

KYRGYZ REPUBLIC



**MINISTRY OF AGRICULTURE, FOOD PROCESSING AND LAND IMPROVEMENT
OF THE KYRGYZ REPUBLIC**

DEPARTMENT OF WATER RESOURCES AND LAND IMPROVEMENT

AGRICULTURAL PRODUCTIVITY AND NUTRITION IMPROVEMENT PROJECT

ENVIRONMENTAL MANAGEMENT PLAN

**for subproject WUA “Belsovkhov” of Jeti-Oguz rayon of Issyk-Kul
oblast**

Environmental Consultant

Neronova T.I.

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CONTENT

Abbreviations and acronyms.....	3
Introduction	4
1. Description of the rehabilitation subproject.....	7
2. Description of activities, carried out under the project.....	7
3. Description of environmental parameters on subproject	8
3.1. The climate	8
3.2. Landscape.....	8
3.3. Hydrology	9
3.4. Vegetation cover	9
4. Description of procedures related to regular operation works	9
4.1. Technical surveillance on canals and structures condition	9
4.2. Preparing on-farm network for the winter period	10
4.3. Looking after wood lines and access roads	10
4.4. Repair works	11
4.5. Desilting of canals and vegetation removal	11
5. Environmental impact.....	11
5.1. Expected positive environmental impact.....	12
5.2. Potential negative environmental impact.....	12
5.3. Impact on climate change.....	12
6. Environmental management and monitoring plan.....	16
7. Legislation support.....	22
8. Public hearings	24
8.1. Minutes of public hearings	25
9. Pictures of canals in the existing condition.....	27
10. Collection, storage, transportation and disposal of asbestos-containing wastes.	29
10.1. Collection and temporary storage of waste	29
10.2. Disposal of asbestos waste	30

Abbreviations and acronyms

AAS	Agricultural Advisory Services
AISP	Agricultural Investment and Services Project
AHE	Ameliorative Hydrogeological Expedition of DWRLI
APNIP	Agricultural Productivity and Nutrition Improvement Project
DSES	Department of Sanitary and Epidemiological Supervision
DWRLI	Department of Water Resources and Land Improvement
E	Environment
EA	Environmental Assessment
EMP	Environmental Management Plan
IDA	International Development Association
ISF	Irrigation Service Fee
GPAFS	Global Program for Agricultural and Food Security
GWT	Groundwater table
KR	Kyrgyz Republic
OIP-2	Second On-farm Irrigation Project
OIP-2 AF	Additional Financing for OIP-2
O&M	Operation and maintenance
PIU	Project Implementation Unit
POL	Petroleum, Oil and Lubricants
RSU	WUA Rayon Support Unit
RVK	Rayon Irrigation Department (Rayvodkhoz)
SAEPF	State Agency for Environmental Protection and Forestry
SanPin	Sanitary Regulations and Rules
SETI	State Environmental and Technical Inspectorate
WBSMQRS	World Bank safety measures quality rating system
WUA	Water Users Association

Introduction

Agricultural Productivity and Nutrition Improvement Project for the Kyrgyz Republic is being implemented by support of International Development Association (IDA) and financed by Trust Fund, provided by Global Program for Agricultural and Food Security.

General Environmental Management Plan (EMP) was prepared under APNIP. The EMP is addressed to ensure compliance of the Project with environmental management principles and practice, and therefore with requirements of environmental protection policy and laws of the Government of the Kyrgyz Republic, as well as the IDA environmental safeguards.

The task of environmental assessment (EA) is to identify the significant impact of the proposed project on the environment (positive and negative), identify appropriate preventive and mitigation interventions aimed at preventing, minimizing or eliminating any expected irreversible impact. The EMP serves as a management tool that ensures proper implementation of interventions to prevent and mitigate the environmental impact, as well as monitoring and institutional strengthening of recommended activities during the implementation of the proposed project. The EMP also establishes the necessary institutional obligations, proposes the timing of the implementation of such activities and the cost estimates for their implementation within the budget proposed by the project.

APNIP, in the World Bank environmental risks system, is classified as "B" category. No irreversible or significant impact on the environment is expected.

Based on the general EMP, the Environmental Management Plan for the rehabilitating WUA "Belsovkhov" has been developed, taking into account the specifics of this particular subproject.

1. Description of the rehabilitation subproject

The service area of the WUA "Belsovkhov" is located on the territory of Orgochor and Svetlopolyansky ayil districts of Jeti-Oguz rayon of Issyk-Kul oblast. The area is located on the southern shore of Issyk-Kul Lake, 30 km from oblast center Karakol city, 3 km from rayon center Kyzyl-Suu. The nearest railway station "Balykchy" is 190 km and 380 km from Bishkek city.

WUA command area is 5275 ha, among them 4536 ha – are being irrigated, 739 ha are fallow.

Current WUA "Belsovkhov" was established by merging of two WUAs "Belsovkhov" - 3487 ha and WUA "Shybagha" - 1788 ha with common name of WUA "Belsovkhov". The decision was adopted on General Assembly on March 17, 2015.

The length of on-farm irrigation network is 86,1 km, among them 23,1 km – lined with reinforced concrete, 63 km – unlined.

Drainage network within WUAs territories and observation wells to control GWT are absent.

On-farm canals of WUA "Belsovkhov" were constructed mainly in the mid of 1980s, the majority of canals are unlined. With the beginning of the agrarian reform in the early 1990s, the peasants received land plots, and the on-farm network remained without the previous owner for a whole decade. Some of the reinforced concrete flumes were destroyed, the capacity of the canals decreased, the seepage and technical losses of water increased, the irrigation water allocation and accounting was deteriorated.

LOT No. 1 includes the southern part of the territory of the Belsovkhov WUA above the Karakol-Balykchy road and the entire off-farm part of the project. The site of LOT #2 is located to the north of the road Karakol - Balykchy on an area of 3487 hectares. The recommended canals' sections were selected by the Commission in close cooperation with Issyk-Kul, Djety-Oguz WUA OSU and WUA «Belsovkhov» representatives.

2. Description of activities, carried out under the project

Off-farm part consists of four main canals - MK "Chon", MK "Polyansky", MK "Gransky", MK "Peschansky". It is necessary to;

- align the L-shaped blocks,
- to rehabilitate certain sections of a canal's bed,
- to replace metal structures.

To improve the regulation and supply of water, it is necessary to;

- rehabilitate headworks,
- build 2 water dividers, 1 bridge crossing and 11 hydroposts,
- fully rehabilitate the headworks of Polyansky off-farm canal.

It is planned to partially replace concrete flumes, to construct or rehabilitate pipe crossings of 28 units, water outlets, mudflow check canals, 13 hydroposts, water dividers, water outlets and stilling basins in the amount of 108 units on on-farm canals.

Only mechanical cleaning is planned in the volume of 4052 m³ and construction of 6 water-inlet and water-outlet structures of 6 units for night storage reservoir.

It is expected an increase in efficiency after rehabilitation. This will make it possible to increase crop yields and, due to this, the WUA can increase the rate of the ISF. At the same time, operation and maintenance funds of the WUA irrigation network will be increased.

Water reservoirs, dams and dikes rehabilitation is not planned. Therefore, the policy on irrigation dams and reservoirs (OP 4.37) is not applicable.

The application of WB policy OP 4.12 (Involuntary Resettlement) is not required, since all works will be carried out within the existing irrigation scheme, without establishment of additional structures that occupy the lands of individual landowners and land users, which could require additional agreement and resettlement.

Civil and rehabilitation works execution period: years 2018-2020

3. Description of environmental parameters on subproject

3.1. The climate

The climate of the territory is moderately continental, with a long, indulgent summer and a short, moderately cold, mild winter with frequent thaws.

The climatic conditions of the farm are characterized by the data of the Karakol meteorological station. The average monthly and annual air temperature in °C and the amount of precipitation (average long-term data) are given in Table 1.

Table 1. Climatic data

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
Air temperature, °C	-3,8	-2,3	1,5	7,3	12,3	16,3	18,8	18,5	14,6	8,1	0,5	-3,4	7,4
Precipitation, in mm.	9	7	18	20	28	33	33	34	19	17	10	7	234

Spring is warm, short, with a rapid increase in temperature and frequent cold spell in spring. Autumn is dry, with early frosts, after which it is often established a long warm weather.

The absolute minimum temperature is observed in January -28 °C, the absolute maximum + 33 °C in July and August.

The average date of the last and first frost is April 16 and October 24, the duration of the frost-free period is 138 days. The long-term maximum freezing depth of the soil during the winter season is 75 cm. The change of daily temperatures through 0 °C is observed on March 12 and October 21 with a transition of 125 days.

The prevailing winds of the western and eastern direction, often hurricane force, its speed reaches 20-25 m/s.

Relative air humidity in winter is about 70-80%, in summer - 50-80%. Seasonal snow cover is formed in January.

Climatic conditions of the site are generally favorable for the cultivation of crops in the Jeti-Oguz rayon, subject to sufficient irrigation.

3.2. Landscape

The irrigation plot is located on the alluvial piedmont plain. The piedmont clinoplain in the upper part directly adjoined to the mid-mountain or low-mountain topography, in the southern part it gradually merges with the flat lake plain. The surface slope is from 7-9 degrees at the southern ridge of Terskey Alatau, to 0.5-1 degrees when approaching the lake. In the eastern part, the territory of the WUA is adjoined by the mountain Orgochor, 450 meters high. There are no stony, not cultivated soils. Design works will not damage the ground and will not affect the landscape.

The territory is prone to erosion. To prevent erosion, caused by irrigation of agricultural lands, it is necessary to use agro-ameliorative interventions aimed at preventing water erosion of

soils. In the EMP, these kinds of interventions are proposed for the operation period of a facility. Construction works will not impact on erosion processes of a particular object's surrounding lands.

To prevent soil erosion during irrigation, the tail-end water discharge structures built on the existing irrigation network.

3.3. Hydrology

The r. Chon-Kyzyl-Suu flows into the Issyk-Lake and is the source for irrigation water and belongs to snow-glaciers type. The length 48 km, water catchment area 340 km² and has 14 small tributaries. Average annual water flow of the river is 4.7m³/s, max flow – 20.8m³/s, minimum flow – 0.7m³/s. the river delivers water on 9559 ha of farmlands. There are no enterprises in the areas that discharge chemicals and waste water into the source of irrigation.

3.4. Vegetation cover

Vegetation cover: trees, grass, agricultural lands. The soil-vegetation layer will not be disturbed, as construction works will be executed on existing water structures/facilities. The rehabilitation works will not impact the agricultural areas, as all projected objects for rehabilitation located beyond their borders.

In the process of canals rehabilitation, it is necessary to execute tree felling that hamper course of works and are in the alienation zone of water facilities/structures. According to the requirements of the Water Code of the Kyrgyz Republic, Art. 80 p.3, while executing repair and rehabilitation works, the shrubbery cutting and forest felling within the alienation zones of water management structures and canals, as well as sanitary cutting and deadwood cutting, do not require permission from specially authorized state agencies/bodies. Prior to commencement of work, the contractor will inform the environmental protection agency of forthcoming tree and shrub vegetation cutting to be conducted. If rehabilitation works to-be-conducted on the sections that are not within alienation water management zones, then tree and shrubbery cutting is the subject to approval with environmental protection agencies/bodies.

4. Description of procedures related to regular operation works

4.1. Technical surveillance on canals and structures condition

In the operational scheme activities, paramount importance is paid to the timely conduct of preventive and rehabilitation works that exclude probability of system failure, while complying to the rules of its operation.

The main indicators of normal technical condition and reliable operation of the on-farm irrigation network are provision of designed canal's capacity, minimum filtration and performance specification water losses, absence of sedimentation, greenery overgrowing, collapse and canal's erosion.

If the actual canal's capacity corresponds to the estimated throughput, then the technical condition of a canal is good and considered as reliable. If there are 20 -25% throughput deviations, then a canal's reliability is reduced, and the technical condition is an average. If the deviations are more than 25%, then a canal's performance considered as unreliable and its technical condition is below the average.

To ensure a canal's throughput, it is necessary to conduct a careful monitoring over water regulating structures. The water volumes regulating structures must be easily and reliably (re)adjusted and controlled. While operating water regulating structures, it is necessary to ensure that there is no water leakage through the water outlet gates and no canals' erosion and destruction on its structural parts. The lined sections, expansion and construction joint sections of a canal are the subject of constant surveillance. The damaged lining must be reworked

immediately. A canal's lined sections must be of monolithic concrete and maintenance must be timely to prevent cracking. A particular attention must be paid to subsiding soils, as concrete lining on those soils is prone to cracks formation.

A daily maintenance of lined and unlined canals, facilities and equipment located on them, keeping them in good condition is reduced to the removal of vegetation and floating objects that block canals and lead to sedimentation in certain areas. During the maintenance, works are carried out to clean up structures and water distribution units from debris and ice, vegetation overgrowth and sedimentation.

A slight and gradual canal's base degradation, sometimes, leads to the formation of cracks on the lining that impossible to rehabilitate. In this case, the cracked and battered lining sections are cut down and filled with new concrete.

The joint sections of a canal, with prefabricated reinforced concrete slabs, are the subject of particular attention. Constant surveillance of which is necessary and, if there any urgency, must be treated with resilient water resistant materials that can withstand a vegetation impact.

Within the flumes it is prohibited to dissolve various types of fertilizers that may cause destruction of concrete. It is also not recommended the flumes network operation if water flow temperature is below $-5 - 10^{\circ}\text{C}$. Therefore, in the process of preparing the network for winter, the whole canal's route must be completely freed of water.

The livestock crossing and pasturing on canal's dams and slopes is prohibited. The livestock drinking and dipping allowed on special canal's section only.

To monitor the quality of irrigation water and prevent a canal's sedimentation, the water samples must be regularly inspected for the following indicators: turbidity, temperature, hydrogen index and mineralization.

4.2. Preparing on-farm network for the winter period

In the winter period, the on-farm irrigation network can be used for water charging irrigation, washing off and other types winter watering, as well as for supplying water to the residential areas and livestock farms, filling up reservoirs. Control over canals and structures operation, in the winter, should be paid particular attention, as to prevent formation of ice jams near bridges, crossings, etc. The trash racks that were set for the summer in front of water structures, must be removed for the winter. When frosts are formed and structures are covered with the ice, in this case the ice must be chipped without violating integrity of the structures and canal's coating.

4.3. Looking after wood lines and access roads

Forest plantations along canals are designed to protect the canals from vegetation overgrowing, lowering the level of groundwater along a canal's route and reducing the adverse effect of wind force on crops. Alongside of permanently located canals of the farm network that require constant desilting interventions, it is recommended to create, on the one side two-row or three-row strips of fast-growing trees and shrubs. The distances between trees in the strip is 1-3 m, between bushes - 0.75 - 1 m with a distance between greenery strips of 1.5 - 3 m.

The field and on-farm roads on irrigated area, as a rule, are ground roads. If they pass through silty loams and solonchaks, then a road is made of gravel or other coating. Roads maintenance is limited to keeping the upper layer in good condition. The thickness of gravel coated roads is maintained within 8 - 10 cm. The roadbed condition is also the subject of maintenance and must be periodically planned and compacted. Roadside cuvettes and canals must be cleaned of dirt and vegetation. To improve the water flow into cuvettes, the roadways must be made with slopes and with a slight lateral inclination from the middle to the cuvettes.

4.4. Repair works

The irrigation schemes are subject to repair works according to the annually developed and approved plans. In the practice of irrigation and drainage systems operation the current, major and emergency repair works are executed.

The current repair works carried out annually including desilting of canals, removal of vegetation, strengthening and widening dams, cleaning berms, eliminating small landslides, collapses, rifts and sandspits, repairing damaged anchorages and canals' lining, repairing small damages of a structure parts. While carrying out current repair works, a complex technical repair works and modifying a structural construction is not included. The preventive (prophylactic) repair works include:

- Patching ratholes;
- Structural cracks maintenance after ice impact;
- Tightening fixing bolts;
- Drainage structures winterization etc.

Preventive repair and a significant part of the current repair, including desilting of canals, vegetation and landslides removal, a minor canal repairs, repair of structures, buildings and other devices are performed annually without stopping the system operation.

Major repair is carried out, as required, within a few years' period and includes: repair works on a canal's sections, dams and parts of structures attritions and destructions, structural modification or replacement of certain elements and structural units.

Emergency repair - rehabilitation of canals, dams and structures or parts of them, destroyed as a result of natural phenomena (mudslides, floods, etc.), or violations of the technical operation rules, execution of which carried out 24/7, and all available material and technical resources and labor resources are mobilized for their implementation.

Repair and construction works on the on-farm network canals performed by WUAs contracting a construction company. Repair works expenses and operation of the on-farm network are annually provided by WUA budget.

4.5. Desilting of canals and vegetation removal

The solid particles of soil form sedimentation that moved around by water flow. The content of solid particles, per water volume unit, characterizes the water flow saturation with sediments, or its turbidity. Sediments, often, are formed as a result of soil wash-away in the catchment basin via snow/glaciers melting and rain waters. Partly the sedimentation is a product of a canal/river bed and banks erosion. The largest bed's sedimentation with pebbles and coarse sand observed and remain within the head section of a bulk water supply canal. The average sized sediment particles washed into a canal's distribution network and even into on-farm irrigation network.

On average, about 80% of sediments remains in the off-farm canals network and about 20% inflows into on-farm irrigation network. A canal's inclination impacts on sedimentation process, if an inclination is too steep then about 60% of sediments washed in on-farm network and fields. Desilting executed on annual basis and, if necessary, more often.

5. Environmental impact

Implementation of APNIP is addressed to provide economic, social and environmental benefits to farmers, farmer entities and local communities through WUA's development, the rehabilitation and modernization of irrigation and drainage infrastructures in projected areas. The best practices of previous projects demonstrate positive impacts on the environment. Namely, this project is aimed at reducing water losses in irrigation schemes, improving water resources management, improving agricultural productivity and improving soil fertility.

During the canals' rehabilitation process, the trees felling and shrubbery vegetation removal required, which is subject to approval with environmental protection authorities. Design and engineering works require strict compliance to the necessary requirements, including noise control, planting new trees to protect against wind erosion and construction of access roads, air pollution and timely construction waste disposal.

The requirements for the prevention of environmental pollution and negative impact on the population are provided for in the Law of the Kyrgyz Republic "General Technical Regulations for Ensuring Environmental Safety in the Kyrgyz Republic", the Law "On Production and Consumption Wastes", the Law "On Protection of Atmospheric Air", SanPin "Noise in the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,

5.1. Expected positive environmental impact

Positive impact includes:

- Reduction of water losses;
- Improved water resources management, which consist of construction and rehabilitation of water distribution and water-measuring structures;
- Agricultural productivity increase;
- Improved soil fertility by increasing humus with efficient irrigation schedules.

5.2. Potential negative environmental impact

At the same time, while carrying out civil reconstruction of irrigation networks works, there may be some potentially negative impacts on environmental protection conditions in projected areas that require attention, to take preventive actions and appropriate mitigation interventions during planning, development, construction, operation and maintenance.

When performing the planned works on the rehabilitation of irrigation networks, no asbestos-containing materials will be used. Note that previously were used asbestos-cement pipe crossings. But even in the past years they were dismantled and replaced with structures of more inert materials. Accordingly, no problems with asbestos-containing materials are expected. In the event of removal of asbestos cement pipes asbestos contained materials waste will be collected, transported and finally disposed by applying special protective measures in accordance with the hazardous waste handling standards. See Section 10 for detailed information on disposal of asbestos-containing materials.

Potential negative impacts are relatively minor, and positive economic, social and environmental benefits far outweigh them in environmental assessment. Consideration of these impacts is given below.

5.3. Impact on climate change

The irrigation and drainage schemes rehabilitation will enhance the agriculture and farming practices, materially-technical procurement, land owning, pastures and water management that

will lead to productivity increase and adaptation to climate change and sustainable use of natural resources.

Table 2. Assessment and ranking of environmental risks

Activities	Impact	Type	Duration	Term	Degree	Risk	Reversibility	Probability
Construction phase								
Location of construction site	Soil contamination at a construction site as a result of storage, construction and household waste, including liquid wastes.	Direct	Short-term	Immediate	Low	Low	Reversible	Average
	surface water and ground water contamination at a construction site, as a result of storage of construction and household waste, including liquid waste	Direct	Short-term	Immediate or delayed	Low	Moderate/Low	Reversible	Low
Unloading of excavated soil and construction waste	the landscape degradation, destruction of the animal world natural habitat	Direct	Mid-term	Immediate	Low	Low	Reversible	Average
Transportation of building materials, use of heavy machinery	air contamination and noise impacting local residents/workers during traffic of vehicles and heavy machinery	Direct	Short-term	Immediate	Low	Moderate/Low	Reversible	High
canals rehabilitation	Damage and trees felling and shrubbery currying	direct	long term	immediate	high	low	reversible	high
Operation and maintenance Phase								
Cleaning of unlined canals during their operation	Deterioration of the landscape, destruction of the natural habitat of the wild animals	Direct	Mid-term	Immediate	Low	Low	Reversible	Average
Increase in the supply of irrigation water, which increases the amount of waste water	Surface water pollution and water of Issyk-Kul Lake by agrochemicals, as a result of excessive use of pesticides and mineral fertilizers	Indirect	Mid-term	Delayed	Moderate	Moderate/Low	Reversible	Average
Increase in the supply of irrigation water, which	Groundwater pollution in the coastal zone of Lake Issyk-	Indirect	Long-term	Delayed	Moderate	Moderate/Low	Reversible	Average

increases the filtration of surface water on the groundwater table	Kul by agrochemicals, as a result of excessive use of pesticides and mineral fertilizers							
Increasing the supply of irrigation water, which can lead to an increase in their speed of movement	Soil erosion, related with existing agricultural production practice	Indirect	Long-term	Delayed	Low	Low	Reversible	Low

6. Environmental management and monitoring plan.

All the construction phase risks are easily monitored and eliminated. They can be minimized by properly designing mitigation interventions and monitoring the Contractor, while executing works. During the (re)construction works, trees felling and shrubbery cutting in a canal's alienation zone will be carried out in accordance with the requirements of the Water Code (Article 80, para. 3.) and in agreement with the specially authorized environmental protection agency/body.

Among the risks of the operation and maintenance phase (O&M), the risk of degradation of the landscape and destruction of the natural habitat of the wild animals when cleaning unlined canals and drains is explicit and easily controlled. In case of suspected contamination of surface and groundwater by agrochemicals due to excessive use of pesticides and mineral fertilizers, soil erosion associated with existing practices of agricultural production, increasing groundwater table in the zone of their deep occurrence due to excessive irrigation and, as a consequence, soil salinization, an accredited laboratory will be mobilized for special monitoring.

The need for mitigation interventions at the O&M phase is determined exactly in the process of environmental monitoring.

Table 3: Mitigation Plan

Phase	Issue	Preventive/ Mitigation interventions	Cost, US \$		Institutional responsibility		Control
			installation	operation	installation	operation	
Construction	organizing a construction site	1) It is forbidden to locate a construction site in the water protection zones of rivers and canals; 2) Ensure removal of all waste and construction rubble from (re) construction sites to dispose on the authorized municipal landfills, with the permission of local authorities; 3) Execute planning and restoration measures to restore troubled lands during and after completing (re)construction	n/a	part of the (re)construction works contract 617 815	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	soil after a canal's cleaning	conduct a planned rehab works	n/a		PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	trees and shrubbery vegetation	Coordination with the specially authorized environmental protection agency/body cutting greenery plantations	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU;

							3) State Ecological Inspectorate
	vehicular emissions into the atmosphere	1) vehicular exhaust systems and construction equipment should be in good condition, in order to minimize air pollution; 2) Limiting the speed of vehicles and selecting suitable transportation routes to minimize dust emissions; 3) Moisturizing the road surface while driving through the residential area territories	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
	noise impact within labor area	machinery and equipment operation	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility for employers health and safety
	Workers' and rural population health and safety	1) construction sites will be equipped with information and designator boards concerning working regulations and requirements; 2) easily accessible and complete first aid kit to treat an injury. 3) ensuring personal protection equipment (helmets, protected shoes, gloves); 4) limiting access to (re)construction sites, zones, equipment locations and other potentially dangerous places by local citizens.	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) A construction site inspections made by PIU; 3) State Ecological Inspectorate
Operation	Threats to water quality due to salinity of soils because of drainage	- training on water and soil use improvement; - visual monitoring (preventing waterlogging)	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspection, approval and coordination with SETI
	Threats to water	- best practices on pesticides	n/a	n/a	AAS/AISP	WUA	RSU on-site

	quality due to contamination by agrochemicals	application, - application of agrochemicals in accordance with recommended norms, - preventing effluent water discharge into canals and surface water objects,				members	inspection, approval and coordination with SETI
	Increase of soil erosion	- training on water use and soil science, - outreach campaign - rational use of irrigation water and applying water regimes in accordance with the irrigation requirements, - Arrangement of irrigation furrows on the lowest slope (cross-cut furrows); - shortened furrows length; - altering irrigation technology (sprinklers, drip irrigation)	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspections
	Climate change impact	education on environmental mitigation activities; -compliance of irrigation norms and regulations.	n/a	n/a	AAS/AISP	WUA members	DWRLI

Table 4. Environmental Monitoring Plan

Project Phase	Parameter	Location	Method/Equipment	Frequency	Objective	Costs		Responsibility	
						Organization	Performance	Organization	Performance
Baseline	salinity, concentration of hydrogen ions (pH), water turbidity	Headworks and tail-end of irrigation scheme: Chon-Kyzyl-Suu River, Suttuu-Bulak canal and waste water	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	Rehabilitation works and agricultural activities impact assessment	0	Insignificant	Samples selection RSU	water sampling and analysis
Construction	Site-specific environmental management and monitoring plan	subprojects under rehabilitation	Visual inspection of subproject	Before, during and after completion of construction	Compliance with environmental protection measures	0	Insignificant	PIU/Contractor	PIU/Contractor
	Salinity, concentration of hydrogen ions, turbidity	Canals under rehabilitation which located upstream and downstream of the rehabilitation site	Field equipment for parameters measurement	Before, during and after completion of construction	Civil works impact assessment	0	Insignificant	RSU	water sampling and analysis. Introduction of results to PIU
	Pollution of watercourses by petroleum, oil and lubricants	Selectively for subprojects when suspected of contamination. Downstream of rehabilitation subproject	Sample for laboratory analysis	During construction	Civil works impact assessment	0	100 USD	Contractor	Accredited laboratory Water sampling and analysis. Introduction of results to PIU

Operation	Salinity in soil	Problematic sites	Sample of soil/analysis	Quarterly	Soil quality identification	0	300 USD	AHE	AHE
	Salinity, concentration of hydrogen ions, turbidity	Headworks of irrigation scheme of WUA – Chon-Kyzyl-Suu River, Suttuu-Bulak canal Waste water	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	Irrigation and Waste water quality identification	0	Insignificant	RSU	RSU

7. Legislation support

In the Kyrgyz Republic there are a number of laws on environmental protection, provisions and regulations, which address specific issues of environmental protection. Table 5 summarizes the legal regulations relevant to this project.

Table 5: Basic laws, provisions and resolutions

Legal authority	Legal mandate
Constitution (2010)	The state's ownership of natural resources, rights and duties of citizens
Water Code of the Kyrgyz Republic (2005)	It identifies state policy, legislative and institutional frameworks on water resources management and protection
Law on environmental protection (1999)	It identifies state policy on environmental protection, legislative and institutional frameworks on water resources management and environmental protection
Law "General technical regulation on ensuring environmental safety in the Kyrgyz Republic" (2009)	The Regulation determines the main provisions of technical regulation in the field of environmental safety and establishes general requirements for ensuring environmental safety in the design and implementation of activities at economic and other activities for production, storage, transportation and disposal of products.
Law on environmental appraisal (1999)	It requires review of environmental protection issues (environmental appraisal) and prevents negative environmental impacts and human health as a result of economic and other activities
Law on specially protected natural reservations (2011)	It establishes regulation rules for specially protected natural areas, various types and/or levels of economic activity
Law on protection of atmosphere (1999)	It regulates emissions to atmosphere and specific obligations on protection of atmosphere
SanPin "Noise in the workplaces, in premises of residential, public buildings and on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,	Establish sanitary-epidemiological requirements, standardized parameters and maximum permissible noise levels at (re)construction sites, noise classification, permissible noise levels in the projected rooms, (re)construction sites, (re)constructed and operated residential, public buildings and on the territory of residential buildings.
the GovKR. Provision No.224 of 03/05/2013. "On approval of fees for calculating the amount of penalties for damages caused to objects of animal and plant life, mumijo-containing mineral materials and mushrooms by legal entities and individuals"	Fees designed to ensure preservation of biodiversity, proper protection of flora and fauna

Government of the Kyrgyz Republic also has ratified a series of international conventions on environmental protection and agreements, related to this project:

- Convention on environmental impact assessment of the transboundary territories, Espoo (2001);
- Agreement on cooperation in environmental protection and efficient use of natural resources (Kyrgyz Republic, Kazakhstan, Uzbekistan) (1998);

- Convention on wetlands of international importance especially as waterfowl habitat (Ramsar Convention) (2002);
- Agreement on the use of water structures for interstate purposes on the Chu and Talas Rivers (Kyrgyz Republic and Kazakhstan) (2000);
- United Nations Framework Convention on Climate Change (2000);
- Kyoto Protocol (2003).

8. Public hearings

In accordance with Operational Procedures OP4.01.¹ The WB has special requirements for information and public consultations disclosure. The disclosure includes presentation of information about the Project to the general public and population covered by the Project and other stakeholders, starting from earlier implementation cycle and throughout the framework. The information disclosure is intended to facilitate constructive interaction with the population covered by the Project and stakeholders throughout the Project's lifecycle.

In addition, the Kyrgyz Republic is a member of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the United Nations Economic Commission for Europe, which also contains provisions for ensuring the disclosure of objectives and environmental considerations of the Project.

Public hearings in the WUA Belsovkhov" in Issyk-Kul oblast, Djety-Oguz rayon and took part in the public hearings: representatives of WUAs, local self-governing authorities, farmers, WUA's rayon support units, designers, PIU.

At public hearings, the information was provided concerning technical solutions of the Project and its environmental impact, as well as the interventions that would be taken to prevent and mitigate the impact.

Participants in the hearings were asked a number of questions, the activities for which are included in the EMP.

The minutes of the public hearings, list of participants and photos are attached.

¹ Operational Guidelines of the World Bank: OG 4.01, "Environmental Assessment", point 3.

8.1. Minutes of public hearings

Minutes of public hearings with WUA ‘Belsovkhov’ members, Issyk-Kul oblast, Djety-Oguz rayon

15.05.2017

Village Orgochor.

AGENDA:

1. Protection of surrounding environment
2. Miscellaneous issues

Attendees:

1. Musaev Kuduret – APNIP PIU engineer
2. Kolupaev Victor – design engineer
3. Mamytov Bektemir – Djety-Oguz RSU WUA chief specialist

WUA Directorate:

1. Mambetov .D – WUA ‘Belsovkhov’ director
2. Dotaliev. T - chieft accountant WUA ‘Belsovkhov’

Other attendees: 24 water users

Kolupaev.V has introduced all attendees. And described oncoming irrigation network rehab and capital repair interventions, and importance of environmental protection measures, which, up until the moment, was not paid sufficient attention. Subject of the meeting “Importance of environmental mitigations”.

Musaev. K has also introduced issue concerning importance of protection of surrounding environment and follow-up impacts, if environmental regulations will not be strictly followed. Every single person must make their own input into the issue, same concerns a subcontractor, as well as WUA’s directorate and water users. The importance of transporting construction wastes, with follow-up burial and defining wastes landfill etc.

Kolupaev V: While under (re)construction works, trees will be felled, which grow along canal’s riverbed. So a formal letter was sent to authority in charge, in order to obtain permission to fell and cut trees and shrubbery. Authorized inspectors were assigned to mark the trees to-be-felled and closely cooperated with WUAs directorate. The trees to-be-felled are the property of WUA and will be handed over to members in need, in accordance with the AO formal decision. As aftermath, even bigger number of trees must be planted in other locations, in order to compensate the loss.

Musaev. K: Does anyone have any question concerning the issue? We have also must to inform you that 31 canals were planned to be rehabilitated, of which 10 will be reconditioned and water filtration losses decrease that will prevent waterlogging.

Akmatov. A: When do you plan to start rehab works? As we are passionately awaiting it for two years.

Musaev. K: I assume that rehab works will start at the beginning of this year. It just depends on bidding procedures deadlines and to covenant a contract with a subcontractor.

Smanov. T: From what zone you plan to start rehabs? Either upper or lower?

Kolupaev. V: The rehab works will start at both zones simultaneously. And, as it was said previously, the object of works was segregated on to two lots, so the contract will be signed with two subcontractors.

Akmatov. A: Who will be responsible for rehab quality inspections?



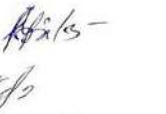



















Musaev. K: On your behalf must be a person assigned to do this and who will be present at the construction site while rehabs will be executed. But there are not restrictions laid upon construction works and anyone of you may scrutinize the process. If you notice that smth goes wrong, please feel free to inform us about. As from our behalf a technical inspection engineer will be assigned, who is responsible for construction quality and design quality control.

Sulaymanov. B: Whether access road surface will be levelled, otherwise it is simply impossible to drive through the roads.

Kolupaev. V: Certainly, as a start up the graders will smooth out the roads' surface, or subcontractor will also encounter difficulties to drive on.

Mambetov. D: Expressed his gratitude to attendees on behalf of all waterusers.

Раббиллаһимдин далайбаевдин коллегия
Союнга өткен чогуушугун кабыл алды.

1. Мамбетов Д. О. 
2. Байсанов Т. 
3. Баймиденов. Б. - 
4. Байгазиев Н. 
5. Исмаилов С. С. 
6. Магдоев 
7. Бексултанов У. 
8. Ахмедов Б. 
9. Мунучиева 
10. Чокмобай 
11. Исмаилов Т. 
12. Исмаилов Т. 
13. Чокмобай А. 
14. Мунучиева Т. 
15. Исмаилов 
16. Исмаилов Ч. К. 
17. Исмаилов М. 
18. Исмаилов 
19. Токмаев Э. 
20. Рысалиев Р. 
21. Исмаилов Т. 
22. Мамбетов К. О. 

9. Pictures of canals in the existing condition



Picture 1. Headworks of Polyanski canal, 02 May, 2015



Picture 2. Flume which is subject to rehabilitation, 02 May, 2015



Picture 3. On-farm canal is unlined, 02 May, 2015



Picture 4. Distribution structure which is subject to rehabilitation, 02 May, 2015

10. Collection, storage, transportation and disposal of asbestos-containing wastes.

Removal of materials that contain asbestos will be carried out in line with the local legislation, including construction standards, work safety issues, air borne emissions of hazardous pollutants and disposal of waste and hazardous waste (in the event that there is no local legislation, the Directive 2003/18/EC of the European Parliament will be used, that amends and supplements Directive of the Council 83/477/EEC on worker protection from workplace asbestos exposure risks: threshold values of airborne dust particles is 0.1 fiber/cm³; also use the Good Practice Note: Asbestos: Health Issues at Workplace and Community; World Bank). Asbestos materials shall be subject to immediate final disposal/burial under special conditions.

According to Order #885 of the Government of the Kyrgyz Republic *On Hazardous Waste Management in the Kyrgyz Republic* of December 28, 2015, asbestos-containing wastes should be disposed as follows.

The hazardous waste management process (waste lifecycle) consists of the following phases: generation, accumulation (collection, temporary storage, stockpiling), transportation, neutralization, recycling, reuse of recycled products, and disposal.

When asbestos is present at a project site, it should be clearly labeled as a hazardous material. Asbestos-containing materials should not be subject to cutting or breaking as this will result in dust generation. In reconstruction, all workers should avoid crushing/damaging asbestos-containing waste, stockpile such waste at designated locations within the construction site and dispose of it properly afterwards to a special location or landfill.

When asbestos-containing waste is subject to temporary on-site storage, they should be properly contained in leak-tight containers and labeled appropriately as a hazardous material. Safety precautions should be taken to prevent any unauthorized removal of such waste from the site.

10.1. Collection and temporary storage of waste

Asbestos waste generation should be minimized by using efficient technologies.

All asbestos-containing materials should be handled and disposed by qualified and experienced personnel only. The personnel should wear appropriate protective equipment (safety masks, gloves and overalls).

The amount of waste stored at the designated site must not be greater than permitted by the standards.

Industrial waste collection sites and access ways must not be blocked up.

When handling asbestos waste, the workers should necessarily wear special protective clothing, gloves and respirators. Prior to removing (if required) asbestos from the site, it should be treated with a wetting agent to minimize asbestos dust emission. Removed asbestos should never be reused.

Keeping foreign items, individual or working clothes, or personal protection equipment, or having meals at waste collection sites is not allowed.

During handling operations, workers must comply with applicable handling requirements and general safety rules. All operations should be carried out mechanically, using labor-saving lifting and transport equipment.

Hazardous wastes should be transported to the landfills by properly equipped vehicles, either own or of a specialized third party carrier. The transport vehicles should be constructed and used in a manner that prevents potential incidents, losses and environmental pollution both on the way to the landfill and when transferring waste from one vehicle to another. All activities that involve loading, transportation and unloading of waste at main and auxiliary sites should be mechanized and use leak-tight equipment. Opening hazardous waste containers during transportation is prohibited.

Solid and dusty wastes should be transported in special containers or containers fitted with gripping devices for unloading by truck cranes. Transporting unpacked asbestos in open trucks or on flat wagons is not allowed.

Using hooks and other sharp tools in handling operations is not allowed.

No one except the driver and staff members authorized to escort the waste off site is allowed to be in vehicles transporting hazardous waste. The drivers of vehicles that will transport asbestos waste must be trained in safe transport requirements.

All operations in connection with loading, transport, unloading and disposal of waste must be mechanized. The waste must be transported in a way to prevent transportation losses and environmental impacts.

10.2. Disposal of asbestos waste

Asbestos waste must be disposed to landfills for municipal solid waste or unrecycled industrial solid waste.