rivers.

There are a big number of trough valleys filled with ancient and modern moraines and with significant areas of glaciation in the near-ridge part of the ridges. The low-mountain relief is characterized by alternation of relatively low mountain formations with rounded outlines of ravines, valleys, gorges and depressions. The central part of Fergana Valley is shallow hilly lowlands sloping to the west, surrounded by low mountains (adyrs), undulating foothill plains and alluvial cones of rivers emerging from the mountains.

A geological structure of the basin is associated with the landscape, which emerges from sequential change from the periphery to the ridges of strata differing in age, lithological composition, degree of distribution and water-physical properties. Crystalline rocks, older in age and resistant to weathering, are found in the highest ridges of mountains belts, and Loose-Quaternary deposits are found mainly along the foothills, alongside of a valley bottoms and depressions. Moreover, the crystalline rocks, limestone, shales, intrusive and effusive rocks are most widespread. The northern slopes of the Turkestan and Alai ridges are characterized by alternation alongside of the ridges of limestone and shales with outcrops of, in multiple places, granodiorite rocks. That explains the alternation of depression-like expansions in shales and narrow gorges in limestone, indicative for a number of river valleys on these slopes.

The Quaternary sediments have a varied composition - alluvial, proluvial, deluvial, eluvial, fluvioglacial and loess rocks. Among which, the loess rocks are widespread and characterized by high porosity, and the ability to soak that causing various deformations⁷.

Hydrology. The biggest part of KSAb⁸ is occupied by the water catchment basin of the r. Karadarya, as well as river basins flowing from Turkestan ridge: Isfayramsay, Shakhimardan, Sokh, Isfara, Khodzhabakirgan, Aksu, Isfana, which are the left-bank tributaries of the r. Syrdarya and r. Kyzylsu (Alai, Western) and Kyzylsu (Tarim, Eastern).

The main waterway is the r. Syrdarya (Aral Sea basin), which is formed by the confluence of the r. Naryn and Karadarya on the eastern part of the Fergana valley, within which it has western-south-western runoff direction, at the left side of which multiple tributaries, such as the rr. Isfayram, Sokh, Isfara, Khodjabakirgan and Aksu, inflow into the river. The mentioned tributaries runoff is abstracted for irrigation purposes and sometimes do not reach the r. Syrdarya.

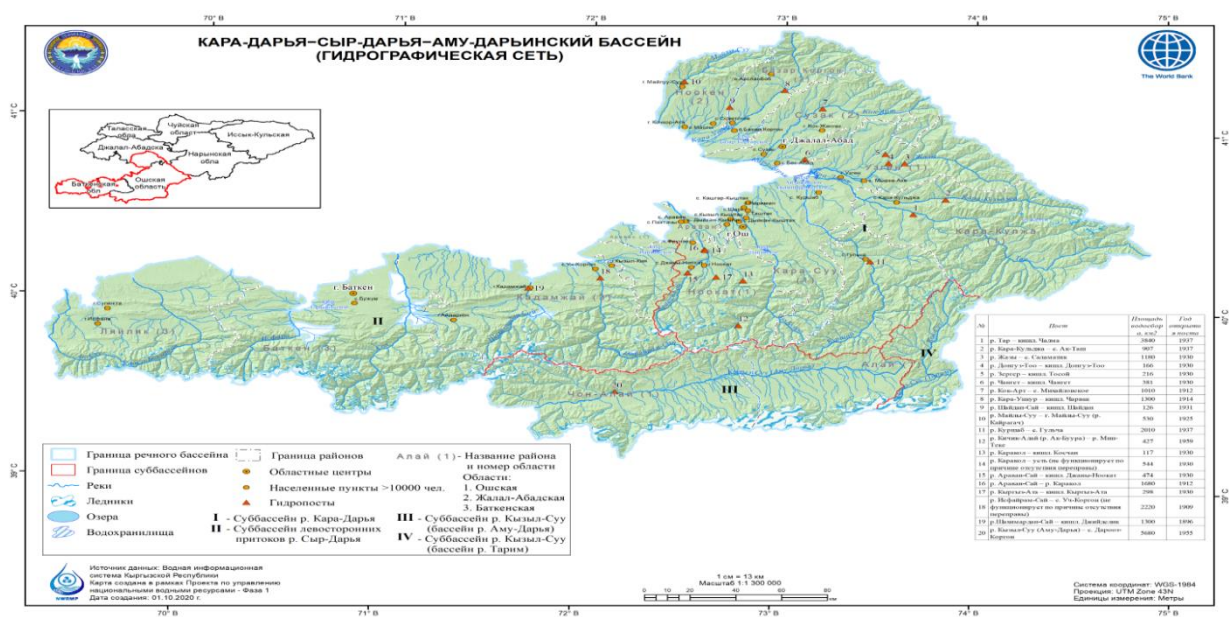


Figure 3. Hydrographic network of KSAb

As mentioned above, the Project is expected to be implemented on irrigation systems of the Shakhimardan, Kurshab and Kara-Ungur-Sai rivers.

⁷ Surface water resources of the USSR. Volume 14. Issue 1: River basin Syr-Darya Hydrometeoizdat 1969.

⁸ Plan for Development, Use and Protection of Water Resources in the Karadarya-Syrdarya-Amudarya Basin, National Water Resources Management Project-F2, 2020.

Shakhimardan river is a left tributary of Syrdarya river, flows through the territory of The KR and Uzbekistan. The river is formed from the confluence of Aksu and Koksx rivers, originating from slopes of Alai and Turkestan ridges, on the territory of Uzbekistan⁹. It begins in Osh-Aravan low mountain depression, cuts through the entire strip of low mountains and cuts through the intermountain plain eastern of the Katran-Too mountains. It has a constant water flow. It flows to the northwest, crosses The KR and Uzbekistan. It turns to the north on eastern part of Orozbekovo village (The KR), flows through Kadamjai, Pulgon.

The river is fed by snow-ice with the peak of high water in June. The catchment area is 1300 km². The average long-term water consumption is 11.6 m³/s, flow rate is 9.66 m³/s, average annual flow is 304 mln.m³ (at the Pavulgan alignment), average water supply year - 275 mln.m³. In floods, the flow rate reaches 64 m³/s. Average salinity of water in vegetation period is 0.24 g/l, in the non-vegetative period - 0.18 g/l. Waters of the river are completely disassembled for irrigation due to the construction of numerous catch water drain canals and waters do not reach to the water mouth.



Figure 4. Headwater intake structure on Shakhimardan river, September 2021

Kurshab-Sai River is a left tributary of Karadarya river. The Karadarya river flow is formed on the northern slope of the Alai ridge and its spurs. The river is called Gulcha in upper reaches, below the confluence with the right tributary of the Zhusaly is called Kurshab. River length is 157 km, catchment area is 3750 km² (within The KR 3260 km²). There are more than 80 small tributaries, among them the largest tributaries are: Zhusaly, Terek-Suu, Bolshoy Bleuli and others¹⁰.

Main source rivers are thawed snow and glacial waters. According to the water regime, it refers to rivers of the Tien Shan type with high water in the summer (May-September). The average long-term water consumption is 26.2 m³/sec¹¹.

⁹Materials to study problems of ecology, drinking water supply, land reclamation, power supply and machine irrigation in pilot canal zone. Part 1: South Fergana Canal / Swiss Agency for Development and Cooperation (SDC), Interstate Commission for Water Coordination of Central Asia (ICWC), International Water Management Institute (IWMI), Scientific-Information Center of ICWC (SIC ICWC), IWRM-Fergana Project, N.N. Mirzaev. - Tashkent, 2006.

¹⁰Web resource:

[https://wikipedia.tel/%D0%9A%D1%83%D1%80%D1%88%D0%B0%D0%B1_\(%D1%80%D0%B5%D0%BA%D0%B0\).](https://wikipedia.tel/%D0%9A%D1%83%D1%80%D1%88%D0%B0%D0%B1_(%D1%80%D0%B5%D0%BA%D0%B0).)

¹¹ Ramazan M. S. Some peculiarities of hydrological regime and hydrotechnical classification of Kyrgyz rivers.



Figure 5. Headwater intake structure on Otuz-Adyr canal, Khurshab-Sai river system, September 2021

Kara-Unkur-Sai River is a left tributary of the Karadarya river. It is formed by confluence of Arslanbob and Kyzyl-Unkur rivers, originating respectively from Babash-Ata ridge and the Ferghana ridge. River length is 127 km, basin area is 4130 km². Water in the river is fresh, a type of mineralization is bicarbonate–calcium–magnesium. The main source is rain and groundwater, as well as snowmelt and glacial water. Average long-term water consumption is 29.6 m³/sec¹². The Bazar-Korgon dam with a volume of 22.5 mln.m³ is located on Kara-Ungur river. It is self-leveling, with an earthen dam with a height of 25 m, used for irrigation.



Figure 6. Water outlet on Levaya-Vetka canal, Kara-Unkur-Sai river system, September 2021

¹² Ramazan M. S. Some peculiarities of hydrological regime and hydrotechnical classification of Kyrgyz rivers.

Hydrogeological conditions¹³. Total ground water reserves are estimated at 64.8 m³/s-per annum, and use of which is very insignificant - 9.05 m³/s or 14.0%. Groundwater of KSAb is divided into three types, according to the type of enclosing rocks permeability: fissure, pore-fissure and porous that indicative to the three age complexes of rocks - Paleozoic, Mesakainozoic and Quaternary¹⁴. In turn, pore, free-flowing groundwaters in loose quaternary rocks forming depressions and valleys are divided into the alluvial-proluvial water of piedmont plumes, alluvium of river valleys, water of say-alluvium and water in moraine deposits. Waters of alluvial-proluvium cones are widespread in intermountain depressions and piedmonts, formation of which occurs due to water losses in permanent and temporarily active water flows, as well as in an irrigation network. Unloading occurs on the surface and underground outflow into river beds (r.b. Sokh). The Alluvial waters of river valleys often wedge out on the surface, sometimes forming small waterlogging and excessively moist areas. The mountain slopes that surround main rivers in valleys and vast depressions are indicative by numerous sais, on the bottom of which, sometimes, single or group springs can be seen. There are completely dry sais without groundwater wedging out to the surface and waters associated with the Sai-alluvial move underground.

Soil and use of land resources¹⁵. The variety of soils in KSAb is represented by seven species, grouped by water-physical properties: (1) desert gray-brown, takyr, (2) sierozem, (3) brown and chestnut, (4) light brown meadow-steppe, (5) desert-steppe highlands, (6) light brown meadow-steppe and (7) saline soils of high mountain valleys and foothills. The total area of considered territory - 52.974 th.km² or 26.5% of the entire KR territory, of which Batken oblast - 17.048 th.km², Osh oblast - 28.934 th.km², Bazar-Korgon rayon - 1.965 th.km². The KSAb area of irrigated lands - 260.4 th.ha, of which 244.8 th.ha - irrigated lands in good condition, 6, 88 th.ha - in satisfactory condition and in unsatisfactory condition - 8, 78 th.ha, of which, due to salinity - 2.498 th.ha, high GWT - 4, 90 th.ha. Thus, 3% of irrigated lands that in unsatisfactory condition. At the same time, the largest areas of irrigated lands that are in unsatisfactory condition are located in Osh oblast and the Suzak rayon.

The salinization of lands is one of the factors leading to degradation of irrigated lands, i.e. to a change in soil functions, their quantitative and qualitative condition a loss of fertility, which caused by inefficient irrigation methods, ineffective water management, the absence or inadequate condition of CDN, and other factors. The arid climate of the territory under consideration, and especially in the valley regions, determines the development of agricultural production under the condition of artificial irrigation. The river valleys of the KSA basin in the flat zone are ancient centers of irrigation. For this, in previous years, a network of irrigation canals, hydraulic structures, reservoirs, pumping stations, etc. were built.

3.1.2. Biological Environment

Flora¹⁶. The nature of vegetation layer is changing depending on the height of terrain, soil cover, slopes exposure and degree of their wetting by the atmospheric precipitation. Main flora of vertical zones specific for this territory: (1) desert, (2) steppe, mountain-meadow, (3) alpine and subalpine, (4) forests, woodlands and shrubs, (5) rocky ridges, talus, moraines, snowfields with sparse flora and (6) tree and shrubbery, on agricultural and arable lands. The deserts are distributed mainly in foothills zone and occupy vast areas, which are characterized by ephemeras, sagebrush, the steppes are characterized by drought-resistant types of various cereals and some spring-autumn ephemeras. The mountain meadows, subalpine and alpine flora are mainly represented by mesophytes: *Dáctylis glomeráta*, narrow-leaved bluegrass, small basilisk, northern bedstraw, bluegrass, various types of cobresia,

¹³Plan for development, use and protection of water resources in the Karadarya-Syrdarya-Amudarya basin, National Water Resources Management Project - F2, 2020.

¹⁴ Monography: the USSK surface water resources. V14, 1st edition. R.b. Syrdariya. Gidrometizdat. 1969.

¹⁶ Plan of Development, Use and Protection of Water Resources in the Karadarya-Syrdarya-Amudarya Basin, National Water Resources Management Project F2, 2020.

sedges, caragans, low-growing juniper shrubs. The forests, woodlands and shrubs are found in separate small areas, groves: spruce, spruce-fir, juniper and nut-bearing. The rocky areas of ridges and slopes, scree and modern moraines in the area of glaciers have sparse plant cover in the form of individual specimens of alpine grasses, pillow-like plants - mountain grits, chorispore, etc.

Cultivated lands: arable lands, orchards, gardens are distributed mainly in the flat, foothill part of the territory, as well as in high valleys and depressions.

Biodiversity and specially protected natural territories. Specially protected natural territories (SPNT) are classified by different status: nature reserves, parks, reserves, biosphere reserves. The total SPNT area in the KR - 1 476 121.6 ha. There are six SPNTs functioning in KSAb territory, with a total area - 167444.5 ha, which is 11% of the total area of protected areas in the KR and 3% of the total area of the KSAb - 52974 km².

Kulunata State Reserve was established based on the KR Government Resolution, dated 11.08.2004 No. 598 in Kara-Kuldzha rayon, Osh oblast, with the total area - 27,780 ha on the lands of the state Kara-Kuldzha forestry fund -10,453 ha, and the state Kara-Kuldzha rayon's land reserve -17327 ha. The area of reserve includes two separate protected areas: Kulunata - 18510 ha and Tonzo - 6000 ha. The reserve was established in order to preserve biodiversity, rare and endangered species of flora and fauna, as well as Lake Kulun. Highland lake Kulun with adjoining forests, subalpine and alpine meadows represent a unique mountain-lake ecosystem. A landscape of the reserve is mountainous and quite diverse. There are about 800 species of wild flora, 24 species of mammals, the list of bird species totals - 81.

Dashman State Reserve was established by the KR Government Resolution, dated 12 July 2012 No. 482 in Bazar-Korgon rayon Jalal-Abad oblast to preserve biodiversity and unique relict forests, covering the area of 7958.1 ha on the lands of Arstanbap-Ata and Kyzyl-Unkur leskhoz. 5158.5 ha of Kyzyl-Unkur leshoz and 3031.1 ha of Arstanbap-Ata leskhoz were transferred to the reserve. The total 7958.1 ha of the area, include: 74.0 ha - haymaking, 452.8 ha – pastures, 5460.3 ha - forests, 1971.0 ha – rocks, rockslides, placers, ravines.

Surmatash State Reserve was established by the KR Government Resolution No. 414 2009 dated 27.06.2009, which is located in Kadamjay rayon Batken oblast to ensure the preservation of unique natural complexes and biological diversity, protection of rare and endangered species of flora and fauna within area of 66,194.4 ha.

Kyrgyz-Ata Natural Park was established by the KR Government Resolution No. 82 of March 18, 1992 to preserve a valuable unique natural complex of juniper forests that has a special ecological, aesthetic, geobotanical, fauna value and use of the park for workers' rest. The park is located in Nookat rayon Osh oblast with total area of 11,172 ha.

Kara-Shoro Nature Park was established by the KR Government Resolution dated 02.08.1996 No. 353 in Uzgen rayon Osh oblast to preserve a unique natural spruce forest complex, a natural source of mineral water with total area of 14340.2 ha. The Project is expected to be implemented on existing facilities and territories that are subject to anthropogenic impact. SPNT will not be affected.

Cultural heritage and historical monuments. The KSAb territory has a long history of human occupation dating back more than 3,000 years, and the area has extensive PCRs, including:

- a. Stone Age tools; bronze and gold relics of the Saka tribe dating from 600 BCE to 500 CE;
- b. Petroglyphs, depicting hunters and animals, some from the late Bronze age (1,500 BCE) and others from the Saka period;
- c. Burial grounds from various times including the Saka period;

- d. Medieval towns, monuments, stone sculptures, and other relics from the period of Turkish control from 600 to 1200 CE;
- e. Sites along the Silk Road, one route of which is believed to have passed through current territory of Osh oblast; and sites, buildings and monuments from the Soviet period.

However, according to preliminary studies, in the area of works within the existing irrigation infrastructure and the proposed alternative areas of works, are absent of historical and archaeological value objects. At the same time, while specifying rehabilitation objects and (re)construction sites, this section may be revised.

Hazardous natural processes and forecasting of emergencies in oblast¹⁷

This section has been prepared in 2019 based on research conducted by the Ministry of Emergency Situations of the Kyrgyz Republic.

Karasuu rayon, Osh oblast. Within Karasuu rayon, 78% of the area is occupied by mountain ridges and 22% are represented by valleys. The areas of expected dangerous natural processes and phenomena are concentrated in the central part of territory in the adyr and low-mountain zones between the rr. Kurshab and Ak-Buura. The prevalence and frequency of dangerous natural processes and phenomena in the area such as: mudslides and floods, groundwater flooding, and in the mountain and foothill parts landslides are frequent occurrence.

The mudslides, floods, coastal erosion. The mudslide processes are most widespread in the region. Most often mudslides occur along the tributaries of rr. Ak-Buura, Taldyk, and Kurshab. On the Papan AA territory, above the bridge over the r. Ak-Buura, alongside of the Papan-Nookat motorway to the gorge, along all varying intensity mudslide developments, are observed annually, and associated with the precipitation volumes.

The flood waters are observed along the rr. Kurshab and Ak-Buura annually during June and July. In high-water years, they erode the developed coastal zones. These areas include the left bank of the r. Kurshab, where cultivated areas are reduced annually, due to accumulation of debris in front of the Andijan reservoir, where the execution of bank protection works is necessary. During the intense and concentrated precipitation, the mudslides after torrential rain are also appear.

Flooding on the territories of Kara-Suu rayon, large areas are subjected to flooding due to rise in GWT, unsatisfactory condition of a collector and drainage network and development of new irrigated lands for rice cultivation. To prevent flooding, it is necessary to clean up and rehabilitate the collector and drainage networks, including in-depth studies for dewatering projects.

Landslides. The landslide processes are mainly developed in the mid-mountain zone in the area of Cretaceous-Paleogene sediments and occur along the left bank of the river valley Kurshab.

Kadamjay rayon, Batken oblast. Kadamjai rayon occupies the mid-mountainous Shakhimardan-Isfayram depression (the absolute height of depression bottom - 1100-2700 m), from the north it borders with the Fergana Valley, and from the south it bounded by the Alai ridge (the average height - 4500 m, the absolute height - 5539 m). Inside the rayon there are the ridges Katyrang-Too, Teskey, Kuruk-Say, Tekesekirdi-Bel, Kollektorsky and Yaruptus with the average height of 3000 to 4400 masl. The valley part is represented by river terraces, a foothill trail. The main rivers Isfayram-Sai and

¹⁷ Monitoring, forecasting of dangerous processes and phenomena on the territory of the Kyrgyz Republic (16th edition with amendments and additions), B.: Ministry of Emergency Situations of the Kyrgyz Republic, 2019 - 819 p.

Shakhimardan. The Kadamjay rayon territory occupied by mountains up to 92%, and 8% - valley areas. the areal distribution of hazardous natural processes and phenomena is shown on layout schematic maps of seismic, avalanche, mudflow hazards and flooding.

Bazar-korgon rayon, Jalal-abad oblast. Bazar-Korgon rayon is located in the southern central part of Jalal-Abad oblast within the river valley Kara-Unkur with adjoining mountain spurs of the Fergana ridge in the northeast, and the Babash-Ata ridge in the northwest. The valley part is represented by river terraces, a foothill trail, absolute elevations vary from 600 to 1500 masl. In the mountainous part, the heights reach 4427m (Babash-Ata ridge). The main rivers of of rayon are the r. Kara-Unkur (maximum throughput 350 m³/s), r. Shaidan-Sai (53 m³/s) and a number of small waterways. On the Bazar-Korgon territories about 85% is occupied by mountains, and 15% valley types. The layout map of emergency forecasting (Image. 5) shows the location of specific areas of possible hazardous processes and phenomena in 2019. The areal distribution of hazardous natural processes and phenomena is shown on layout schematic maps of seismic, avalanche, mudflow hazards and flooding.

Potential sources of pollution¹⁸

There are a number of waste tailing ponds located in KSAb region, mainly in Kadamjay rayon of Batken oblast and Nooken rayon of Jalal-Abad oblast, the rest of the region is free of these kinds of pollution sources. These hazardous waste storage facilities, can be potential sources of water pollution, especially drinking water supply, because of planned construction of new water intake sources and water supply systems.

On the territories of Kadamjai rayon, the tailing pond of Kadamjai antimony plant, a matte dump and salt accumulator/heapwastes. The plant built in 1971 with design capacity of 2600 th.m³. In fact, 2570 th.m³ is stored in the tailing pond, with 96% fill-up. The tailing pond area -17 ha. The tailing pond operated until September 2004, but currently is not in operation. The hazard class - IV. According to the "Project for technical recultivation of the plant tailing ponds", the recultivation works executed on the embankment of tailing pond. But currently, the negative impact of tailing pond on the environment has been minimized.

Salt accumulators (waste electrolyte). In 1976-80, 7 salt accumulator cards built for the industrial wastewater of the Kadamjai Metallurgical Plant with total volume of discharged industrial wastewater of 245.5 th.m³. From 2005 to the present, in order to prevent soil and groundwater pollution, measures undertaken to prevent environmental pollution by the salt accumulator. All wastes collected from carts No. 1,2,3,4 are placed on cart #6. The recultivation of landfill for entombment of dry industrial salts has also been performed.

According to the Government decree of the Kyrgyz Republic No. 594, December 19, 2005, salt accumulators #7 and #8 were transferred to the balance of the Ministry of Emergency Situations of the Kyrgyz Republic. In recent years, no waste electrolyte discharged into the carts of salt accumulators #7 and #8. The waterproof coating of the carts # 7 and 8 is damaged in many places, which causes the drainage of polluted waters into the soil. The planned placement of the salt accumulators' carts is causing the drains that resulted from precipitation and melting of snow from the adjacent territories, seeping into carts of #7 and #8, as a result of which contaminated drains are formed on these carts causing infiltration from the settler.

In order to prevent pollution of drinking water supply and irrigation water sources, during elaboration design estimates documentation for detailed design, an environmental survey of this object will be

¹⁸ Monitoring and forecasting of possible activation of hazardous processes in the territory of the Kyrgyz Republic. Chapter 2, paragraph 2.13. Dangerous objects on the territory of the Kyrgyz Republic, 2019

executed and an environmental assessment will be developed for each subproject. The environmental assessment will be submitted for consideration by the State environmental expertise. Detailed information is provided in section 6 and section 8.2.

3.1.3. Socio-economic overview of the KSA basin

Population. Over the past five years (2017-2021), the total population of Batken and Osh oblasts and three rayons of Djalal-Abad Oblast; Bazar-Korgon, Nooken and Suzak, located within the territory of the KSB, increased from 2416.9 to 2658.9 th.people, or by 9%, or 1,5% per annum, which is higher than the nationwide rate of population growth of 8% (1.1% per annum)

Over the past five years (2017-2021), population of the KSA basin (Batken, Osh and Bazar-Korgon, Nooken and Suzak rayons of Jalal-Abad oblasts) has been increased. Total population increased from 3241.6 to 3522.7 th.people or by 9% (1.5% per annum), which is higher than the nationwide rate of population growth of 8% (1.1% per annum).

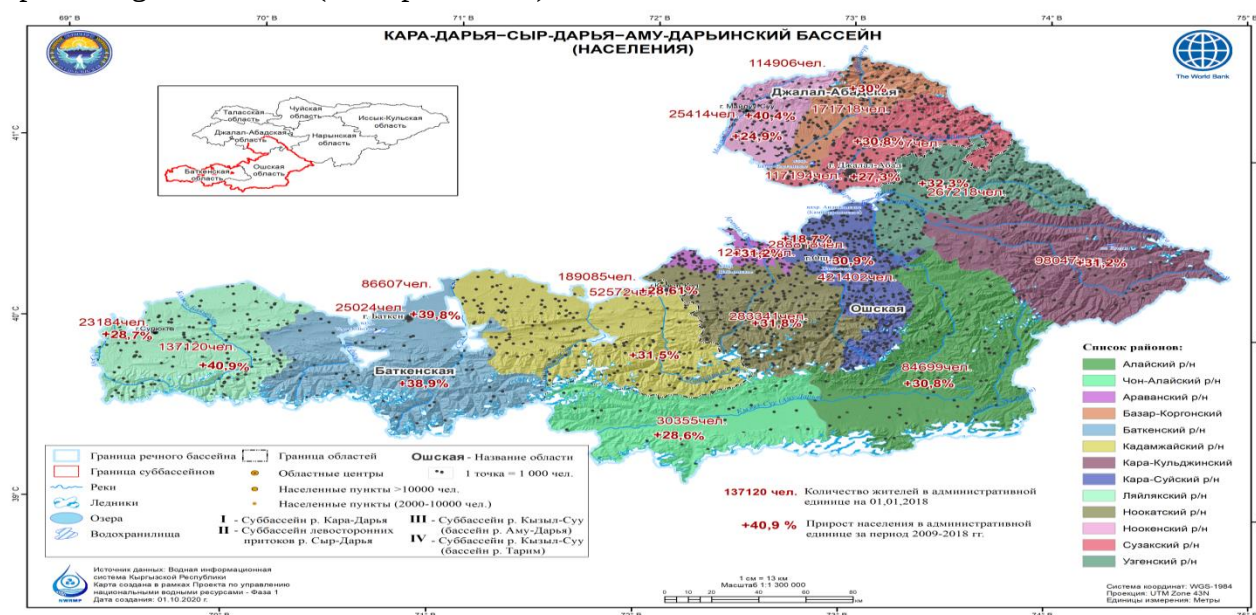


Figure 7. KSA basin population

Based on the current trend, it should be expected that by 2028 the KSA basin population will be about 3186.7 th. people.

Industry. There is extraction of minerals, industrial production processing, mainly food products, are concentrated in KSA basin. In monetary terms, industrial products output over the past three years is 11-14% of the total countrywide.

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%).

The cultivated crops in region are dominated by cereals - 29%, legumes - 19%, rice - 14%, corn (maze) - 10%, oil crops - 4%, potato - 3%, perennial grasses - 2%, cotton - 3%.

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, especially goats in Jalal-Abad and Batken oblasts, which are pestiferous to the forests, is also growing.

Water use. Total volume of water intake is about 2.50 km³, including 0.70 km³ in Karadarya basin, 1.61 km³ in left-bank tributaries of the Syrdarya river, and 0.05 km³ of water intake from the r. Kyzylsu. The highest level of water use 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.

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.

Tourism. There are several tourist camps in Batken oblast: Ak-Suu, Ozgorush and Pyramid Valley, a climbing base Dugaba which meets the world standards (experienced trainers, climbers, control and rescue service, etc are on-duty). Attractive sights are a mountain lake Kurban-Kul in upper river Shakhimardan called blue, a cave Sel-Unkur at the western margin of v. Khaidarkan. The region is famous for the Batken apricot, the Aigul flower (grouse-Eduardo), which blooms in April, so every year in April a holiday is celebrated that attracts tourists.

The Sulaiman Too and Uzgen historical monuments are attractive in Osh oblast. Jalal-Abad region has rich tourist resources: there are many sources of mineral waters, resorts of Jalal-Abad, Kochkor-Ata, Keremet, nature corners: relict nut and fruit forests consisting of two massifs: Arstanbap (Kugart) and Khoja-Ata. The listed objects are currently used for outdoor recreation, medical treatment, rural and religious tourism.

3.1.4. General characteristics of KSA basin's target rayons

Bazar-Korgon rayon, Jalal-Abad oblast. Bazar-Korgon rayon established in 1928. The rayon area - 1965 km². The number of permanent populations according to the National Statistical Committee of the Kyrgyz Republic data as of January 1, 2021 is 180.2 th.people. There are 57 rural residential area belonging to 9 ail aimags on the rayon's territory: Akman (6 residential area), Bazar-Korgon (3), Beshik-Zhon (4), Arstanbap (5), Kyzyl-Unkur (5), Mogol (6), Saidakum (12), Taldu-Bulak (8), Kenesh (8). The rayon administrative center is Bazar-Korgon.

Bazar-Korgon rayon is located in the south-central part of Jalal-Abad region within the valley of the Kara-Unkur River with adjacent mountain spurs of the Ferghana Ridge in the northeast and the Babash-Ata ridge in the northwest. The valley part is represented by river terraces, a foothill plume, absolute elevations vary from 600 to 1500 m above sea level. In the mountainous part, the heights reach 4427 m (Babash-Ata ridge).

The rayon's main rivers are Kara-Unkur River (maximum flow - 350 m³/sec), Shaidan-Sai River (53 m³/sec) and a number of small watercourses. Rivers feed from snow and glaciers. Bazar-Korgon reservoir is located on the territory of the rayon. It feeds from Kara-Unkur River. The reservoir volume is 22.5 mln.m³, it is self-leveling, with an earthen dam with a height of 25 m, used for irrigation.

About 85% of the Bazar-Korgon rayon's territory is occupied by mountain structures, and 15% is a valley type of relief. According to the prevalence and frequency of manifestations, mudslides and flood phenomena prevail, and landslides are highly likely to activate.

Bazar-Korgon rayon is located in the south-central part of Jalal-Abad oblast within the valley of Kara-Unkur River with adjacent mountain spurs of the Ferghana ridge in the northeast and Babash-Ata ridge in the northwest. The valley part is represented by river terraces, a foothill plume, absolute elevations vary from 600 to 1500 m above sea level. The heights reach 4427 m (Babash-Ata ridge) in the mountainous part.

An average air temperature in January is – 4°C in valley – -12°C in mountains. The average air temperature in July in valley is +28°C, in the mountains up to +16°C. The minimum air temperature is minus 30°C. The absolute maximum air temperature is +40°C. The average annual precipitation is 200-600 mm in the valley part, 800-1000 mm in the mountainous part. The maximum possible amount of daily precipitation reaches 50-80 mm in the valley, 100 mm or more in the mountainous region. The average height of snow cover in the valley part is 20-30 cm, in the mountainous part up to 200 cm. The highest wind speed possible in the valley part is 28 m/sec, in the mountains up to 40 m/sec.

7 WUAs are commanded under Levaya Vetka irrigation and drainage system, according to the WUAs database for 2020¹⁹. Below are Table 3 with the names of WUAs, irrigated area, service areas and Table 4 with data on WUAs members.

Table 3. 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

¹⁹ WUA report – I&D system – Levaya Vetka Canal, AF NWRMP, Bishkek 2021.

Karacha-Suu	343	3	343	100%	343	100%
Tamchy-Bulak	1,209	4	1,209	100%	1,209	100%
Kashka-Suu	1,642	5	1,642	100%	1,642	100%
Murap	1,293	11	1,293	100%	1,293	100%
Obi-Khayot	1,308	10	1,308	100%	1,308	100%
Myrza-Suu	2,430	12	2,430	100%	2,430	100%
Total	8,225		8,225	100%	8,225	100%

Table 4. WUA members

WUA name	Individual Farmers		Peasant Farmers	Collective Farm Unit
	Total	Female		
Karacha-Suu	322	55	2	0
Tamchy-Bulak	1 054	67	3	0
Kashka-Suu	1 543	300	3	0
Murap	1 407	353	2	0
Obi-Khayot	978	400	5	0
Myrza-Suu	1 467	129	0	0
Total	6771	1304	15	0

There are 21,148.00 households in rayon. The Osh–Bishkek and Osh–Arslanbab highways pass through the rayon.

Kara-Suu rayon, Osh oblast. Kara-Suu rayon established in 1935. The rayon area - 3616 km². The number of permanent populations according to the National Statistical Committee of the Kyrgyz Republic data as of January 1, 2021 is 440.4 th.people. There are 122 rural residential area belonging to the 16 aiyl aimaks (AA): Ak-Tash (3 residential area), Jana-Aryk (5), Joosh (12), Katta-Taldyk (9), Kashgar Kashtak (8), Kyzyl-Kashtak (7), Kyzyl-Suu (4), Mady (11) Nariman (14), Otuz-Adyr (8), Sary-Kolot (6), Papan (9), Savay (9), Saray (6), Teleiken (5), Shark (6). The rayon center is Kara-Suu town. According to the NSC data as of January 1, 2021, the town permanent population is 26.6 th.people.

The rayon occupies the Osh-Karasuu oasis, the northern spurs of Alai ridge and partially adyr zone of Kichik-Alay ridge. Altitude of the oasis varies from 800 to 1200 m. The rayon's relief in the northern part is flat (22%), which is replaced in the southern direction by adyr zone (20%), the mid-mountain and high-mountain zones are located above.

78% of the Kara-Suu rayon territory is occupied by mountain ridges and 22% is valleys. The areas of expected outbreaks of dangerous natural processes and phenomena are concentrated in the central part of the territory in adyr and low-mountain zones between the rr. Kurshab and Ak-Buura. According to the prevalence and frequency of dangerous natural processes and phenomena, mudslides and floods, flooding by groundwater prevail in the area, landslides are developed in the mountainous and foothill parts.

Mudslides, floods, coastal erosion: Mudflow processes are widespread in the area. Most often, floods arise along the tributaries of Ak-Buura, Taldyk, and Kurshab rivers. Mudflows of varying intensity associated with the amount of precipitation are observed annually on the territory of Papan aiyl aimak above the bridge over Ak-Buura river on Papan-Nookat road to the gorge along all the short components of the mudflow sais.

Flood waters are observed annually along Kurshab and Ak-Buura rivers during June and July. They erode reclaimed coastal zones in high-water years. Such sites include the left bank of the r. Kurshab, where acreage is reduced annually due to the accumulation of debris in front of the Andijan reservoir. The shore protection works are in need. Rainwater mudflows may occur during intense precipitation concentrated over the area.

Flooding: Large areas on the Kara-Suu rayon's territory are subject to flooding due to rising groundwater levels, unsatisfactory condition of the collector and drainage network, development of new irrigated lands for rice cultivation. To eliminate flooding, it is necessary to clean and restore collector and drainage networks, as well as comprehensive studies to substantiate water reduction projects.

Landslides: Landslide processes are mainly developed in mid-mountain zone on the area of Cretaceous-Paleogene sediments and are present on the left bank valley of the r. Kurshab.

The rayon's climate depends on the terrain altitude with hot summers in flat and foothill parts of rayon, winters are moderately cold. Air temperature in January on the plains is -3.3°C, in mountainous areas -6.9°C. The average annual air temperature is 12.1°C. Precipitation in the area falls unevenly and amounts to 300-500 mm. The warm season lasts 200-225 days.

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 2020²⁰. Table 5 with the data on WUAs, irrigated area, service areas and Table 6 with data on WUAs members.

Table 5. 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 6. 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

²⁰ WUA report – I&D system – Levaya Vetka Canal, AF NWRMP, Bishkek 2021.

Total	6 763	716		
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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 withih the rayon territory.

Batken rayon, Batken oblast. Batken rayon occupies an area of 5948 km². The total permanent population according to the National Statistical Committee of the Kyrgyz Republic data as of January 1, 2021 is 92.0 th.people, the average population density is 13.4 people per 1 km².

The rayon has city Batken of regional importance, which is the rayon administrative center with a permanent population of 27.7 th.people, (including urban 19.7 th.people, rural 8.0 thousand) and 42 rural residential area belonging to 9 aiyl aimaks: Dary (9 residential area), Tort-Gul (5), Kara-Bak (4), Kara-Bulak (2), Kyshtut (6), Samarkandek (3), Ak-Say (5), Ak-Tatyr (3), Suu-Bashy (5).

The Tajik enclave of Vorukh is located on the rayon's territory. Batken rayon is located in the low mountain Batken depression, passing into the Fergana valley, and is bounded to the south by Alay and Turkestan ridges. The ridges Adygine-Too, Daud, Kok-Bel, Kara-Bel, Akun-Too and Tokhtabuz with average heights from 2,500 to 4,700 m are located inside of the area. The main rivers of the rayon are Sokh and Isfara. 92% of Batken rayon's territory is occupied by mountainous and 8% by valley areas. In total, there are 11,480 households in rayon.

The main transportation is an automobile. Aidarken-Batken and Osh-Batken-Isfana highways pass through the area. There is an airport in Batken city.

Kadamjay rayon, Batken oblast. Kadamjay rayon formed in 1938. Rayon occupies an area of 6146 km². The number of resident populations according to the National Statistical Committee data as of January 1, 2021 is 201.5 th.people, including urban - 21.2 th.people, rural - 180.3 th.people.

Kyzyl-Kiya town of regional importance (territory of 78 km²) with population of 56.8 thousand (urban population - 42.6 thousand, rural population - 14.2 thousand), two towns of regional importance - Kadamjay - 14.1 thousand (urban population - 9,2 thousand, rural population - 4,9 thousand), Aidarken - 12,0 thousand and 105 rural localities belonging to 13 aiyl aimaks are located in rayon: Ak-Turpak (14 residential area), Sovet (1), Chaivay (1) Alga (6), Birlik (11), Masaliev (8), Kotormo (10), Maidan (13), Markaz (6), Orozbekov (5), Uch-Korgon (12), Khalmion (13), Kyrgyz-Kyshtak (5).

The administrative center of rayon is Kadamjay town with permanent population of 14.1 th.people (urban population 9.2 thousand, rural population 4.9 thousand).

Kadamjay rayon occupies the middle Shakhimardan-Isfairam trough (absolute height of the bottom of the trough is 1100-2700 m), from the north borders with Fergana valley, and from the south is limited by the Alai range (average height - 4500 m, absolute - 5539 m). Katyran-Too, Teskei, Kuruk-Sai, Tekesekirdi-Bel, Collector and Yaruptyus ridges with average heights from 3000 to 4400 m above sea level are located inside the area.

The valley part is represented by river terraces, foothill plume. The main rivers are Isfairam-Sai and Shahimardan. 92% Kadamjai rayon territory is occupied by mountainous and 8% by valley areas. There are 29,088 households in rayon.

The main transport is an automobile. The Kyzyl-Kiya-Vuadil (Republic of Uzbekistan), Fergana-Aidarken-Batken, Kyzyl-Kiya-Kuva-Sai-Fergana, and Isfana-Kyzyl-Kiya-Osh roads pass through the area. Railroad connects Kyzyl-Kiya with Fergana city (Republic of Uzbekistan). There is an airport in Kyzyl-Kiya.

According to the WUAs database for 2020, 3 WUAs are commanded under Nurgazieva main canal - Shakhimardan irrigation and drainage system located in Kadamjay rayon of Batken oblast.

Table 7 with the names of WUAs, irrigated area, service areas and Table 8 with data on WUA members are given below.

Table 7. 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
Ak-Suu-Khalmion	3 080	77	3 080	100%	2 880	94%
Alga-Jarkoton	750	18	750	100%	750	100%
Zhany-Zher-Pulgon						
Total	3 830		3 830		3 630	

Table 8. WUA members

WUA name	Individual Farmers		Peasant Farmers	Collective Farm Unit
	Total	Female		
Ak-Suu-Khalmion	3 250	135	32	0
Alga-Jarkoton	430	52	9	0
Zhany-Zher-Pulgon				
Total	3 680	187	41	

Leilek rayon, Batken oblast. Leilek rayon formed in 1928. The Rayon area - 4653 km². The total permanent population, according to the National Statistical Committee of the Kyrgyz Republic data, as of January 1, 2021 is 146.0 th.people, urban population 23.0 th.people, rural population 123.0 th.people. Average population density - 27.9 people per 1 km².

Sulukta town of regional importance (an area of 18 km²) with a population of 24.2 thousand, including the Vostochny urban settlement 8.6 thousand.

There are 46 rural residential areas, belonging to 9 aiyl aimaks: Ak-Suu (4 residential area), Beshkent (5), Margun (4), Dzany-Jer (4), Leylek (5), Katran (3), Kulundu (5), Sumbul (4), Toguz-Bulak (6).

Isfana town is the administrative rayon center with population of 34.2 thousand (urban population 23.0 th.people, rural population 11.2 th.people).

Leilek rayon occupies the low-lying Isfara-Isfana depression (absolute height of the bottom of the depression is 900-1600 m), bordering with Fergana valley from the north. Rayon is bounded by the Turkestan ridge with an average height of 4,400 m (the highest point is Pyramidalny peak - 5,509 m) from the south. The ridges Beli-Synyk, Almaly, Kyrk-Karakchy, Kekche-Too and Ak-Tash with average heights of 1200-3,800 m are located inside of the area. The main rivers of the rayon are Ak-Suu, Sumbula, Kozy-Baglan and Isfana. There are 21,622 households in the rayon.

Osh-Isfana and Sulukta-Isfana highways pass through the rayon. A narrow-gauge railroad connects Sulukta and Proletarsk (Republic of Tajikistan). There is an airport in Isfana.

3.2. The Issyk-Kul-Tarim River Basin

3.2.1. Physical Environment

Location. The The Issyk-kul-Tarim (ITb) Basin²¹ Water Resources Management should be established in accordance with the adopted structure of the State Water Resources Agency under Ministry of Agriculture, Water Resources and Regional Development, its territory covers the basins of The l. The Issyk-kul, tributaries of the Tarim river (Lobnor lake basin) within the The KR territory (Saryjaz, Chon-Uzengu-Kuush, Aksai, Kokshaal, Keksu), Karkara river (Balkhash lake basin) and Chatyr-Kul lake basin, figure 8.

Thus, ITb water resources management covers almost the entire territory of The Issyk-kul oblast, as well as the southeastern part of the Naryn oblast.



Figure 8. Map of Issyk-Kul-Tarim basin

Table 9. ITb within KR oblasts and rayons

#	Oblast	Rayon	Area of rayons within basin (km ²)	Oblast total area (km ²)	Area of oblast within basin (km ²) (км ²)	% oblast area within basin
1	The Issyk-kul	The Issyk-kul	3608	43100	28872	67
		Tyup	2121			
		Ak-Suu	9917			
		Jeti-Oguz	9529			
		Ton	3697			
2	Naryn	At-Bashy	10128	45200	10128	22,4
			39000	88300	39000	

Table 10. Main characteristics of ITB basin

Catchment area, km ²	39000 km ²
Rivers with a catchment area larger than 1 000 km ²	Tyup, Jyrgalan, Kokshaal, Aksai, Terek, Kyndy, Kokkiya, Chon-Uzengukuush, Saryjaz, Inylchek, Uchkul, Akshiryak

²¹ Plan for Development, Use and Protection of Water Resources in the Issyk-Kul-Tarim Basin, National Water Resources Management Project-F2, 2020.

Rivers with a catchment area larger than 500 km ²	Aksu (Arashan), Juuku, Ton, Akterek, Turasu (Ulakhol), Kyzylsu, Kuilyu, Kaindy
Rivers with a catchment area of 100 km ² – 1000 km ²	Turgenaksu, Bozuchuk, Aksu, Karakol, Irdyk, Djetyoguz, Chon-Kyzylsu, Kichine-Kyzylsu, Kichi-Jargylchak, Chon-Jargylchak Barskoon, Tamga, Tosor, Aksai, Jeruy, Konurolon, Toraygyr, Duresu, Kabyrga, Choctal, Cholponata, Chon-Aksu, Kichi-Aksu, Chon-Oruktu
The highest point of the basin, m. above sea level	Pobeda peak, 7439 m
The lowest point of the basin, m above sea level	1600 ²²
Neighboring countries	Republic of Kazakhstan, People's Republic of China
Cities and residential area with populations over 10,000	c. Karakol, c. Cholpon-Ata, c. Balykchy
Land use (%)	Agricultural areas - (of which - pastures), man-made areas (residential area; industrial, transport, commercial infrastructures; mines, tailings dams) - forest land -, unused areas -%, water fund -%

Climatic conditions. Climate of the basin is moderately continental, mid-mountain and high-mountain, with contrasts of air temperature and moisture, both by altitudinal belts and during the year.

To characterize climatic conditions in the mountainous and high-mountainous areas of the basin, Koylu meteorological station (Saryjaz river basin 2800 masl) and Karakol meteorological station (H=3080 masl, Karakol river basin) were selected).

Average long-term annual air temperature at Koylu and Karakol meteorological stations is -2.0 and -3.3°C respectively, at Cholpon-Ata meteorological station - (+7.3°C), i. e. temperature gradient at 1 km is about (-0.01°C), i. e. there is decrease of air temperature with increase of altitude.

Annual amplitude of air temperature is 20.6°C, which corresponds to the moderately continental climate. January is the coldest month, while July is the warmest. Average monthly temperature in January at Cholpon-Ata meteorological station is (-3.2°C), at Koylu and Karakol meteorological stations (-19.6°C), average monthly temperature in July at Cholpon-Ata meteorological station is (+17.3°C), at Koylu and Karakol meteorological stations (+10.3 and +9.1°C) respectively, Table 11.

Table 11. Average annual air temperatures by meteorological stations

Station	Months												T°C
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Cholpon-Ata (H=1645 m)	-3,2	-2,1	1,8	7,3	11,5	15,0	17,3	17,0	13,3	8,2	2,3	-1,1	7,3
Koylu H=2800 m	- 19,6	-13,7	-5,0	1,7	5,6	8,3	10,3	9,6	5,7	-0,4	-9,9	-17,2	-2,0
Karakol H=3080 m	- 19,6	-15,2	-7,4	-0,3	3,7	6,9	9,1	8,7	4,4	-2,0	-10,7	-17,1	-3,3

Average annual precipitation total at Cholpon-Ata meteorological station is 264 mm and 325 mm at Koylu, and 209 mm at Karakol meteorological stations and the amount of precipitation at Koylu

²² Physical Geography of Kyrgyzstan. Turar Bishkek 2013.

meteorological station is 1.2-1.5 times higher than the other two listed. Precipitation falls mainly in warm period of the year in April-October months - 77% of the annual amount (Cholpon-Ata meteorological station), 92% (Koylu meteorological station) and 88% (Karakol meteorological station), the periods with the maximum amount of precipitation are June-September (Cholpon-Ata meteorological station) and May-August (Koylu meteorological station), (Karakol meteorological station), Table 12.

Table 12. Average annual monthly precipitation in 1951-1980, mm

Station	Months												Amount
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Cholpon-Ata (H=1645 m)	9	8	17	20	28	30	37	43	29	16	18	9	264
Koylu H=2800 m	4	4	6	24	49	58	63	58	34	12	7	6	325
Karakol H=3080 m	4	3	7	14	31	41	41	35	17	6	5	5	209

Prevailing wind directions for Cholpon-Ata station are north, northeast, east and southeast. For meteorological station Koylu - western, northeastern and eastern, for meteorological station Karakol - western, southwestern and eastern²³.

The western wind - Ulan and the eastern wind - Santash are typical for the flat part of the basin. The strongest of them is Ulan, which often reaches speeds of 20 m/s, with gusts up to 40 m/s. Sometimes, both winds act simultaneously, and when they collide over the lake, they form tornadoes.

In addition, a coast is characterized by local winds - breezes. Daytime breeze is warm and blows from the lake toward mountains, while the night time breeze brings coolness to the coast from the mountains. Frequent thunderstorms with an average frequency of 40-45 thunderstorms per annum²⁴ are characteristic for the considered territory.

Landscape. The landscape of territory is divided into two main parts: the The Issyk-kul basin and the The Issyk-kul watershed upland. The The Issyk-kul basin is bounded from the north and south by Kungei and Teskey Ala-Too ridges and is 240 km long and about 100 km wide from east to west. Lake The Issyk-kul occupies the central part. The lake is located at an altitude of 1,608 m above sea level, with an area of 6,200 sq. km, a depth of 668 m, length - 180 km, width - 64 km. The lake is surrounded by a plain, a narrow coastal strip is covered with sand, less often with pebbles, in some places it is built of cemented sandstone, in some parts it is swampy. The plain stretches for 40-50 km to the east of the lake along the valleys of the Tyup and Djyrgalan rivers. It is 1 to 10 km wide on the northern bank, on the western bank 10-15 km wide. Only along the southern shore it is sometimes interrupted, giving way to foothill ridges.

The foothills of Kungei and Teskey Ala-Too are composed of Meso-Cenozoic sediments, heavily dissected by saiyas, ravines and river valleys. The length of the Kungei Ala-Too ridge is 280 km. A crest of the ridge is located at an altitude of 3,800-4,000 m. The highest point is Choktal Mount (4,771 m). The central part of the ridge lies above the snow line, so small snowfields and glaciers are found here.

²³ Scientific and Applied Reference Book on Climate of the USSR Series 3 Multiyear Data. Part 1-6. Issue 32 Kyrgyz SSR, Gidrometeoizdat. Leningrad 1989.

²⁴ Project "Promotion of the Concept of Ecosystem Services Related to Water in Central Asia" Integrated Plan for the Development, Use and Protection of Natural Resources of the Chon-Aksuu River Basin Bishkek 2016, Sakhvaeva E.

To the south of Teskey Ala-Too lie syrts, sparsely inhabited highland areas with a characteristic alternation of gentle ridges and intermountain depressions. Undulating areas surrounded by ridges covered by eternal snow and glaciers prevail here.

Hydrology. Main elements of the territory's hydrography are lakes, rivers, glaciers, ponds, irrigation canals, etc. Glaciers are one of the most important factors forming flow of mountain rivers. The largest areas of glaciation are concentrated in the basin of Saryjaz (25.9%), Chon-Uzongukuush (14.2%), r.Kyzylsu (10.5%), r. Kokshaal (3.5%), glaciation area of the The Issyk-kul basin rivers is 16-23%²⁵.

The undrained lake Issyk-kul has 118 rivers flowing into it, and the river network in the western part of the lake basin, which is poor in precipitation, is underdeveloped and has a low specific water content. The middle and eastern parts of the Issyk-Kul basin are characterized by a developed river network with higher specific water content. The largest rivers are Tyup and Jyrgalan.

The Lake Issyk-kul is a tectonic lake, undrained, ice-free, situated at an altitude of 1,608 m above sea level. The area of the lake is 6,200 square kilometers, the depth is 668 m, length - 180 km, width - 64 km, length of the coastline - 688 km, average depth - 278.4 m, maximum depth - 668 m, volume of water - 1,738 cubic km. The total annual flow of rivers into the lake is 3,720 million m³²⁶.

The level of lake has had a general tendency to decrease since 1870. During the period of instrumental measurements from 1927 to 2010, the average annual decrease in the level was 3.0 cm, and the lowest level of 1606.18 was registered in 1998.

The Issyk-Kul is the largest lake in the KR and one of the largest mountain lakes in the world. Among all the high-mountain lakes in the world that are above 1,200 meters above sea level, The Issyk-Kul is the second largest lake by surface area after Lake Titicaca in South America, and the first in the world by water volume and depth. The Lake Issyk-Kul is the largest ice-free lake in Central Asia.

The Issyk-Kul Lake contains 37 annual flows of all the rivers of the KR. This huge mass of water accumulates a considerable amount of energy during the warm season, which makes the lake ice-free and gives the basin unique natural features. There is a great diversity of local climates here: boreal arid climate of deserts, boreal arid climate of steppes, moderately warm climate of steppes, boreal climate with enough moisture, cold climate of tundra, and the first three climates are observed mainly in the flat part and the last two in the mountainous part.

The Issyk-Kul Lake is characterized by three natural mechanisms of self-purification of water: presence of sufficient numbers of endemic fish (chebak, burbot, marinka, carp, etc.) as well as other non-predatory species such as bream and carp; presence of coastal forest-marsh ecosystems serving as natural water filters, and the natural circulation exchange of the entire volume of lake water, resembling a centrifuge. The water in the lake by chemical composition belongs to the sulfate-chloride class, magnesium group and has an alkaline reaction.

Water quality of the Issyk-Kul Lake

The Climate Resilient Water Services Project will be implemented in Cholpon-Ata, which is located in biosphere territory of The Issyk-Kul. Wastewater from the wastewater treatment plant in Cholpon-Ata is discharged for irrigation of agricultural plantations. At the same time, a sewage collector passes in the water area of the Issyk-Kul Lake, and in case of its rupture, there is a risk of untreated wastewater entering the lake. Water quality in the Issyk-Kul Lake is not monitored on a regular basis. It is usually

²⁵ Monograph Surface Water Resources of the USSR Volume 14 Issue 2 Gidrometeoizdat 1973.

²⁶ Source: Basin Plan for Development, Use and Protection of Water Resources in the Issyk-Kul-Tarim Basin 2017. MAWR, DWR, National Water Resources Management Project F-1.

at the beginning of the tourist season and during the tourist season, the Issyk-Kul Department of Environmental Protection conducts monitoring. There are no publicly available monitoring data. In addition, monitoring of the Issyk-Kul Lake is conducted periodically under international projects.

Information on water quality is presented based on the results of the KGZ - Water the Issyk-kul Project, which was implemented by the State Agency for Environmental Protection and Forestry (SAEPF) under the KR Government together with the Finnish Environmental Institute (SYKE) in 2014-2017.²⁷

The chemical composition of the lake water belongs to the sulfate-chloride class, magnesium group and has an alkaline reaction. The lake water is considerably mineralized. The coastal part of Tyup bay is the least mineralized (612 mg/l), especially in spring-summer period, as rivers are most full-flowing and water in the bay is considerably desalinized. For the rest of the lake water area salinity ranged from 3,963 to 6,611 mg/l. The lake water is distinguished by high transparency - up to 30 m on the Secchi disk, which is explained by weak development of organic life and water salinity. Water transparency in the Lake Issyk-Kul is an indicator of vertical water exchange processes. The coastal zone is characterized by a lower value of transparency than in the central deep part of the lake. The average transparency value on the southern shore was 11.5 m and 10.8 m on the northern shore. Such distribution of transparency is determined by the fact that the northern coastal zone is much shallower than the southern one, in connection with this the northern shore has more intensive turbidity of bottom sediments during waves.

The oxygen condition of the lake is satisfactory. High oxygen content was registered throughout the water column from the surface to the bottom within the range of 5.77 to 10.27 mg/l, and the percentage of oxygen saturation was 76-120%. Water hardness was between 22.92 and 32.75 mmol/l. The content of organic matter according to BOD₅ in the Issyk-kul Lake varies between 0.19 mgO₂/l - 2.88 mgO₂/l and corresponds to the norm.

The increased content of ammonium nitrogen is observed in the coastal part of the lake near Balykchy city, in bay near the ship repair plant. The maximum permissible concentration (MPC) was exceeded within 1.7-2.2 times, due to the proximity of half-ruined Selkhozkhimiya enterprise. Content of nutrients in the open (deep) part of the lake is insignificant. Nitrite nitrogen, nitrate and mineral phosphorus did not exceed permissible norms during the whole period of investigations.

However, it should be noted that the pollution by nutrients takes place in the coastal zone of the lake. Analysis of the monitoring data for 2014 - 2017 showed exceeding of allowable standards for nitrite nitrogen content in the area of ship repair plant of Balykchy city within a range of 1.8 - 7.5 MPC and in the area of oil depot of Balykchy city up to 5 MPC in 2015. The pollution of the bay near the ship repair plant can be explained by ingress of rainwater from the area contaminated with mineral fertilizers, located near the Selkhozkhimiya enterprise, where a fertilizer warehouse for The Issyk-kul and Naryn regions was located.

Among specific pollutants of anthropogenic origin, petroleum products have the greatest impact on water quality in the Issyk-kul Lake. Pollution by petroleum products was detected in Balykchy city in the area of oil depot and former ship repair plant. In-depth monitoring of the lake water quality in 2015-17 showed a presence of oil products away from the shoreline. Concentration of petroleum products varies between 0.07 mg/l - 0.14 mg/l or 1.4 - 2.8 MPC. Cholpon-Ata c., v. Choktal, v. Grigorievka, c. Balykchy etc are polluted with petroleum products even before the beginning of holiday season. Pollution occurs due to the operation of water vehicles running on gasoline and diesel fuel, most of which carry out their activities without permits.

²⁷ Report on State Environment of the Issyk-Kul Region, 2018. Environmental Institute, Finland (SYKE).

Heavy metals such as zinc, cobalt, cadmium, lead, chromium, arsenic are within permissible limits. In general, a chemical composition of the lake and water quality during the studied period compared to the set of multiyear data of the lake study have not changed significantly.

Hydrogeological conditions. The groundwater reserves of the the Issyk-kul basin are estimated at 848.0 mln.m³ per annum. Two types of major hydrogeological structures are distinguished here: artesian basin corresponding to the depression and hydrogeological massifs corresponding to the ridges surrounding the depression.

The Issyk-kul artesian basin, according to the geological structure, is divided into three structural-geological floors: the lower, middle and upper. The ground floor is of Paleozoic foundation, composed of hard rocks of the Proterozoic and Paleozoic. It forms a closed synclinal structure due to a significant (up to 5000 m) immersion in the era of Alpine orogeny with a common slope from west to east. The waters of the lower floor opened in the The Issyk-kul basin by only two wells, at depths of 1803-1920 m, in sandstones and quartz porphyries, where the depth of the Paleozoic basement upper boundary is the lowest. Waters are under pressure - one of the wells is self-discharging, the second - the piezometric level was established at the depth of 480m²⁸.

The newest structure of the middle Mesozoic-Cenozoic structural geological floor is not completely closed. In the east, in the area of the San Tash pass, it connects with the neighboring Kegen artesian basin. The thickness of the layer reaches 4-5 km. They are mainly represented by Neogene and Paleogene sediments. The sandstones, conglomerates, gravelites, less often limestones, siltstones in clayey and sandy-argillaceous molasses are water bearing layers, lying in the form of separate horizons of low pressure (a few meters, rarely dozens of meters), or their complexes. Strong aquifers (predominantly in conglomerates), measured in hundreds of meters, are contained in the Sharpyldytsky suite.

The middle floor waters are also under pressure. They explored by the single wells to a depth of 1500 m. The groundwater discharge is carried out due to their penetration into the basin foundation.

The upper structural-geological floor unites the loose quaternary deposits of different genesis and lithology. Their thickness varies from a few tens meters to 500 m. On the northwestern shore of the lake their apparent thickness is 340 m. The water-bearing layers are represented by gravel-pebble deposits with the different aggregates. In general, this is a single watered stratum with a single groundwater aquifer moving in the direction of the prevailing surface slope - to the lake, which is the source of regional groundwater²⁹ discharge.

3.2.2. Biological Environment

Biodiversity³⁰

Biocenoses in the Issyk-kul oblast are extremely diverse. This is primarily due to the large length of the territory and its mountainous terrain, creating a heterogeneity of natural and climatic conditions and determining the horizontal (from west to east) and vertical alternation of biocenoses.

The richness of flora is explained by great diversity of relief, soil, climatic conditions of the Issyk-Kul basin, presence of a large number of vegetation types, location of the The Issyk-kul hollow at the junction of two geobotanical provinces - the Central Tien-Shan and the Northern Tien-Shan.

The contrast of the balance of heat and moisture has a great influence on the diversity of the biocenosis spectrum. In the west of the Issyk-Kul basin in the piedmont belt, where precipitation is less than in its eastern part, desert, semi-desert and swampy biocenoses prevail. As they move eastward and the

²⁸ Hyrdogeology. 1971

²⁹ WWW.ISSYKINFO.RU

³⁰ State of the Environment Report, KGZ-Water/Issyk-Kul Project. Finnish Environment Institute (SYKE), State Agency for Environmental Protection and Forestry under the GKR, 2018.

amount of precipitation increases, they, with the same absolute altitude values, give way to dry-steppe, steppe, meadow-steppe, river and lake biocenoses. The mountainous nature of relief and associated differences in climatic conditions at different altitudes determine the vertical zonation of vegetation cover and aquatic ecosystems throughout the region.

Flora

Flora of the I. Issyk-Kul basin numbering more than 1500 plant species, 11 of which are listed in the Red Book of the KR. All-natural belts can be found within the Issyk-Kul basin: deserts, semi-deserts, steppes, meadow-steppes, forests, subalpine and alpine belts. Such heterogeneity of natural conditions is reflected in the vegetation, which is also diverse.

For the desert belt of the region located in its western part (along the northern shore of the lake it reaches the village of Kara-Oy, and along the southern shore - up to the hills of Kyzyl-Choku), more often there are potash, a pointed sympel of the regel, sedges, wormwood Tien Shan, ephedra medium, of shrubby - carapha multifoliate.

Semi-deserts occupy low advanced ridges of Teskey Ala-Too. Vegetation cover is not rich, it consists mainly of formations of Caucasian knotweed and Tien-Shan wormwood, cereals - bearded and tipchak. There are lots of shrubs - Kyrgyz pea-shrub, sea buckthorn, barberry, rose hips.

The steppe zone is spread on the foothill plain of the eastern part of the basin. Turf grasses are common here, such as fescue and feather grass, as well as various types of wormwood. Shrubs are represented by polygonum multifoliate.

Meadowsweet is found mainly in the foothills. In the west, they are confined to shady slopes in the high foothills and medium-altitude mountains, in the east, they are located on the plain. The flora of steppes is dominated by forms of plants with vegetative propagation of rhizomes, such as fescues, sedges, irises, ephedra, and a high percentage of shrubs.

In the lower part of the belt, the grass cover usually consists of cereals - short-grass, steppe timothy, bluegrass, and often aspen.

Subalpine belt is higher than the meadow-steppe belt in the west and the meadow-steppe belt in the east. The lower boundary of the belt in the west and east of the basin lies at an equal level (3000-3100 m), and the upper - 3400 m above sea level. Turf grasses dominate - cobresium hairy-grass, ptilagrostis, fescue, sedges, Tien Shan fescue, etc. Grasses are widely represented. Spruces grow in small groups of trees, interspersed with juniper Turkestan and deciduous shrubs.

There is a complete absence of woody vegetation in alpine belt, and insignificant areas of meadow-steppe humidification. Terrestrial lichens and mosses are typical for alpine meadows. Cereals are widespread - red and Krylov's fescue, bluegrass alpine, sedges and representatives of motley grasses.

Vegetation cover of the The Issyk-kul watershed uplands (2000-3500 m above sea level) is represented by high-mountain semi-deserts, where different types of wormwood, feather grass: feather grass, feather grass and oat grass steppes, cobrizia heathlands, high alpine meadows and steppes predominate.

Forests are widespread in the middle and eastern part of the basin. They are formed mainly by Tien Shan spruce. They are also characterized by a rich shrubby undergrowth, which consist of rowanberry, accompanied by a number of honeysuckles, currant, dogwood, rose hips, barberry, etc., in more humid places grows willow Ilya and Tien Shan. As of 2019, the total area of the forest fund in The Issyk-kul region amounted to 341.2 th.ha , covered by forest -144 th.ha , thus, the forest cover area is only 3.3%, while in the whole country - 5.7%³¹.

³¹ Environment in the Kyrgyz Republic. Statistical Book. Bishkek. 2020.

Fauna

The Issyk-kul oblast is a habitat for a variety of interesting fauna, represented by a number of endangered species that find shelter away from populated areas. The western and eastern shores of the lake serve as wintering grounds for waterfowl.

Bird fauna is the most diverse. The list of birds includes 267 species, from which species not found here 50-60 years or accidentally flown in are excluded. Reliably 173 species are nesting here and 11 other species nesting is assumed but not confirmed yet. Among 184 breeding species, 65 (35.3%) are sedentary, same number of migrants (some of them winter in small numbers), and 52 (28.2%) overwintering species. Three species are included in the International Red Data Book, 18 species are included in the Red Data Book of the Republic. Among the great diversity of birds, of particular value are the mountain goose (*Anser indicus*) and the rarely occurring serpentine (*Ibidorhyncha struthersii*).

A large number of birds nesting in Kazakhstan, Western Siberia and Altai pass through The KR for wintering to and from India, Pakistan, Iran and Southern Europe. Between 25,000 and 40,000 different species of birds winter on the Lake Issyk-Kul each year.

The world of mammals is very diverse and consists of six orders and 34 species (insectivores, meanders, rodents, carnivores, hares and cloven-hoofed), namely:

- **Rodents.** Common vole, Djungarian hamster, common field mouse, house mouse, red-tailed gerbil, Siberian jerboa, tamarisk gerbil, Tien Shan red vole, Tien Shan gopher, and tolai hare;
- **Predators.** Common marten/mountain marten, fox, jackal, raccoon dog, steppe polecat, wolf; and
- **Parturient ungulates.** Roe deer and wild boar.

The fauna of terrestrial vertebrates of the The Issyk-kul region is represented by 335 species: 3 species of amphibians: (Central Asian and lake frog and Central Asian toad); 11 species of reptiles - Kashgar, fast and multicolored lizard, jumping lizard, water snake, Pallas's shieldmormon, etc.). The class of mammals is represented by 54 species, of which 9 are included in the Red Book of The KR, 4 species are endemics of the Tien Shan, 4 species have been introduced or introduced recently.

A number of rare species is the highest among birds, and endemics among mammals and fish. There is a penetration of new species to the The Issyk-kul region: lake frog, jackal, Afghan starling-maina, some fish. Construction of 220 kV Tamga-Karakol substation will be in the eastern zone of the Lake Issyk-Kul, where desert biocoenosis prevails.

Aquatic fauna and fish resources. The Issyk-kul is home to a diverse group of endemic species that are also highly prized as commercial fish. In addition, there are introduced acclimatized species. At the same time, the lake is a habitat for many species of highland Asian fish, eight of which are endemic.

In the past, the most significantly represented fish species of the Lake Issyk-kul was the chebach (*Leuciscus bergi*), which began to disappear after the introduction of non-native species, such as the East Siberian bream (*Abramis brama orientalis*), gold or common carp (*Carassius carassius*), omul, zander (*Stizostedion lucioperca*), Sevan trout (*Salmo ischchan*), and tench (*Tinca tinca*). Some species, including the naked sturgeon (*Diptychus dybowskii*), are on the verge of extinction. The following fish species are currently represented in The Lake Issyk-Kul: *Pseudorasbora parva*, bream, silver carp (*Carassius gibelio*), omul (*Coregonus migratorius*), zander, rainbow trout (*Salmo gairdneri*), Sevan trout, eleotris (*Hypseleotris cinctus*), striped bullhead (*Alburnoides taeniatus*), tench and common whitefish (*Coregonus lavaretus*).

Species of flora and fauna in Issyk-kul oblast included in the Red Book³²

Currently, as a result of anthropogenic impacts, thousands of plant and animal species may disappear on the planet, reducing biodiversity can lead to the destabilization of ecosystems. The growth of tourism threatens the biological resources of the the Issyk-kul region due to habitat degradation and land transformation. As a result of human activity, some species have disappeared altogether, while others are threatened with extinction. 3 species became extinct, 15 species are endangered in the fauna of large and medium-sized mammals; 4 species became extinct, 26 species are endangered in the fauna of birds; in plants losses are smaller, only one species disappeared, 56 species are endangered (Figure 9).

The Red Books are a form of biodiversity conservation. They contain information about the most vulnerable animal and plant species and practical recommendations for stabilizing or restoring their numbers.



Figure 9. Rare and endangered species of the Issyk-kul Lake

According to the decree of the Government of the Kyrgyz Republic, all rare and endangered species of animals and plants are included in the Red Book of the Kyrgyz Republic. Two editions were issued: the first edition came out in 1985, the second in 2006.

Animals in the the Issyk-Kul region, included in the Red Book of the KR, are the following species: 13 species of mammals, 39 species of birds, 2 species of fish, 1 amphibian and 5 species of insects.

There are 11 species of plants included in the Red Book of the Kyrgyz Republic in the study area: sosurea wrapped, growing in the Teskey Ala-Too and in the upper reaches of the river Sary-Jaz; umbrella tulip - Teskey Ala-Too and The Issyk-kul region; mossy tulip - The Issyk-kul basin (western part); Kolpakovsky tulip - Chui valley, Kyrgyz Alatau, The Issyk-kul; blunt-edged vetch - Central Tien Shan, Teskey Alatau, basin of the Sary-Jaz river; Tian Shan sibirica grows in the Teskei Alatau, Kungei Alatau, and other.

³² Red Book of the Kyrgyz Republic, approved by the Government of the Kyrgyz Republic on April 28, 2005 N 170 (As amended by the Government of the KR on July 25, 2009 N 471).

The Red Book of The KR includes 12 species of insects, five of which are found in the The Issyk-kul region: Tricholatis relict spider, Apollo loxias - subspecies of Tashkoroo, Apollo common - subspecies of Merzbacher, Ktyr giant, Wasp Mazaris long-nose.

Taking into account that the implementation of the project will be carried out in the areas where the population lives and which are affected by anthropogenic impacts, the presence of species of flora and fauna included in the Red Book is absent.

Specially protected natural territories (SPNT)

In accordance with the KR Law on Specially Protected Natural territories there are two state reserves (The Issyk-kul and Sarychat-Ertash), two state national nature parks (Karakol, Khan-Tengri), 10 reserves, of which five are zoological, two botanical, one forest and two geological in the The Issyk-kul region. The Ysyk-Kul biosphere territory was established, and the Law and Statute on Biosphere Territory regulate its activities. According to the National Statistical Committee of the Kyrgyz Republic, the total area of all protected areas in The Issyk-Kul oblast is 206,272.2 ha.

The protected areas of the region of international importance include: The Issyk-kul Nature Reserve, which since 1976, together with the Lake Issyk-Kul is included in the International List of Wetlands of the Ramsar Convention, as a resting place for migratory and wintering waterfowl and water-related birds.

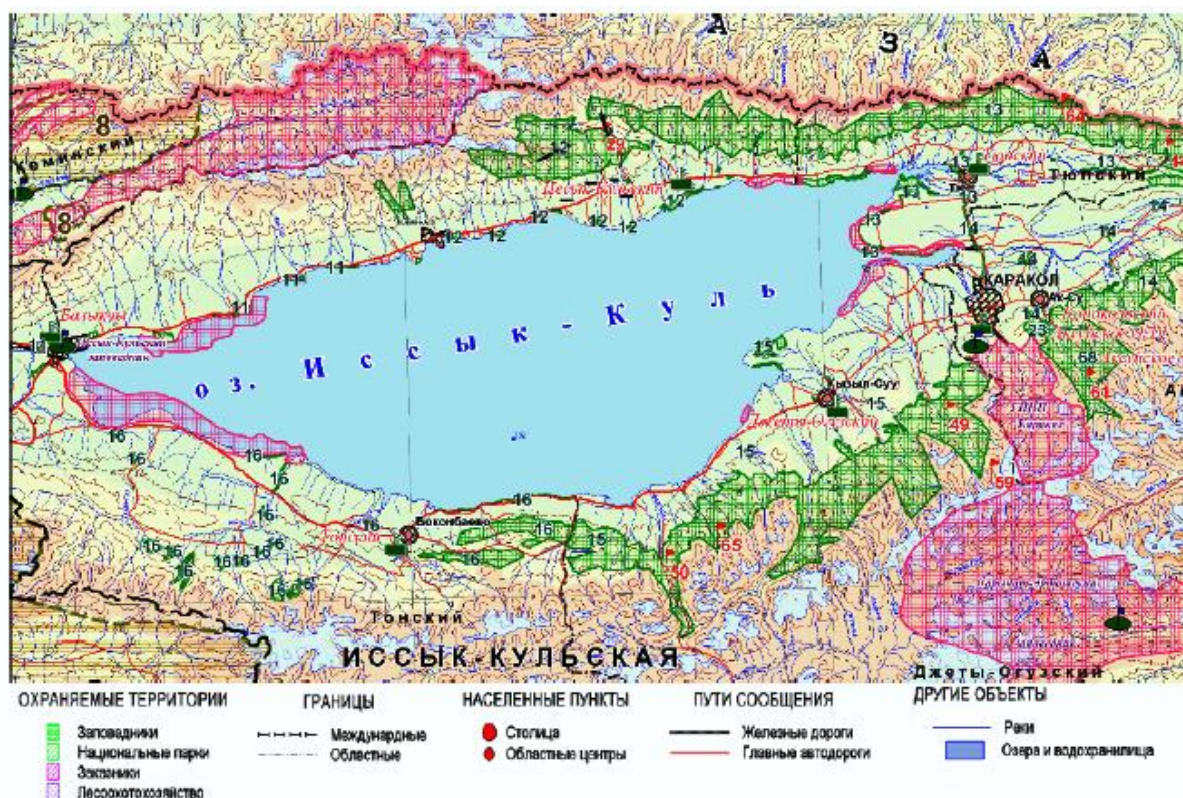


Figure 10. Protected Areas of the Issyk-Kul Region and Ramsar Sites

The Lake Issyk-Kul is unique in its nature and therefore, in 1998, the lake and its coastal area were classified as a specially protected natural area with the formation of the biosphere territory Ysyk-Kul on an area of 4,314.4 th.ha (administrative territory of The Issyk-kul oblast). It is necessary to comply with a special protection regime in biosphere area. Since 2001, by the decision of UNESCO, the biosphere territory Ysyk-Köl was included in the World Network of Biosphere Reserves and divided into zones - core, buffer, transition and remediation. Zoning is of serious importance for the future development of the region.

The project will be implemented in the Issyk-Köl Biosphere territory. In accordance with the Law of the Kyrgyz Republic on Biosphere territories in the Kyrgyz Republic and in accordance with international standards, the biosphere territory Issyk-Köl is divided into zones with different regimes of protection and use.

- 1) *A Core zone* with total area of 141022 ha includes the following areas:
 - Wetlands of International Importance as Waterfowl Habitat (Ramsar Convention) within the boundaries of the Issyk-kul Nature Reserve territory and water area, 19842 ha, including the coastal zone of 3164 ha, water area of The Lake Issyk-Kul 16678 ha;
 - Protected area of Kara-Kol National Nature Park covering an area of 8,600 hectares, represented by the slope ecosystems of the forest belt of the Teskey Ala-Too ridge;
 - Territory of the Sarychat-Ertash State Reserve of 72080 ha represented by the ecosystems of the syrtic highlands;
 - Territory of subalpine, alpine and nival belts of Teskey Ala-Too ridge with area of 59 th.ha ;
 - Northern - on northern slopes of Teskey Ala-Too range above the borders of the state forest fund from top of Jyly-Suu (3985 m) on watershed of upper reaches of Chon-Kyzyl-Suu and Kichine-Kyzyl-Suu rivers to Tekele pass on watershed of Jety-Oguz and Karakol rivers;
 - Eastern - along the watershed of Karakol and Jety-Oguz rivers from Tekele pass to the tops of Teskey Ala-Too (5216 m) and further to the borders of the state reserve Sarychat-Ertash;
 - Western - from Jyly-Suu peak along the watershed of Chon-Kyzyl-Suu and Kichine-Kyzyl-Suu rivers to the tops of Teskey Ala-Too Kyzyl-Suu (4590 m) and to the border of the Sarychat-Ertash state reserve;
 - Southern - northern border of the Sarychat-Ertash State Reserve.
- 2) *The Buffer zone* with a total area of 3501516 ha includes the following areas:
 - Protection zone of the Issyk-kul State Reserve, excluding residential area, boarding houses and croplands;
 - Water area of the Issyk-Kul Lake, excluding the 1-kilometre zone near ports and moorings of boarding houses;
 - Territory of the state forest fund on Teskey-Ala-Too and Kyungey-Ala-Too ridges;
 - Territory of the state land reserve and agricultural land located above the state forest fund to the tops of Kyungey-Ala-Too and Teskey-Ala-Too ridges;
 - Territory of The Issyk-kul region southeast of the Teskey-Ala-Too ridge to the state border of the Kyrgyz Republic, excluding lands of residential area, areas of industry, energy and areas of occurrence of minerals.
- 3) *Transitional zone* with total area of 688540 ha, including agricultural lands and lands of industry, transport, communication, defense and other purposes, as well as territories of residential area, resorts and the rest of the Issyk-kul basin, which were not included in the buffer zone.
- 4) *Remediation zone*, which includes anthropogenic disturbed areas requiring regeneration and reclamation measures (mineral deposits, tailings dams, strips of highways, residential area, degraded lands, bovine routes and bovine staging areas).

According to the presented gradation, the areas where the project will be implemented belong to the *Transition zone*. In the transition zone, various types of productive activities are allowed, in which economically interested groups and citizens living in the area jointly participate in the production and long-term use of natural resources in compliance with environmental requirements that ensure sustainability of environmental and economic development of the territory. There are arable lands,

agricultural, industrial and health-improving complexes, sources of mineral waters, as well as experimental areas with production centers in the transition zone.

Forests and wood lands

The forests participate in global cycles of water, oxygen, carbon, etc. They are the only natural absorber of carbon dioxide in the atmosphere, the excess of which leads to global climate change. The forests growing on the mountains slopes contribute to the accumulation of atmospheric precipitation, regulating melting processes and forming a river runoff, preventing erosion of slopes, which is important for prevention of mudflows, etc.

The territory of Issyk-Kul basin is dominated by dark coniferous spruce forests, which are widespread within the altitudinal zone of 1600-3100 masl. The forest-forming species is *Picea shrenkiano*, there are floodplain forests of the Tien Shan and Turkestan birch, poplar, etc., illegal logging and especially spruce in the gorges of Barskoon, Karakol, Sary-Bulak, etc. lead to the reduction of this type of forests. As of 2015, the total area of forest fund in Issyk-Kul oblast -341.2 th.ha, covered by forest -144 th.ha, the forest cover within the territory is only 3.3%, while countrywide, as a whole, - 5.7%. The reforestation works are executed insufficiently, for example, in the period 2011 – 2015, on the area of 1 184.1 ha just 1571.0 ha reforested. The number of economic entities involved in the works of forestry within the territory is 7-10.

A key role in the sustainable development of ecosystem, the preservation of its biodiversity should be assigned to water-coastal ecosystems and, first of all, floodplain forests, which perform the functions of accumulating moisture, reducing the risks of mudflow floods, avalanches, regulating water flows, protecting slopes, river beds, roads, railways, etc. moreover, the floodplain forests act as a natural filter-purifier of a river water. Currently, the floodplain forests are degraded due to use for pastures, felling for firewood, hayfields and harvesting sea buckthorn fruits, etc. No measures are taken at all to restore plantings in coastal zones.

Along the shores Issyk-Kul Lake, it is necessary to plant forests of aboriginal species of dendroflora (sea buckthorn, willow, elk, maple, birch, poplar, etc.), and, as first priority, in the identified vulnerable areas. It is necessary to strengthen protection of forests from unauthorized felling, fires, and special attention should be paid to fight against pests and plant diseases.

Cultural heritage and historical monuments. According to preliminary studies, there are no objects of historical and archaeological value in the area of the existing water and wastewater infrastructure and proposed alternative work sites. However, this section may be revised when the (re)construction sites are cleared.

Hazardous natural processes and emergency forecast by oblast³³

This section was prepared based on research conducted by the Ministry of Emergency Situations of the Kyrgyz Republic in 2019. On the territory of Jety-Oguz rayon, 95% of the area is occupied by mountain ridges, and remaining 5% by valley areas. The mudflows and floods and frequency prevail in the area.

Potential pollution sources within project areas

The tailing pond of uranium waste is located 2.5 km east of town Kaji-Sai in a dry sai/ditch. The taildump functioned from 1952 to 1966³⁴. The tailing pond was designed to withstand the earthquake magnitude 9. In 1997-1998, the taildump was deactivated and in 1999 the taildump was transferred to the balance of Ministry of Emergency Situations. The actual taildump area - 10.8 th.m², the wastes

³³ Monitoring, forecasting of dangerous processes and phenomena on the territory of the Kyrgyz Republic (16th edition with amendments and additions), B.: Ministry of Emergency Situations of the Kyrgyz Republic, 2019 - 819 p.

³⁴ According to the Ministry of Emergency Situations.

design capacity - 400 th.m³, in fact, 150 th.m³ buried. The level of gamma radiation on tailing pond surface: from 20 to 70 µR/hour. Kaji-Say tailing pond went for a full reclamation within the frame of the CIS project "Reclamation of territories of states affected by uranium mining" for 2013-2023.

In order to prevent the contamination of drinking water, while preparing DED for construction of a water supply system in Kajisay, during the Project implementation, it is necessary to conduct an environmental impact assessment of the construction site of the proposed water intake and drinking water pipeline. The environmental assessment shall identify potential negative environmental impacts during construction, operation and maintenance of sites and propose measures to mitigate such impacts. The results of the impact assessment must be formalized as a section of the project (working draft) "Environmental Protection" and a positive conclusion of the State Environmental Expertise must be obtained.

3.2.3. Socio-economic review of Issyk-Kul-Tarim Basin

Population. In recent years, total population of the region has increased from 476,800 in 2017 to 501,900 in 2021 and is 8% to the nationwide population, Table 13. The Population growth rate is half the nationwide rate and does not exceed 1% per year.

Table 13. Number of permanent population at the beginning of year, th. people³⁵

<i>(estimate at the beginning of the year, th.people)</i>				
	2017	2018	2019	2020
	All population	All population	All population	All population
Kyrgyz Republic	6 140,2	6,256,7	6,389,5	6,523,5
Issyk-kul Oblast	476,8	483,0	489,8	496,1
c. Karakol	75,6	77,7	79,3	80,9
Including:				
Township. Prjevalsk port	2,8	2,8	2,8	2,8
c. Balykchy	47,3	48,0	49,1	50,2
Including:				
Township. Orto-Tokoi	0,5	0,5	0,5	0,5
Ak-Suu rayon	67,8	68,3	69,1	69,9
Jeti-Oguz rayon	89,3	90,4	91,7	92,8
The Issyk-kul rayon	81,2	82,1	83,2	84,0
c. Cholpon-Ata	12,9	13,3	13,7	13,9
Ton rayon	52,2	52,6	52,9	53,3
Tyup rayon	63,4	63,9	64,5	65,0

The considered territory is characterized by a steadily low towards the urban population, which is 28% in relation to the national rate, while the national rate is 34%, Table 14.

Apparently, this ratio of urban to rural population in the considered basin will remain in the future.

³⁵ Demographic Yearbook of the Kyrgyz Republic 2012-2016, c. Bishkek 2017.

Table 14. Number of permanent population at the beginning of the year, th.people³⁶

	Years							Average
	2013	2014	2015	2016	2017	2018	2019	
Kyrgyz Republic	5663,1	5776,0	5895,1	6019,5	6140,2	6 256, 7	6 389, 5	5898,8
Urban	1900,2	1943,6	1986,7	2029,5	2073,9	2 121, 0	2 173, 6	1986,8
Rural	3762,9	3833,0	3908,4	3990,0	4066,3	4135, 69	4215, 8	3912,1
% Urban population	34	34	34	34	34	34	34	34
Issyk-Kul Oblast								
Total population	453,4	458,5	463,9	470,1	476,8	482, 98	489, 76	464,5
Urban	126,2	128,9	130,8	133,0	135,8	139, 0	142, 0	130,9
Rural	327,2	329,6	333,1	337,1	341,0	343, 9	347, 69	333,6
% Urban population	28	28	28	28	28	29	29	28

Industry. A volume of industrial product in region considered is 19-25% of the total national volume³⁷, mainly manufacturing industries up to 97-98%, Table 15. The region produces metals and finished metal products, electrical equipment, food products, etc. Up to 96% of the volume of industrial production is produced in Jety-Oguz rayon. As the data in Table 15 show, the growth rate of industrial production in the region is uneven from year to year and is characterized by rather low indicators. The number of idle enterprises is still not reduced; their number is 9, including 5 in Balykchy, 2 in Karakol, 1 in Tyup rayon, 1³⁸ in Ton rayon. Industrial production is accompanied by pollution of water resources, air space, violation of environmental conditions.

Table 15. Volume of industrial productions (mln KGS)^{39,40}

	Years						
	2013	2014	2015	2016	2017	2018	2019
Kyrgyz Republic	169 829,4	171,108,9	181,026,7	209,812,0	237,225,3	257,348,5	283,971,7
KR excluding Kumtor Mine Development Enterprises	89 652,3	93,938,7	102,195,3	112,578,4	136,120,7	155,152,3	154,803,9
The Issyk-kul Oblast	41 723,6	40,993,1	42,198,1	51 129, 5	52 416,4	49,965,4	62 280 ,2
Including Jety-Oguz rayon	39 765,9	38,996,3	39701, 7	48269, 8	49 157, 9	46 539, 8	58 591,3
% of Republican	25	24	23	23	22	19	23

³⁶ Ib.

³⁷ Industry of the Kyrgyz Republic 2011-2015, Annual publication, Bishkek 2016.

³⁸ <https://kaktus.media/>

³⁹ Ib

Agriculture. The share in the total national volume of gross output of agriculture, forestry and fishery in The Issyk-kul oblast averaged 11% over the past five years, Table 16. The established in recent years, the structure of agricultural production in Issyk-kul region is as follows - crop production - 46%, livestock - 51.9% and agricultural services - 1.8%.

Table 16. Volume of gross output of agriculture, forestry and fishery in current prices (mln KGS)⁴¹

	Years						
	2013	2014	2015	2016	2017	2018	2019
Kyrgyz Republic	171695,6	195650,9	196936,3	197413,9	208530,0	204,969,9	220,958,0
Issyk-kul oblast	19930,3	24337,8	21714,8	21,943,3	26,055,5	22,817,7	25,350,1
%	12	12	11	11	12	11	11

The total sown area of The Issyk-kul oblast for the last five years is quite stable and amounts to 176.4 -183.3 th.ha . Grain crops (50%), including wheat - 67%, barley - 33%, potatoes - 15% and fodder crops - 33% prevail in the composition of sown crops, Table 17.

Table 17. Sown area of crops in Issyk-kul oblast, th.ha

	Years							Average	%
	2013	2014	2015	2016	2017	2018	2019		
Total sown area	176,4	177,2	179,7	181,9	183,3	183,3	182,9	180,7	
Grain	93,4	92,7	93,0	88,9	88,8	88,8	90,5	90,9	50
Including wheat	67,7	65,4	62,8	57,6	57,1	57,1	57,0	60,7	67
Barley	25,3	26,8	29,0	30,7	31,1	31,1	33,0	29,6	33
Potatoes	27,6	27,6	27,8	27,1	28,1	28,1	24,9	27,3	15
Fodder crops	52,9	54,6	56,1	62,6	62,8	62,8	63,6	59,3	33

Table 18 below demonstrates the grain crop yields in the region under consideration, yields of which have slightly increased, but still remain quite low. Significantly lower than average values were observed in the dry year of 2014, i.e. there is a dependence on natural moisture conditions.

Table 18. Yields of growing crops in Issyk-Kul oblast in c/ha.

	Years							Average
	2013	2014	2015	2016	2017	2018	2019	
Grain	21,4	16,0	23,5	24,5	24,5	24,6	25,1	22,8
Wheat	21,6	16,2	23,5	24,4	24,7	25,0	25,4	23,0
Barley	20,9	15,3	23,3	24,8	24,1	24,0	24,5	22,4
Oat	19,2	14,3	20,2	21,1	22,5	22,7	20,4	20,1
Potato	177,5	181,6	182,0	183,9	185,5	185,6	191,2	183,9

Regarding the main types of livestock, it should be noted a stable growth of it in recent years and especially a number of horses (18%), bovine and sheep (15%), Table 19. The load of bovine and horses per 100 ha in oblast is rather high in the Republic and amounts to 15 and 7 bovine, respectively. The load of sheep and goats is also quite high, amounting to 57 heads⁴², table 19.

⁴¹ Agriculture of the Kyrgyz Republic 2011-2015, 2015-2019. Statistical Book.

⁴² Ib.

Table 19. Number of main types of livestock and poultry in the Issyk-kul oblast, (thousands of heads).

	Years							% to 2013
	2013	2014	2015	2016	2017	2018	2019	
Bovine	200,0	209,9	212,8	216,8	226,1	237,6	248,8	124
Sheeps, goats	834,1	876,0	888,4	899,6	896,2	916,6	931,2	112
Horses	87,3	92,1	95,7	99,9	102,5	105,6	108,6	124
Poultry	821,9	675,3	615,9	618,7	623,6	638,9	800,5	97

Land resources and land use

The area of Issyk-kul oblast - 3,682.3 th.ha , of which 1626.8 th.ha are agricultural lands, 1,405.4 th.ha are pastures, 10.8 th.ha are perennial plantations, 191.6 th.ha is arable land, and 156.63 th.ha is irrigated arable⁴³ land. As statistics show, area of irrigated land in The Issyk-kul region since 1997 has decreased by almost 10.0 th.ha due to land transformation.

According to the State Land Reclamation Cadastre data 142,9 th.ha of 156,7 th.ha of irrigated lands are in satisfactory and 13,8 th.ha - unsatisfactory condition, and 4931 ha of them are under near-surface groundwater table, 2,706 ha are salinized and 273 ha are under these conditions. Areas with near-surface groundwater table location (0-1,5 m) make up 6492 ha, reed overgrowing 3900 ha, 28 residential areas are under the groundwater flooding. To reduce the negative processes related to irrigation, land use, it is necessary to carry out a set of works, table 20.

Table 20. Assessment of reclamation needs, repair of CDN (collector-drainage network), organization of groundwater monitoring⁴⁴

Technical condition						Construction of observation wells
Area affected by reed overgrowth, ha	Area of agricultural land, ha requiring:				Number of flooded residential area	
	construction and rebuilding of CDN	repairing of CDN	capital leaching of saline soils	chemical reclamations		
3900	4054	4702	757	1279	28	227

For irrigation purposes, irrigation facilities were built at one time: canals, water intake facilities of dam, river type, NSR (daily runoff pound), pumping stations, etc.

As of 1.01.2018, length of irrigation canals in Issyk-Kul oblast is 762.74 km, of which 270.625 km or 35% are lined. Technical condition of 530.885 km of irrigation canals is assessed as satisfactory or 70%, 201.8 km - unsatisfactory and 31.431 km requires major repairs. Due to the obsolete impervious covers on the irrigation canals, their efficiency (coefficient of efficiency) is within 65-70%. More than 65% of the total length of canals are in earth bed, which leads to water losses. Due to the failure of on-farm artesian wells and mobile pumping stations, possibility to use water through pumping stations has decreased. Rayons water management units have undergone considerable reduction of staff members,

⁴³ Environment in the Kyrgyz Republic. Statistical Book for 2011-2015. Bishkek 2016.

⁴⁴ Ib.

therefore the issue of automation of water accounting and water distribution is acute, equipping with motor, bicycle and other transportation means is required.

It is necessary to restore areas of old irrigated lands of about 7.8 th.ha that lost connection with irrigation sources, which were mainly under machine irrigation, pumping stations of which do not work at present.

Pastures

The mountain pastures are one of the main natural resources of the country, which are used extremely intensively. Increase in livestock has led to an increase in the load on pastures, which is currently 1.8 conditional head per 1 ha, while the optimal load is 1.0 - conditional unit of livestock. Thus, load on pastures in The Issyk-kul region is 1.8 times higher than the allowable, table 21.

That leads to destruction of natural grass stands, loss of water-absorbing and water-holding capacity of soils, there is atomization, compaction and destruction of soil structural aggregates, which ultimately contributes to its washing away, leading to degradation of pastures, surface and wind erosion, deterioration of water quality of water structures. Fires leading to destruction of pastures are not uncommon. Sale and lease of pastures obtained by the result of the reform, force to use remote, unsuitable places for grazing animals.

Table 21. Area of pasture (at the beginning of the year, th.ha)

	Years				
	2015	2016	2017	2018	2019
Kyrgyz Republic	9 030,9	9,007,5	9,006,5	9,005,8	9,004,4
Issyk-kul oblast	1 405,4	1,405,2	1,405,0	1,404,7	1,404,6

According to the Law of KR on Pastures (2009) pastures are under the authority of local authorities and the authority for pasture land management is transferred to Pasture Users Associations, Jaiyt committees, which need constant support.

Tourism. One of the priority directions of republic's development is tourism, and the The Issyk-kul region is one of the main sources of income. In considered basin, there are prospects for tourism development in such areas as water tourism, resort and recreational tourism, mountain adventure tourism, adventure tourism (speleology, mountain skiing, yachting) and ecological tourism.

Dozens of rest homes, boarding houses, resorts, are of great importance for the development of medical and health tourism. However, density reaches 18 people/km² during tourist season in the valley of l. Issyk-kul, in the coastal part of the lake - about 100 people/km², which is ten times higher than average regional population density and five times higher than the republican average (20 people/km²), this indicates a high level of anthropogenic impact on natural environment.

The presence of holidaymakers leads to pollution of beaches and lakeside territories with various kinds of garbage (paper, polyethylene, remains of food, cigarette butts, glassware, etc.), excrement and also to pollution of coastal waters. The daily amount of potassium and sodium released into the water by each ten th. people amounts to 7-8 kg, chlorine and nitrogen to 13-15 kg and 940 kg of phosphorus, fat, sweat, flaking skin particles. With one "average" bather washed into the water for 10 minutes, about 10 million bacteria, of which about 2 million - pathogenic. In total, during the three months of summer season, the load on the lake beach is at least 30 million man-days.

Taking into account the fact that each vacationer leaves only 100 g. (usually more) substances, the total mass of extraneous agents is 300 tons, in other words, there are at least three tons of substances per season for every 100 ha of beach used. In addition, swimmers destroy natural vegetation and communities in the littoral part of the lake, stir up the silt, and the mechanical impact, when moving

on the beach, leads to its compaction and dusting⁴⁵. There has also been an increase in waterborne traffic using fuel and lubricants, which negatively affects the quality of the lake's water and air basin. The coastal areas near the cities of Cholpon-Ata and Karakol, the villages of Bosteri, Sary-Oy, Choktal, Bulan-Sogottu, Chon-Sary-Oy, Tamchy as well as the gorges of the Barskoon, Jety-Oguz, Grigoryevskoye and Semenovskoye rivers are subjected to the highest recreational load.

The increasing recreational load without responding appropriately for its reduction will inevitably lead to disturbance of the natural balance of the lake ecosystem, reduction of the biological self-purification function. Based on the current situation, further development of tourism is possible only with the implementation of nature protection measures based on relevant normative legal acts.

3.2.4. General characteristics of target rayons in Issyk-Kul-Tarim Basin

Djeti-Oguz, Issyk-kul oblast. Djety-Oguz rayon formed in 1930. The rayon is located in the southeastern part of the Issyk-kul basin. the rayon Area - 14,499 km² and is bordered by Ak-Suu rayon in the east, by the China in the southeast, by Naryn oblast in the southwest, and by Ton rayon in the west. The rayon's territory is divided into 13 aiyl aimaks, including Kyzyl-Suu (4).

Total number of resident rural population, according to the National Statistical Committee of the Kyrgyz Republic as of January 1, 2021 is 93.4 th.people. Population density in the rayon is 6.0 people per 1 km². Administrative center of the rayon is Kyzyl-Suu village with a permanent population of 12,150 people.

Djety-Oguz rayon is bounded to the north by l. The Issyk-kul, and to the south by the Teskei Ala-Too ridges and syrts spreading to the south of the ridge. The highest heights of the range are in the upper reaches of the Chon-Kyzyl-Suu river (peak Koyluu 5281 m). Syrts are sparsely populated, high-altitude areas with a characteristic alternation of gentle ridges. The valley part is represented by foothill plumes, alluvial-proluvial plains with cones of the rivers outflow and lakeside plains of the Lake Issyk-Kul.

Hydrography of the area is represented by Yrdyk river (maximum discharge 30 m³/sec), Djety-Oguz river (42.2 m³/sec) and Chon-Kyzyl-Suu river (57 m³/sec), Kichi-Kyzyl-Suu (45 m³/sec), Juuku (65 m³/sec), Chon-Jargylchak (25 m³/sec), Barskoon (55.9 m³/sec), Tamga (50 m³/sec) and Tosor (65 m³/sec).

Climatic conditions of the area are characterized by the following data: average air temperature in January is 4°C in valley part, -24°C in a mountain part; in July average monthly temperature changes from 18°C in a valley part to 8°C in a mountain part. Absolute minimum of air temperature is -30°C. Average of absolute maximum air temperatures varies from 30°C in the valley to 15°C in the mountains. Precipitation is 300-400 mm in the valley, 500-600 mm in the mountains during warm season, 150 mm in the valley and 250 mm in the mountains during cold season. Average height of snow cover in the valley part reaches up to 30 cm. The highest wind speed possible once in 20 years is 32 m/sec. There are 17,451 households on the territory of the rayon. The interstate highway Balykchy-Karakol (along the southern shore of l. The Issyk-kul), Barskoon-Ak-Shyirak pass through the area. There is Pokrovka pier and Tamga airport. In terms of prevalence and frequency of occurrences, mudflows and floods prevail in the area.

Ton rayon, Issyk-kul oblast. Ton rayon formed in 1936 and is located in the southwestern part of ITb. The area of the rayon is 7,230 km² bordered by Djety-Oguz rayon in the east, Naryn oblast in the southwest, and Chui oblast in the northwest. The rayon is administratively divided into 9 aiyl aimaks,

⁴⁵ GEF/UNDP Small Grants Program Newsletter No. 6, 2016

including Kun-Chygysh (Bokonbaev v. as well) and Kadji-Say. Total number of resident population of the area, according to the National Statistical Committee of the Kyrgyz Republic as of January 1, 2021 is 53.4 th.people. Average population density in the rayon is 7.1 people per 1 km². The administrative center of the rayon is the v.Bokonbaev with the resident population - 20557 people.

The area is located between the southern shore of l. The Issyk-kul and the Teskei Ala-Too ridge and has a natural outlet to the west of the basin along the Boom Gorge. Foothills of the ridge are composed of Meso-Cenozoic sediments, heavily dissected by saiy, ravines and river valleys. The coastal zone of the lake extends lacustrine plains, cones of river outflow, sometimes interrupted, giving way to piedmont ridges. To the south of the Teskey Ala-Too ridge, there are syrts.

The area of hydrography is presented by the rivers Ton ($Q_{max} = 34,2 \text{ m}^3/\text{sec}$), Ak-Sai ($35,6 \text{ m}^3/\text{sec}$), Ak-Terek ($8,5 \text{ m}^3/\text{sec}$) and Tuura-Suu ($7,31 \text{ m}^3/\text{sec}$). the climatic conditions of the area are characterized by the following data: average air temperatures in January in the valley part are -4°C , -16°C in the mountain part. In July, the average monthly temperature varies from 18°C in the valley part to 10°C in the mountain part. Absolute minimum of air temperature is -30°C , average of absolute maximum air temperatures varies from 30°C in the valley part to 15°C in the mountain part. Annual precipitation is 200-300 mm in the valley and 300-400 mm in the mountains, while in warm periods it is 25-50 mm in the valley and 100-150 mm in the mountains. The average height of snow cover in the valley part reaches up to 10 cm. There is practically no snow cover in the area of Balykchy. The maximum wind speed of 45 m/sec is possible once in 20 years.

On the territory of Ton rayon 89% of the area is occupied by mountains, and the remaining 11% by valley areas. In terms of prevalence and frequency of manifestations, mudflows, floods, waterlogging, rockfalls and landslides on the Bishkek-Torugart road prevail in the area.

4. REGULATORY FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL ASSESSMENT

The fundamental principles of natural resource and environmental management are set forth in the Constitution of the Kyrgyz Republic. **Constitution of the KR** (May 5, 2021). 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 and natural resources are used as the basis of life and activity of the people of the Kyrgyz Republic; in order to maintain a unified ecological system and sustainable development, they are under the control and special protection of the state.

The Land may also be in private, municipal and other forms of ownership, except for pastures that may not be in private property. Foreign citizens and legal entities with foreign participation may not privately own the Land. 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. Everyone shall have the right to compensation for damage to health or property caused by actions in the field of environmental management. Everyone has a duty to protect and care for the natural environment, flora and fauna.

A legal framework developed in Kyrgyz Republic, which ensures the ongoing management of natural resources and the environment and regulates the legal relationship between users of nature and the state. 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.

4.1. Legislative acts in the field of environmental protection

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

- (i) Law of KR "On Environmental Protection" (1999);
- (ii) Water Code of KR (2005);
- (iii) Law of KR "On Environmental Expertise" (1999);
- (iv) Law of KR "General technical regulations to ensure environmental safety in the Kyrgyz Republic". (2009);
- (v) Law of the KR "On Protection of Atmospheric Air" (1999);
- (vi) Land Code of the Kyrgyz Republic (1999);
- (vii) Law of KR "On Production and Consumption Waste" (2001);
- (viii) Law of the Kyrgyz Republic "On the Protection and Use of the Flora" (2001);
- (ix) Law of KR "On specially protected natural territories". (2011)
- (x) Law of KR "On Biosphere Territories" (1999);
- (xi) Law of KR "On Sustainable Development of the The Issyk-kul Ecological and Economic System" (2004).

The Framework **Law of the KR "On Environmental Protection" (1999)** establishes the basic principles of environmental protection (1999). It also contains brief basic descriptions of the main regulated aspects that form the basis for the development of new legal instruments in selected areas of environmental protection.

The Water Code of KR was adopted on 12 Jan. 2005. This Code shall regulate water relations in the field of use, protection and development of water resources for guaranteed, adequate and safe supply

of water for the population of the Kyrgyz Republic, protection of the environment and promotion of the rational development of the water fund of the country.

The Law of the KR "On Environmental Expertise" (1999) regulates in detail the procedures of environmental expertise and EIA covers both current and new programs, plans and legislation in the field of environmental protection. Its tasks include preventing negative impacts on human health and the environment resulting from economic or other activities and ensuring that such activities comply with the country's environmental requirements. This law applies broadly to "development projects" that may have an impact on the environment, including Feasibility Studies, as well as projects for construction, reconstruction, development, conversion, and other projects, regardless of their estimated cost, ownership, or type of ownership, the implementation of which may affect the environment.

Under the Law, the project initiator is responsible for submitting the necessary documentation on the project and its environmental impact to the state environmental expertise. A specially authorized state environmental protection body carries out the review of the submitted documentation. Approval of the SEE is required before the project can be financed or implemented. Disapproval prohibits the implementation of the project. For sub-projects that will be covered by the CRWSP project, it is necessary to develop an EIA for category 1 projects⁴⁶ and submit it for the state environmental review to obtain an opinion.

Law of the Kyrgyz Republic "The general Technical regulation on providing ecological safety in the Kyrgyz Republic" determines basic provisions of technical regulation in the field of ecological safety and establishes general requirements to providing ecological safety when designing and implementing activities on objects of economic and other activity for production processes, storage, transportation and utilization of products. Requirements of this technical regulation act on the territory of the Kyrgyz Republic concerning production processes, storage, transportation and utilization of products and are obligatory for all legal entities and physical persons performing production processes, storages, transportations and utilizations of products.

The Law of KR "On Production and Consumption Waste" dated November 13, 2001, № 89 defines the state policy in the field of production and consumption waste management and is designed to help prevent the negative impact of production and consumption waste on the environment and human health when handling them, as well as maximizing their involvement in the economic turnover as an additional source of raw materials.

The Law of Kyrgyz Republic "On protection and use of flora" establishes a legal framework to ensure the effective protection and use of flora.

The Law of Kyrgyz Republic "On Wildlife" establishes legal relations in the field of protection, use, and reproduction of wildlife. According to the Law, wildlife is considered the national property of the Kyrgyz Republic, an inalienable element of the natural habitat, environment, and biodiversity of the Land. It is a regenerating natural resource and an important regulating and stabilizing component of the biosphere, that is under protection and is destined for rational use for the purpose of satisfaction of spiritual and material needs of the Kyrgyz nationals.

⁴⁶ Activities categorized according to hazard class I or having potential for significant adverse transboundary effects, a complete (full) EIA is required. For activities categorized according to hazard class II or III, a preliminary EIA is required.

The Law of Kyrgyz Republic "On Specially Protected Natural Territories" (SPNT) regulates relations in the field of organization, management, protection, and use, as well as control of specially protected natural areas to preserve reference and unique natural complexes and objects, landmark natural formations, genetic fund of fauna and flora, the study of natural processes in the biosphere and control over changes in its condition.⁴⁷ SPNT include natural and/or artificially created natural complexes and objects of nature. Specially protected natural areas are the basis for the conservation, reproduction and restoration of natural ecosystems, which are a regulator of environmental sustainability. SPNT, depending on their designated purpose and regime of protection of natural resources and objects, are divided into the following categories in accordance with international standards and classifications adopted by the International Union for Conservation of Nature:

- public nature reserve;
- public national parks;
- state Reservations;
- state natural monuments;
- state botanical gardens, dendrological and zoological parks;
- biosphere areas and/or reserves;
- transboundary specially protected natural areas;
- specially protected areas at local level;
- small size natural reservations.

In order to ensure an appropriate regime of protection of specially protected natural areas, zones are established in them: the main or protected (core zone), buffer, protection and other zones.

The Law of the Kyrgyz Republic "On Biosphere Territories" defines the legal basis for the creation and functioning of biosphere territories in the Kyrgyz Republic.⁴⁸ Biosphere areas are areas of terrestrial and aquatic ecological systems or combinations thereof that provide a sustainable balance of biodiversity, economic development, and protection of the relevant cultural values. Biosphere areas have the status of specially protected areas at the national level, for which a special regime of protection and use is established. The biosphere area has special environmental, scientific, cultural, aesthetic, recreational, and health significance.

The status of a biosphere area is determined by:

- transboundary specially protected natural areas;
- species diversity of flora and fauna, rare and endangered species included in the The KR -Red Data Book;
- complex of natural and historical and cultural monuments;
- tourist, resort and recreational complex.

4.2. Subordinate legislation

The main aspects of the regulatory measures of the laws, are reflected in the bylaws approved by resolutions of the Government.

Regulations on the procedure of environmental impact assessment in the Kyrgyz Republic establish the procedure of environmental impact assessment (EIA/ OBOC) of projected activities.⁴⁹ The purpose of EIA is to prevent and/or mitigate the impact of the proposed activity on the environment and its associated social, economic and other consequences. EIA is conducted for activities subject to

⁴⁷The law was adopted on May 03, 2011. №18

⁴⁸The law was adopted on June 09, 1999 № 48

⁴⁹ Approved by the Regulation of GovKR № 60 dated 13.02.2015;

mandatory environmental review in accordance with the Law of the Kyrgyz Republic "General Technical Regulations on Environmental Safety in the Kyrgyz Republic". For all sub-projects that will be covered by the CRWSP project, it is necessary to develop an EIA for category 1 projects and submit it for the state environmental review to obtain an opinion.

The Regulation on the Procedure of State Environmental Expertise in the Kyrgyz Republic establishes the procedure for organizing and conducting state environmental expertise.⁵⁰

Regulation "On Water Protection Zones and Bands of Water Bodies in the Kyrgyz Republic".⁵¹ The Regulation defines the procedure for establishing water protection zones and strips on water bodies of the Kyrgyz Republic, establishes the regime of economic activities and land use included in the water protection zones and strips, as well as responsibility for maintaining them in proper condition.

Table 22. The minimum width of the water protection zone for lakes, ponds and reservoirs is taken

Volume of the reservoir	Width of water protection zone, m
up to 10 mln. m3	100
up to 100 mln. m3	200
up to 1000 mln. m3	300
more than 1000 mln. m3	500

In accordance with the above-mentioned regulation, the water protection zone for Issyk Kul lake is 500 m.

Rules of surface water protection of the Kyrgyz Republic regulate the protection of surface waters from pollution, fouling and depletion, when water users carry out various economic activities that have or may have an adverse impact on the condition of surface waters, regardless of their organizational and legal form, as well as regulate the procedure for implementing measures to protect surface waters⁵².

4.3. Legislation of the Kyrgyz Republic, in relation to the project

The Law of the Kyrgyz Republic "On Public Health" aimed to improve public health through increased access to Public Health Service, promoting the protection and promotion of public health generally. According to Public Health Law, drinking water must be safe and comply with the technical regulations of the Kyrgyz Republic, approved under the procedure established by the legislation of the Kyrgyz Republic. Water bodies must be safe in epidemiological, radiation and physical-chemical terms and meet the requirements of technical regulations and other normative legal acts approved in the manner prescribed by the legislation of the Kyrgyz Republic.⁵³

The Water Code of the Kyrgyz Republic provides for a general ban on water pollution. (see section 4.1). The discharge of pollutants into water bodies, water facilities and lands of the water fund is prohibited, except for the cases specified in the discharge permit.

According to the Law of KR "On Drinking Water" the main principles of domestic and drinking water supply to the population are:⁵⁴

⁵⁰ Approved by the Regulation of GovKR under № 248 dated 7 May, 2014;

⁵¹ Regulation of GovKR under № 271 dated July 7, 1995.

⁵² Approved by the Regulation of GovKR under № 128 dated 17 March, 2014;

⁵³ Law of KR "On Public Health" under No. 248 dated July 24, 2009;

⁵⁴ Drinking Water Law, № 33 dated 25.03.1999.

- source selection of water supply, the systems of economic and drinking water supply conforming to settlement outputs, sanitary and hygienic and ecological requirements, and also opportunities for cleaning and disinfecting of water;
- providing requirements for safety and harmlessness of drinking water, creation of necessary technological reliability of systems of economic and drinking water supply and taking measures to sanitary protection of sources of water supply;
- population requirements satisfaction in water according to reasonable regulations of consumption;
- permanent maintenance of quality of drinking water according to requirements of standards and health regulations and regulations.

Realization of the basic principles of economic and drinking water supply of the population and quality assurance of drinking water is reached by package of measures, including:

- prevention of pollution of sources of water supply;
 - construction and reliable operation of water intaking constructions, constructions of cleaning, disinfecting and transportation of water, priority providing them with necessary resources;
 - development and deployment of committed methods of cleaning and disinfecting of water;
 - development and upgrade of water supply systems;
 - development and deployment of evidence-based normative quality requirements of drinking water in the established standards and health regulations and regulations;
 - creation of effective quality control system of drinking water;
- economic incentives of activities for improvement of economic and drinking water supply of the population;
- training of specialists in the field of providing the population with drinking water;
 - informing public on condition of water supply of the population.

Technical regulation "On the safety of drinking water"

The objectives of the Technical Regulations "On the safety of drinking water" (are:

- protecting the health and life of people from the harmful effects of pollutants contained in water intended for human consumption;
- prevention of actions that mislead consumers when using drinking water.

The technical regulation establishes drinking water quality standards

Regulatory indicators of drinking water safety

Part A: Microbiological and parasitological indicators drinking water from centralized systems

Indicators	Units	MPC standards
Escherichia coli	Number of bacteria in 100 ml	Absence
Enterococci	Number of bacteria in 100 ml	Absence
Colifags (PFU) (1)	The number of plaque-forming units in 100 ml	Absence
Giardia cysts (1)	The number of cysts in 50 liters	Absence
Cryptosporidium (1)	Number of oocysts in 50 l	Absence
(*)Additional indicators in accordance with note 4		

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(1) Note: The determination is carried out in water supply systems from surface sources.

Part B: Chemical substances

No	Indicators	Units	MPC standards	Hazard Class
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1	Aluminum	Mg/l	0,5	2
2	Ammonia	Mg/l	2,0	4
3	Benz(a)pyrene	mcg/l	0,01	1
4	Benzol	Mg/l	0,01	1
5	Berillium	Mg/l	0,0002	1
6	Bicarbonates (HCO ₃)	Mg/l	400,0	3
7	Bor	Mg/l	0,1	2
8	Vinyl chloride	Mg/l	0,0001	1
9	Iron	Mg/l	0,3	3
10	Rigidity (1)	degree, W(0)	7,0(10)	
11	Cadmium (in total)	mcg/l	0,0005	2
12	Cobalt	Mg/l	0,1	2
13	Litium	Mg/l	0,03	2
14	Manganese	Mg/l	0,05	3
15	Arsenic	Mg/l	0,01	2
16	Copper	Mg/l	1,0	3
17	Molybdenum	Mg/l	0,25	2
18	Sodium	Mg/l	200,0	2
19	Oil products (in total)	Mg/l	0,1	
20	Nickel (in total)	Mg/l	0,02	3
21	Sodium - ion	Mg/l	45,0	3
22	Nitrite -ion	Mg/l	0,5	2
23	Ozone residual	Mg/l	0,3	
24	Surfactants	Mg/l	0,1	
25	Mercury (in total)	Mg/l	0,0005	1
26	Lead (in total)	Mg/l	0,01	2
27	Selen	Mg/l	0,01	2
28	Silver	Mg/l	0,05	2
29	Strontium	Mg/l	7,0	2
30	Styrene	Mg/l	0,1	1
31	Sulfates	Mg/l	250,0	4
32	Antimony	Mg/l	0,005	2
33	Trihalomethanes - general content (2)	Mg/l	0,1	2
34	Uranium	Mg/l	0,030	1
35	Phenolic index	Mg/l	0,25	
36	Formaldehyde	Mg/l	0,05	2
37	Formaldehyde	Mg/l	1,2	2

38	Chlorides	Mg/l	250,0	4
39	Chloroform	Mg/l	0,2	1
40	Chlorine residual free	Mg/l	0,3-0,5	3
41	Chromium (Cr(+3))	Mg/l	0,05	2
42	Cyanides	Mg/l	0,035	2
43	Zink	Mg/l	5,0	3
44	Pesticides:			
45	Gamma HCCCH (lindane)	Mg/l	0,002	1
46	DDT (sum of isomers)	Mg/l	0,002	2
47	2,4-D	Mg/l	0,03	2
(*) Additional indicators in accordance with note 4				

Note 1. The hardness index indicated in brackets can be set for a particular water supply system based on an assessment of the applied water treatment technology.

Note 2: Sum of concentrations of identified substances.

Note 3. The standards for benzene, iron, arsenic, nickel, nitrite ion, lead, sulfates, antimony, chlorides, vinyl chloride, trihalomethanes are adopted in accordance with Directive 98/83/EC.

Note 4. Depending on local natural and sanitary conditions, as well as the epidemic situation in the settlement, the list of monitored indicators can be expanded in the corresponding territory to include additional microbiological and chemical indicators.

Part C: Radiation safety indicators

Indicators	Units	MPC standards
Total alpha activity	Bq/l	0,5
Total beta activity	Bq/l	1,0

Note: The specified values of the specific total alpha and beta activity are a preliminary assessment of the admissibility of using water for drinking purposes. If these values are exceeded, the radionuclides present in the water are identified and their individual specific activities are measured. The criterion for the radiation safety of water is the compliance of the measured values of specific activities of radionuclides with radiation safety standards.

Part D: Indicators of the content of chemicals entering and forming in water during its treatment in the water supply system (residual concentrations)

Indicators	Units	MPC standards	Note
Chlorine			1
Residual free	Mg/l	0,3-0,5	
Residual bound	Mg/l	08,8-1,2	
Chloroform (when chlorinating water)	Mg/l	0,2	2
Ozone residual	Mg/l	0,3	3
Formaldehyde (when ozonating water)	Mg/l	0,05	
Polyacrylamide	Mg/l	2,0	
Activated silicic acid (by Si)	Mg/l	10,0	
-3 Polyphosphates (by PO) 4	Mg/l	3,5	

Residual quantities of aluminum and iron-containing coagulants	Mg/l	Aluminium and iron	
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Note 1. The safety of drinking water in terms of microbiological indicators is ensured by complete disinfection. When disinfecting water with free chlorine, the time of its contact with water should be at least 30 minutes, with combined chlorine - at least 60 minutes.

The residual concentration of free chlorine should be no more than 0.5 mg/liter after 30 minutes of contact at a pH of no more than 8.0.

With the simultaneous presence of free and combined chlorine in water, their total concentration should not exceed 1.2 mg /l.

In some cases, in agreement with a specially authorized body, an increased concentration of chlorine in drinking water may be allowed.

Residual chlorine content is monitored before water is supplied to the distribution network.

Note 2. The standard was adopted in accordance with WHO recommendations.

Note 3. Control over the content of residual ozone is carried out after the mixing chamber, providing a contact time of at least 12 minutes.

Regulatory indicators drinking water safety non-centralized water supply

Indicators	Units	MPC standards
Common coliform bacteria	Number in 100 ml	Absence
Total microbial count	The number of colony-forming microbes in 1 ml	100
thermotolerant coliform bacteria	Number of bacteria in 100 ml	Absence
Colifags (*)	The number of plaque-forming units in 100 ml	Absence
Helminth eggs and cysts of pathogenic intestinal protozoa	Number in 50 l	Absence
Transparency	cm	Not less than 30 cm
Chroma	Degree	Not less than 30 degrees
Taste and smell	Points at a temperature of 20 degrees. Celsius	No more than 2-3
Oxidability permanganate	mgO /L2	7,0
Ammonia (for nitrogen)		2,0
Nitrate ion	Mg/l	No more than 45
Nitrite ion	Mg/l	No more than 0.5
pH	Unit of pH	6,0-9,0
Total mineralization (dry residue)	Mg/l	No more than 1000
Sulfates	Mg/l	250
Chlorides	МГ/Л	250
Additional indicators in accordance with note 4		

Note 1. The presence of aquatic organisms and surface film visible to the naked eye is not allowed in drinking water.

Note 2.— Other chemicals should not be present in excess of Annex 1, Part B.

Note 3.— Regulatory indicators of radioactivity are adopted in accordance with Annex 1, Part D.

Note 4. Depending on local natural and sanitary conditions, as well as the epidemic situation in a populated area, the list of monitored indicators of water safety can be expanded for the corresponding territory with the inclusion of additional microbiological and (or) chemical indicators.

Law on Sustainable Development of the Environmental and Economic System, Issyk-Kul, is aimed at preserving the natural potential of the Issyk-Kul region. Lake Issyk-Kul has special status as a national treasure of the Kyrgyz Republic, which are a natural ecosystem of global importance, a biosphere area with a complex of historical and cultural monuments, specially protected natural areas, resort and recreational facilities protected by the state.⁵⁵

Basic conservation principles shall regard and use of the Issyk-Kul EES:

- (a) conservation of global and local biological diversity and rational use of natural resources through the conservation and restoration of resources;
- the multivariate use of the Issyk-Kul EES as: (a) a unique natural monument and natural heritage of the people of the Kyrgyz Republic, (b) historical and cultural heritage, (c) an object of economic activity; (d) an object of recreational use and tourism;
- ensuring sustainable development of the environmental and economic system through a harmonious science-based combination of environmental, economic and social interests of society, the complexity of addressing resource conservation and environmental protection issues.

Decree of the KR Government "On the Establishment of the Ysyk-Kol Biosphere Territory". Taking into account the relevance of the environmental component in the strategy for sustainable human development, and in order to attract foreign investment in the promising and environmentally-oriented sectors of the economy and services of Issyk-Kul region, Regulation of GovKR dated September 25, 1998, under № 623 created the biosphere territory "Ysyk-Kel".

Hygienic standards "Maximum permissible concentrations of chemical substances in water bodies for household and cultural-domestic use" establish maximum permissible concentrations of chemical substances in water bodies for household and cultural-domestic use.⁵⁶

Hygienic standards apply to water from ground and surface water sources used for centralized and non-centralized water supply to the population, recreational and cultural and domestic water use, as well as drinking water and water in hot water supply systems.

Sanitary and epidemiological rules and regulations "Sanitary and epidemiological requirements for zones of sanitary protection of water supply sources and water pipelines for domestic and drinking purposes" establish sanitary and epidemiological requirements for the organization and use of sanitary protection zones (SPZ) of water supply sources and water pipelines for domestic and drinking purposes.⁵⁷

Sanitary rules apply to drinking water supply sources and domestic and drinking water pipelines (hereinafter - objects) being designed, constructed, reconstructed and operating, regardless of their subordination and forms of ownership.

Water supply sources and water pipelines that direct water for domestic and drinking needs from surface and underground sources shall be provided with SPZ.

4.4. 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.

⁵⁵The law №115 was adopted on 13.08.2004

⁵⁶Approved by Resolution of GovKR № 201 on 11 April, 2016.

⁵⁷Approved by Resolution of GovKR № 68, dated 31.01.2018.

The Constitution of the Kyrgyz Republic provides that:

- (i) In the Kyrgyz Republic, private, state, municipal and other forms of property are equally recognized and protected (Article 15, paragraph 1);
- (ii) Land, with the exception of pastures and forests, can be in private and municipal forms of ownership (article 16, paragraph 3);
- (iii) The property is inviolable. No one can be arbitrarily deprived of their property. The right to inheritance is guaranteed. The seizure of property against the will of the owner is allowed only by a court decision in accordance with the procedure established by law (Article 15, paragraph 2); and
- (iv) The seizure of property for public and state needs, determined by law, is carried out by a court decision by providing fair and preliminary security for compensation for the value of this property and losses caused as a result of the alienation of property (Article 15, paragraph 2).

Civil Code of the Kyrgyz Republic

(CC) provides that a person whose right has been violated may demand full compensation for the losses caused to him, unless otherwise provided by law or an agreement in accordance with the law (paragraph 1 of Article 14).

The Civil Code also indicates that recoverable losses include:

(i) expenses that the person whose right has been violated has made or will have to make to restore the violated right, loss or damage to his property (real damage), and

- unearned income that this person would have received under normal conditions of civil turnover, if his right had not been violated (loss of profits).

- if the person who violated the right received income as a result, the person whose right was violated has the right to demand compensation, along with other losses, for lost profits in an amount not less than such income (paragraph 2 of article 14).

Lost profit that the party should have received under normal conditions if its rights were not violated (opportunity costs) (paragraph 2 of Article 14). With regard to compensation for losses caused by state bodies and local governments, Article 15 states that losses incurred by a citizen or legal entity as a result of illegal actions (or inaction) of state bodies, local government bodies or officials of these bodies, including the issuance by a state body of an act that does not comply with the law, are subject to compensation from the state, as well as from local authorities in cases provided for by law.

Land plots can be alienated or transferred from one person to another to the extent that their turnover is allowed by the land legislation of the Kyrgyz Republic (paragraph 4 of article 23).

Land Code of the Kyrgyz Republic. Article 68 of the Land Code (LC) defines the seizure of a land plot for state and public needs and provides that:

- (I) Withdrawal (redemption) of a land plot for state and public needs may be carried out on the basis of an agreement between the authorized body and the owner of the land plot or land user. If the owner of the land plot or land user disagrees with the seizure (redemption) or its conditions, the authorized body has the right to apply to the court within two months with a claim for a paid seizure (redemption) of the land plot from the moment of receipt of the refusal (Article 68, paragraph 1);
- (II) When determining the redemption price of a land plot, it includes the market value of the right to the land plot and buildings and structures located on it, as well as losses caused to the owner or land user in connection with the termination of the right to the land plot, including losses associated with the early termination of obligations to third parties (Article 68, paragraph 3); and

- (III) When seizing a land plot for state or public needs, with the consent of the owner of the land plot or land user, he may be provided with another land plot another land plot, taking into account the value of the right to it in the redemption price (Article 68, Clause 4).

The Land Code establishes that the right to land and related structures can be terminated, including cases when the land is needed for state or public purposes (Article 66, paragraph 1).

The acquisition of land for state and public needs can be influenced only after the payment of the cost of the right to the land plot and compensation for losses have been made (Article 66, paragraph 4).

The owner or user of a land plot has the right to demand compensation in accordance with the legislation of the Kyrgyz Republic (article 49, paragraph 1, subparagraph 5).

Finally, the Land Code (article 78, paragraph 2) also defines the use regime for common lands. In particular, this indicates that common land in settlements, cities and villages (for example, roads, streets, squares, sidewalks, driveways, park strips, boulevards, mini-parks, water bodies, etc.) cannot be privately owned and only in exceptional cases can be leased by an authorized state body to legal entities and individuals for a period not exceeding 5 years. The authorized state body may authorize the construction of lightweight structures on public lands (clause 78, clause 3).

Law of the Kyrgyz Republic "On state registration of real estate rights and related transactions" states that the state registration of rights to real estate and related transactions is a legal act of recognition and confirmation of rights to real estate and their encumbrances (restrictions), as well as real estate transactions that ensure the protection of rights and encumbrances (restrictions), with the exception of cases provided for by this Law (Article 1). Any other document or rights and their restrictions are subject to mandatory registration in accordance with Article 4 of this Law, submitted to the registering authority no later than thirty days from the date (drawing up) of the above document (Article 7).

Property rights that are not subject to registration, but are recognized and protected by the state, include (Article 6):

- Access rights to communication lines, pipelines, geodetic places and other parts of the infrastructure intended for public use;
- Rights of spouses, children and others;
- Temporary rights, lease or sublease for up to 3 years;
- Actual use rights for main or primary use of property;
- Rights arising from tax claims;
- Encumbrances arising from general health, public safety, environmental protection, etc.

Asset Valuation Regulation

Assets are appraised on the basis of the Provisional Rules for Appraisers and Valuation Companies (Government Decree of August 21, 2003, # 537), Valuation Standards for Appraisers (Government Decree of April 03, 2006, # 217) and other provisions of national legislation.

Labor Code of the Kyrgyz Republic is a fundamental piece of legislation aimed at regulating all labor issues that arise in the Kyrgyz Republic. This Code regulates labor relations and other relations directly related, aimed at protecting the rights and freedoms of the parties to labor relations, establishing minimum guarantees of rights and freedoms in the labor sphere. Article 9 of the Code prohibits discrimination and guarantees that all citizens have equal rights to work; discrimination in labor relations is prohibited. Any differences, exclusion or preference, refusal to hire, regardless of nationality, race, gender, language, religion, political opinion, social status, education, property, leading to a violation of equality of opportunity in the world of work are prohibited.

The Law of the Kyrgyz Republic "On Labor Protection", adopted on August 1, 2003, establishes the legal basis for regulating relations in the field of labor protection between employers and employees and is aimed at creating working conditions that meet the requirements of preserving the life and health of employees in the course of work. Labor protection requirements are provided by legal entities and individuals specified in the second part of Article 2 of this Law when they carry out any type of activity, including in the design, construction, reconstruction and operation of facilities, construction of machines, mechanisms and other equipment, development of technological processes, organization of production and labor. The law grants rights and guarantees to employees to work in conditions that meet the requirements of labor protection. The law establishes the obligations of the employer to ensure safe working conditions and labor protection for workers.

The main document regulating the labor occupational health and safety (OHS) is the Labor Code. Chapter 17 of the Labor Code stipulates general provisions on responsibilities of employer and employee on labor protection, compliance of production facilities and products with the labor protection requirements, provision of PPE to employees, training and instructional briefing on labor protection for employees, sanitary facilities and medical services, as well as medical examination of employees. Chapter 18 of the Labor Code regulates liability of the employer for harm caused to workers by injury, occupational disease or other health impairment at work. The Law of the Kyrgyz Republic "On Labor Protection" 58 (the "Labor Protection Law") establishes regulatory framework in OHS and extends to employers, employees of all legal entities, operating in the Kyrgyz Republic of any legal form or form of ownership. The Law defines major areas of public policy in OHS, establishes powers of the authorized OHS state authorities' and principles and procedure of state supervision and control over compliance with the OHS requirements. In addition, the requirements of labor safety in construction is included in the Building Code SN 12-01:2018 "Labor Safety in Construction".

The Constitution of the Kyrgyz Republic provides that:

- (i) In the Kyrgyz Republic, private, state, municipal and other forms of property are equally recognized and protected (Article 15, paragraph 1);
- (ii) Land, with the exception of pastures and forests, can be in private and municipal forms of ownership (article 16, paragraph 3);
- (iii) The property is inviolable. No one can be arbitrarily deprived of their property. The right to inheritance is guaranteed. The seizure of property against the will of the owner is allowed only by a court decision in accordance with the procedure established by law (Article 15, paragraph 2); and
- (iv) The seizure of property for public and state needs, determined by law, is carried out by a court decision by providing fair and preliminary security for compensation for the value of this property and losses caused as a result of the alienation of property (Article 15, paragraph 2).

4.5. Legislation of the Kyrgyz Republic on Stakeholder Engagement and Information Disclosure

A number of national laws and international acts regulates stakeholder engagement and participation.

The Law of the Kyrgyz Republic "On guarantees and freedom of access to information" with the purpose of regulation of the process of realization of the constitutional right of everyone to freely seek, receive, process, produce, transmit and impart information. Everyone is guaranteed the right for access to information, and that the State protects the right of everyone seeking, receiving, processing, producing, transmitting and imparting information. In addition, restrictions on access to secret and confidential information set by the Law only.

⁵⁸ Dated August 1, 2003 (as last amended on July 26, 2016).

The core principles for freedom of access to information are public accessibility, objectivity, timeliness, openness, and reliability of the information.

The Law of KR "On the procedure of consideration of citizens' appeals" is aimed at legal regulation of relations connected with the realization of the right of everyone to appeal to state bodies and local self-government bodies, enshrined by the Constitution of the Kyrgyz Republic, as well as the procedure of consideration of citizens' appeals by state agencies, local self-government bodies, and officials. The Law provides that appeals from citizens of the Kyrgyz Republic must be registered, properly reviewed and considered in a fair, timely and accountable manner. Every citizen has the right to apply personally or through his representative to state authorities, local self-government bodies and their officials, who are obliged to provide a reasoned answer within the time period established by law. A complaint registered with a state authority or local government must be considered within 14 working days, it can be extended only within no more than 30 days.

As the law «On access to information of government agencies and local self-governments of the Kyrgyz Republic» is aimed at ensuring the implementation and protection of the right of access to information under the jurisdiction of state and local authorities, and achieving maximum information openness, publicity and transparency in their activities.

Local self-government carries out its activities, on the principles that include:

- openness and responsibility of local self-government bodies to the local community and the performance of their functions in the interests of the local community;
- the will of citizens through the system of local self-government, as well as through meetings of citizens and kurultai;
- protection of the rights and legally protected interests of local communities;
- publicity and consideration of public opinion.

Local self-government bodies work in close cooperation with public authorities in order to create conditions for the implementation of the constitutional rights of citizens of the Kyrgyz Republic to participate in solving issues of state and local importance.

In 2001, the Kyrgyz Republic acceded to the **Aarhus Convention** on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters of the UN Economic Commission for Europe, which also contains provisions to ensure disclosure of project objectives and environmental considerations.

In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention.

One of the principles of environmental protection under the **Law "On Environmental Protection"** is the principle of openness: transparency in addressing environmental issues in economic and other activities with environmental footprint, close communication with public organizations, and the population, promotion and encouragement of measures aimed at the protection and rational use of natural resources, a combination of national, regional and international interests in the field of environmental protection.

The law also provides for the right of every citizen or organization to access information on the environment held by public authorities in accordance with the provisions of the law.

4.6. Strategies and National Programs

By Presidential Decree № 221, dated 31.10.2018, the Republic adopted the **“National Development Strategy for 2018-2040”**. The strategy provides for access to clean drinking water, proper operation and maintenance, financial and institutional sustainability of water, wastewater and sanitation systems

for all settlements. State policy will focus on the principle of resource conservation and rational use of water resources, including the reuse of effluents.

One of the ways to address food security and poverty alleviation in the Kyrgyz Republic, the NDS of the Kyrgyz Republic provides for the development of irrigation. In this regard, according to the State Irrigation Development Program, it is planned to implement 46 water projects, which will make it possible to put into operation 66.5 thousand hectares of new irrigated lands, to increase water availability by 51 thousand hectares, to transfer 9.5 thousand hectares from pumping to gravity irrigation and to improve ameliorative condition of 50 thousand hectares.

In order to address the social issues of the rural population, the development of irrigated agriculture, the construction of irrigation objects, **"State Program of Irrigation Development of the Kyrgyz Republic for 2017-2026"** Regulation of GovKR No. 440 was adopted on July 21, 2017 in the Kyrgyz Republic. The state program provides for the construction of irrigation infrastructure to provide new irrigated land to rural residents. The new irrigated lands introduced for growing agricultural products will improve the socio-economic situation and regional development, as well as contribute to food security and poverty alleviation.

The State Program will allow for searching and allocation of 58.8 billion KGS for the realization of 46 water objects (projects) and commissioning of 66.5 thousand ha of newly irrigated lands, increase of water supply of 51.08 thousand ha, transfer of 9.5 thousand ha from pumping irrigation to gravity irrigation, improvement of reclamation state of lands on 50 thousand ha.

The number of people who benefit. About 245 thousand people will receive land allotments. About 200 thous. people will receive an improved supply of irrigation water and about 150 thous. people after the improvement of land reclamation will benefit through increased crop yields on these lands.

The Development Program of drinking water supply and sanitation systems **in the settlements of the Kyrgyz Republic until 2026 was approved by the Government Decree № 330 on 12 June 2020.** The program defines the main directions and measures for the sustainable development of drinking water supply and sanitation systems, taking into account measures to minimize environmental impact, preventive response to existing and potential risks in the form of natural disasters, man-made disasters and climate change, as well as measures required for monitoring and evaluation, and taking corrective measures, if necessary.

4.7. World Bank's Environmental and Social Standards and their requirements

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, 2018⁵⁹. 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

⁵⁹ <https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>

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 ESF consists of:

- the World Bank’s Vision for Sustainable Development, which sets out the Bank’s aspirations regarding environmental and social sustainability;
- the World Bank’s Environmental and Social Policy for Investment Project Financing (IPF), which sets out the requirements that apply to the Bank
- Ten Environmental and Social Standards (ESS), and Annexes, which set out the requirements that apply to Borrowers and projects;
- Bank Directive on Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups

Borrowers and projects are also required to apply the relevant requirements of the World Bank Group Environmental, Health and Safety Guidelines (EHSGs).

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;
- 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 requirements of these ESSs and their implications for the current project are presented in Table 23 below.

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. A summary of the ESSs and their relevance to the project are presented in Table 23. Since the exact location of irrigation and drinking water supply and drainage systems is unknown and is subject to an assessment of economic feasibility at this stage, the project will use a framework approach. Accordingly, the client will need to meet the requirements of the WB ESF and the following tools prepared under the project :

- (i) Environmental and Social Commitment Plan (ESCP);
- (ii) Stakeholder Engagement Plan (SEP);
- (iii) Environmental and Social Management Framework (ESMF);

- (iv) Resettlement Policy Framework (RF);
- (v) Labor Management Procedure (LMP).

For each subproject, it is recommended to take into account the WB Environmental, Health, and Safety (EHS) Guidelines⁶⁰.

The EHS guidelines applicable to the Project include the following:

- General EHS Recommendations (2007);
- EHS Guidelines for Water Supply and Sanitation (2007);

⁶⁰ https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

Table 23: World Bank environmental and social standards related to the project

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
ESS 1. Assessment and Management of Environmental and Social Risks and Impacts		ESS1 sets out the Borrower's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). As required by this standard, the Environmental and social assessments should be conducted based on current information, including a description and delineation of the project and any related aspects, as well as environmental and social baseline data at an appropriate level of detail sufficient to characterize and identify risks and impacts and mitigation measures. The assessment evaluates the potential environmental and social risks and impacts of the project, with particular attention to those that may disproportionately affect disadvantaged and/or vulnerable social groups; explore project alternatives; identify ways to improve project selection, hosting, planning, design and implementation to apply a hierarchy of mitigation of adverse environmental and social impacts, and seek opportunities to enhance the positive impacts of the project.	The project will have a number of positive social and environmental impacts. It will provide technical assistance and interventions to enhance water management at the basin level, improve access to clean drinking water and adequate sanitation, improve water supply to agricultural irrigation fields, which will contribute to increased crop yields. It is expected that environmental risks are possible during the construction and operation of irrigation canals, the laying of drinking water and sewage pipelines, the construction of water intake facilities and other facilities. The expected risks should be local in nature and of short duration. Mitigating measures will help reduce them. The project may cause some adverse environmental impacts related to noise, dust, air, soil and water pollution, solid waste management, health and safety hazards, public health and safety risks, etc. Before sub-projects implementation, an ESIA and ESMP will be developed for each subproject, where the environmental and social risks will be specified. For the sub-projects under Sub-components 1.1 and 1.2. The TA and studies under the Components 2 and 3 need assessment/consideration of ESHS risks per Bank's guidance note on TA activities.
ESS2. Labor and Working Conditions	The standard is relevant	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. ESS2 applies to project employees, including full-time, part-time, temporary, seasonal and migrant workers.	The project may cover the following categories of workers: employees who hired on Single Source Selection (SSS) mode. The direct employees will be those who PIU will send as "technical consultants" and "project specialists. They will be regulated by mutually agreed contracts. Contract workers will be hired by contractors, subcontractors, and other intermediaries as appropriate, the details will be known as the activities begin. Workers in rural communities may be involved in project activities, but such workers will be employed by contractors and may not meet the criteria for community workers under ESS2.

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
		The Borrower will develop and implement written labor management procedures applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. The procedures will address the way in which this ESS will apply to different categories of project workers, including direct workers, and the way in which the Borrower will require third parties to manage their workers in accordance with ESS2.	The risks of performing work on this project will be reduced by establishing, and strictly enforcing, the following procedures: 1) personnel management procedures (LMP), 2) Personnel management plan(s) as part of the contractor's EMP, 3) a code of conduct for workers. Risks associated with child and forced labor are considered low, and potential risks and mitigation measures will be included in the Environmental and Social Management Plan (ESMP) and the LMP. The PIU will prepare a LMP for the project, prior to the assessment, describing the types of workers, key elements of national labor policies and regulations, and gaps in the ESS2. The LMP will include provisions on working conditions and pay, fair treatment, and equal opportunity. Construction sites/camps are also provided, but at this time it is not possible to estimate the number of workers needed. There will be provisions for training and hiring as many community members as possible where project activities are taking place. The ESMF will include environmental, health and safety (EHS) sections based on the World Bank Group EHS Guidelines (EHS checklists for expected job types, codes of conduct; safety training, procedures for handling hazardous materials such as asbestos and lead-based paint, etc.). The core occupational health and safety risk for project workers is associated with construction works and Operation and Maintenance of water, wastewater, existing irrigation and drainage systems, and COVID-19. The project will regularly integrate the latest recommendations and best practices regarding COVID-19 as it evolves. All project workers are expected to adhere to standard codes of conduct regarding SEA/SH prevention measures. The project will also include a grievance redress mechanism for project staff, measures to prevent SEA/SH, and the inclusion of workforce requirements in the Environmental, Social, Health and Safety (ESHS) requirements for procurement documents, and contracts with contractors and performance monitoring firms.
ESS3 Resource Efficiency and	The standard is relevant	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite	This standard is relevant because potential sources of contamination are associated with construction activities conducted under

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
Pollution Prevention and Management		resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention, and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable.	Component 1 and later Operation and Maintenance of the rehabilitated and constructed infrastructure. Such activities include the construction of water wells, wells, storage and networks, the collection, treatment and disposal of wastewater, and the (re)construction of irrigation and drainage systems. Potential adverse impacts associated with these activities include dust and noise emissions, generation of construction waste, sewage, and hazardous materials and wastes (oils, greases, hydrocarbons, paints, etc.), sludge and solid waste disposal, emissions of hydrogen sulfide, methane, and odor during operation of wastewater treatment plants and facilities. These kinds of impacts are unlikely to be significant or irreversible. ESMF will include sections on resource efficiency and pollution prevention and management, particularly those dealing with air, water, and noise pollution, as well as recycling and disposal of construction waste (hazardous and non-hazardous), and wastewater. (Re)construction of irrigation systems could potentially lead to increased agricultural activity, which means that the potential for pesticide and fertilizer use is an important point. ESMF will include a special section on procurement, transportation, storage, handling, use and disposal of pesticides and fertilizers. pesticides and fertilizers. The risks of handling pesticides will be during the operation of the irrigation systems. In the ESMP for subprojects of subcomponent 1.2. arrangements will be made for the handling of pesticides. Assessment of risks and impacts and proposed mitigation measures related to relevant ESS3 requirements, including water use, soil and air contamination, and hazardous materials management, and procedures for materials and hazardous waste management and disposal will be included in the location-specific ESIA/ESMPs ESMPs for sub-components 1.1 and 1.2, as appropriate.

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
ESS4: Community Health and Safety	The standard is relevant	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.	For risks and impacts mitigation that may affect public health and safety, the ESMF will include an assessment of health and safety risks, work and traffic safety, excessive noise and dust, on-site safety awareness and access restrictions, labor influx (if any) and sexual harassment/sexual exploitation and abuse (SH/SEA). All of these issues will be analyzed and addressed in the sub-projects ESIA/ESMP for specific locations, which will be prepared once the locations for investment with detailed project details are identified. ESMF requires that the location-specific ESIA/ESMP specify the necessary measures to ensure effective waste management, compliance with good labor management practices, information disclosure, and effective communication with local communities throughout the duration of the work. The ESMF will also emphasize the need to provide training/education and will include specific guidelines, requirements and regulations, in this case, for PIU staff, local authorities and project beneficiaries (farmers, water user associations (WUAs) and river basin organizations (BWRM). Site-specific ESMPs will include emergency preparedness and response plans for the construction and operation phases of the project, to manage natural or man-made hazards/incidents (floods, fires, etc.), in the project areas. They will also include measures to address SH/SEA risks, including, as appropriate, action plans, codes of conduct, outreach, etc.). Component 2 will also cover the design and implementation of dam safety measures. This action consists of the following: (i) development of technical guidelines and strengthening of institutional capacity for dam monitoring; (ii) conducting dam safety risk assessments and creating guidelines for developing dam safety plans and contingency plans; (iii) supporting the adoption of a regulatory framework for dam safety management; (iv) development and partial implementation of dam safety management plans for dams in the KSAb (Papan, Naiman, Tortkul, and Bazar-Korgon);

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
			(v) development of an information module on dam safety as part of the water information system, including the introduction of remote monitoring tools, such as drone applications and remote sensing. ESIA/ESMP will include studies related to the potential social impact of project components. Public health and safety impact will be caused by construction work, digging open trenches for laying drinking water and wastewater/sewage pipelines, caused by air emissions from excavation work, construction site engines on public thoroughfare, and construction machinery noise. In addition, workers and subcontractors hired by the contractor who will temporarily reside on the construction site can spread diseases, including COVID-19. ESIA/ESMP will include measures to ensure safety and mitigate the impact of construction and other activities on public health in project- affected areas. All construction sites will be fenced to prevent unauthorized access to the areas where work is carried out. Under the project, a grievance mechanism (GM) will be developed in conjunction with local authorities for project-affected people.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	The standard is relevant	ESS5 recognizes that project land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term "involuntary resettlement" refers to these impacts. Experience and research indicate that physical and economic displacement, if unmitigated, may give rise to severe economic, social and environmental risks. Experience and research indicate that physical and economic displacement, if unmitigated, may give rise to severe economic, social, and environmental risks: production systems may be dismantled; people may face impoverishment if their productive resources	The ESS5 is considered relevant due to potential investments under Component-1 that may require additional land and entail temporary and/or permanent physical and economic displacement, because of work to improve access to water (drinking and irrigation water) and sanitation services. For example, the sub-components "Water Supply and Sanitation" will cover civil and electrical/mechanical installations for water production (boreholes, wells, intakes, and disinfection and pumping) as well as water transmission and distribution activities (networks, storage, water control facilities) to households in the project areas, along with wastewater management infrastructure and facilities, collection, transportation, treatment and disposal/reuse of wastewater. Considering that the irrigation and drainage sub-components will include improving the performance of the existing irrigation and

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
		or other income sources are lost; people may be relocated to environments where their productive skills are less applicable and the competition for resources greater; community institutions and social networks may be weakened; kin groups may be dispersed; and cultural identity, traditional authority, and the potential for mutual help may be diminished or lost. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented.	drainage schemes located in KSAb. Investments will include the following : - construction works on rehabilitation and modernization of head water intake structures, main and secondary canals; - modernization of the existing pumping station to improve energy efficiency; - construction of water reservoirs/ponds and drainage canals. The nature and extent of the activities and their impact, at this time, are unknown and will become clearer when the investment activity is selected. An involuntary resettlement policy (RF) will be prepared and consulted on, and will be submitted prior to the assessment. The RF will determine how resettlement action plans (RAPs) will be prepared, disclosed, and implemented for specific locations. It should be noted that all sub-projects requiring land acquisition and involuntary resettlement will ensure the preparation and full implementation of the RAP before work begins. In case the design and investments for sub-projects are defined during the preparation of the project, as well as the method of rapid assessment they will also be prepared in the Project Appraisal Document.
ESS6: Biodiversity Conservation & Sustainable Management of Living Natural Resource	The standard is relevant	Protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Thus, impacts on biodiversity can negatively impact the provision of ecosystem services. ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. All habitats support complexities of living organisms and vary in terms of species diversity, abundance, and importance. This ESS also deals with the sustainable management of primary production and harvesting of living natural resources. This standard seeks to protect natural habitats and their biodiversity; to avoid significant conversion or degradation of essential natural habitats; and to ensure the sustainability of the	The standard is relevant. During project preparation, consultations will be held with the state environmental protection agency to clarify the boundaries of specially protected natural areas (SPNA) that may be affected by the project. As for the implementation of subprojects on the shore of Issyk-Kul lake, they are located in the transition zone of the Issyk-Kul Biosphere Territory, approved by Decree of the Government of the Kyrgyz Republic, № 40 dated January 24. 2000. According to this provision, the transition zone includes agricultural lands and lands of industry, transport, communication, defense and other purposes, as well as the territories of settlements, rest homes and the rest of the Issyk-Kul basin, which are not included in the buffer zone. A variety of productive activities are allowed in the transition zone, in which economically interested groups and citizens living in the area participate together in the extraction and long-term use of

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
		services and products that natural habitats provide to human society.	natural resources in compliance with environmental requirements that ensure environmental sustainability and economic development of the area. In the transition zone, there are arable land, agricultural, industrial, and recreational complexes, mineral water sources, as well as experimental areas with production centers. At the same time, works can be carried out in the water area of Issyk-Kul lake, which belongs to the buffer zone, where various forms of activities can be carried out that do not have a negative impact on the state of the main ecosystems. In the process of preparing the project, this is should be agreed with the specially authorized state body for environmental protection. The ESMF will include biodiversity assessments of the two target river basins, with particular emphasis on the potential overlap of project activities with critical habitats or protected areas. The ESMF will address relevant issues based on the ESS6 in the sections on selection of sub-projects and preparation of specific ESIA/ESMP or/and Biodiversity Management Plans (BMP), when needed. As the project develops, the team reviews potential identified actions for compliance with ESS6 and include additional mitigation measures as needed. The project is not expected to have adverse impacts on biodiversity. Activities that would result in significant biodiversity risks and impacts, will not be supported.
ESS7: Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities	The standard is not relevant	Applies when the Indigenous Peoples are present or have a collective attachment to the land, whether they are affected positively or negatively and regardless of economic, political or social vulnerability. The option to use different terminologies for groups that meet the criteria set out in the Standard. The use of national screening processes, providing these meet World Bank criteria and requirements. Coverage of forest dwellers, hunter gatherers, and pastoralists and other nomadic groups. Requirements for meaningful consultation tailored to affected parties and a grievance mechanism.	This standard is not currently relevant, the indigenous peoples defined by this standard do not live in the Kyrgyz Republic.

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
		Requirements for a process of free, prior and informed consent in three circumstances.	
ESS8: Cultural Heritage	The standard is relevant	ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life-cycle.	ESS 8 may be relevant, and as a precautionary measure, the incidental finding procedure is included in the ESMF and, where appropriate, will be part of the site-specific mitigation measures in the ESMP.
ESS10: Stakeholder Engagement and Information Disclosure	The standard is relevant	ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Client engages with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design. The nature, scope, and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts. In consultation with the Bank, the Borrower will develop and implement a Stakeholder Engagement Plan (SEP) commensurate with the nature and scale of the project and its potential risks and impacts.	This standard is relevant to the project. Stakeholder engagement includes the following: (i) identifying and analyzing stakeholders; (ii) planning of interaction with stakeholders; (iii) grievance redress mechanism; (iv) consultations on the ESMF, the RF, and SEP; It involves constant interaction with stakeholders and submitting reports to them The project will be implemented in several regions (Issyk-Kul, Jalabad, Osh, Batken) of the Kyrgyz Republic in two basins. Individuals and groups who may benefit directly are expected to be identified during project preparation, and then identified once specific sub-project activities have been agreed upon. At this stage, the following main project beneficiaries are identified: rural and small urban households, farmers, water user associations (WUA), water service providers (municipal enterprises, water utilities), local rural and municipal administrations (aiyl okmotu). Other stakeholders include, among others, regional and rayon governments, local businesses (tourism sector), government agencies that can be involved in various ways, as well as academia, civil society, international organizations, and the media. Individual interventions will also be needed to engage different stakeholder groups, including disadvantaged and vulnerable groups The project has a diverse stakeholder profile; their expectations and orientation, as well as their ability to interact with the project, vary from one way to another. The SEP allows the project to identify different stakeholders and outline an approach to interacting with them over the life of the project. The SEP will also identify barriers, if any, to stakeholder outreach and reflect/enhance the client's

Environmental and Social Standards (ESS)	Relevance to the project	BASIC REQUIREMENTS	ESS HANDLING
			ability to engage with stakeholders. Ultimately, the SEP will be an important tool for resolving potential conflicts over water resources. The Project Planning Group (PPG), at this stage, and the client prepared a draft SEP to support ongoing engagement and early involvement of stakeholders in project design. The draft SEP will be updated as it is prepared. The PIU creates a grievance mechanism for stakeholders to voice their concerns/comments/suggestions. The SEP will include detailed procedures for consultation and disclosure of all the tools that will be prepared for the project. A preliminary version of the SEP will be released prior to the evaluation and will be updated as needed during the project. As part of the stakeholder engagement activities, a precautionary approach will be taken to minimize the risk of COVID-19 transmission, considering WHO and World Bank recommendations.

4.8. Gap analysis of the National Legislation of the Kyrgyz Republic and World Bank's Environmental and Social Framework

The gap analysis of the national legislation of the Kyrgyz Republic and World Bank's Environmental and Social Framework is given in Table 24 below.

Table 24. Comparing the National Legislation and the requirements of the World Bank Environmental and Social Standards

Environmental and Social Standards	Relevant to this Project (yes or no)	WB ESS requirements	KR National E&S legislation requirements
ESS 1 - Assessment and Management of Environmental and Social Risks and Impacts	Yes	ESS1 sets out the Client's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). As required by this standard, the ESA should be conducted based on current information, including a description and delineation of the project and any associated aspects, and environmental and social baseline data at an appropriate level of detail sufficient to inform characterization and identification of risks and impacts and mitigation measures. The assessment evaluates the project's potential environmental and social risks and impacts, with a particular attention to those that may fall disproportionately on disadvantaged and/or vulnerable social groups; examine project alternatives; identify ways of improving project selection, siting, planning, design, and implementation in order to apply the mitigation hierarchy for adverse environmental and social impacts and seek opportunities to enhance the positive impacts of the project.	The system of environmental risk classification under Kyrgyz law is based on a includes a list of activities that are either subject to or not subject to an EIA. While under the ESF, risk is classified based on the due diligence and judgement of the Bank team. However, certain provisions in ESS 1 are not fully reflected in national legislation – for example, in social risk assessment, the need for identification of vulnerable and disadvantaged groups and application of differentiated measures to prevent disproportionate impacts or disadvantage in sharing development benefits. National law also does not elaborate on other types of social risk assessment and mitigation such as community health and safety although some of these aspects are present in other state regulations for example those on air or water pollution, and food safety.
ESS 2 – Labor and Working Conditions	Yes	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits	Over the last twenty years, Kyrgyz labor legislation has evolved as the country has adopted supplementary legislation and introduced amendments to its key labor laws. The Kyrgyz Republic has also ratified eleven ILO conventions on issues such as forced and child labor, freedom of association, rights

		of a project by treating workers in the project fairly and providing safe and healthy working conditions. ESS2 applies to project workers, including fulltime, part-time, temporary, seasonal, and migrant workers. Considering specified requirements, the Borrower must develop and implement written labor management procedures applicable to the project. These procedures should set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. The procedures should address the way in which this ESS will apply to different categories of project workers including direct workers, and the way in which the Borrower will require third parties to manage their workers in accordance with ESS2.	to organize and collective bargaining, non-discrimination, and labor inspection (see Annex III). The national Labor Law, last amended in April 2021, establishes state guarantees of labor rights and freedoms of citizens, creates favorable working conditions, and protection of rights and interests of employees and employers. In addition to this Law, the government has approved fourteen other laws and more than twelve regulations that directly relate to labor relations. Collectively, the body of legislation enacted in the country covers many of the objectives and requirements of ESS 2. Full or partial legal gaps with ESS 2 exist on issues such as child labor and minimum age of employment, clear definitions of non-discrimination and harassment, obligations for contractors and management of contractors, due diligence on primary suppliers, the provision of a workplace grievance mechanism, and the monitoring and enforcement of labor laws. Grievance registration and follow-up procedures are available through the Law on Appeals of Citizens; however, they are general to all project effected persons and do not spell out specific grievance process for employees as is required under ESS 2.
ESS 3 – Recourse and Efficiency, Pollution Prevention and Management	Yes	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution¹ prevention and management throughout the project life cycle consistent with GIIP.	The national regulatory framework for pollution prevention prioritizes public health protection and is based on defining thresholds for permitted concentrations of pollutants to which humans may be exposed. The environmental regulation requires calculation of the expected emissions (including noise) and discharges as part of the EIA, so that compliance of an intended project with the established thresholds is proven.

ESS 4 – Community Health and Safety	Yes	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.	The general principles of protecting the health and safety of citizens and communities are embedded in the Constitution of the Kyrgyz Republic and the Law on Environmental Protection. These laws stipulate that everybody has a right to live in a natural environment that is not harmful to their health. To achieve this goal, thresholds are established to limit human exposure to hazardous environments based on several physical, chemical, and biological parameters.
ESS 5 – Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	Yes	ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement plans are prepared and implemented for any project that results in economic or physical displacement. Affected persons eligible for compensation: (a) Who have formal legal rights to land or assets; (b) Who do not have formal legal rights to land or assets, but have a claim to land or assets that is recognized or recognizable under national law; or (c) Who have no recognizable legal right or claim to the land or assets they occupy or use. Compensation alone is not sufficient to restore or improve the livelihoods and social welfare of displaced households and communities.	The Land Code of the Kyrgyz Republic states that land acquisition (withdrawal) is an exceptional measure for terminating the right to land plot. The Constitution and several laws refer to the need to compensate for land acquisition although there is no specific requirement to prepare land acquisition or resettlement action plans with detailed procedure. Under Kyrgyz national law affected persons are those who either have formal legal rights to land or assets and/or have a claim to land or assets that is recognizable under national law. The latter this mainly applies to land titles allocated by relevant authorities, but not yet registered according to the legislation. Users of land or property without proof of such recognizable claim are not eligible to receive compensation. This is one of the main legal gaps existing between national legislation and ESF. National law is silent regarding restoring and improving living conditions of the project affected households, particular attention to vulnerable persons and additional assistance to them.
ESS 6 – Biodiversity	Yes	ESS6 recognizes the importance of maintaining core ecological	The Kyrgyz Republic has a strong regulatory framework for

Conservation and Sustainable Management of Living Natural Resources		functions of habitats, including forests, and the biodiversity they support. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance. This ESS also addresses sustainable management of primary production and harvesting of living natural resources.	protecting, conserving, and restoring biodiversity, but legal provisions for sustainable use of living natural resources do not provide regulatory basis enabling to meet social needs of forest-dependent communities and maximize benefits of its economic use while preserving forest ecosystems, preventing forest degradation and depletion of its resources. National legislation mainly focuses on protecting and conserving species and less so on preserving habitats. The Law on Red Book and Red List of Species prohibits any activities that would damage habitats that support species under protection, meaning that any proposed activity in such habitats must prove that the proposed mitigation measures are sufficient to meet this requirement.
ESS 7 - Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant as there are no such social groups in the Kyrgyz Republic.		
ESS 8 – Cultural Heritage	Yes	ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. It sets out measures designed to protect cultural heritage throughout the project life cycle. The requirements of ESS8 apply to cultural heritage regardless of whether or not it has been legally protected or previously identified or disturbed - to intangible cultural heritage only if a physical component of a project will have a material impact on such cultural heritage or if a project intends to use such cultural heritage for commercial purposes.	National legislation comprehensively covers many aspects related to historical and cultural heritage. The Law on Protection and use of Historic-Cultural Heritage mandates the State to acknowledge the general cultural values of humankind, support cultural development and international cultural relations, ensure the availability of cultural assets for the public, and preserve the freedom of every citizen to express his or her own cultural identity. The State establishes a system for protecting items of local, state and international historical or cultural importance.
ESS9 – Financial Intermediaries	Not relevant	ESS9 recognizes that strong domestic capital and financial markets and access to finance are important for economic development, growth and poverty reduction. FIs are required to monitor and manage the environmental and social risks and impacts of their portfolio and FI subprojects, and monitor	The project will not use Financial Intermediaries.

		portfolio risk, as appropriate to the nature of intermediated financing. The way in which the FI will manage its portfolio will take various forms, depending on a number of considerations, including the capacity of the FI and the nature and scope of the funding to be provided by the FI. FIs are required to develop and maintain, in the form of an Environmental and Social Management System (ESMS), effective environmental and social systems, procedures and capacity for assessing, managing, and monitoring risks and impacts of subprojects, as well as managing overall portfolio risk in a responsible manner.	
ESS 10 – Stakeholder Engagement and Information Disclosure	Yes	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The client will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design. The nature, scope and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts. In consultation with the Bank, the Borrower will develop and implement a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts.	In general, a robust legislation exists, however, it needs to be applied consistently. In regard to investment projects, national legislation and norms are focused mainly on stakeholders engagement during project preparation stage. The existing legal framework describes a grievance procedure in detail without differentiating into local, regional/central levels as in the IFI-funded projects. No special rules exist in national legislation regarding the involvement of vulnerable or disadvantaged individuals and groups in public consultation process and project activities. Regulations on information disclosure and meaningful consultation with project-affected persons are not as clearly prescribed as under ESF.

4.9. 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 in the LMP prepared for the project will also be applied.

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.

PIUs 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.

The WB ESIRT does not replace monitoring procedures and implementation of regular monitoring of the implementation of the project safeguard provisions. The document includes the following six stages of the incident management and reporting process:

Stage 1. Informing the PIU, local authorities, the WB, the public, providing urgent health care and providing the necessary safety measures for workers. All measures must be taken immediately. In parallel, all necessary data about the incident are collected - its scope, degree of danger to public health and environment, location, cause of occurrence, duration, what decisions are taken by the Executor, what actions should be taken next, etc.

Stage 2. Assess severity of the incident. The Executor should promptly provide information to the WB about the incident and its degree of danger.

Stage 3. Notification. The Executor is preparing an incident notification for the WB. Submission of a notification in the event of an incident should be determined when signing a contract with the Contractor.

Stage 4. Investigation of the incident. The Executor provides any information requested by the WB and does not prevent to visit the incidence scene. The Executor is also obliged with the assistance of the Contractor to analyze the causes of the incident and to document the information received. The Executor may need to involve external experts in investigation of the incident. The term of the investigation should not exceed 10 days after the incident. The findings of the investigation should be used by the Executor and the Contractor to develop corrective actions and draw up a corrective action plan (CAP) to avoid any future repetition of what happened. Besides, the conclusions should be submitted to the WB.

Stage 5. Corrective Action Plan (CAP). The Executor develops a CAP with specific actions, responsibilities, implementation dates and monitoring program and discusses it with the WB. In case of serious incidents, the WB and the Executor agree on a set of measures to eliminate the major causes of sources for such incidents. The CAP indicates actions, duties and terms that should be performed by the Executor and the Contractor. The Executor is responsible for implementation of the CAP. The CAP may include development or modernization of technical measures to protect the environment and prevent further pollution, conduct training, including on issues of emergency health care, compensation for insurance claims of injury or death. If the WB considers that the CAP measures are not effective, and/or the Executor has shown unwillingness or inability to take corrective measures, the WB may consider a decision on complete or partial suspension of the loan payments until such actions are taken, or in some cases it may consider a question of cancellation of the whole or part of the Project after its suspension.

Stage 6 Monitoring execution of the CAP. The Executor performs the CAP, monitors execution of individual CAP items and provides a report on implementation to the WB.

5. NATIONAL INSTITUTIONAL FRAMEWORK

Potential government institutions and self-government bodies that will be involved in the Project are described in the Matrix of relevant institutions in Table 25. They are divided into categories depending on which administrative level(s) the institutions are represented at: national, regional, rayon, a rural/administrative unit.

Table 25: Relevant government agencies and local government bodies involved in the project implementation

Institution category	National level	Oblast	Rayon	Functions in the project implementation
Government administrations and local governments	Government agency	Oblast administration	Rayon administration	1) Organization of public consultations,

				2) Work with the population to explain the ongoing work
Sector-specific ministries and agencies	Ministry of Finance of the Kyrgyz Republic		-	Loan agreement
	Ministry of Agriculture of the Kyrgyz Republic	-	-	The PIU- Water Resources Service (WRS) is under the Ministry of Agriculture
	Ministry of Natural Resources, Environment and Technical Supervision of the Kyrgyz Republic, Department of Environmental Monitoring	Osh regional division of ecological monitoring Jalal-Abad regional division of ecological monitoring	-	1) Carrying out the state ecological expertise 2) Providing support in the implementation Subcomponent 2.3. 3) State environmental control over the activities of economic entities, incl. for construction projects
	State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic	Territorial administration	Rayon level territorial units	1) Implementation of the sub-project 1.1.
	Water Resources Service under the Ministry of Agriculture of the Kyrgyz Republic	Main Water Resources subdivisions	Rayon Water Resources subdivisions	1) Implementation of the sub-project 1.2.
	Department of Construction and Engineering Infrastructure	Territorial administrations		
	State Agency for Land Resources / State Institution "Cadastral"	-	Rayon/city department	

The basis of the institutional structure for the implementation of environmental safeguards tasks has been formed in Kyrgyzstan. A sector of nongovernmental organizations actively involved in solving environmental problems in the country has formed. The GovKR has identified specific management bodies responsible for coordinating actions and implementing international obligations.

The Ministry of Agriculture (MA) of the Kyrgyz Republic is an authorized state executive body that implements state policy in the field of the agro-industrial complex, including animal husbandry, veterinary medicine, fish farming (aquaculture), crop production, plant quarantine, land reclamation, land, water resources, irrigation and reclamation infrastructure, food and processing industry, development of regions and local self-government, land legal relations, state, as well as state supervision and control over compliance with the land and water legislation of the Kyrgyz Republic. The Ministry of Agriculture of the Kyrgyz Republic will monitor the compliance of the project with the legislation of Kyrgyzstan and will participate in the implementation of the project's activities related to irrigation infrastructure (re)construction.

The Water Resources Service under the Ministry of Agriculture of the Kyrgyz Republic (WRS) carries out state regulation in the field of management and use of water resources, as well as in the management, planning, distribution and monitoring of water resources, the development of irrigation and the provision of services for the main water infrastructure. The WRS will conduct general control and supervision over the progress of the project subcomponents related to irrigation infrastructure (re)construction, institutional capacity development activities and will be accountable to the Ministry of Agriculture of the Kyrgyz Republic.

The State Agency of Architecture, Construction and Housing and Communal Services of the Kyrgyz Republic (SAACHCS) is an administrative agency that performs the functions of the executive authority in the area of architectural and construction activities, housing, and communal services, drinking water supply, and sewerage system.

The tasks of SAACHCS include the development and implementation of a unified state policy in the field, architectural and construction activities, housing and communal services, drinking water supply and sanitation; implementation of measures for construction, restoration and rehabilitation of social construction facilities and facilities of drinking water supply and sewerage systems, financed from the republican budget, international projects and other sources that do not contradict the legislation of the Kyrgyz Republic. The SAACHCS will monitor the compliance of the project with the legislation of Kyrgyzstan and will participate in the implementation of some of the project's activities related to drinking water supply and wastewater management infrastructure (re)construction.

The Department of Construction and Engineering Infrastructure (DCEI) under the SAACHCS carries out its activities in the field of development of centralized drinking water supply and sewerage systems in settlements.

The DCEI acts as an executing agency for public investment projects in the field of drinking water supply and sanitation;

It acts as a customer for the construction and reconstruction of centralized drinking water supply and sewerage facilities, financed from the republican budget and international projects. The DCEI will carry out general control and supervision over the progress of the project sub-components related to drinking water supply and wastewater management infrastructure construction, institutional capacity development activities and will be accountable to the SAACHCS.

The Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic is an authorized state executive body in the field of environmental protection, environmental safety (including chemical, biological, radiation and nuclear), nature management, hydrometeorology, which exercises state supervision and control over environmental safety issues.

The Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic (hereinafter MNRETS) is responsible for environmental policy, regulation, and coordination for expertise and permitting. MNRETS functions are following:

- (i) development of environmental policy and its implementation;
- (ii) performance of state environmental impact assessment;
- (iii) issuance of environmental licenses;
- (iv) environmental monitoring and control
- (v) organization of work on mitigation and adaptation measures in the field of climate change;
- (vi) organization and coordination of the implementation of scientific research in the field of environmental protection, environmental impact and rational use of natural resources, as well as hydrometeorological activities.

The MNRETS will be involved in the project activities under subcomponent 2.3 on water resources quality monitoring. Also conducts State environmental control over the activities of economic entities, incl. for construction projects.

The State Agency for Land Resources Service under the Ministry of Agriculture of the Kyrgyz Republic is an authorized executive body that provides implementation of state policy in the field of land resources and land legal relations, state registration of rights to real estate, geodesy and cartography, including ensuring uniformity in the application and compliance with land legislation, the formation of a full-fledged geoinformation system for land resources, the implementation of topographic and geodesic, cartographic and land management works, registration of rights to real estate.

6. PROJECT ENVIRONMENTAL AND SOCIAL IMPACTS

The project is expected to have positive impacts, since the implementation of the activities envisaged in the project (i) improved access to irrigation and drinking water services and sanitation (ii) increased institutional capacity to provide climate-resilient water services and water management, in general, will contribute to improved rural livelihoods and food security in the project area.

At the stage of project preparation, the exact location of project sites and areas is not clearly defined, so this framework document contains the basic requirements and recommendations for environmental and social management, and to all future subprojects.

6.1. Environmental risks and impacts

The environmental and social impact of the proposed project will be largely positive. Identified positive impacts will include the following:

- (i) improved water management and efficiency through the replacement of flowing pipes and production systems, the replacement of permanent utility columns with household connections and the installation of individual water meters, including support for improved operation and maintenance;
- (ii) assistance in the protection of surface and groundwater by promoting the construction and use of environmentally sound wastewater disposal, wastewater collection and treatment, with recycling where possible;
- (iii) economic, environmental, and social benefits through modernization of irrigation and drainage systems that prevent excessive energy and water loss, genesis of bog soils and soil erosion, and salinization of agricultural lands and adjacent landscapes;
- (iv) sustainable management of improved infrastructure by communities, which will bring environmental and social benefits associated with natural resource management;
- (v) improving citizens' skills and awareness during planning and implementation;
- (vi) improvement of health of the local population by reducing waterborn diseases.

Investments in Component 1 will cover (re)construction work to improve small-medium scale rural drinking water supply and sanitation and wastewater treatment systems, as well as (re)construction of existing irrigation and drainage systems. Depending on the type and specific location of the subprojects, these works are expected to cause a variety of local risks and impacts ranging from low to substantial, which may include the following:

Construction phase:

- (a) increased pollution due to construction waste (hazardous and non-hazardous);
- (b) generation of dust, noise, and vibration due to the vehicle movement and machinery operation;
- (c) potential for soil erosion and hence sedimentation in water bodies,
- (d) (iii) associated risks due to improper disposal of construction waste and asbestos-containing materials that may be found in old water pipes,
- (e) operational or accidental fuel and lubricants spillage from construction machinery;
- (f) inadequate restoration of construction sites after work is completed;
- (g) increased traffic/traffic, as well as public health and safety
- (h) occupational, health and safety issues;
- (i) clearing of the vegetation while laying the water supply, wastewater pipelines and rehabilitating irrigation infrastructure.

Operation and Maintenance Phase:

- (a) generation of waste (hazardous and non-hazardous) and their disposal during the operation and maintenance of the irrigation and drinking water infrastructure;
- (b) accidents of the workers if no adequate OHS measures are in place; maintenance of drinking water and sewer network may result to community disturbance;
- (c) Potential supply of contamination of potable water with hazardous materials (e.g. pesticides and those use for drinking water treatment) and wastewater treatment, potential supply of contaminated potable water,
- (d) conflicts with water supply and/or Irrigation related to other water users and existing surface/ground water availability.
- (e) increase land use changes, soil degradation and erosion,
- (f) impacts on the quality of ground and surface water, by wastewater, use of pesticides;
- (g) lack of proper emergency response during natural hazards

Potential indirect impacts/risks due to irrigation may include increase land use changes, soil degradation and erosion, ground and surface water pollution, and increase use of pesticides. Water supply activities, may also increase demand for housing which will lead to land use change and would induce impacts on biodiversity.

These potential adverse environmental impacts are easily identified and can be effectively prevented, minimized, or mitigated. The ESMF identifies and describes management and mitigation measures and implementation mechanisms pertaining to all investment activities to be identified during project implementation. For sub-projects activities under sub-components 1.1 and 1.2 to be developed and executed during project implementation, a site-specific ESIA/ESMP ESMP, or ESMP checklists will be prepared, disclosed and agreed upon with relevant stakeholders, and approved by the Bank, prior to issuance of the relevant tender documents, or initiation of construction activities. The ESMP will also be developed for specific locations, applying the World Bank's General EHS Guidelines for environmental and OHS Requirements, with particular attention to the Water and Sanitation Guidelines. All construction work will be conducted in accordance with World Bank recommendations to minimize the risk of COVID-19 spreading during construction work.

Component 2 includes capacity-building activities for dam safety management. Project preparation is complete and dam safety related requirements were determined. Only one of the three existing irrigation schemes planned or expected to be supported by the project relies on an upstream off-stream Bazar Kurgan reservoir (capacity 22.5 million m³ and dam height of 25 meters) In this case, the ESS4 Annex 1: Safety of Dam will be relevant. The WRS will hire 1-2 independent dam safety experts to inspect and evaluate the safety status of Bazar-Kurgan existing dams, its appurtenances, and its performance history; review and evaluate their dam owner's operation and maintenance procedures; and provide written report for findings and recommendations for any remedial work or safety-related measures that might be required to upgrade the dam to an acceptable standard of safety. For technical assistance of capacity building for dam safety, the WRS will engage experienced and competent professionals to guide the dam safety assessments and provide high-level technical input to the Dam Safety Unit within WRS. This will include an independent commission to provide advice on dam safety management.

The project also includes Contingent Emergency Response Component (CERC). Before CERC component is triggered, the ESMF will be updated in accordance with the contingency activities foreseen by the client to include a specific section on CERC. The CERC Section will describe the environmental and social risk management procedures and provide a positive list of activities that can be funded under the CERC, which will be reviewed and cleared by the Bank.

Furthermore, potential ESHS risks and impacts of the TA related activities under components 2 and 3 will be considered and incorporated as per the WB Advisory Note on Technical Assistance and the ESF.

6.1.1. Possible environmental impacts and mitigation measures

The project may cause some environmental impacts and risks that may arise from the implementation of sub-projects. This is mainly due to construction and operation and maintenance work to be carried out under Component 1. These impacts will be considered in the site-specific assessment (i.e., ESIA and ESMP), and site-specific mitigation measures will be developed.

Impacts on biodiversity

During the construction works, pipes laying will be carried out, which can damage the vegetation cover and lead to the vegetation loss, as well as fragmentation of plant communities that could threaten natural habitat quality and composition of plant communities, incremental land clearing. Moving and storage of construction materials, removing surplus, waste and building rubbish at water heads can disrupt wildlife, including affecting natural habitats. In order to minimize the potential risks, once the project sites are identified, the project will conduct site-specific ESMP.

Natural habitats in the immediate vicinity of the proposed activities will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. When rehabilitating irrigation canals, as per Article 80 of the Water Code of the Kyrgyz Republic, cutting trees in the right-of-way can be carried out without the permission of the environmental authority. Adjacent wetlands and streams shall be protected from runoff from the construction site with appropriate erosion and sediment controls. There will be no unlicensed borrow pits, quarries or landfills in adjacent areas, especially in landscape protected area.

The territories where the project on drinking water supply and water disposal in Issyk-Kul oblast will be implemented belong to the *Transition zone of "Issyk-Köl" biosphere area*. A variety of productive activities are allowed in the transition zone, where economically interested groups and citizens living in the area participate together in the extraction and long-term use of natural resources in compliance with environmental requirements that ensure environmental sustainability and economic development of the area. There are cropland, agricultural, industrial estates and health and recreational compounds, mineral water springs, as well as experimental sites with production centers are located in the transition zone.

Soil and ground water pollution during the Construction and Operation Phases. As a result of leakages of fuel and lubricants from construction machinery and equipment, as well as improper waste storage, petroleum products and chemicals can contaminate the soil, seep into groundwater, or flow into impounded surface water. Equipment and machinery maintenance near natural waterways can lead to water pollution, in addition to impacts of wastewater discharges from WWTP on receiving waters. Use of hazardous materials and pesticides during both construction and O&M of facilities would impact the quality of soil and water. If temporary developer camps are set up on the construction site, sanitary facilities built in these camps, as well as equipment cleaning, material storage, spills may cause pollution. The project will invest in improving the quality of sanitary conditions in the areas where workers take food and rest. Inadequate management and operation of sanitation facilities can lead to increased stream and groundwater pollution. In the event of an accidental spill, immediate cleaning will be carried out. All cleaning materials must be stored in a safe place on the site where hazardous waste can be disposed of.

Air pollution. Construction works, transportation of construction materials/waste, and vehicles generate dust. In particular, the risk of dust pollution will increase in windy weather. The magnitude of the impact will increase if construction/rehabilitation work is carried out in a short distance from settlement. Given the kind of most work, these impacts are expected to be short-term, low-risk, and can be mitigated by the measures recommended in Table 26. Particular caution should be exercised in case of contact with toxic asbestos dust, which can occur when replacing drinking water piping and irrigation canals that contain asbestos. Thus, proper measure for ensuring safe removal and disposal of asbestos containing pipes should be implemented in accordance with the requirements of the Kyrgyz Republic established in SanPiN 2.2.3.013-03 “Working with asbestos and asbestos-containing materials”. (e.g. moistening ACM before removing them, and disposing them to a licensed landfill site). Personnel should wear protective masks. Adverse impacts can be prevented by applying best construction practices and appropriate mitigation measures. in strict accordance with the requirements of the Kyrgyz Republic established in SanPiN 2.2.3.013-03 “Working with asbestos and asbestos-containing materials”.

Noise and vibration pollution. A strong increase in noise and vibration is expected during transportation of materials, operation of construction machinery, particularly during excavation works, pneumatic drilling, and operation of building cranes at construction stage, as well as use of pumps/motors during I&D operations, noise from water treatment and WWTP operations during operation phase. If the works carried out in short distance from residential areas, noise and vibration will raise concern among local residents. Noise levels shall not exceed established limits during project activities. Noise pollution can be reduced by using the recommended mitigation measures in sub-projects ESMPs. Given the specifics of the project, vibration is not expected to affect human health and structural integrity because there will be no significant vibration generation activities. Decree of Gov KR under № 201 dated 11.04.2016. Sanitary Regulations and Norms “Noise at workplace, in residential edifices, public edifices and residential areas” establishes sanitary and epidemiological requirements, standardized parameters and maximum allowable noise levels at work places, noise classification, allowable noise levels in premises of designed, under construction, reconstructed and operated residential and public buildings and in residential areas.

Construction debris. During the construction works on irrigation canals, water and sanitation systems, all kinds of wastes can be generated, including hazardous wastes containing asbestos. Construction debris will be removed on a timely manner and properly disposed of at designated sites in locally permitted landfills. Non-hazardous construction waste will be disposed in authorized landfills, which are available in all municipalities: in Osh, Kadamzhai, Jalal-Abad, Kyzyl-Suu, Kajisay and in the villages of Batken oblast, where the drinking water supply systems will be constructed. Recyclable waste, such as wood, paper and other will be recycled. Construction debris and solid waste will be temporarily stored at the construction site, and properly transported to special sites in local authorized landfills. Hazardous waste will be removed and disposed of carefully to avoid further impact on the health of workers and surrounding communities. Waste disposal sites should be carefully selected at the construction site, permits from the local and regional authorities or contracts with specialized entities will be signed to carry out the transportation and disposal of hazardous waste. Waste classification and recycling rules should be prepared in environmental management plans.

As for asbestos-containing waste, an Asbestos Waste Management Plan will be developed. Sanitary norms and rules № 2.2.3.013-03 "Work with asbestos and asbestos-containing materials" must be enforced when working with asbestos-containing waste. Disposal of asbestos containing materials shall be made at the authorized landfills. Developed Asbestos Waste Management Plan (sample plan is provided in Annex 10) is subject for the Bank's review and approval before the sub-project implementation.

Other Impacts

These may include potential reduction in water availability due to water supply and irrigation projects, inefficient use of raw materials and encroachment and indirect impacts due to project development (expansion).

Chance finds. During construction activities, discoveries that are of historical value might be discovered. To address this issue, the ESMP for all such sub-projects will have specific provisions in all construction contracts for a "chance find procedure " that will outline how chance finds associated with the sub-project will be handled.

6.2. Social impact assessment

The expected social and economic benefits of the Project, related to irrigation, include job creation, expected reduction in migration, and improved food security. The access to water, sanitation and hygiene (WASH) reduces the incidence of diarrhea in young children and, in general, has a positive effect on the nutritional status of children, especially stunting. Although, Project will benefit all people in the proposed Project area, some of its activities are likely to have social risks and adverse impacts, including potential land acquisition and involuntary relocation, accessibility related issues, and equity in project benefits for disadvantaged and vulnerable groups, as well as institutionally low ability to cope with such problems.

The social risks include limited access of vulnerable groups to the project information and limited capacity to pay for water supply services: women, disabled people, the elderly, poor households, and households with a small income.

The limited access of households to water management in both irrigation and drinking water supply and sanitation, where the head is a woman, is a certain social risk. Risks can be related to local traditions by limiting woman participation in meetings, gatherings, where water issues arisen like: irrigation water supply or water and sanitation sector, insolvency of such households, difficulties in carrying out irrigation at the allocated time for the household.

The nature of the impacts and the scale of the measures will become clearer once the final design of the subprojects is completed. The ESMF identifies potential risks and impacts, recommends appropriate mitigation measures to be taken. In addition, vulnerable and disadvantaged groups are identified in the SEP, and these groups will be consulted, and their concerns and opinions will be taken into account in the ESMF, SEP, RF, and project design. A Grievance Redress Mechanism will be established as soon as possible to enable people affected by the project to file a complaint against project activities and obtain a timely resolution of problems and complaints. ESS 5 is relevant to the project, RF is prepared for the project. The RF will provide guidance on the preparation, disclosure, and implementation of site-specific Resettlement Action Plans (RAPs) during project implementation. The Borrower conducted meaningful and collaborative consultations with stakeholders in the project area on prepared instruments (ESMF, RF, SEP). The project's ESMF includes appropriate measures to ensure compliance with the World Bank's ESSs.

6.2.1. The resettlement impact under ESS5

Rehabilitation of existing irrigation and drainage systems, necessary construction works for rehabilitation and modernization of headwater intake structures, main and secondary canals, existing pumping stations, as well as civil and electrical/mechanical installations for water

production (boreholes, wells, water intakes and also disinfection and pipage), works on transfer and distribution of water (networks, collectors, water supply controls) to households in the project areas, along with infrastructure and wastewater management facilities, collection, transportation, treatment and disposal/reuse of wastewater, may lead to forced acquisition of land or resettlement. The project will follow a mitigation hierarchy and try to avoid, to the extent possible, any adverse impacts on private or privately used land and property and will record all actions and efforts to avoid the impacts of land restriction and resettlement. Wherever it is not possible to avoid the impacts, they will be minimized and necessary mitigation measures will be taken to help the impacted people in the project area.

Nevertheless, there may be some land impacts and restrictions on land use if minor changes to the existing alignment are necessary to improve water conveyance efficiency that could affect a community's livelihood or source of income. All site-specific investments under the project will be pre-screened for adverse land or resettlement impacts, and if such impacts are identified, the compensation and mitigation procedures described in the Project's Resettlement Framework will be followed.

RAP will be prepared for the subproject and implemented; RAP implementation report is a subject for approval by the Bank prior to start any civil works.

6.2.2. Limited access for vulnerable groups

The social risks include limited access of vulnerable groups to the project information and limited capacity to pay for new water supply services: women, disabled people, the elderly, poor households, and households with a small income. The limited access of female-headed households to water management in both irrigation and drinking water supply and sanitation is a social risk which can be due to local traditions of limiting women's participation in meetings, gatherings, where water issues arise like: irrigation water supply or water and sanitation sector, insolvency of such households, difficulties in carrying out irrigation at the allocated time for the household.

The Project will take steps to ensure that vulnerable groups have equal opportunities to participate in a (sub)project activities, access information and project benefits, and provide feedback or complaints. A (sub)project representatives will help to ensure comprehensive coverage of all population groups. In AO, WUA, RVK under the Project, trainings and awareness-raising sessions will be performed to ensure wider participation of target population groups. All of the above stakeholder engagement techniques specifically targeted at vulnerable groups will be used.

6.2.3. Labor risks

Risks associated with child and forced labor are considered low, and potential risks and mitigation measures will be included in the Environmental and Social Management Plan (ESMP) in accordance with the LMP. The project LMP describes the types of workers, key elements of national labor policies and regulations, and gaps.

The core occupational health and safety risk for project workers at Construction and O&M phases are associated with construction and operation and maintenance activities of water, wastewater, existing irrigation and drainage systems, and COVID-19. The project will take all measures to ensure safety of Contractors' and O&M Operators' and workers at construction sites and facilities. Contractors and facilities operators will need to develop OHS plan/ procedures to mitigate potential OHS issues. The OHS measures will be designed and implemented to address:

- (a) identification of potential hazards to project workers, particularly those that may be life-threatening.

- (b) provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances;
- (c) training of project workers and maintenance of training records;
- (d) documentation and reporting of occupational accidents, diseases and incidents;
- (e) emergency prevention and preparedness and response arrangements to emergency situations; and
- (f) remedies for adverse impacts such as occupational injuries, deaths, disability, and disease.

Project will ensure provision of basic facilities like separate toilets for men and women workers, safe drinking water and medical kits. Project will also ensure to integrate the latest recommendations and best practices regarding COVID-19 as it evolves.

Sexual exploitation and abuse/sexual harassment (SEA / SH) Risk rating is Low. The project will create an effective and robust grievance system to deal with all grievances, including SEA/SH. A separate dedicated privacy window will be created to manage SEA/SH complaints, if any.

6.2.4. Community Health and Safety

Construction work will have some impact on the health and safety of construction workers and local communities. To mitigate the impacts, a number of activities will be developed to prevent the impacts. Mitigating measures will be included in the tender construction documents. Such measures include compliance with ESS 2 "Labor and Working Conditions" and ESS4 "Community Health and Safety". The necessary mitigation measures are presented in Table 25 of the document.

Related mitigation measures for O&M phase are also required. These should include ensuring acceptable potable water is provided, potential emergencies (releases, spills, fires, etc.) at water treatment and wastewater treatment plants, failure for WASH facilities to be properly maintained and hence human exposure, potential risks due to any irrigation canals that are left open to both humans and animals.

6.3 Possible cumulative project impacts

Natural and anthropogenic disturbances increasingly endanger public health and the environment. Separately, these disturbances affect ecosystems. When combined with each other, there can be stronger "cumulative impacts" on the environmental, cultural, social, and economic values of water and land resources.

Many natural and man-made events, include the following:

- climate change
- use of resources (e.g., water, land, vegetation, etc.);
- disturbance of roads, pipelines;

When developing a site-specific SEA, cumulative impacts and their risk will be taken into account. It will also determine how the violations will affect natural resources. Mitigation measures will be developed to mitigate cumulative impacts.

Each resource sector needs to understand how their activities interact with other activities in the same landscape. When forest or rangeland ecosystems are affected, the impact extends to rural user communities. The economy and regional well-being of these communities are linked to the health and productivity of local resources.

Understanding the cumulative impacts of landscape disturbance allows take better decisions related to the sustainable use of the nation's natural resources. To understand, assess, and mitigate the risk of cumulative effects, executive agencies are committed to the following actions:

- to develop strategies and tools to assess, prevent and minimize the risks and impacts of cumulative impacts on forests. However, there are knowledge and data gaps for understanding, evaluating, predicting, and managing the cumulative effects of resource development projects. The natural resource sectors must fill these gaps in order to maintain their environmental reputation.
- to work with national partners, jurisdictions, local communities and other stakeholders. This collaboration will help identify problems, needs, gaps and opportunities.
- to consult with resource users and neighboring communities.

The impact of cumulative effects on the rights and interests of local communities and resource users must be considered. Their knowledge and values can play an important role, along with those of technical planners, in natural resource management decisions.

- to identify climate change impacts and mitigation measures. Climate change is one of the main factors affecting cumulative impacts at project sites. The ultimate challenge in assessing cumulative impacts will be to understand how these impacts evolve with a changing climate and to improve existing approaches to monitoring and managing cumulative environmental impacts in the context of climate change. To do this, a climate change vulnerability assessment will be conducted at project sites where appropriate.

Potential Indirect Risks and Impacts

Irrigation systems may have an indirect impact on the surrounding environment. These indirect effects may not be as immediately noticeable as the direct issues. Additionally, these effects take a longer time to develop and produce longer-lasting changes. The indirect effects of water logging and soil salination occur directly on the land being irrigated. The ecological and socioeconomic consequences take longer to happen but can be more far-reaching. Some irrigation schemes use water wells for irrigation. As a result, the overall water level decreases.

7. ESMP INTEGRATION

7.1. Integration of ESMP into project documentation

All bidding documents for sub-projects must include a requirement to implement the ESMP, and these documents must be attached to the bidding documents and then to the construction contracts. The requirements of this ESMF will be included in the Project Operational Manual, while the requirements of the ESMP will be included in the construction contracts for individual sub-projects, both in the specifications and in the bill of quantities, and Contractors will be required to include the cost of implementing the ESMP in their financial proposals. This ESMF highlight the roles and responsibilities of all parties involved in the preparation, implementation and monitoring and reporting of the ESIA and ESMP0, or ESMP checklists. Contractors' contracts must include requirements for compliance with all national building codes, health and safety, protective procedures and regulations, and environmental protection. Construction bids and contracts will include the standard WB terms and conditions for construction works (per WB procurement guidance).

7.2. Institutional capacity to meet the new ESF

There is insufficient capacity to apply ESS at the national and local levels (collaborative planning, project management and supervision). Given that the implementing agency and line ministries have limited experience with ESS and that local governments and local construction organizations also have no experience with ESS implementation, training workshops will be held on environmental and social procedures related to the project, as outlined in the Environmental and Social Commitment Plan.

Table 26. Potential environmental and social impacts and mitigation measures

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
CONSTRUCTION PHASE					
Component 1. Infrastructure Investments and Service Improvements					
Subcomponent 1.1: Water Supply and Sanitation Infrastructure					
1) Construction of water supply and sewerage systems 2) Construction of water intake structures and boreholes 3) Construction of sewage intake and treatment facilities 4) Construction/renovation of office buildings and others Education	Disturbance of the landscape during the laying of pipelines of drinking water and water disposal systems and construction of water intake structures;	Moderate	Landscape	1) Minimize the area and time of landscape clearing, avoid to extent possible clearing of large trees and/or sensitive or economically important species 2)The soil during the digging of trenches of the water pipeline and the construction of the tank, will be used for backfilling of trenches; 3) Excess soil from drilling wells will be used for reclamation and planning and restoration of the water intake construction site; 4) Recultivated and planning and restoration work will be carried out in the work areas	Low
	Waste generation and disposal: solid and liquid household and non-hazardous construction waste	Moderate	Soil, ground and surface water bodies	1) Installation of containers for solid waste and minimize to extent possible waste generation; 2) Installation of temporary toilets in accordance with environmental or bio-toilets; 3) Temporary storage of construction waste on protected ground; 4) Reuse and recycling of waste such as: wood, metal, paper; 5) Regular and timely removal of solid waste (SW) and construction waste from	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				the construction site to municipal sanctioned landfills in accordance with the permission of Local authorities	
	The generation of hazardous (asbestos-containing) waste when replacing drinking water and sewage pipelines	High	Soil, atmospheric air, worker safety and health	1) Develop an asbestos-containing waste management plan 2) Excavation, transportation, and burial of asbestos-containing waste should be carried out in strict accordance with the requirements of the KR established in Sanitary Rules and Standards № 2.2.3.013-03 "Work with asbestos and asbestos-containing materials".	Low
	Pollution of water bodies and soil associated with leakage of petroleum products during storage and operation of equipment in water protection zones and strips, with the organization of camps for construction workers	Moderate	Water objects, soil	1) It is prohibited to locate the construction site in water protection zones of rivers and canals; 2) In order to avoid penetration of fuel and lubricants into the soil, the use of machinery in the production of works (transportation of building materials, work on the construction site, etc.), passed the technical inspection; 3) Filling of equipment at stationary filling stations and repair of equipment at specialized enterprises; 4) Construction equipment will be maintained in good condition, and if there are any leaks, must be repaired immediately; 5) Drilling rigs when drilling drinking wells must be technically sound; 6) In the case of a spill of fuel and lubricants on the soil, the site must be immediately cleaned up and disposed of in accordance with environmental safety	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				standards in coordination with the environmental protection authorities.	
	Pollution of atmospheric air during construction and rehabilitation of water supply and sewage systems, as well as construction and rehabilitation of other facilities within the project. Emissions from vehicles and other construction equipment. Especially these risks will be felt in populated areas.	Moderate	Atmospheric air, population, workers on sites	1) Exhaust systems of vehicles and construction equipment must be in good condition to minimize air pollution; 2) Limiting the speed of vehicles and selecting appropriate transportation routes to minimize dust emissions; 3) Moistening of the pavement when machinery passes; 4) Wetting trenches of canals and pits during excavation works; 5) Construction work must be suspended in strong winds (15 m/sec) if dust (particulate matter) levels are high. 6) All machines delivering dusty building materials to the site or removing debris must be enclosed or covered to prevent dusting; 7) Welding of metal structures should be carried out by electric welding.	Low
	Destruction of the natural habitat of the animal world	Low	Wild animals	1) Prohibition of hunting among workers in construction contractors 2) Any potential impacts on natural habitat due to land clearing for laying the new water pipes, construction of wastewater networks and WWTPs will be mitigated by applying biodiversity-related mitigation measures in line with the ESS6 requirement and GIIPs	Low
	Cutting tree and shrub vegetation	Moderate	Tree and shrub vegetation growing in populated areas	1) If possible, preference will be given to sites for the construction of water supply and drainage facilities, taking into account	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				the least amount of growing wood and shrub vegetation; 2) If necessary, the number of trees and shrubs that can be cut down and monetary damages will be determined in accordance with the Resettlement and Land Purchase Plan; 3) Trees will be cut on the basis of a permit issued by the environmental authority; 4) In the course of reclamation and restoration work, trees will be planted in the water intake area.	
	Destruction of topsoil during construction of new reclamation canals and water supply and drainage systems	Moderate	Land resources	1) Stockpiling of disturbed topsoil for its further use in reclamation and restoration works; 2) Transferring the topsoil to local governments and farmers for further use.	Low
	Noise pollution, especially in populated areas	Moderate	Workers on the sites and the public	1) Work only during daylight hours; 2) Exhaust system in vehicles, trucks and machinery must be in good working order to minimize noise pollution; 3) If the work is carried out in settlements, it is necessary to inform the settlements about the schedule and duration of the construction work.	Low
	Inadequate restoration of construction sites after completion of works	Moderate	Soil, landscape, water objects	1) Cleaning the site of the construction camp of solid waste, construction debris, liquid waste and other possible contaminants; 2) Conducting restoration and planning work.	Low
	Workplace health, safety and security, including measures to prevent the spread of COVID-19.	High	Contractor workers	1) The sites should be equipped with appropriate information boards and signs	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				alerting workers to the rules and standards of work; 2) Introductory and periodic pre-job briefing and during the activities of workers. An entry in the instruction log; 3) checking the temperature of the personnel with later introduction of it in the log-book; 4) Availability of first-aid kits at the site in case of injury; 5) Providing workers with personal protective equipment (helmets, safety shoes, gloves); Establishment of GM for workers 5) Temperature check for workers; 6) Social distance at work sites and during meals per WHO recommendations; 7) Regular facility cleaning service at living and eating areas, using disinfectants; 8) Isolation of the worker in case of fever and other symptoms of cold 9) Coughing and sneezing etiquette (handkerchief or elbow usage)	
	Impacts under land acquisition and resettlement	High	Population, RPADWC, Local authorities	1) Avoid land acquisition or resettlement of local populations as much as possible; 2) Minimize the scale of resettlement impacts; 3) In case of impact, RAP preparation and implementation;	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				4) Properly inform the population of their rights to compensation in the event of land acquisition ensuring consultations with vulnerable groups and women; 5) Effective engagement with local communities to minimize grievances from the public. 6) Effective GM	
	Construction of water intakes and water supply and sanitation systems on agricultural lands and lands of aiyl okmotu, etc.	High	Population, local authorities, agricultural productivity	1) Land transformation	Low
	Public safety and other social measures	High	Population, local authorities, roads and social facilities	1) Conducting information campaigns about construction work and its impact on the environment and the social environment; 2) Public are not admitted to construction sites; 3) Work-site protection with signal tapes, if construction is carried out within settlements; 4) Traffic control, installation of warning signs when working on construction sites that run along highways and roads; 5) Conducting construction work in populated areas only during daylight hours; 6) Respecting construction schedules so as not to interfere with social facilities, should they be affected; 7) Effective engagement with local communities and effective GM, including SEA/SH preventing measures.	Low
Subcomponent 1.2: Irrigation and Drainage Services Improvement					

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
1) Rehabilitation and modernization of head irrigation structures, main and secondary canals; 2) Modernization of existing pumping stations in order to increase energy efficiency and thus reduce greenhouse gas emissions; 3) Reconstruction of ponds to collect and store local surface runoff for irrigation purposes and drainage canals;	Landscape disturbance during construction irrigation canals and (re)construction of HWS and other hydraulic structures (HS);	Moderate	Landscape	1) The soil after trenching a pipeline and tank construction, will be used for backfill; 2) Excess soil after drilling wells will be used for recultivating, and planning and restoration of the water intake construction site; 3) Recultivating and planning and restoration will be carried out in the work areas	Low
	Waste generation and disposal: solid and liquid household and non-hazardous construction waste	Moderate	Soil, ground, and surface water bodies	1) Installation of containers for solid waste; 2) Installation of temporary toilets in accordance with environmental or bio-toilets; 3) Temporary storage of construction waste on protected ground; 4) Reuse and recycling of waste such as: wood, metal, paper; 5) Regular and timely removal of solid waste (SW) and construction waste from the construction site to municipal sanctioned landfills in accordance with the permission of Local authorities	Low
	Generation of hazardous (asbestos-containing) waste during reconstruction of hydraulic structures and head water intake structure (HS and HWS)	High	Soil, atmospheric air, worker safety and health	1) Develop an asbestos-containing waste management plan Excavation, transportation, and asbestos-containing waste dumping should be carried out in strict adherence to the Sanitary Rules and Standards under KR requirements № 2.2.3.013-03 "Work with asbestos and asbestos-containing materials".	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
	Pollution of water objects and soil associated with leakage of petroleum products during storage and operation of equipment in water protection zones and strips, with the organization of camps for construction workers	Moderate	Water objects, soil	1) It is prohibited to locate the construction site in water protection zones of rivers and canals; 2) In order to avoid penetration of fuel and lubricants into the soil, the use of machinery in the production of works (transportation of building materials, work on the construction site, etc.), passed the technical inspection; 3) Fuel machinery at stationary fuel filling station and machinery maintenance at specialized enterprises; 4) Construction equipment will be maintained in good condition, and if there are any leaks, it should be repaired immediately; 5) Drilling rigs when drilling drinking wells should be technically sound; 6) In the case of a spill of fuel and lubricants on the soil, the site should be immediately cleaned up and disposed of in terms with environmental safety standards in coordination with the environmental protection authorities.	Low
	Pollution of atmospheric air during construction and rehabilitation of water supply and sewage systems, as well as construction and rehabilitation of other facilities within the project. Emissions from vehicles and other construction equipment. These risks will be felt especially in populated areas.	Moderate	Atmospheric air, population, workers on sites	1) Exhaust systems of vehicles and construction equipment should be in good condition to minimize air pollution; 2) Speed limiting and selection of appropriate transportation routes to minimize dust emissions; 3) Moistening of the pavement when machinery passes; 4) Wetting trenches of canals and pits during excavation works;	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				5) Construction work must be suspended in strong winds if dust levels are high. 6) All vehicles delivering dusty building materials to the site or removing debris should be enclosed or covered to prevent dusting; 7) Welding of metal structures should be carried out by electric welding.	
	Destruction of the natural habitat of the animal world	Low	Wild animals	1) Prohibition of hunting among workers in construction contractors	Low
	Trees and shrubs cutting	Moderate	Tree and shrub vegetation growing in populated areas	1) If possible, preference will be given to sites for the construction of water supply and sewerage, taking into account the least amount of growing tree and shrubbery vegetation; 2) If necessary, the number of trees and shrubs that can be cut down and monetary damages will be determined in terms of the Resettlement and Land Purchase Plan; 3) Trees are cut down on the basis of a permit issued by the environmental authority; 4) In the course of recultivation and restoration work, trees should be planted in the water intake area.	Low
	Destruction of topsoil during construction of new reclamation canals	Moderate	Land resources	1) Stockpiling of disturbed topsoil for its further use in reclamation and restoration works; 2) Transferring the topsoil to local authorities and farmers for further use.	Low
	Noise pollution, especially in populated areas	Moderate	Workers on the sites and the public	1) Work only during daylight hours; 2) Exhaust systems of cars, trucks and machinery must be in good condition to minimize noise pollution;	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				3) If the work is carried out in settlements, it is necessary to inform the settlements about the schedule and duration of the construction work.	
	Inadequate restoration of construction sites after work is completed	Moderate	Soil, landscape, water objects	1) Cleaning the site of the construction camp of solid waste, construction debris, liquid waste and other possible contaminants; 2) Conducting restoration and planning work.	Low
	Workplace health, safety and security, including measures to prevent the spread of COVID-19.	High	Contractor workers	1) The sites equipped with appropriate information boards and signs alerting workers to the rules and standards of work; 2) Passing introductory and periodic briefings before the start of work and during the activities of workers. An entry in the instruction log; 3) Availability of first aid facilities at the site in case of injury; 4) Providing workers with personal protective equipment (helmets, safety shoes, gloves); 5) Measuring the temperature of the worker; 6) Social distance at sites and during meals in line with WHO recommendations; 7) Regular cleaning of living and eating areas using disinfectants; 8) Isolation of the worker in case of fever and other symptoms of cold 9) Coughing and sneezing etiquette (handkerchief or elbow usage)	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
	Impacts under land acquisition and resettlement	High	Population, WUA, RVK	1) Avoid land acquisition or resettlement of local populations as much as possible; 2) Minimize the scale of resettlement impacts; 3) In case of impact, RAP preparation and implementation; 4) Properly inform the population of their rights to compensation in the event of land acquisition; 5) Effective engagement with local communities to minimize grievances from the public; 6) Effective GM	Low
	Public safety and other social measures	High	Population, local authorities, roads and social facilities	1) Conducting information campaigns about construction work and its impact on the environment and the social environment; 2) Restricting public access to construction sites; 3) Fencing of construction sites with signal tapes, if construction is carried out within populated areas; 4) Regulation of traffic, installation of warning signs when working on construction sites that run along highways and roads; 5) Conducting construction work within populated areas only during daylight hours; 6) Observance of construction schedules in order not to impede the activities of social facilities, if they are affected;	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				7) Effective engagement with local communities and effective GM, including SEA/SH preventing measures.	
Component 2: Institutional Strengthening for Climate Resilient Service Delivery, Water Resources Management and Dam Management					
- Resilience to climate change - water and soil quality; - National regulatory and supervisory capacity; - Functional capacity in service delivery at the local level		Low	WRS, DCEI, MNRETS, WUA, RPADWC, BWRU, vulnerable population	- Supporting the implementation of the Water Code; - Improving the technical and financial activities of the WRS by creating a system for issuing permits and collecting payments for the use of water resources; - Capacity building of river basin councils; - Strengthening WUAs and RPADWCs with a focus on cost recovery and water management; - Enhancing the role of women in decision-making processes; - Operation and improvement of the current WIS; - Building capacity of DCEI in monitoring and planning investments; - Capacity building in the field of regulation of the water supply and sanitation sector; - Capacity building in monitoring water and soil quality; - Effective GM, including SEA/SH preventing measures.	Positive
Subcomponent 2.1. Institutional Strengthening for WSS Service Delivery					
Subcomponent 2.2 Institutional strengthening for irrigation water services delivery					
Subcomponent 2.3. Water and soil quality monitoring system					

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
- Provision of consulting services for conducting a needs assessment; - Support for the development of a water quality monitoring program and capacity building to ensure the sustainability of investments.	- Air pollution in the work area during construction work inside buildings;			12) Social distancing on the job site and at mealtimes as recommended by WHO; 13) Regular cleaning of the living quarters of workers and food intake with disinfectants; 14) Isolation of the worker when fever and other cold symptoms appear 15) Coughing and sneezing etiquette (handkerchief or elbow usage)	
Subcomponent 2.4. Dam management					
- Develop technical guidelines and build institutional capacity for dam safety monitoring through the establishment of a dam safety unit; - Conduct a risk assessment for dam safety and develop guidelines for the preparation of dam safety plans and contingency plans; - Support for the implementation of a regulatory framework for the management of dam safety measures; - Development of plans for the management of		Low	WRS, BMWU, WUA, RPADWC,	- Ensure these guidelines meet ESS\$ requirements and follows GIIP guidance; - Ensure adequate resources are provided to implement each of the dam safety plans;	Positive

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
measures to ensure the safety of dams for the KSA basin (Papan, Naiman, Tortkul and Bazar-Korgon); - Development of an information module on dam safety for WIS, including the introduction of remote monitoring tools such as the use of drones and remote data collection.					
Component 3: Project Management, Monitoring and Evaluation and Professional Development					
- Financing and support to the PIU - Conducting surveys on the level of satisfaction of beneficiaries, introducing a mechanism for collecting complaints from beneficiaries, conducting social mobilization, communication and information activities, audits, feasibility studies, environmental and social impact assessments, technical design studies for investments related to project activities and		Low	PIUs of the WRS and DCEI, project beneficiaries, WUA, RPADWC, population		Positive

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
future investments, as well as professional development programs with a focus on increasing employment opportunities for women and youth in water sector organizations					
Component 4: Contingency Emergency Response Implementation Component (CERC)					
Reallocation of project funds in case of emergency response and implementing the emergency activities			WRS, DCEI, WUA, BWMU, RPADWC, population		
Operation Phase					
Solid and Hazardous Waste management	i) waste generated and disposed of during the operation and maintenance of the irrigation and drinking water infrastructure;	Low	WRS, DCEI, WUA, BWMU, RPADWC, local authorities,	1) Installation of containers to collect solid waste; 2) Installation of temporary toilets in accordance with ecological or composting toilets; 3) Temporary storage of construction waste on protected ground; 4) Reuse and recycling of waste such as: wood, metal, paper; 5) Regular timely removal from the construction site of Municipal solid waste (MSW) and construction waste to municipal authorized landfills in accordance with the permission of the local authorities 6) Develop a Management Plan for asbestos-containing waste	Low
	(ii) hazardous waste management: use of hazardous materials including pesticides and those use for drinking water treatment and wastewater treatment, potential supply of contaminated potable water,	High			Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
				7) Excavation, transportation, and burial of asbestos-containing waste should be carried out in strict accordance with the requirements of the KR established in Sanitary Rules and Standards № 2.2.3.013-03 "Work with asbestos and asbestos-containing materials".	
Water supply and sanitation system	Disposal of sludge from manholes and on-site septic tanks contaminates the soil.	High	Design company, APADWC, Municipal Water companies, Population	- Design appropriate sludge management and disposal, and produce a sludge management plan, including on-site handling. - Reuse sludge (e.g., for agriculture manure composting) after the laboratory testing.	Low
	Heavy rains cause overflow and bypassing of sewage at pump stations, flooding the surrounding area or discharging untreated sewage.	High		- Prepare an emergency response plan for each facility in case of accidental spills of sewage, considering arrangements for isolating the problem area. - Establish monitoring and supervision for sewage pumping station performance that complies with existing design effluent quality standards.	Low
Occupational health and safety (OHS) of the personnel	Accidents of the workers if they do not have suitable equipment (including PPE) and knowledge for the job;	Medium	WRS territorial units, Municipal Water companies	- Providing introductory and periodic briefings before the start of work and in the process of workers' activities. Register in briefing log-book; - Availability of first aid kit on site in case of damage or injury; - Providing workers with personal protective equipment (helmets, safety shoes, gloves);	Low

Project activities	Expected environmental and social impacts	Degree of impact before mitigating measures	Impact targets	Measures to prevent/mitigate negative impacts	Impact degree after mitigating measures
Socio-economic issues	Conflicts with water supply and/or Irrigation related to other water users and existing surface/ground water availability.	Low	WRS, DCEI, WUA, BWMU, RPADWC, local authorities.	Consider development of sustainable water use plan with all water using stakeholders.	Low
Environmental issues	Increase land use changes, soil degradation and erosion, impacts on ground and surface water, use of pesticides;	Medium	WRS, DCEI, WUA, BWMU, RPADWC, MNRETS, local authorities	Consider development of sustainable water use plan with all water using stakeholders. Introduction of sustainable land use plan with rotating plantation of the crops and soil quality monitoring activities.	Low

8. ENVIRONMENTAL AND SOCIAL ASSESSMENT AND MANAGEMENT PROCEDURE

8.1. E&S Screening of subprojects

Environmental and social management begins with environmental and social (E&S) screening of proposed sub-projects. The main purpose of environmental and social screening is to identify and assess environmental and social risks at an early stage of subproject preparation and development, which will be based on the requirements of national legislation and WB ESF by filling out the screening forms indicated in Annex 1. PIUs environmental and social specialists will carry out a rapid assessment of the likely environmental and social impacts and the potential for involuntary resettlement, which will be based on the requirements of national legislation and WB ESSs using the screening forms of the environmental and social aspects presented in Annex 3 and Annex 9. Subproject activities will be also checked against WB criteria for High-Risk Projects and the exclusion list provided in Section 7.1.2 and Annex 2. E&S screening will determine which environmental and social (E&S) assessment instruments/tools for specific sub-projects will need to be prepared. Results of the screening will be reflected in the screening form presented in Annex 4. For Substantial Risk subprojects, a site-specific Environmental and Social Impact Assessment ESIA/ ESMP will be required to identify, evaluate and manage potential environmental and social risks and impacts. For Moderate Risk subprojects, an ESMP will be prepared. For Low Risk subprojects, an ESMP Checklist will be prepared. The proposed sub-projects will be prepared by the appropriate PIU with the help of professional environmental and safety consultants/firms. The E&S team within the PIU will supervise the selection process and finally analyzes and summarizes the results of the screening before sending them to the WB for no objection. Approved by the bank the Review Report should be approved by PIU for implementation. The development of E&S instruments/tools for specific sub-projects should be initiated and implemented by PIU after the exact locations and preliminary conceptual designs and feasibility studies are identified for each sub-project. Guidance on the monitoring process is described below. Subprojects will be monitored by the PMU. Regular subproject ESMP monitoring reports should be submitted to the PIU and the WB. During the selection process, there will also be an inadmissibility assessment prior to the environmental and subproject social categorization as per ESMF. Sub-projects that could have a significant impact on biodiversity values, including protected species or protected areas; impacts on known cultural heritage sites; and "high risk" subprojects are considered ineligible for funding.

Environmental and social screening will include: (i) a survey of the subproject area and its surroundings; (ii) identification of the main activities of the subproject; and (iii) a preliminary assessment of the impact of these activities on the environmental, Physic-chemical, and socio-economic environment of the areas adjacent to the subproject and the considerations to be further investigated with site-specific ESIA's or ESMPs, as appropriate.

In cases where several individual activities are linked and constitute components of a single sub-project, all activities will be evaluated as one sub-project. The ESIA/ESMP prepared for such a subproject should consolidate all the activities to be implemented under the subproject. In cases where the components are technically independent of each other, the ESIA/ESMP activities can be prepared separately, and the work can start at different times. Based on the results of additional research and evaluations, the PIU should confirm and submit the proposed selection categories for sub-projects to the PIU for approval. Therefore, the PIU will submit it to the WB for approval.

8.2. Environmental assessment procedures

After the sites are identified, and subproject screening was completed, an ESIA/ ESMP, EMP or EMP checklist, as appropriate will be prepared. Per the national requirements, EA need to be prepared and

submitted to the authorized state environmental protection body for approval⁶¹. The sub-project activities will also be screened against the World Bank and project exclusion criteria.

This will determine the type and scale of potential environmental impacts and determine what risk category the subproject should be assigned to. Generally, the significance of the impacts and risks introduced into the resulting socio-environmental assessment (SEA) categorization will depend on the type and scale of the subproject, its location, the sensitivity of environmental issues, and the nature and magnitude of potential risks and impacts.

Type and scope of projects. Subprojects, that considered as a «High Risk Subproject", will not be funded. A "high risk" assessment will usually entail the following impacts: (a) significant impacts on human populations, including settlements and local communities (b) alteration of ecologically important areas, including wetlands, natural forests, grasslands, and other "critical" natural habitats. and ecosystem services; (c) direct releases of pollutants that are large enough to cause degradation of air, water, or soil, endangered species, and "critical" habitats; (d) large-scale physical disturbance of the site and/or its surroundings; (e) extraction, consumption, or conversion of significant amounts of forests and other important natural habitats, including terrestrial and subsurface and aquatic ecosystems; (f) measurable alteration of the hydrologic cycle; (g) hazardous materials in amounts greater than incidental; and (h) involuntary human displacement and other serious social disturbances.

Location. There are several locations to consider when deciding whether to assign "high risk" status of a project: (a) in or near sensitive and valuable ecosystems and "critical" habitats - juniper forests, wetlands, wild lands, sensitive soils, and special habitats of rare and endemic endangered species; (b) in or near areas with archaeological and/or historic sites or existing cultural and social institutions; (c) in densely populated areas where relocation may be required or potential pollution and other disturbance may significantly affect communities; (d) in regions where development activities are active or where there are conflicts over the allocation of natural resources; along watercourses, in aquifer recharge areas, or in reservoir catchments used for drinking water supply; and on lands or waters containing valuable resources (such as fisheries, minerals, medicinal plants, better agricultural soils). Subprojects located short distances to such areas will be classified as high-risk projects and will not be considered for project support.

Sensibility. Complex issues may include (but are not limited to): wetland conversion, potential adverse impacts on endangered species and habitats and protected areas or sites, involuntary relocation, impacts on international waterways and other transboundary issues, and toxic waste disposal.

Risk level. There are several ways to measure the level, such as the absolute amount of the resource or ecosystem affected, the amount affected relative to the existing stock of the resource or ecosystem, the intensity of the impact, its time, and its duration. In addition, it may be necessary to consider the likelihood of a particular impact occurring and the cumulative impact of the proposed action and other planned or ongoing actions. Given the type and scale of the proposed sub-projects, their environmental impact is expected to be low to moderate, and their social impact is expected to be moderate to significant.

In addition to high-risk sub-projects, the Bank do not finance several types of sub-projects that are in the WB's negative listing (see Annex 4).

Environmental Assessment and defining an EA tool

⁶¹ Environmental assessment in the Kyrgyz Republic is founded on two subsystems: (i) OVOS (the Russian acronym for "Assessment of Environmental Impacts"), and (ii) Ecological Expertise (State Environmental Review, SER). Based on a "list", project screening is done to determine whether a project is the subject to environmental assessment or not. For cases that this is required, an OVOS is conducted by an OVOS consultant hired by a Project Proponent. The environmental assessment proceeds the EIA documents which will be subjected for further reviews.

Subprojects with significant environmental risk will require a site-specific environmental assessment to identify, assess and prevent potential environmental risks and impacts. Measures to mitigate identified risks and impacts will be included in the design of the ESMP. Depending on the risk level, a site specific ESIA and/or an ESMP for the sub-projects will be prepared by the PIU contracted company.

The purpose of the ESIA/ESMP is to improve the environmental and social implementation aspects of sub-projects by minimizing, mitigating, or compensating for negative effects. For substantial and moderate risk subprojects, the ESMP will consist of a set of mitigation, monitoring and institutional measures that need to be taken during the implementation and operation of the project in order to eliminate adverse environmental and social risks and impacts, and to reduce or mitigate them to acceptable levels. The ESMP also includes the steps and actions required to implement these measures. The PIU(s) will identify a set of responses to potential adverse impacts; (b) define requirements to ensure that these responses are made in an effective and timely manner; and (c) describe the means to meet these requirements (see Annex 6).

For low risk subprojects, which may have little environmental and social impact, and which are typical for small construction and rehabilitation investments, an ESMP checklist will be prepared. The ESMP checklist will consist of three sections: (a) Part 1 is a descriptive part ("facility certificate") that describes the features of the project in terms of the physical location, project description, and list of permitting or notification procedures with reference to relevant regulations. Annexes for additional information may be supplemented as necessary; (b) Part 2 includes environmental and social screening in a simple Yes/No SEA format, and identifies mitigation measures; and (c) Part 3 is a monitoring plan for activities carried out during remediation activities (see Annex 1).

For prevention of drinking water contamination, while preparing detailed design for construction of a water supply system in Kajisay, during the Project implementation, necessary environmental impact assessment of the construction site of the proposed water intake and drinking water pipeline will be carried out. The environmental assessment shall identify potential negative environmental impacts during construction, operation and maintenance of sites and propose measures to mitigate such impacts. The results of the impact assessment must be formalized as a section of the project (working draft) "Environmental Protection" and a positive conclusion of the State Environmental Expertise must be obtained.

Moreover, some sub-projects may require the development of detailed water balances, especially those that could impact downstream communities.

Furthermore, biodiversity assessments of the two target basins, with particular emphasis on the potential overlap of project activities with critical habitats or protected areas will be undertaken during the site-specific assessments.

For sub-projects with significant and moderate risk, the EA documents will be disclosed and public consultations will be conducted with project-affected people and stakeholders. In-person consultations should be arranged for all projects that will require site-specific ESIA and ESMP. For this purpose, the EA document should be published in advance (about two weeks) in the Executive Agency and on the websites of the municipalities involved, and the local public administrations and key stakeholders (environmental authorities) should be provided with hard copies. During consultations, sub-project applicants will register all comments and suggestions for improvement of site-specific ESIA/ESMP documents and prepare relevant reports for inclusion in the final version of EA documents. In addition, other specific information relating to project activities and SEA should also be publicly available online on the executive agency's website. In some cases, public consultations can be conducted virtually, receiving relevant questions/proposals online and taking them into account when finalizing the ESMP for sub-projects - such consultations can only be conducted if there is clearly no direct impact on the local population. Expected population - mainly when the proposed activities are located far from residential areas and will not have adverse impacts on environmentally sensitive areas such as wetlands, forests, legally protected areas, etc.

Similarly, in the case of the ESMP Checklist for the restoration of existing facilities, public consultation can be conducted virtually.

8.3. Social assessment procedures

Social screening is a mandatory procedure for identifying possible social impacts, including involuntary resettlement in line with World Bank ESS5. The executive agency will conduct a social screening/due diligence of each proposed sub-project.

The sub-project activities will also be examined for compliance with World Bank criteria for high-risk projects. This will allow to determine the type and scale of potential social impacts and determine which risk category the subproject should be assigned to. Generally, the significance of the impacts and risks introduced into the resulting ESIA categorization will depend on the type and scale of the subproject, its location, the sensitivity of environmental issues, and the nature and magnitude of potential risks and impacts.

Type and scope of subprojects. Subprojects that are considered "High Risk Subprojects" will not be funded. A "high risk" assessment usually entail the following impacts: (a) significant impact on human populations, including settlements and local communities (b) involuntary resettlement and other serious social problems.

Location There are a number of places to consider when deciding whether to assign "high risk" status to a project: (a) in densely populated areas where resettlement may be required or where potential pollution and other disturbances may significantly affect communities; (b) in regions where development activities are active or where conflicts over natural resource allocation exist; along watercourses, in aquifer recharge areas or in reservoir watersheds used for drinking water supply; and on lands or waters containing valuable resources (such as fisheries, minerals, medicinal plants, best agricultural soils). Subprojects located short distances to such areas will be classified as high-risk projects and will not be considered for project support.

Sensibility. Challenging issues may include (but not limited to): involuntary resettlement.

Risk level. Given the scale of the proposed sub-projects, the degree of social impact is expected to be moderate to significant. Therefore, only sub-projects rated "Substantial Risk" or lower will be considered for project support.

In addition to high-risk sub-projects, the Bank do not finance several types of sub-projects that are in the WB's negative listing (exclusion list).

Accordingly, non-eligible subprojects/ activities which will not be financed by the WB, and therefore excluded from the scope, are listed below:

- a) Manufacture or trade in any product or activity that is illegal under the laws or regulations of the host country or international conventions and agreements or subject to international bans, such as pharmaceuticals, pesticides / herbicides, ozone depleting substances, PCBs, wildlife, or controlled products within Cities.
- b) Manufacture or trade in arms and ammunition.
- c) Production or sale of alcoholic beverages (other than beer and wine).
- d) Manufacture or trade of tobacco.
- e) Gambling, casinos and similar businesses.
- f) Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment if the IFC considers the radioactive source to be trivial and / or is protected accordingly.
- g) Manufacture or trade in unbound asbestos fibers. This does not apply to the purchase and use of a bonded asbestos-cement pavement where the asbestos content is less than 20%.

- h) Drift net fishing in the marine environment using nets exceeding 2.5 km. in length.
- i) Any sub-project that may cause long term, permanent and/or irreversible adverse impacts on Natural Habitats/Critical Habitats such as alteration of environmentally important areas, including wetlands, native forests, grasslands, and other “critical” natural habitats and ecosystem services.
- j) Any sub-project that will have impacts on buildings registered as Cultural Heritage.
- k) Any sub-project which would be classified as “High Risk”⁶²[\[1\]](#) in terms of environmental and social risks.
- l) Any subprojects that cause significant impacts on human populations, including settlements and local communities
- m) Any subproject that may have significant adverse social impacts and may give rise to significant social conflict.
- n) Any subproject that may involve high risk/impact land acquisition, involuntary resettlement or restrictions of access or adverse impacts on cultural heritage.
- o) Any subproject that results in direct emissions of pollutants that are large enough to cause degradation of air, water or soil, endangered species and “critical” habitats;
- p) Any subproject that causes large-scale physical disturbance of the facility and / or its surroundings;
- q) Any subproject that causes the extraction, consumption or conversion of significant amounts of forests and other important natural habitats, including terrestrial and underground and aquatic ecosystems;
- r) Any subproject that causes change in the hydrological cycle;
- s) Any subproject involves hazardous materials in excess of incidental quantities; and
- t) Any subproject causes involuntary displacement of people and other serious social unrest.
- u) New canals or structures that will allow increases in the abstraction and supply of irrigation water are going to be constructed
- v) Any subprojects involve development of new irrigation areas will be financed.
- w) Any works or activities that will exceed the capacity of original systems, change their location, or alter or expand their scope and extent to make it appear new or different systems.
- x) Any subproject that involves additional water withdrawals related to rehabilitation of the irrigation systems
- y) Any subproject with impacts on critical habitats

Screening sub-project activities and defining an ESIA tool

Subprojects with significant risk will require a site-specific environmental and social impact assessment (ESIA) or ESMP to identify, assess and prevent potential environmental and social risks and impacts. Mitigation measures of identified impacts and risks will be included in the draft ESMP checklist. A site specific ESIA and an ESMP for the risk sub-projects will be prepared by the PIU contracted company. For the subprojects with potential resettlement impacts will be prepared RAPs which to be implemented prior to start civil works. Roles and responsibilities of all parts are given below in the Table 27.

Table 27: Roles and Responsibilities

Responsible	Responsibilities	Note
Preparation stage prior to project implementation launch		
WRS PIU under MoA KR and DCEI PIU under Gosstroy	1) Preparation of the Environmental and Social Management Framework (ESMF) 2) Public awareness about project and social and environmental activities in project preparing process.	
The World Bank	Providing no-objection to the ESMF	
LSGAs, WUAs, RPADWC	Organization and participation in proposed subproject public consultations.	
Preparation works for construction		

WRS PIU and DCEI PIU	1) Hiring of Consultant for the preparation of project design for subprojects in compliance with environmental regulations of the Kyrgyz Republic and preparation of ESA and ESMP considering the World Bank requirements. 2) Coordination of consulting company's works on developing of ESA and ESMP, as well as preparation of subprojects design. 3) Public awareness on project's impacts for social and ecological environmental during project implementation and mitigation measures for impacts.	
The World Bank	Providing no-objections for ESA and ESMP for each subproject	
Consulting company	1) Development of the project design, including a section on Environmental Protection for each project. 2) Preparation of ESA and ESMP. 3) Approving documents with the environmental protection body and receiving positive State environmental expertize. 4) Receiving State expertize for construction.	
Specially authorized state body on Environmental Protection	Reviewing the project design for each subproject and preparing the conclusion of the State Construction Expertise.	
Specially authorized state body on Architecture and Construction.	Reviewing the project design for each subproject and preparing the conclusion of the State Environmental Expertise.	
LSGAs, WUAs, RPADWC	Organizing and participating in public awareness.	
	Project TA and studies	
WRS PIU and DCEI PIU, Consulting company	1) Hiring of Consultant for the implementation of TA and Studies. 2) Coordination of consulting company's works on TAs and studies to ensure proper consideration of ESHS risks	
	Operation and Maintenance Phase	
WRS, DCEI and their territorial units	Organization of the work of the facilities built by the project.	

9. INSTITUTIONAL ARRANGEMENT AND CAPACITY FOR IMPLEMENTING THE ESMF

9.1 Project Implementation Unit

The project will be implemented by PIUs under the WRS and DCEI. PIUs will ensure the implementation of the project in compliance with the requirements of the WB environmental and social standards. Both PIUs will maintain one Environmental Specialist with experience in OHS, one Social Specialist, who will also be responsible for gender-based violence (GBV) as part of the Project implementation team. Additional staff on short-term or long-term assignment as necessary will be mobilized to manage the E&S risks in accordance with the ESSs and the ESMF institutional assessment/needs will be mobilized.

The PIUs mandate is to coordinate policies and investments in sustainable natural resource management, climate change mitigation and adaptation, environmental monitoring, and awareness-raising. The executive agency, represented by the WRS and DCEI, will promote key aspects of landscape restoration efforts across the country and support a range of activities designed to address degradation factors and seize opportunities to improve sustainable land management.

The functions of WRS and DCEI in project implementation. The WRS PIU has the environmental and social development specialists with extensive experience responsible for all environmental (including OHS) and social issues, such as environmental and social assessment, supervising preparation of site-specific ESIAs/ESMPs, monitoring, and reporting. Both of them participated in the WB ESF trainings.

The DCEI has experience with projects financed by other international financial institutions but have no experience in preparing and implementing the WB ESSs.

The team of the two PIUs will have overall responsibility for updating, adopting and implementing the project, including the various communication mechanisms, their tentative timelines, roles and responsibilities, and the resources allocated for the project. The ESMF introduces other partners and project participants and describes their functions and roles in project implementation. The detailed Beneficiaries and Contractors' responsibilities are shown below in the Table 28, whereas detailed roles and responsibilities of other parties involved in project ESMF implementation are highlighted in Section 8 and Table 27.

Table 28. Beneficiaries and Contractors' responsibilities

Responsible	Responsibilities	Note
Construction period		
WRS PIU and DCEI PIU	1) Recruiting construction companies for each subproject. 2) Recruiting a company for technical supervision over the project implementation. 3) Monitoring over the works of the construction companies on compliance of the ESMP. 4) Semi-annual reports to the WB on performance of the activities envisaged in the ESMP. 5) Public consultations and grievance redress 6) Trainings for construction and supervision companies. 7) Notification to WB in case of ES incident per the ESCP requirements 8) Development and implementation of operation and maintenance phase ESMP/ procedures for their respective Components 1.1 and 1.2	
Construction companies	1) Preparation of contractors ESMPs that are costed, with enough budget to mitigate E&S risks. 2) Construction of subprojects 3) Performance of social and environmental activities and activities specified in subproject ESMP and all ESHS requirements in the construction contract. 4) Responsible for compliance of the social and environmental requirements. 5) all Contractors will be required to provide reports on ESMPs' implementation and Occupational Health and Safety issues to their employers- as stated in ESCP 6) immediately notify their client in case of ES incident - as implied in ESCP 7) prepare OHS Management Plans, commensurate with the risks and impacts of sub-projects. 8) adopt and implement a subproject LMP consistent with the Project LMP and ESS2. 9) Codes of conduct	

Company responsible for technical supervision over the construction works conducted	1) Supervision over the technical performance of the construction works 2) Supervision over the performance of the social and environmental activities in subproject ESMP and all all ESHS requirements in the construction contract. 3) Providing to the PIUs the monthly reports on work progress of the construction companies and performance of the ESMP.	
State inspection on environmental control	1) Controlling and monitoring over the compliance of the environmental activities during construction works at subprojects' sites.	
LPGA, WUA, RPAWDC	Registration and consideration of the citizens' grievances and requests.	

9.2. PIU institutional capacity building activities

SEP tools require specific knowledge of the beneficiaries and all project participants at every stage of the project. To ensure effective project implementation and a clear understanding of the environmental and social risk management requirements under the World Bank's ESF, this project offers a training plan. The program provides training in both the general principles of World Bank environmental and social policy and relevant national legislation, as well as some specific aspects relevant to this project. It is planned to conduct training and provide information on topics such as the implementation of the ESMP, reporting on the ESMP.

Given the specific nature of the project, a wide range of planning activities, it is necessary to increase the capacity of the Executive Agencies to meet the new requirements of the WB ESS.

For this purpose, prior to the start of the physical activities of the project, the PIU should hire a Consultant with knowledge of national environmental and social management requirements, as well as substantial knowledge of the World Bank ESSs requirements, who will develop training materials and conduct the training itself. The training will include the basic requirements of the World Bank, national OHS (Occupational Health and Safety) risk management rules and procedures, and case studies in this regard. All developed training materials after the first series of trainings by the Consultant will be transferred to the Executive Agencies for further use.

Discussions with stakeholders revealed that it would be useful to align the content of the national environmental assessment procedures and the content of the EA report with the WB requirements for the ESMP. In particular, the inclusion of the ESMP in the national EA report will simplify the process of preparing environmental documentation.

The project capacity building proposal on environmental and social risk management will cover the following activities given in the Table 29.

Table 29: Preliminary training plan for environmental and social standards

	Training title	Time and estimated duration	Target group	Responsible	Projected cost
1.	Review of the World Bank ESSs and their implementation during the project cycle. National environmental requirements in the preparation and	During the first year of the Project Duration - 0.5 day.	PIU staff including regional project office staff	Consultant	US \$1000

	implementation of projects				
2.	Implementation of ESMF, ESMP, RF, RAP, LMP, SEP, GM	Before selecting subprojects Duration - 2 days.	PIU staff including regional project office staff	Consultant	US \$2000
3.	Implementation of ESMF, ESMP, RAP	Before selecting sub-projects Duration - 2 days.	Local stakeholders in the regions	Consultant	US \$1000
4.	Environmental and social sensitivity of the project area: ESIA/ESMP	Immediately after signing the contract	Contractors	Consultant	US \$2000
5.	Reporting on E&S performance and compliance	During the first six months of the Project Duration - 0.5 days.	IA staffing, including regional project office staff, PTC members	Consultant	US \$1000
	TOTAL				US \$10000

In addition, training will be provided by WBs Task Teams during project implementation to relevant staff of PIEs and other involved agencies within the first year of the project implementation, in order of relevance, followed by, at minimum, annual refresher trainings as needed throughout project implementation. This training will cover:

- ESF and related standards.
- Screening and preparation of site-specific ES instruments and specific aspects of environmental and social assessment, supervision and monitoring.
- Relevant occupational health and safety issues including COVID-19 precautions.
- Incidence reporting and root cause analysis.
- Gender Action Plan, SEP and GM implementation.
- Labor Management Procedures.
- Security and conflict risk assessment and management
- Prevention of and response to sexual exploitation and abuse, and sexual harassment.

Moreover, training for project workers is expected to be delivered by the contractors at the commencement of engagement of project workers, followed by, at minimum, one annual refresher training. Training will include:

- Basic E&S and OHS risk management.
- Occupational health and safety including on emergency prevention and preparedness and response arrangements to emergency situations.
- Community Health and Safety.
- COVID-19 infection safety awareness, community health and safety.
- Security and conflict risk assessment and management.
- SEA/SH risk prevention and Labor Management Procedures.
- Code of Conduct.

10. MONITORING AND REPORTING ACTIVITIES

10. 1. General requirements for environmental and social monitoring and reporting

Environmental and social monitoring in the implementation of sub-projects must contain information on the key environmental and social aspects of subprojects, their impact on the environment, the social consequences of impacts and the effectiveness of measures taken to mitigate impacts. This information allows the PIUs ESF staff /local officials to monitor the implementation of environmental and social measures, evaluate the effectiveness of mitigation measures, and allows for timely corrective action to be monitored, how often, where, and who should be monitored.

The implementation of environmental protection and OHS measures will be monitored by the environmental specialist of the PIUs and at the local level. Representatives of the environmental authority may also be involved in the monitoring. The goal is to verify the main points of compliance with the ESMP, the progress of implementation, the amount of consultation, and the involvement of local communities. A standard checklist from the evaluation studies will be used for the activity report. An independent environmental, health and safety audit will be conducted in the medium term of the project and at the end of the project. Audits are necessary to ensure that (i) the ESMP has been properly implemented and (ii) mitigation measures have been identified and implemented appropriately. The audit will be able to identify any revisions to the ESMP approach to improve its effectiveness.

Part of the social risk management measures will be carried out on an ongoing basis by the social development specialist of the PIUs to ensure that there are no unintended consequences during construction work on land, production assets, illegal users, people's livelihoods, etc. Monitoring will also cover health and labor issues, as well as stakeholder engagement activities. If some problems are identified, mitigating measures will be proposed in progress reports or in individual corrective action plans (CAPs) (details are provided in the environmental and social reporting section below).

10.2. Environmental and social monitoring

In order to ensure the implementation of the environmental and social measures specified in the subproject specific ESMP, the subproject ESMP will include specific monitoring plan with identified monitoring indicators/variables and corresponding limits. Monitoring should be carried out as follows:

- Visual monitoring - during the construction phase of sub-projects, environmental and social specialists must constantly monitor the implementation of the ESMP. This will be achieved through monthly inspections by specialists of construction / reconstruction projects throughout the construction period.

Contractors' obligations, non-compliance action and remedies will be included in the works contracts. If specialists observe a violation to the ESMP implementation, they will record these violations and request the contractor to rectify them. Additional measures, such as suspension of the works, or withhold of payments will be managed as per the works contracts terms.

It is recommended to use special checklists for monitoring, which can be compiled with the attachment of photos from the monitoring site.

For all facilities, environmental and social experts check the timeliness of contractors' reports on discharges into water bodies, emissions into the atmosphere and solid waste, which contractors must periodically submit to regional committees on ecology and environmental protection.

- Instrumental monitoring of environmental quality, e.g. air and water quality. Given the types of activities that will be implemented as part of this Project, instrumental monitoring cannot be conducted. However, in the case of complaints of violations or nuisances from the local population, instrumental measurements of air or water quality should be carried out by an environmental specialist through the

involvement of a certified laboratory. If the national standards are exceeded, the contractor shall take additional measures to reduce the identified exceedances to compliance with the standards.

Potential negative environmental and social impacts will be prevented or mitigated during the construction and operation phases. Monitoring is based on impact/mitigation/monitoring issues as defined in the ESMP and/or subproject ESMP checklists. Visual monitoring will be done through weekly audits of environmental performance by contractors throughout the construction period.

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

10.3. Reporting on environmental and social activities

Environmental and social indicators, including monitoring, must be properly documented (registered) and reported. All Contractors are legally required to have occupational safety and health log and accident book on sites, for recording details of any accidents that occur at construction sites. This is a requirement is under national law for construction projects. In the case of instrumental monitoring, it is necessary to keep a log of environmental monitoring data.

For sub-components related to construction/rehabilitation, it is recommended that contractors develop a format (checklist) for site inspections with the help of the contractor to streamline the environmental and social oversight process prior to the start of work. The format could be in the form of a checklist with a list of mitigation measures to be implemented on construction sites, the status of their implementation and some explanation of the implementation status, if necessary. On a monthly basis, the contractor submits summary reports on the implementation of the ESMP. The list of measures that are checked by the environmental and safety specialists during the site visit should correspond to the measures specified in the ESMP for the subproject being monitored. Information on the results of construction/rehabilitation monitoring should be provided to local specialists of the Engineering Groups on a quarterly basis. Based on semi-annual reports prepared by the PIU specialists, the PIUs prepares a summary report on ESMP implementation, which will be included in the progress reports and submitted to the World Bank.

Monitoring reports during project implementation should include information on key environmental and social aspects of project activities, especially with respect to environmental impacts and the effectiveness of mitigation measures. Using this information, the PIUs and the World Bank be able to assess the success of mitigation measures as part of project oversight and allow corrective action to be taken if necessary.

ESMP subproject monitoring section is responsible to provide the following:

- (a) comprehensive data on monitoring measures, including parameters to be measured, methods to be used, sampling locations, frequency of measurements; and
- (b) monitoring and reporting procedures to: (i) ensure early identification of conditions requiring mitigation measures; and (ii) provide information on the progress and results of mitigation.

The PIUs will provide summary information on ESMF implementation and the sub-project environmental and social activities as part of the progress reports and submit them to the WB every six months.

If social monitoring has identified any impacts, they need to be mitigated immediately. If there is an impact on land, production assets, illegal users, people's livelihood, etc., then the construction work must be stopped. A Corrective Action Plan (CAP) should be developed. The CAP contains information on the sub-component of the project, construction work status, types of impacts and social impact assessment, proposed mitigation measures. CAP is prepared by the subcomponent performer and approved by the relevant PIU. All unanticipated subproject impacts that occur outside the right-of-way should be

compensated/mitigated by the Contractor. This should be reflected in the tender documents. All impacts in the right-of-way should be compensated by the subproject contractor.

The PIU M&E Specialist is responsible for the overall information gathering on progress and results. It is postulated that semi-annual reports and quarterly reports be submitted to the WB. These reports should include information on implementation and progress (success), as well as financial reports, project implementation reports, social audit meeting minutes, and feedback and complaints received. The PIU is responsible for compiling the completion report. All environmental and social standards performance are monitored by the PIUs specialists. Despite minor social impacts, potential negative impacts must be prevented or mitigated during construction and operation.

The environmental and social monitoring system starts from the stage of preparation of a sub-component of the project through the operation phase to prevent negative impacts of the project and monitor the effectiveness of mitigation measures. This system helps the WB evaluate the success of mitigation as part of project oversight and allows an action to be taken when necessary. The monitoring system provides technical assistance and monitoring, where necessary, early detection and follow-up of mitigation conditions.

10.4. Occupational Health and Safety (OHS) issues

OHS issues will be covered in all supervision and monitoring activities. This include checking whether there have been any incidents or accidents on the subprojects, checking logs and the availability and use of protective and preventative equipment, and workers training and records. Respectively, the ESF sections of all progress reports will include specific section on OHS implementation.

The PIU will also ensure that at the project launch workshop and in the operational manual contain adequate provisions for occupational health and safety.

Notification of incidents and accidents will be as follows:

- a. PIUs shall promptly notify the Association of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers. The notification shall be no later than 48 hours after taking notice of the incident or accident.
- b. PIUs shall provide sufficient details regarding the incident or accident, indicating immediate measures taken to address it, and include information provided by any contractor and supervising entity, the injured party and regulatory authority, if necessary and as appropriate. Subsequently, as per the Association's request, prepare a report on the incident or accident and propose any measures to prevent its recurrence within an agreed timeframe. An incident or accident report, acceptable to the Association, shall be submitted within 30 days after the occurrence of the incident or accident.
- c. Other incidents and accidents not subject to immediate notification and reporting in accordance with this provision, shall be included in the regular Project reports and throughout the project implementation.

10.5. ESMF implementation budget

An estimated budget for the implementation of the ESMF is provided below, together with relevant budget items and costs.

Table 30. Budget Items and Estimated Costs

Budget Items	Estimated Costs (\$)
Hiring of PIU Individual Specialists	24000
Preparation of the Environmental and Social Instruments	15000
PIU Monitoring Activities (for 36 months)	15000
Training and awareness activities to be provided for PIU, stakeholders/beneficiaries, and Contractor's ESHS Specialists (see Table 24 for details)	53,000
Total	107,000

11. GRIEVANCE MECHANISM

In accordance with the Environmental and Social Standard (ESS) 10 requirements of the World Bank, the PIUs under WRS and DCEI will introduce and apply its Grievance Mechanism (GM) for relevant project components/activities. GM is a process of obtaining prompt, objective information, assessing, considering, resolving complaints (applications, proposals, complaints, inquiries, positive feedback) related to the Project implementation. GM will allow streamlining the process of receiving, considering, and resolving complaints that may arise because of implementation of the project activities. The Project will also launch a feedback mechanism (FbM), as one of the main tools to prevent social risks/conflicts.

GM and FbM are necessary so that direct and indirect beneficiaries of the Project have an opportunity, at all stages of project implementation, to submit their complaints, or wishes for improving the Project activities or proposals for eliminating problems without any costs, and with a guarantee of their timely solution. Applications directly related to the Project implementation are subject to consideration. Appeals or complaints can be both individual and collective. This mechanism also allows you to submit and review anonymous complaints. 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 Project implementation at all implementation stages. This GM will be applied for the entire Project, however, the emphasis will be on components 1, since the direct negative impact from the Project activities will be received by residents/population living in the selected project areas, and an issue of social, environmental, and other nature may arise during rehabilitation or (re)construction, selected irrigation and drinking water supply and sanitation systems.

11.1. GM objectives

- Registry, inspect, consider, tracking and respond to complaints received or appeals related to social, environmental and any other issues related to the Project activities;
- Come to mutually coordinated/agreed solutions that are satisfactory for a (sub)project and those affected by it, and resolve any complaints on the spot, in consultation with the affected party;
- Facilitate the development process at the local level, while maintaining transparency, and establish the degree of accountability towards PAP;
- Establish feedback;
- Allow vulnerable individuals and/or groups to express their views.

11.2. Complaints review and resolution process

Table 31 provides detailed information on the levels, timing and persons responsible for considering appeals and complaints.

Table 31. Grievance Management Matrix

Claim procedure	Complaint addressed	Submission form	Complaints Management Procedure	Consideration period (from the date of registration)
1 level	Local Commission under WUA / RPADWC or AOs to deal with complaints.	Verbally or telephonically	- Registration of a complaint in the register of complaints with date and time; - Registration of the complaint is carried out by the secretary of the local commission; - In case of dissatisfaction with the complaint, the complaint is redirected to the central level.	5 working days
2 level	Centralized: at the PIU level - a grievance commission (to be created by the WRS and DCEI director orders from the PIU staff, representatives of the IA and other persons, as agreed	In writing	- Registration of a complaint in the register of complaints with date and time; - Registration of the complaint is carried out by a specialist in social issues.	14 working days

- **First level:** The first step in the grievance process will be the verbal or written appeal of the aggrieved party (hereinafter referred to as the AP) to the local commission. The affected person must file a complaint on the issue related to the project activities in writing to the local commission under the WUA/RPADWC or AO to deal with grievances, consisting of a project representative, WUA/RPADWC and AOs. The grievance is registered by the secretary of the local grievance commission. The term for consideration of complaints by the commission is 5 working days. If at the first level the complaint is not satisfied, then the complaint will be considered at the central level.
- **Second level – Central level:** At the central level, the complaint lodged must be signed and dated by the aggrieved party. The complaint received will be registered in the log of requests and complaints of the PIU by a social specialist, reviewed by a commission, which will include specialists from the PIU on social and environmental issues/component coordinators, the PIU management and representatives of the Executing Agency and other persons as agreed. At this level, the Project Social Specialist will be in direct contact with the AP. The project will determine the validity of the claim, notify the complainant that he/she will be assisted. A response will be provided within 14 business days, during which meetings and discussions with the AP will be held. The project will assist the APs at all stages to resolve the complaint and ensure that their complaint is dealt with in the best possible way.
- In the event of an objection to decision of the second level (central) commission, AP may appeal to the court. The grievance process is outlined in Table 29 Grievance Management Matrix.

The project GM is not an obstacle to going to court in accordance with the legislation of the Kyrgyz Republic. In cases where the resolution of the appeal requires a special check (examination), the request for additional materials or the adoption of other measures, the terms for the resolution of complaints can be exceptionally extended, but for no more than 30 calendar days in accordance with the Law of the Kyrgyz Republic # 67 dated May 4, 2007, "On the Procedure for Considering Citizens' Appeals".

The project will consider anonymous complaints and take action on it.

Complaints register. All incoming complaints or appeals are subject to registration in the Complaints Log, information from which is duplicated in the electronic database. The database should contain, as minimum, relevant information about the date of filing, registration number, essence of an issue, person in charge, timeline for resolving a problem and feedback (positive/negative). According to the registration number, the specialist monitors the progress of consideration through the database.

An appeal or complaint should be addressed through the following channels:

WRS contact details

By mail to the WRS PIU: 4a, Toktonaliev str., office 104
By phone to WRS PIU: 0312 54-49-72
By e-mail to the WRS PIU: crwsp@elcat.kg
On the web platform of the WRS PIU, by filling out the online application form: <https://nwrmp.water.gov.kg>

DCEI contact details

By mail to the DCEI PIU: 28, Manas avenue
By phone to the DCEI PIU: 0312 61-03-05
By e-mail to the DCEI PIU: drpv00@mail.ru
On the web platform of the DCEI PIU, by filling out the online application form: <http://tynyksyy.kg>

11.3. WB Grievance Redress Service

Communities and individuals who believe that a World Bank-supported project is affecting them negatively can also file complaints directly with the Bank through the Bank's Grievance Redress Service (GRS). (<http://projects-beta.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>). A complaint (grievance) can be filed in English, Kyrgyz or Russian, although consideration of complaints that are not in English will take additional time. A complaint can be filed with the Bank's GRS through the following channels:

- By e-mail: grievances@worldbank.org
- By Fax: +1.202.614.7313
- By mail: The World Bank, Grievance Redress Service, MSN MC10-1018, 1818 H Street Northwest, Washington, DC 20433, USA
- To the World Bank office in Kyrgyz Republic, at the address: 120, Moskovskiy str., Bishkek, Kyrgyz Republic, bishkek@worldbank.org, Phone: +996 312 625262

The complaint (grievance) must clearly state the adverse impact believed to be caused or likely to be caused by a Bank-supported project. It should, as far as possible, be supported by available documentation and correspondence. The applicant can also indicate the desired outcome of the complaint (grievance). The complaint (grievance) must contain the full name of the person, applicant or designated representatives and contact information. Complaints filed through the GRS are dealt with as soon as possible so that problems related to the Project can be quickly resolved.

In addition, communities and individuals affected by the Project can file complaints (grievances) with the World Bank's Independent Inspection Panel, which then determines whether damage has been or could have been caused by the World Bank's failure to comply with its policies and procedures. Complaints (grievances) can be filed with the Inspection Panel at any time after the issue has been brought to the attention of the World Bank and after the management of the bank can respond. For more information on how to file complaints (grievances) with the World Bank's Inspection Panel, visit www.inspectionpanel.org

12. DISCLOSURE OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF) DOCUMENT AND PUBLIC CONSULTATION

12.1. Disclosure of Environmental and Social Management Framework (ESMF)

The environmental and social assessment process was done with the participation of all stakeholders. A draft ESMF document in Russian language was published on the website of the Water Resources Service https://www.water.gov.kg/index.php?option=com_content&view=article&id=449&Itemid=1562&lang=r, on the website of the State Agency for Architecture, Construction and Housing and Communal Services <http://gosstroy.gov.kg/15810-2/>, on the website of the NWRMP-AF https://nwrmp.water.gov.kg/?page_id=8956 on November 30, 2021, with the announcement of the planned public consultations and re-disclosure before negotiation dated February 18, 2022.

In addition, information on planning consultations was also disseminated through the municipalities and administrations of the oblasts participating in the project. As part of the information disclosure process, a number of meetings were held with stakeholders, in particular, officials of rayon and city administrations, public utilities specialists at regional and rayon levels (water supply companies, municipal solid waste disposal companies, city improvement department, Land Cadastre, architecture department, Ministry of Culture, Information and Tourism, etc. During the meeting, the project team discussed with various experts the planned activities within the framework of the project and the implementation of the WB ESSs requirements.

12.2. Public consultation on ESMF

In order to inform stakeholders about the project, the PIU of the WB under the WRS and the DCEI held consultations with stakeholders in the Karadarya-Syrdarya-Amu Darya and Issyk-Kul-Tarim River basins from December 7 to 14, 2021. The data on conducted consultations is given in the Table 32.

Table 32. Information on public consultations conducted

#	Name of oblast	Conducted date	Number of participants, including women
1.	Osh oblast	December 7, 2021	164
2.	Jalal-Abad oblast	December 7, 2021	
3.	Batken oblast, Kadamjai rayon	December 8, 2021	
4.	Batken oblast, Batken city	December 9, 2021	
5.	Batken oblast, Leylek rayon	December 10, 2021	
6.	Issyk-Kul oblast, Bokonbaev and Kadzhy-Sai villages	December 13, 2021	204
7.	Issyk-Kul oblast, Kyzyl-Suu village	December 14, 2021	
	Total		368, of which 132 women

The participants of the public hearings were representatives of the MRBMU, RVKs, rayon WUA support units, heads of the WUA, heads of ayil okmotu, representatives of WUAs, heads of canal sections of the Otuz-Adyr, Shakhimardan, Levaya Vetka, heads of reservoir units, representatives of rayon administrations, deputies of local keneshes, and local population (the list is attached).

The Director of the PIU under the WRS and the advisor to the Director of the State Agency for Architecture, Construction and Housing and Communal Services presented information about the project, shared the information about its components and the proposed work. Specialists of PIU under WRS and DCEI spoke about the environmental and social policy of the World Bank to be applied during the implementation of the project, and focused on requirements of the environmental legislation of the Kyrgyz Republic, environmental and social risks in the implementation of the project and measures to mitigate these risks.

The participants in the hearings actively asked questions, which were answered by the specialists of the PIU under WRS and DCEI.

ANNEXES

ANNEX 1. ENVIRONMENTAL CHECKLIST - FORMS

Form 1. Environmental Checklist

Part 1. *(to be filled in by the beneficiary of the subproject)*

1. Project name:

2. A brief description of the subproject, including: nature of the project, project cost, physical size, area of the facility, location, ownership of real estate, availability of ongoing operations, plans for expansion or new construction.

3. Will the project affect the following environmental parameters during construction or operation? Indicate by checking at what stage the impact will occur and whether mitigation measures are required.

Environmental component	Construction phase	Operational phase	Mitigation measures
Terrestrial environment			
Land and Soil Degradation: Will the project include earthworks?			
Solid waste generation, including toxic waste?			
Pollution of soil and groundwater			
Activities that involve positive or negative effects on Ecosystem Services or Biodiversity			
Air quality			
Does the project provide for emissions of pollutants?			
Water environment			
Amount of water: will the project include water use?			
Water Quality / Pollution: Will the project contribute to surface water pollution			
Socio-economic environment			
Will the project ensure that there is no deterioration in human health, labor safety and unimpeded living of residents near the project area including Traffic and road safety.?			
Does the project require public consultation to address environmental issues and proposals from local residents?			
Social implications			
Activities that may affect Cultural Heritage			

Subproject beneficiary

Environmental Checklist

Part 2. *(to be filled in by the PIU based on the results of the environmental review process)*

1. Environmental category of the subproject (High (H), Substantial (S), Moderate (M) or Low (L)) _ ____
(if the project is in category H, the following points do not need to be completed - the subproject cannot be included in the project)

2. Will the project activities be implemented?

a) in or near sensitive and valuable ecosystems - wetlands, wilderness and endangered species habitats - ____ (yes or no)

b) in or near areas with archaeological and / or historical sites or existing cultural and social institutions - ____ (yes or no)

c) in densely populated areas where resettlement may be required or potential impacts of pollution and other disturbances can have a significant impact on communities - ____ (yes or no)

d) in regions prone to intensive development activities or where there are conflicts in the distribution of natural resources; along watercourses, in aquifer recharge zones or in reservoirs used for drinking water supply; and on lands or waters containing valuable resources (such as fishing, minerals, medicinal plants, basic agricultural soils) - ____ (yes or no)

If "yes" - the subproject will be excluded from the Program.

3 Environmental Assessment Required (yes or no) ____ (the following items should be completed only for Substantial, moderate subprojects)

3. Types of EA documents required (circle required):

a) Partial ESIA including site assessment and Environmental and Social Management Plan (ESMP) for Substantial risk subprojects;

b) Environmental and Social Management Plan for Moderate risk subprojects;

c) ESMP checklists for Low risk subprojects;

d) Draft Environmental Impact Report (for Kyrgyz subprojects of categories 2-4)

e) Environmental Impact Statement (for Kyrgyz Category 2-3 subprojects only)

4. What environmental and social issues are being raised under the subproject?

10. If an environmental and social impact assessment is required, what specific issues need to be addressed?

11. What is the time frame and estimated cost of an ESIA? _____

Conclusion (can a subproject be included in the program and, if so, under what conditions):

Environmental review:

Date:

Environmental Checklist

Part 3. Final Environmental Assessment Checklist *(to be filled in by the PIU based on the review of the proposed mitigation and environmental impact assessment (if required))*

Was an environmental and social impact assessment necessary? (Yes or No) ____ If yes, was it done? ____

Has an Environmental and Social Management Plan been prepared? (Yes or no) _____

Are the mitigation measures to be included in the project implementation adequate and appropriate? (Yes or no) _____

Will the project comply with existing pollution control standards for emissions and waste? (Yes or No) ____ If no, is an exemption necessary? _____

Do you need an environmental monitoring plan? (Yes or No) ____ If so, was it prepared? (Yes or No) ____
Does PIA approve? _____

What are the follow-up actions required by the initiator, PIA and GPI? _____

Has there been a public consultation regarding the potential environmental impacts of the proposed subproject? (Yes or No) ____ Were protocols kept? (Yes or no) ____

Date:

Participants

Project officer:

Date:

Environmental Inspector:

Date:

Environmental Checklist

Part 4. Final Environmental Review Checklist (2)

(to be filled in by the PIU based on the review of the proposed mitigation and environmental and social impact assessment (if necessary))

Is the project documentation completed? If not, what is missing?

Are land and resource use permits required? If so, have they been received?

Are solid waste permits required? If so, have they been received?

Are discharge permits required for wastewater? If so, have they been received?

Is a sanitary inspection required? Has a permit been issued?

Has an environmental assessment been obtained and approved?

Is there a probability of soil degradation or contamination? If so, have appropriate prevention or mitigation measures been planned and envisaged?

Is there a probability for deteriorating water quality or contamination? If so, have appropriate prevention or mitigation measures been planned and envisaged?

Is there a probability for air quality degradation or pollution? If so, have appropriate prevention or mitigation measures been planned and envisaged?

Is there a threat to the biological environment? If so, have appropriate prevention or mitigation measures been planned and envisaged?

Is there a potential for adverse social impact? If so, are the necessary prevention, mitigation or compensation measures planned and envisaged?

Was the level of public participation in design, planning and public consultation sufficient? Was public opinion raised during the consultation process?

What is the desired level, frequency and extent of environmental monitoring during the construction phase?

What is the desired level, frequency and extent of environmental monitoring during the operational phase?

Form 2. Site visit checklist

Project name:

Date / time of visit:

Rayon:

Visitors:

Current activities and history of the facility (site)

- Contact person (name, title, contact information)?
- What area of the facility (site) will be used for the project activities?
- What are the current users of the facility (site)?
- What was the previous purpose of use of the facility (site) (include dates if applicable)?
- Are there any intruders or illegal users of the facility whose livelihoods or assets will be affected by the project?

Environmental situation

- Are there any sensitive sites nearby (nature reserves, cultural sites, historical sites)?
- Are there watercourses at the site?
- What kind of terrain or slope?
- Is the site susceptible to flooding, waterlogging or landslides? Are there signs of erosion?
- What buildings are located nearby (e.g., schools, dwellings, industrial facilities) and land use? Estimate the distances.
- Will the proposed facility have an impact on transportation or utilities?

Licenses, permits

- Does the facility require licenses or permits to carry out the proposed activity? Are they available for verification?
- Which environmental or other (e.g., health, forestry) authorities have jurisdiction over the facility?

Water quality problems

- Does the proposed activity use water for any purpose (provide details and estimate the amount)? What is the source?
- Will the planned activity produce any effluent? (estimate the quantity and determine the point of discharge)
- Is there a drainage system in place for surface water or waste water? Is there a plan for existing drainage or septic systems?
- How is wastewater (surface water courses, dry wells, septic tanks) managed?

Soil

- What is the surface of the land (farmland, pasture, etc.)?
- Will the project damage the soils during construction or operation?
- Will the project significantly affect the landscape (drainage of wetlands, change in water flow)

Biological environment

- Describe the vegetation on the site.

- Is there information on rare or threatened flora and fauna in or near the site? If so, will the project have an impact or increase the risk to the species?
- Get a list of vertebrate fauna and common plants of the site (if any).
- Note potential negative impacts on biota if the project is continued.

Visual inspection procedures

- Try to get a map of the site or make a rough draft to mark the details.
- Take photos if allowed.
- Walk as much of the site as possible, including boundaries, to mark adjacent activities.
- Pay attention to any odors, smoke or visual dust emissions, standing water, etc.

ANNEX 2. ENVIRONMENTAL MONITORING PLAN

Project Phase	Parameter	Location	Method/Equipment	Frequency	Objective (applicable criteria or limit)	Costs		Responsibility	
						Organization	Performance	Organization	Performance

ANNEX 3. SOCIAL SCREENING CHECK LIST - FORM

Project name:				
Subproject name:				
Location (Oblast, city, village)				
Infrastructure to be constructed (all types drinking water and irrigation structures):				
Previous Screening (if any) date _____, (mention the reason) _____				
Project/subproject start date: _____				
Project/subproject completion date: _____				
Current Screening date: _____				
Field visit conducted: No, Yes, (add dates and locations in the field) _____				
Description of the Subproject Give a brief introduction to the sub-project and its components, their objectives and benefits. Details about existing conditions of the structures and proposed civil works with scopes. Available design maps earmarking site and proposed activities in order to explain work. Does the subproject include construction work, including construction of new facilities, expansion, modernization, or (re)construction of existing drinking water, wastewater and/or irrigation facilities? Is this sub-project closely linked to any other activity not funded under the Project? Will this sub-project involve any ancillary impact/ activity away from the work site?				
Questions	Yes	No	Not Known	Observations, remarks
Impacts Due to Land Acquisition/Donation				
Is land area needed for the project known? (Provide estimates in the Remarks, including status of ownership, area, type of land use etc.)				
Is the ownership status and current usage of land to be used for the construction known? (provide details in the remarks). Please, add is the site chosen for this work free from encumbrances and is in possession of the subproject implementer?				

Is there any estimate of the land area owned/actually used by private persons/entities which is subject for land acquisition?				
Is there any estimate of the likely number of persons/entities that will be displaced by the Project?				
Is land for material mobilization or transport for the civil work available within the existing plot (Right of Way)? If not, provide the details on that land location, availability etc.				
Would the Project potentially involve temporary or permanent and full or partial physical displacement? (Specify in the remarks what type of displacement is anticipated).				
Would the Project potentially involve temporary or permanent and full or partial economical displacement (e.g. loss of assets or access to resources due to land acquisition/ donation or access restrictions – even in the absence of physical relocation)? (Specify in the remarks what type of displacement is anticipated).				
Is there any impact on illegal land use practices? Are there any non-titled people who are living/doing business on the proposed site/project locations that will be used for civil work? If yes, provide in the Note Section details on any temporary or permanent impact on them?				
If the site is privately owned, can this land be purchased through negotiated settlement?				
Will the land owners donate the land plot for the project?				
Will there be loss of shelter and/or residential land due to land acquisition/ donation?				
Will there be loss of any productive assets due to land acquisition/donation?				
Will there be losses of crops, trees, and fixed assets due to land acquisition/donation?				
Will there be loss of businesses or enterprises due to land acquisition/donation?				
Will there be loss of income sources and means of livelihoods due to the subproject land acquisition/donation?				
Will any social or economic activities be affected by land use related changes?				
Will people lose access to natural resources, communal facilities, services or other assets as a result of land acquisition/donation or project implementation? Provide details in the remarks.				
Will project result in land use restrictions and/or easement rights? Provide details in the remarks.				
Will access to land and resources owned communally or by the state be restricted?				
Will the subproject be located in or near any known cultural heritage sites?				
Is there a territorial dispute between two or more countries over the subproject area, its ancillary aspects and related activities?				
Are there any previous land acquisitions happened and the identified land has been already acquired? Provide details in the Note section.				

Are there any land acquisition happening under this project but without financing of the World Bank? Provide details in the Note section.				
Data on Vulnerable Groups				
Is there any estimate of the likely number of vulnerable groups/persons that will be displaced by the Project?				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? Provide some estimate				
Is the subproject located in or near any vulnerable/sensitive areas, social facilities - such as a residential area or school and the availability of municipal services (irrigation, drinking water, sewage and waste collection services)?				
Whether the subproject is located in or near any known cultural heritage sites?				
Gender				
Is there a likelihood of impacts on gender equality and/or the situation of women and girls?				
Would the Project potentially reproduce discriminations against women based on gender, especially regarding access to assets, opportunities and benefits?				
Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?				
SEA/SH				
Does the project site pose a significant risk of gender-based violence (GBV) and sexual exploitation and abuse (SEA)?				
Is it expected to hire a foreign workers for the subproject purpose which can lead to a labor influx?				
GM				
Does the subproject have a GM, including at the Central level, to which all employees have access and which is intended for quick and effective response?				
Other additional information (as needed)				
Decision on categorization After reviewing the answers above, a sub-project's category is determined				
Prepared by _____ Date _____ Approved by _____ Date _____				

Note: Attach additional information on the project, as necessary. For example, maps, photos, expert conclusions, minutes of meeting etc.

ANNEX 4. Exclusion List

The following activities/ subprojects will not be supported by the project:

- Manufacture or trade in any product or activity that is illegal under the laws or regulations of the host country or international conventions and agreements or subject to international bans, such as pharmaceuticals, pesticides / herbicides, ozone depleting substances, PCBs, wildlife, or controlled products within Cities.
- Manufacture or trade in arms and ammunition.
- Production or sale of alcoholic beverages (other than beer and wine).
- Manufacture or trade of tobacco.
- Gambling, casinos and similar businesses.
- Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment if the IFC considers the radioactive source to be trivial and / or is protected accordingly.
- Manufacture or trade in unbound asbestos fibers. This does not apply to the purchase and use of a bonded asbestos-cement pavement where the asbestos content is less than 20%.
- Drift net fishing in the marine environment using nets exceeding 2.5 km. in length.
- Any sub-project that may cause long term, permanent and/or irreversible adverse impacts on Natural Habitats/Critical Habitats such as alteration of environmentally important areas, including wetlands, native forests, grasslands, and other “critical” natural habitats and ecosystem services.
- Any sub-project that will have impacts on buildings registered as Cultural Heritage.
- Any sub-project which would be classified as “High Risk”⁶³[\[1\]](#) in terms of environmental and social risks.
- Any subprojects that cause significant impacts on human populations, including settlements and local communities
- Any subproject that may have significant adverse social impacts and may give rise to significant social conflict.
- Any subproject that may involve high risk/impact land acquisition, involuntary resettlement or restrictions of access or adverse impacts on cultural heritage.
- Any subproject that results in direct emissions of pollutants that are large enough to cause degradation of air, water or soil, endangered species and “critical” habitats;
- Any subproject that causes large-scale physical disturbance of the facility and / or its surroundings;
- Any subproject that causes the extraction, consumption or conversion of significant amounts of forests and other important natural habitats, including terrestrial and underground and aquatic ecosystems;
- Any subproject that causes change in the hydrological cycle;
- Any subproject involves hazardous materials in excess of incidental quantities; and
- Any subproject causes involuntary displacement of people and other serious social unrest.
- New canals or structures that will allow increases in the abstraction and supply of irrigation water are going to be constructed
- Any subprojects involve development of new irrigation areas will be financed.
- Any works or activities that will exceed the capacity of original systems, change their location, or alter or expand their scope and extent to make it appear new or different systems.
- Any subproject that involves additional water withdrawals related to rehabilitation of the irrigation systems
- Any subproject with impacts on critical habitats

ANNEX 5. OUTLINE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Where an environmental and social impact assessment has been prepared as part of an environmental and social assessment, it will include the following:

(a) Explanatory note

- Briefly discusses important findings and recommended actions.

(b) Legal and institutional framework

- Analyzes the legal and institutional framework of the project within which the environmental and social assessment is carried out, including the issues outlined in ESS1, paragraph 26.
- Compares the existing environmental and social structure of the Borrower and the ESS and identifies gaps between them.
- Identifies and evaluates the environmental and social requirements of any funding organization.

(c) Description of the project

- Briefly describes the proposed project and its geographic, environmental, social and temporal context, including any external investment that may be required (e.g., dedicated pipelines, access roads, electricity, water, housing, and storage of raw materials and products), as well as major suppliers of the project.
- Considering the details of the project, indicates the need for any plan to meet the requirements of ESS1-10.
- Includes a map in sufficient detail showing the location of the project and the area that may be affected by direct, indirect and cumulative impacts of the project.

(d) Initial data

- Provides details of baseline data that are relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability and data sources, as well as information on dates associated with the identification, planning and implementation of the project.
- Identifies and evaluates the extent and quality of available data, key data gaps and uncertainties associated with predictions.
- Based on current information, assesses the area of study and describes the relevant physical, biological and socio-economic conditions, including any changes expected before the start of the project.
- Takes into account current and proposed development activities within the project site, but is not directly related to the project.

(e) Environmental and social risks and impacts

- Takes into account all relevant environmental and social risks and impacts of the project. This will include the environmental and social risks and impacts specifically identified in ESS2-8, as well as any other

environmental and social risks and impacts arising from the specific nature and context of the project, including the risks and impacts identified in paragraph ESS1, paragraph 28.

(f) Mitigation measures

- Identifies mitigation measures and significant residual adverse impacts that cannot be mitigated and, where possible, assesses the acceptability of these residual adverse impacts.
- Identifies graded interventions so that adverse impacts are not disproportionate to the disadvantaged or vulnerable population.
- Assesses the feasibility of mitigating environmental and social impacts; the capital and operating costs of the proposed mitigation measures and their suitability in the local context; and institutional development, training and monitoring of requirements for proposed mitigation measures.
- Identifies issues that do not require additional attention, providing a basis for this definition.

(g) Analysis of alternatives

- Systematically compares possible alternatives to the proposed project site, technology, design and operation, including the “no project” situation, in terms of their potential environmental and social impact.
- Assesses the feasibility of environmental and social mitigation alternatives;

capital and operating costs of alternative mitigation measures and their suitability for local conditions, including institutional, training and monitoring requirements for alternative mitigation measures.

- For each of the alternatives, environmental and social impacts are quantified to the extent possible, including economic value attached where possible.

(h) Estimated measures

- Defines the basis for the selection of a specific proposed project and identifies the applicable ESHGs or, if ESHGs are found not applicable, justifies the recommended emission levels and pollution prevention and reduction approaches that are in line with the GIIP.

(i) Key actions and measures for the Environmental and Social Commitment Plan (ESAP)

- Summarizes the main steps and activities, as well as the time required for a project to meet the requirements of the ESS. This will be used in the development of the Environmental and Social Commitment Plan (ESCP).

(j) Annexes

- List of individuals or organizations that have prepared or contributed to the environmental and social assessment.
- Links / References - contain written materials used, both published and unpublished.
- Minutes of meetings, consultations and surveys with stakeholders, including affected people and other stakeholders. The minutes identify the means of this stakeholder engagement that was used to obtain the views of affected people and other interested parties.
- Tables presenting relevant data referred to or summarized in the main text.

- List of related reports or plans.

ANNEX 6. INDICATIVE ESMP OUTLINE

The ESMP consists of a set of mitigation, monitoring and institutional measures that need to be taken during the implementation and operation of the project in order to eliminate adverse environmental and social risks and impacts, and to reduce or mitigate them to acceptable levels. The ESMP also includes the steps and actions required to implement these measures. The borrower (s) will identify a set of responses to potential adverse impacts; (b) define requirements to ensure that these responses are made in an effective and timely manner; and (c) describe the means to meet these requirements.

Depending on the project, the ESMP can be prepared as a separate. The content of the ESMP will include the following:

(a) Impacts and *Mitigation measures*

- The ESMP identifies all expected adverse environmental and social impacts and measures/actions according to a mitigation hierarchy that reduce potentially adverse environmental and social impacts to acceptable levels.

The plan will include compensatory measures, if applicable. In particular, the ESMP:

- (i) identifies and summarizes all expected adverse environmental and social impacts (including those related to indigenous peoples or involuntary resettlement);
- (ii) describes - with technical details - each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of unforeseen costs), together with designs, equipment descriptions and operating procedures, as appropriate;
- (iii) This may be especially true in cases where the Borrower is employing contractors and the ESMP specifies the requirements to be followed by the contractors. In this case, the ESMP should be included as part of the contract between the Borrower and the contractor, together with the relevant monitoring and enforcement provisions.
- (iv) assesses any potential environmental and social impacts of these measures; and
- (v) takes into account and aligns with other mitigation plans required for the project (e.g., involuntary resettlement, indigenous peoples or cultural heritage).

(b) *Monitoring*

- The ESMP defines the monitoring objectives and the type of monitoring linked to the impacts identified during the environmental and social assessment and the mitigation measures described in the ESMP.

In particular, the monitoring section of the ESMP provides (a) specific description and technical details of the monitoring measures, including the parameters measured, the methods used, the sampling locations, the frequency of measurements, the detection limits (where applicable), and the definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that warrant specific mitigation measures, and (ii) provide information on progress and mitigation results.

(c) Capacity building and training

- To support the timely and effective implementation of the environmental and social components of the project and mitigation measures, the ESMP relies on an environmental and social assessment of the existence, role and capabilities of responsible parties locally or at the level of departments and ministries.
- In particular, the ESMP provides a specific description of the institutional arrangements
 - to determine which party is responsible for implementing mitigation and monitoring measures (e.g., for operations, supervision, enforcement, monitoring implementation, corrective actions, funding, reporting and training).
- To strengthen the environmental and social management capacity of the implementing authorities, the ESMP recommends the creation or expansion of stakeholder responsibilities, staff training and any additional measures that may be needed to support the implementation of mitigation measures and any other recommendations for environmental and social assessment.

(d) Implementation schedule and cost estimate

- For all three aspects (mitigation, monitoring and capacity building), the ESMP provides (a) a timetable for the implementation of the measures to be carried out by the project, showing phasing and coordination with the overall project implementation plans; and (b) capital and operating cost estimates and sources of funds for the implementation of the ESMP. These figures are also included in the tables for the total project cost.

(e) Integration of the ESMP into the Project

- The Borrower's decision to proceed with the project and the Bank's decision to support it are based in part on the expectation that the ESMP (either separately or as part of the ESCP) will be effectively implemented. Consequently, each of the measures and actions to be implemented will be clearly defined, including the individual mitigation and monitoring measures and actions, as well as the institutional responsibilities associated with each of them, and the costs of this will be integrated into the overall planning, design, budget and project implementation.

- (v) List of related reports such as resettlement plans or social assessments that have been prepared for the project.

ANNEX 7. MINUTES OF PUBLIC CONSULTATIONS

**Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project
Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin
Osh city 7 December 2021**

Attended by:

Zhamaldinov Z. - Plenipotentiary Representative of the President of the Kyrgyz Republic in the Osh oblast

Abibillaev R.A. - Head of the Osh OVK;

Torogeldiev U. T. - PIU Director under the WRS of the Ministry of Agriculture of the Kyrgyz Republic;

Neronova T.I. - PIU WRS Environmental specialist;

Orozalieva S. M. - PIU WRS public affair and social specialist

Batkulova A.O. - PIU WRS payout specialist.

31 people took part in the public hearings: representatives of the OVK, RVK, WUA rayon support units, representatives of WUAs feeding from the Otuz-Adyr main canal of the Kurshab river system of Osh oblast, heads of sections of the Otuz canal -Adyr, heads of reservoir departments, representatives of rayon administrations, the public and other interested participants (the list is attached). One woman took part in the hearings.

Chairman of meeting

Torogeldiev U. T. –Director of PIU WRS made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the Department of Drinking Water Supply and Sewerage in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

Neronova T.I. - PIU WRS environmental specialist told the participants of the public hearings about the requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's policy on environmental protection during the implementation of the project.

The objective of an environmental assessment is to identify the significant environmental impacts of a proposed project (positive and negative), and identify appropriate preventive and mitigation measures to prevent, minimize or eliminate any expected irreversible impact.

The proposed project is adaptation to climate change. The project will have a positive impact on the environment, improve the population's access to piped drinking water and sanitation. The environmental assessment identified many positive project impacts. Namely, this project aims to reduce water losses in irrigation systems, supply clean drinking water to residents' homes, improve water management, increase agricultural productivity and improve soil fertility.

However, during construction work, there may be some potential negative environmental impacts in the project areas, which need to be paid attention to, preventive actions taken and appropriate mitigation measures taken during planning, development, construction, operation and maintenance. The potential negative impacts are relatively minor, and the positive economic, social and environmental benefits far outweigh them in environmental assessments. A discussion of these impacts is provided below.

The main impact that can be provided as a result of construction works:

- 1) Soil contamination at the construction site
- 2) Contamination of groundwater at the construction site

- 3) Deterioration of the landscape, destruction of the natural habitat of the animal world, change in the local drainage network
- 4) Air pollution and worker / public exposure from traffic and heavy equipment

To prevent or mitigate the negative impact of construction, an ESMP is drawn up for each rehabilitation facility. It includes a mitigation and monitoring plan for both the construction phase and the operation and maintenance (O&M) phase.

All risks of the construction phase are easily controlled and eliminated. They can be minimized with proper design of mitigation measures and control of the Contractor during the execution of the work.

From the risks of the O&M phase, the risk of deterioration of the landscape and destruction of the natural habitat of the animal world during the cleaning of earthen canals and drains is obvious and easily controllable. The risks of contamination of surface and groundwater with agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with the existing 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. In addition, compliance with the sanitary protection zones of drinking water supply systems and organized wastewater treatment will be required. The need for mitigating measures at the O&M stage is determined precisely in the process of environmental monitoring.

Orozaliev S.M. - PIU WRS Social Specialist told the participants of public hearings about the main social risks of the project:

- (i) in terms of land acquisition and involuntary resettlement, necessary in connection with (a) new construction and / or rehabilitation of water supply and sewerage infrastructure and (b) rehabilitation and modernization of irrigation infrastructure.
- (ii) problems of accessibility and fairness of water tariffs (including connection costs), water permits and irrigation service charges, especially for low-income and vulnerable groups of the population.
- (iii) Low institutional capacity to deal with regulation, planning and supervision of tariffs / charges and permits.
- (iv) Other risks.

She spoke in detail about the Environmental and Social Standards of the World Bank applicable to the project, in particular, dwelled on the ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure.

Thus, ESS 5 is considered appropriate because of the 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 certain activity areas. For example, they may include sanitation, water supplies, irrigation and drainage systems, and other transformative investments in improving the livelihoods of beneficiaries in the field, agriculture, and the supply of drinking water services. However, the nature and extent of the interventions and their consequences are currently unknown and they will become more understandable when choosing an investment activity. To implement the above impacts, the project has developed a Framework Document on the Fundamentals of Resettlement Policy and is disclosed on the websites of the NWRMP-AF, WRS and Gosstroy project. In the event that projects and investments for sub-projects are identified, Resettlement Action Plans will be prepared by assessment.

In accordance with the requirements of the ESS10 of the World Bank, the Project will introduce and apply the Grievance Mechanism (GM) for subcomponent 1.1. "Drinking water supply and sewerage services" and subcomponent 1.2. "Irrigation and Drainage Services" for Affected Persons. The GM is a process of obtaining prompt, objective information, evaluating, considering, resolving complaints (applications, proposals, complaints, inquiries, positive feedback) related to the implementation of the Project.

Appeals or complaints can be both individual and collective. This mechanism will also allow for the filing and processing of anonymous complaints.

Communities and individuals who believe they are negatively impacted by a World Bank (WB) - supported project can also file complaints with the Grievance Redress Service of the World Bank. The Grievance Redress Service ensures that complaints received are dealt with in a timely manner in order to resolve project-related problems. Affected communities and individuals can file a complaint with the World Bank's Independent Inspection Panel, which determines whether harm has been caused or may result from the World Bank's failure to comply with its policies and procedures. Complaints can be filed at any time after concerns have been brought directly to the attention of the World Bank and Bank management has been given the opportunity to respond. For information on how to file a complaint with the World Bank's Grievance Redress Service, see <http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service>. Information on how to file complaints with the World Bank Inspection Panel can be found at www.inspectionpanel.org.

Questions:

Kalilov F. Who will monitor the environment during construction?

T.I. Neronova - The contractor is responsible for the implementation of the activities specified in the ESMP. The contractor will appoint a person responsible for the implementation of the ESMP. In addition, the work of the contractor will be monitored by the PIU of the project, as well as within the framework of state environmental control.

B. Kadyrov - Will they monitor the quality of water in the canals? If so, who will do it?

T.I. Neronova - Monitoring of water quality in canals will be carried out by the rayon department of water use support. They will conduct express analyzes of water for salinity, acid-base analysis and water turbidity.

Baziev J. - Is it necessary to obtain a permit for cutting down green spaces if they are located in the canal exclusion zone?

T.I. Neronova - When examining the rehabilitated areas, the presence of green spaces was established. WUAs need to prepare a letter to the Chu-Bishkek Territorial Department of Environmental Protection, and they will agree on the felling.

Arapov A. - Construction waste and household waste, where will it be removed after construction?

T.I. Neronova - Construction and household waste will be transported by the contractor to places agreed with local authorities. Construction waste can be reused.

Mametova A. - Who are the vulnerable groups?

Orozalieva S. - Vulnerable groups include the elderly, people with disabilities, female-headed households, poor households and low-income households.

Sydykov Z. - Who can file a complaint?

Orozalieva S. - Persons who have questions and comments in the course of construction work or in the course of implementation of project activities can file a complaint.

Any resident where the project is being implemented can file a complaint. Complaints can be filed at any time orally or in writing during the preparation and implementation of the project.

Ashirov A. - What does forced resettlement mean?

Orozalieva S. - 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 home loss; c) loss of assets or access to assets; d) loss of sources of income or livelihood, regardless of the decision whether PAPs will be relocated to another place.

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

R. Abibilaev, on behalf of all those present, thanked for the support and information provided.

Chairman

PIU Director

Environmental specialist

Social specialist

Osh OVK Head

U. Torogeldiev

T. Neronova

S. Orozalieva

R. Abibilaev

**Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project
Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin
Jalal-Abad city 7 December 2021**

Attended by:

Abduvaliev T. - Head of the Jalal-Abad OVK;

Torogeldiev U. T. - PIU Director under the WRS of the Ministry of Agriculture of the Kyrgyz Republic;

Neronova T.I. - PIU WRS Environmental specialist;

Orozalieva S. M. - PIU WRS public affair and social specialist

Batkulova A.O. - PIU WRS payout specialist.

12 people took part in the public hearings: representatives of the OVK, RVK, WUA rayon support units, representatives of WUAs feeding from the Otuz-Adyr main canal of the Kurshab river system of Osh oblast, heads of sections of the Otuz canal -Adyr, heads of reservoir departments, representatives of rayon administrations, the public and other interested participants (the list is attached).

Chairman of meeting

Torogeldiev U. T. –Director of PIU WB WRS made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the Department of Drinking Water Supply and Sewerage in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

Zheenaliev K. Zh. - the engineer of the southern unit of the PIU WB WRS spoke about the work carried out to study the objects that will be considered in the feasibility study for their rehabilitation.

Neronova T.I. - PIU WRS environmental protection consultant told the participants of the public hearings about the requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's policy on environmental protection during the implementation of the project.

The objective of an environmental assessment is to identify the significant environmental impacts of a proposed project (positive and negative), and identify appropriate preventive and mitigation measures to prevent, minimize or eliminate any expected irreversible impact.

The proposed project is adaptation to climate change. The project will have a positive impact on the environment, improve the population's access to piped drinking water and sanitation. The environmental assessment identified many positive project impacts. Namely, this project aims to reduce water losses in irrigation systems, supply clean drinking water to residents' homes, improve water management, increase agricultural productivity and improve soil fertility.

However, during construction work, there may be some potential negative environmental impacts in the project areas, which need to be paid attention to, preventive actions taken and appropriate mitigation measures taken during planning, development, construction, operation and maintenance. The potential negative impacts are relatively minor, and the positive economic, social and environmental benefits far outweigh them in environmental assessments. A discussion of these impacts is provided below.

The main impact that can be provided as a result of construction works:

- 5) Soil contamination at the construction site
- 6) Contamination of groundwater at the construction site
- 7) Deterioration of the landscape, destruction of the natural habitat of the animal world, change in the local drainage network

8) Air pollution and worker / public exposure from traffic and heavy equipment

To prevent or mitigate the negative impact of construction, an ESMP is drawn up for each rehabilitation facility. It includes a mitigation and monitoring plan for both the construction phase and the operation and maintenance (O&M) phase.

All risks of the construction phase are easily controlled and eliminated. They can be minimized with proper design of mitigation measures and control of the Contractor during the execution of the work.

From the risks of the O&M phase, the risk of deterioration of the landscape and destruction of the natural habitat of the animal world during the cleaning of earthen canals and drains is obvious and easily controllable. The risks of contamination of surface and groundwater with agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with the existing 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. In addition, compliance with the sanitary protection zones of drinking water supply systems and organized wastewater treatment will be required. The need for mitigating measures at the O&M stage is determined precisely in the process of environmental monitoring.

Orozaliev S.M - PIU WRS Social Specialist told the participants of public hearings about the main social risks of the project:

- (v) in terms of land acquisition and involuntary resettlement, necessary in connection with (a) new construction and / or rehabilitation of water supply and sewerage infrastructure and (b) rehabilitation and modernization of irrigation infrastructure.
- (vi) problems of accessibility and fairness of water tariffs (including connection costs), water permits and irrigation service charges, especially for low-income and vulnerable groups of the population.
- (vii) Low institutional capacity to deal with regulation, planning and supervision of tariffs / charges and permits.
- (viii) Other risks.

She spoke in detail about the Environmental and Social Standards of the World Bank applicable to the project, in particular, dwelled on the ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure.

Thus, ESS 5 is considered appropriate because of the 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 certain activity areas. For example, they may include sanitation, water supplies, irrigation and drainage systems, and other transformative investments in improving the livelihoods of beneficiaries in the field, agriculture, and the supply of drinking water services. However, the nature and extent of the interventions and their consequences are currently unknown and they will become more understandable when choosing an investment activity. To implement the above impacts, the project has developed a Framework Document on the Fundamentals of Resettlement Policy and is disclosed on the websites of the NWRMP-AF, WRS and Gosstroy project. In the event that projects and investments for sub-projects are identified, Resettlement Action Plans will be prepared by assessment.

In accordance with the requirements of the ESS10 of the World Bank, the Project will introduce and apply the Grievance Mechanism (GM) for subcomponent 1.1. "Drinking water supply and sewerage services" and subcomponent 1.2. "Irrigation and Drainage Services" for Affected Persons. The GM is a process of obtaining prompt, objective information, evaluating, considering, resolving complaints (applications, proposals, complaints, inquiries, positive feedback) related to the implementation of the Project.

Appeals or complaints can be both individual and collective. This mechanism will also allow for the filing and processing of anonymous complaints.

Communities and individuals who believe they are negatively impacted by a World Bank (WB) - supported project can also file complaints with the Grievance Redress Service of the World Bank. The Grievance Redress Service ensures that complaints received are dealt with in a timely manner in order to resolve project-related problems. Affected communities and individuals can file a complaint with the World Bank's Independent Inspection Panel, which determines whether harm has been caused or may result from the World Bank's failure to comply with its policies and procedures. Complaints can be filed at any time after concerns have been brought directly to the attention of the World Bank and Bank management has been given the opportunity to respond. For information on how to file a complaint with the World Bank's Grievance Redress Service, see <http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service>. Information on how to file complaints with the World Bank Inspection Panel can be found at www.inspectionpanel.org.

Questions:

Baziev J. - Is it necessary to obtain a permit for cutting down green spaces if they are located in the canal exclusion zone?

T.I. Neronova - When examining the rehabilitated areas, the presence of green spaces was established. WUAs need to prepare a letter to the territorial department of environmental protection, and they will agree on the felling.

Ozgonov M. - Who are the vulnerable groups?

Orozalieva S. - Vulnerable groups include the elderly, people with disabilities, female-headed households, poor households and low-income households.

A.A. Tashtanov - Who can make a complaint?

Orozalieva S. - Persons who have questions and comments in the course of construction work or in the course of implementation of project activities can file a complaint.

Any resident where the project is being implemented can file a complaint. Complaints can be filed at any time orally or in writing during the preparation and implementation of the project.

Turдуматов А. - how will the loan be repaid by the WUA?

Orozalieva S. - 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 home loss; c) loss of assets or access to assets; d) loss of sources of income or livelihood, regardless of the decision whether PAPs will be relocated to another place.

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

R. Abibilaev, on behalf of all those present, thanked for the support and information provided.

Chairman

PIU Director

Environmental specialist

Social specialist

Osh OVK Head

U. Torogeldiev

T. Neronova

S. Orozalieva

R. Abibilaev

Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin city Kadamjay
8 December 2021

Attended by:

Shakirov K. A. - head of the administration of the Kadamjai rayon;

Torogeldiev U. T. - PIU Director under the WRS of the Ministry of Agriculture of the Kyrgyz Republic;

Halov Sh. K. - Deputy Director of the Department of Drinking Water Supply and Wastewater Disposal;

Neronova T.I. - PIU WRS Environmental specialist;

Orozalieva S. M. - PIU WRS public affair and social specialist

Batkulova A.O. - PIU WRS payout specialist.

18 people took part in the public hearings: representatives of the OVK, RVK, WUA rayon support units, representatives of WUAs feeding from the main Nurgaziyev canal of the Shakhimardan river system in Batken oblast, heads of sections of the Nurgaziev canal, managers reservoir departments, representatives of rayon administrations, the public and other stakeholders (list attached). 2 women took part in the hearing.

Chairman of meeting

Torogeldiev U. T. –Director of PIU WB WRS made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the Department of Drinking Water Supply and Sewerage in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

Khalov Sh.K. - informed the participants of the hearing about subcomponent 1.1. and the types of work to be done under the subcomponent. I turned to the participants in the hearing on the provision of assistance and provided by AO ITU (engineering and technical conditions) and APZ (architectural planning assignment).

T.I. Neronova - PIU WB WRS environmental protection consultant told the participants of the public hearings about the requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's policy on environmental protection during the implementation of the project. The objective of an environmental assessment is to identify the significant environmental impacts of a proposed project (positive and negative), and identify appropriate preventive and mitigation measures to prevent, minimize or eliminate any expected irreversible impact.

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The main impact that can be provided as a result of construction works:

- 9) Soil contamination at the construction site

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She spoke in detail about the Environmental and Social Standards of the World Bank applicable to the project, in particular, dwelled on the ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure.

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Questions:

A. Zholdoshev - an employee of the rayon state administration suggested using spring water for drinking water supply in the design to reduce the cost of construction.

Khalov Sh. K. - proposals for the use of spring water for drinking water supply will be considered in the detailed design.

Masadykov Zh. - the head of the Alga AO, what documents must be provided for the implementation of water supply systems.

Khalov Sh. K. - You must prepare the ITU yourself and submit it to the Department of Drinking Water Supply and Wastewater Disposal for use in the development of the design and estimate documentation of the object.

A. Asamidinov - offered to provide ready-made projects for drinking water supply to the DCEI for inclusion in the list of priority villages.

Khalov Sh. K. - The rehabilitation of water supply systems will begin only in those villages that have ready-made APU ITU and design estimates.

Ismailov O. - the head of Boz AO - asked to consider the possibility of carrying drinking water from the river through a pumping station to Boz AO.

Khalov Sh.K. -

Shakirov K.A. - outlined the main points on the upcoming work of the Nurgaziev Canal and water supply systems in the villages of the Kadamzhai region. I asked all interested parties, in particular the management of WUA /RPADWC/ AO and other stakeholders to take an active part in the preparation of the feasibility study and ITU.

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

Chairman

DCEI Deputy Director

Environmental specialist

Social Specialist

U. Torogeldiev

Sh. Halov

T. Neronova

S. Orozalieva

Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project

Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin city Kadamjay
8 December 2021

Attended by:

Shakirov K. A. - head of the administration of the Kadamjai rayon;

Torogeldiev U. T. - PIU Director under the WRS of the Ministry of Agriculture of the Kyrgyz Republic;

Halov Sh. K. - Deputy Director of the Department of Drinking Water Supply and Wastewater Disposal;

Neronova T.I. - PIU WRS Environmental protection specialist;

Orozaliev S. M. - PIU WRS public affair and social specialist

Batkulova A.O. - PIU WRS payout specialist.

18 people took part in the public hearings: representatives of the OVK, RVK, WUA rayon support units, representatives of WUAs feeding from the main Nurgazyev canal of the Shakhimardan river system in Batken oblast, heads of sections of the Nurgaziev canal, managers reservoir departments, representatives of rayon administrations, the public and other stakeholders (list attached). 2 women took part in the hearing.

Chairman of meeting

Torogeldiev U. T. –Director of PIU WB WRS made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the Department of Drinking Water Supply and Sewerage in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

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The main impact that can be provided as a result of construction works:

13) Soil contamination at the construction site

- 14) Contamination of groundwater at the construction site
 - 15) Deterioration of the landscape, destruction of the natural habitat of the animal world, change in the local drainage network
 - 16) Air pollution and worker / public exposure from traffic and heavy equipment
- To prevent or mitigate the negative impact of construction, an ESMP is drawn up for each rehabilitation facility. It includes a mitigation and monitoring plan for both the construction phase and the operation and maintenance (O&M) phase.

All risks of the construction phase are easily controlled and eliminated. They can be minimized with proper design of mitigation measures and control of the Contractor during the execution of the work.

From the risks of the O&M phase, the risk of deterioration of the landscape and destruction of the natural habitat of the animal world during the cleaning of earthen canals and drains is obvious and easily controllable. The risks of contamination of surface and groundwater with agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with the existing 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. In addition, compliance with the sanitary protection zones of drinking water supply systems and organized wastewater treatment will be required. The need for mitigating measures at the O&M stage is determined precisely in the process of environmental monitoring.

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She spoke in detail about the Environmental and Social Standards of the World Bank applicable to the project, in particular, dwelled on the ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure.

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Chairman

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Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin Batken city
9 December 2021 r.

Attended by:

Halov Sh. K. - Deputy Director of the Department of Drinking Water Supply and Wastewater Disposal;

Neronova T.I. - PIU WRS Environmental specialist;

Orozalieva S. M. - PIU WRS public affair and social specialist.

38 people took part in the public hearings: representatives of rayon administrations, the public and other interested participants (the list is attached). 9 women took part in the hearing.

Chairman of the meeting: Satarova B.

Halov Sh. K. – made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the DCEI in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

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Questions:

– Is there a plan for sewerage networks in Batken oblast?

Khalov Sh. K. - under this project in the Batken oblast, only drinking water supply systems are provided. Treatment facilities will be carried out in three villages of the Issyk-Kul oblast.

I ask you to pay special attention to the bid process, since recently many problems have arisen due to the tender, the selection of unqualified contractors, the installation of low-quality equipment that fail in the first years of operation.

Khalov Sh. K. - Bid procedures are held within the framework of the relevant laws of the Kyrgyz Republic, taking into account the requirements of the World Bank. The commission is created by order of the Department, the members of the commission can be from the employees of the Department, PIU, Ministry of Finance, Ministry of Economy and employees of local self-government and water utilities. Of course, from our side, we will do our best to hold bids openly and honestly, and those included in the bid committee from the local government must protect and defend the interests of the local population.

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

DCEI Deputy Director
Environmental specialist
Social specialist

Sh. Halov
T. Neronova
S. Orozalieva

Minutes of public hearings on informing stakeholders and the public about the Project, social and environmental standards of the World Bank applicable to the project
Rehabilitation of irrigation infrastructure in the Karadarya-Syrdarya-Amudarya river basin
Isfana city **10 December 2021**

Attended by:

Halov Sh. K. - Deputy Director of the Department of Drinking Water Supply and Wastewater Disposal;

Neronova T.I. - PIU WRS Environmental protection specialist;

Orozalieva S. M. - PIU WRS public affair and social specialist.

51 people took part in the public hearings: representatives of rayon administrations, the public and other interested participants (the list is attached). 6 women took part in the hearing.

Chairman of meeting: Karimberdieva M.

Halov Sh. K. – made information about the project, in which he spoke about the components of the project and the proposed work. The project aims to improve water management at the basin level and has four components. Component 1: Investments in infrastructure facilities and quality improvement of services to ensure water security. It consists of 2 sub-components: sub-component 1.1. Drinking water supply and sanitation services and subcomponent 1.2: Irrigation and drainage services. Sub-component 1.1 will be implemented with the support of the DCEI in the Issyk-Kul-Tarim river basin, and component 1.2. in Karadarya-Syrdarya-Amudarya. This public hearing focuses on component 1.2. Irrigation and drainage services.

Neronova T.I. - PIU WRS environmental protection consultant told the participants of the public hearings about the requirements of the environmental legislation of the Kyrgyz Republic and the World Bank's policy on environmental protection during the implementation of the project.

The objective of an environmental assessment is to identify the significant environmental impacts of a proposed project (positive and negative), and identify appropriate preventive and mitigation measures to prevent, minimize or eliminate any expected irreversible impact.

The proposed project is adaptation to climate change. The project will have a positive impact on the environment, improve the population's access to piped drinking water and sanitation. The environmental assessment identified many positive project impacts. Namely, this project aims to reduce water losses in irrigation systems, supply clean drinking water to residents' homes, improve water management, increase agricultural productivity and improve soil fertility.

However, during construction work, there may be some potential negative environmental impacts in the project areas, which need to be paid attention to, preventive actions taken and appropriate mitigation measures taken during planning, development, construction, operation and maintenance. The potential negative impacts are relatively minor, and the positive economic, social and environmental benefits far outweigh them in environmental assessments. A discussion of these impacts is provided below.

The main impact that can be provided as a result of construction works:

- 21) Soil contamination at the construction site
- 22) Contamination of groundwater at the construction site
- 23) Deterioration of the landscape, destruction of the natural habitat of the animal world, change in the local drainage network
- 24) Air pollution and worker / public exposure from traffic and heavy equipment

To prevent or mitigate the negative impact of construction, an ESMP is drawn up for each rehabilitation facility. It includes a mitigation and monitoring plan for both the construction phase and the operation and maintenance (O&M) phase.

All risks of the construction phase are easily controlled and eliminated. They can be minimized with proper design of mitigation measures and control of the Contractor during the execution of the work.

From the risks of the O&M phase, the risk of deterioration of the landscape and destruction of the natural habitat of the animal world during the cleaning of earthen canals and drains is obvious and easily controllable. The risks of contamination of surface and groundwater with agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with the existing 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. In addition, compliance with the sanitary protection zones of drinking water supply systems and organized wastewater treatment will be required. The need for mitigating measures at the O&M stage is determined precisely in the process of environmental monitoring.

Orozaliev S.M.- PIU WRS Social Specialist told the participants of public hearings about the main social risks of the project, in terms of land acquisition and involuntary resettlement, necessary in connection with (a) new construction and / or rehabilitation of water supply and sewerage infrastructure and (b) rehabilitation and modernization of irrigation infrastructure, about the problems of accessibility and fairness water tariffs (including connection costs), water permits and irrigation service charges, especially for low-income and vulnerable groups and other risks.

She spoke in detail about the Environmental and Social Standards of the World Bank applicable to the project, in particular, dwelled on the ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, and ESS10: Stakeholder Engagement and Information Disclosure.

Thus, ESS 5 is considered appropriate because of the 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 certain activity areas. For example, they may include sanitation, water supplies, irrigation and drainage systems, and other transformative investments in improving the livelihoods of beneficiaries in the field, agriculture, and the supply of drinking water services. However, the nature and extent of the interventions and their consequences are currently unknown and they will become more understandable when choosing an investment activity. To implement the above impacts, the project has developed a Framework Document on the Fundamentals of Resettlement Policy and is disclosed on the websites of the NWRMP-AF, WRS and Gosstroy project. In the event that projects and investments for sub-projects are identified, Resettlement Action Plans will be prepared by assessment.

In accordance with the requirements of the ESS10 of the World Bank, the Project will introduce and apply the Grievance Mechanism (GM) for subcomponent 1.1. "Drinking water supply and sewerage services" and subcomponent 1.2. "Irrigation and Drainage Services" for Affected Persons. The GM is a process of obtaining prompt, objective information, evaluating, considering, resolving complaints (applications, proposals, complaints, inquiries, positive feedback) related to the implementation of the Project.

Appeals or complaints can be both individual and collective. This mechanism will also allow for the filing and processing of anonymous complaints.

Communities and individuals who believe they are negatively impacted by a World Bank (WB) - supported project can also file complaints with the Grievance Redress Service of the World Bank. The Grievance Redress Service ensures that complaints received are dealt with in a timely manner in order to resolve project-related problems. Affected communities and individuals can file a complaint with the World Bank's Independent Inspection Panel, which determines whether harm has been caused or may result from the World Bank's failure to comply with its policies and procedures. Complaints can be filed at any time after concerns have been brought directly to the attention of the World Bank and Bank management has been given the opportunity to respond. For information on how to file a complaint with the World Bank's Grievance Redress Service, see <http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service>. Information on how to file complaints with the World Bank Inspection Panel can be found at www.inspectionpanel.org.

Questions:

Jalilov A. . – The representative of the Kulundinsky AO expressed gratitude to the management of the DDWSWS and the staff of the PIU WB WRS project in organizing the hearings and

informing the population about the project and the benefits they can get from the project. I was sincerely glad for the inclusion of his village in the list of villages that will undergo rehabilitation. **Kamalova R.** - deputy of the local kenesh of the village K. Sabyrova expressed gratitude on her behalf and on behalf of the local population of the village K. Sabyrova, whose interests she represents at this hearing for including her village in the list of priority villages of the project. She also asked that special attention be paid to the bid process so that only the relevant companies are selected that will carry out the installation of water supply systems.

Ismailov S. - I ask you to take control of the commissioned objects.

Khalov Sh.K. - Control during the implementation of projects is carried out by technical supervisions (or companies) appointed by the PIU (project implementation units), by the designers (as designer supervision) and, of course, appointed by the local government in the person of ayil okmotu and water suppliers. After the completion of construction work, the project is transferred under the act of the state commission for further operation to the balance of ayil okmotu.

Tashbaev B., representative of Bulak-Bashy AO - we have an acute problem of salinization of drinking water in our village, in connection with which I ask you to include our village in the priority list of villages and solve the problem of salinization.

Khalov Sh. K. - proposals for the use of spring water for drinking water supply will be considered in the detailed design.

K. Baltaev, representative of Toguz-Bulak AO - how will the bid be held?

Khalov Sh. K. -Bidding procedures are held within the framework of the relevant laws of the Kyrgyz Republic, taking into account the requirements of the World Bank. The commission is created by order of the Department, the members of the commission can be from the employees of the Department, PIU, Ministry of Finance, Ministry of Economy and employees of local self-government and water canals. Of course, from our side, we will do our best to hold bids openly and honestly, and those included in the tender commission from the local government must protect and defend the interests of the local population.

Borubaev S. - Chairman of the Katran Aiyl Kenesh, expressed gratitude to the organizer of the public hearing on behalf of all participants in the hearing, noted the interest of all participants in the project and expressed readiness to provide comprehensive support at the level of the AO.

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

DCEI Deputy Director
Environmental specialist
Social specialist

Sh. Halov
T. Neronova
S. Orozalieva

**Minutes of the
public hearings to inform stakeholders and the public about the World Bank project
"Ensuring water security for climate resilience, about the social and environmental
standards of the World Bank applicable to the project"**

Kadzhi-Sai village

«13» December 2021

Date: 13 December 2021

Venue: 13:00 – 15:00

Venue: building of Kadzhi-Sai ayil okmotu
(Issyk-Kul region, Tonsky district, Kadzhi-Sai village, Zhunushova st., No. 1.

Presiding - Baigazieva Ch.B.

Secretary - A. Zhyrgalova

Head of Kazhy-Sai ayil okmotu

Statistic-economist of Kazhy-Sai ayil okmotu

Attendees:	
Toktoshev A.S.	Advisor to the Director of the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic
Zheentaev P.J.	Chief specialist of the DDWSSD on Issyk-Kul region
Zhusupbek uulu Zh.	Deputy of Kazhy-Sai Aiyl Kenesh

Residents of the Kadzhy-Sai village: a list of residents of the Kadzhi-Sai village who took part in the public hearing is attached.

Agenda of the hearings: Discussion of framework documents prepared by the State Agency for Water Resources (GAVR) under the Ministry of Agriculture of the Kyrgyz Republic in conjunction with the Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic for the project Water Security for Climate Resilience, funded by the International Development Association and administered by the World Bank.

The following framework documents have been prepared:

- Stakeholder Engagement Plan;
- Framework document "Fundamentals of Environmental and Social Management";
- The Resettlement Policy Framework Document.

№	Topic of speeches	Speaker / presenter
1	<i>Greetings speech</i>	Monoldorov S.Sh. Head of Kun-Chygysh ayil okmoty
2	Information about the Water Security for Climate Resilience Project funded by the International Development Association and administered by the World Bank.	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic
3	Presentation Of the Framework Document "Fundamentals of Environmental and Social Management" of the World Bank Environmental and Social Standards.	DDWSSD Specialist
4	Presentation World Bank standard ESA10: Stakeholder Engagement and Disclosure	DDWSSD Specialist
5	Presentation World Bank standard ESS5: Land Acquisition, Land Use Restrictions and Involuntary Resettlement.	DDWSSD Specialist
6	Questions-Answers	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic. DDWSSD Specialist

After the conclusion of the public discussion, the participants thanked the organizers for providing clarifications and holding a public hearing.

Based on the results of the discussion and the raised issues, it was decided that the prepared framework documents by GAVR together with the DDWSSD for the project "Ensuring water security for increasing resilience to climate change", funded by the International Development Association and administered by the World Bank, were taken into account.

Presiding
Secretary

Baigazieva Ch.B.
A. Zhyrgalova

**Minutes of the
public hearings to inform stakeholders and the public about the World Bank project
"Ensuring water security for climate resilience, about the social and environmental
standards of the World Bank applicable to the project"**

Bokonbaeva village

«13» December 2021

Date: 13 December 2021

Venue: 11:00 – 13:00

Venue: building of Kun-Chygysh ayil okmotu
(Issyk-Kul region, Tonsky district, Bokonbaeva village, Bazarov st., No. 51.

Presiding - Monoldorov S.Sh.

Secretary - G.K. Shakirova

Head of Kun-Chygysh ayil okmoty

Executive secretary
of the Kun-Chygysh ayil okmoty

Attendees:	
Toktoshev A.S.	Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic
Zheentaev P.Zh.	Chief specialist of the DDWSSD on Issyk-Kul region
Osmonov M.SH.	Deputy of Kun-Chygysh ayil okmoty

Residents of the Bokonbaeva village: a list of residents of the Bokonbaeva village who took part in the public hearing is attached.

Agenda of the hearings: Discussion of framework documents prepared by the State Agency for Water Resources (GAVR) under the Ministry of Agriculture of the Kyrgyz Republic in conjunction with the Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic for the project Water Security for Climate Resilience, funded by the International Development Association and administered by the World Bank.

The following framework documents have been prepared:

- Stakeholder Engagement Plan;
- Framework document "Fundamentals of Environmental and Social Management";
- The Resettlement Policy Framework Document.

№	Topic of speeches	Speaker / presenter
1	<i>Greetings speech</i>	Monoldorov S.Sh. Head of Kun-Chygysh ayil okmoty
2	Information about the Water Security for Climate Resilience Project funded by the International Development Association and administered by the World Bank.	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic
3	Presentation Of the Framework Document "Fundamentals of Environmental and Social Management" of the World Bank Environmental and Social Standards.	DDWSSD Specialist
4	Presentation World Bank standard ESA10: Stakeholder Engagement and Disclosure	DDWSSD Specialist
5	Presentation World Bank standard ESS5: Land Acquisition, Land Use Restrictions and Involuntary Resettlement.	DDWSSD Specialist
6	Questions-Answers	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic. DDWSSD Specialist

After the conclusion of the public discussion, the participants thanked the organizers for providing clarifications and holding a public hearing.

Based on the results of the discussion and the raised issues, it was decided that the prepared framework documents by GAVR together with the DDWSSD for the project "Ensuring water security for increasing resilience to climate change", funded by the International Development Association and administered by the World Bank, were taken into account.

Presiding - Monoldorov S.Sh.
Secretary - G.K. Shakirova -

Head of Kun-Chygysh ayil okmoty
Executive secretary of the Kun-Chygysh ayil okmotu

**Minutes of the
public hearings to inform stakeholders and the public about the World Bank project
"Ensuring water security for climate resilience, about the social and environmental
standards of the World Bank applicable to the project**

Kyzyl suu village

«14» December 2021

Date: 14 December 2021

Venue: 11:00 – 13:00

Venue: building of Kazhy-Sai ayil okmotu
(Issyk-Kul region, Jeti-Oguz district, Kyzyl-Suu village, Manas str. No. 194.

Presiding - Kydyev Zh.A.
Secretary - R. Orozobaeva

Acting Head of the Kyzyl-Suu a / o
Clerk of ayil okmotu

Attendees:	
Toktoshev A.S.	Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic
	Chief specialist of the DDWSSD on Issyk-Kul region
Tokosheva Kamzada	Deputy of Kyzyl-Suu Aiyl Kenesh
Imanaliev R.S.	Deputy of Kyzyl-Suu Aiyl Kenesh
Asanaliev Zh.A.	Deputy of Kyzyl-Suu Aiyl Kenesh

Residents of the Kyzyl-Suu village: a list of residents of the Kyzyl-Suu village who took part in the public hearing is attached.

Agenda of the hearings: Discussion of framework documents prepared by the State Agency for Water Resources (GAVR) under the Ministry of Agriculture of the Kyrgyz Republic in conjunction with the Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic for the project Water Security for Climate Resilience, funded by the International Development Association and administered by the World Bank.

The following framework documents have been prepared:

- Stakeholder Engagement Plan;
- Framework document "Fundamentals of Environmental and Social Management";
- The Resettlement Policy Framework Document.

№	Topic of speeches	Speaker / presenter
1	<i>Greetings speech</i>	Kydyev Zh.A Heads of Kyzyl-Suu ayil okmotu
2	Information about the Water Security for Climate Resilience Project funded by the International Development Association and administered by the World Bank.	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic
3	Presentation Of the Framework Document "Fundamentals of Environmental and Social Management" of the World Bank Environmental and Social Standards.	DDWSSD Specialist
4	Presentation World Bank standard ESA10: Stakeholder Engagement and Disclosure	DDWSSD Specialist
5	Presentation World Bank standard ESS5: Land Acquisition, Land Use Restrictions and Involuntary Resettlement.	DDWSSD Specialist
6	Questions-Answers	Toktoshev sh A.S Advisor to the Director of the State Agency for Architecture, Construction, Housing and Cmmunal Services under the Cabinet of Ministers of the Kyrgyz Republic. DDWSSD Specialist

After the conclusion of the public discussion, the participants thanked the organizers for providing clarifications and holding a public hearing.

Based on the results of the discussion and the raised issues, it was decided that the prepared framework documents by GAVR together with the DDWSSD for the project "Ensuring water security for increasing resilience to climate change", funded by the International Development Association and administered by the World Bank, were taken into account.

Presiding -

Kydyev Zh.A. Acting Head of the Kyzyl-Suu

Secretary -

R. Orozobaeva Clerk of ayil okmotu

ANNEX 8. PHOTOS



Image 1. Osh, December 2021, public hearings.



Image 2. Djalal-Abad, December 2021, public hearings.



Image 3. Osh, December 2021, public hearings.



Image 4. Batken, December 2021, public hearings.



Image 5. Isfana, December 2021, public hearings.

ANNEX 9. ESF/SAFEGUARDS INTERIM NOTE COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19 and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering and exiting the site; support services, such as catering, cleaning services,

equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-serviced areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)

- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PMU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PMU s) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PMU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).
- In making the request, it may be helpful for the PMU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.
- The PMU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.
- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.
- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PMU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member site manager
- (with back up) to attend such meetings. If meetings cannot be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will

depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.

- The PMU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PMU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity. • Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PMU s and contractors should refer to guidance issued by relevant authorities, both national and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PMU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures: The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).

- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.

- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID- 19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing)

and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).

- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation, and waste management for COVID-19).

ADJUSTING WORK PRACTICES

- Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:
 - Decreasing the size of work teams.
 - Limiting the number of workers on site at any one time.
 - Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be

kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).

- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing mealtimes to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.
- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present, and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected.
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on construction sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to

breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).

- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
- Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site. • If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in

that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.

- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.
- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation, or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PMU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2-month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible) Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work

force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers' presence on the project site. The project should set out risk-based procedures to be followed, which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

EMERGENCY POWERS AND LEGISLATION

- Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:
- Declaring a public health emergency
- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)

- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

ANNEX Advice for the public

- WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>

Technical guidance

- [Infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected](#), issued on March 19, 2020
- [Recommendations to Member States to Improve Hygiene Practices](#), issued on April 1, 2020
- [Severe Acute Respiratory Infections Treatment Center](#), issued on March 28, 2020
- [Infection prevention and control at health care facilities \(with a focus on settings with limited resources\)](#), issued in 2018
- [Laboratory biosafety guidance related to coronavirus disease 2019 \(COVID-19\)](#), issued on March 18, 2020
- [Laboratory Biosafety Manual, 3rd edition](#), issued in 2014
- [Laboratory testing for COVID-19, including specimen collection and shipment](#), issued on March 19, 2020
- [Prioritized Laboratory Testing Strategy According to 4Cs Transmission Scenarios](#), issued on March 21, 2020
- [Infection Prevention and Control for the safe management of a dead body in the context of COVID-19](#), issued on March 24, 2020
- [Key considerations for repatriation and quarantine of travelers in relation to the outbreak COVID-19](#), issued on February 11, 2020
- [Coronavirus disease \(COVID-19\) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health](#), issued on March 18, 2020
- [Oxygen sources and distribution for COVID-19 treatment centers](#), issued on April 4, 2020
- [Risk Communication and Community Engagement \(RCCE\) Action Plan Guidance COVID-19 Preparedness and Response](#), issued on March 16, 2020
- [Considerations for quarantine of individuals in the context of containment for coronavirus disease \(COVID-19\)](#), issued on March 19, 2020
- [Operational considerations for case management of COVID-19 in health facility and community](#), issued on March 19, 2020
- [Rational use of personal protective equipment for coronavirus disease 2019 \(COVID-19\)](#), issued on February 27, 2020
- [Getting your workplace ready for COVID-19](#), issued on March 19, 2020
- [Water, sanitation, hygiene and waste management for COVID-19](#), issued on March 19, 2020
- [Safe management of wastes from health-care activities](#), issued in 2014
- [Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus \(COVID-19\) outbreak](#), issued on March 19, 2020

- [Disability Considerations during the COVID-19](#) outbreak, issued on March 26, 2020

WORLD BANK GROUP GUIDANCE

- [Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings](#), issued on March 20, 2020
- [Technical Note: Use of Military Forces to Assist in COVID-19 Operations](#), issued on March 25, 2020
- [ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects](#), issued on April 7, 2020
- [Technical Note on SEA/H for HNP COVID Response Operations](#), issued in March 2020
- [Interim Advice for IFC Clients on Preventing and Managing Health Risks of COVID-19 in the Workplace](#), issued on April 6, 2020
- [Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19](#), issued on April 6, 2020
- [IFC Tip Sheet for Company Leadership on Crisis Response: Facing the COVID-19 Pandemic](#), issued on April 6, 2020
- [WBG Covid Guidelines for Healthcare Facilities](#), issued on April 30, 2020

ILO GUIDANCE

- [ILO Standards and COVID-19 FAQ](#), issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

MFI GUIDANCE

- [ADB Managing Infectious Medical Waste during the COVID-19 Pandemic](#)
- [IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework](#)
- [KfW DEG COVID-19 Guidance for employers](#), issued on March 31, 2020
- [CDC Group COVID-19 Guidance for Employers](#), issued on March 23, 2020

ANNEX 10. ASBESTOS CONTAINING MATERIAL MANAGEMENT PLAN (EXAMPLE)

Applicability

The Asbestos Containing Material Management Plan (ACMMP) applies to all project construction or reconstruction sites and any related areas. Contractors employed by Project are legally responsible for their construction sites and related areas and must follow the provisions of the Project ACMMP within those locations. Specifically, this procedure must be used to ensure the safe handling, removal, and disposal of any and all Asbestos Containing Materials (ACM) from those areas.

Immediate Action

On discovering ACM on a Project site, the Contractor must:

- a) Stop all work within a 5 m radius of the ACM and evacuate all personnel from this area;
- b) Delimit the 5 m radius with secure fencing posts, warning tape and easily visible signs warning of the presence of asbestos;
- c) If the site is in an inhabited area, place a security guard at the edge of the site with instructions to keep the general public away;
- d) Notify the PCU's Safeguards Specialist and arrange an immediate site inspection.

Equipment

To remove asbestos from a construction site, contractors must provide the following equipment:

- a) Warning tape, sturdy fence posts and warning notices;
- b) Shovels;
- c) Water supply and hose, fitted with a garden-type spray attachment;
- d) Bucket of water and rags;
- e) Sacks of clear, strong polythene that can be tied to close;
- f) Asbestos waste containers (empty, clean, sealable metal drums, clearly labelled as containing asbestos).

Personal Protective Equipment (PPE)

All personnel involved in handling ACM must wear the following equipment, provided by the contractor:

- g) Disposable overalls fitted with a hood;
- h) Boots without laces;
- i) New, strong rubber gloves;
- j) A respirator is not normally required if there are only a few pieces of ACM in a small area, and if the ACM is damp;
- k) There must be no smoking, eating or drinking on a site containing ACM.

Decontamination Procedure 1: Removing small pieces of ACM

- a) Identify the location of all visible ACM and spray each lightly but thoroughly with water;
- b) Once the ACM is damp, pick up all visible ACM with shovels and place in a clear plastic bag;
- c) If ACM debris is partially buried in soil, remove it from the soil using a shovel and place it in the plastic bag;
- d) Insert a large label inside each plastic bag stating clearly that the contents contain asbestos and are dangerous to human health and must not be handled;
- e) Tie the plastic bags securely and place them into labelled asbestos waste containers (clean metal drums) and seal each drum;

Soil that contained ACM debris must not be used for backfill and must instead be shoveled by hand into asbestos waste containers;

- f) At the end of the operation, clean all shovels and any other equipment with wet rags and place the rags into plastic disposal bags inside asbestos waste containers.

Decontamination Procedure 2: Removing ACM-contaminated backfill

- a) If soil containing ACM debris has inadvertently been used for backfill this must be sprayed lightly with water and shoveled out by hand to a depth of 300 mm and placed directly into asbestos waste containers (i.e. not stored temporarily beside the trench);
- b) Any ACM uncovered during the hand shoveling must be placed in a clear plastic bag;
- c) Once the trench has been re-excavated to 300 mm, if there is no visible ACM remaining, the trench may be refilled by excavator using imported clean topsoil.

Disposal

ACM should be disposed of safely at a local hazardous-waste disposal site if available, or at the city municipal dumpsite after making prior arrangement for safe storage with the site operator.

- The Contractor must arrange for the disposal site operator to collect the sealed asbestos waste containers as soon as possible and store them undisturbed at the disposal site.
- At the end of construction Contractors must arrange for the disposal site operator to bury all ACM containers in a separate, suitably-sized pit, covered with a layer of clay that is at least 250 mm deep.

a) Personal Decontamination

At the end of each day, all personnel involved in handling ACM must comply with the following decontamination procedure:

- At the end of the decontamination operation, clean the boots thoroughly with damp rags;
- Peel off the disposable overalls and plastic gloves so that they are inside-out and place them in a plastic sack with the rags used to clean the boots;
- If a disposable respirator has been used, place that in the plastic sack, seal the sack and place it in an asbestos waste container;
- All personnel should wash thoroughly before leaving the site, and the washing area must be cleaned with damp rags afterwards, which are placed in plastic sacks as above.

b) Clearance and Checking-Off

- The decontamination exercise must be supervised by site supervisors (engineering or environmental).
- After successful completion of the decontamination and disposal, the Contractor should visually inspect the area and sign-off the operation if the site has been cleaned satisfactorily.
- The Contractor should send a copy of the completion notice to the PCU, with photographs of the operation in progress and the site on completion.

TRAINING

PCU's Environmental Specialist may hire the specialized companies to conduct training on ACCMP implementation for Contractors staff and PCU. The training will include a session focusing on ACM, which covered:

- a. Risks of contact with ACM;
- b. Responsibilities for dealing with ACM on project's construction sites;
- c. The Project's ACMMP and the Protocol for site clean-up;
- d. Awareness-raising for the contractors' workforce.

COST ESTIMATE

Costs incurred by contractors in implementing the ACMMP are included in their budget in ESMP budget.