

**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 MANAGEMET PLAN**

For subproject WUA «Kara-Kungoy-Ukok-Suu», Kochkor rayon, Naryn oblast

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## 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
MASL	Meters above sea level
CDN	Collector and drainage network
NSR	Night storage reservoir
DSR	Decade storage reservoir
HCR	Hydraulic cross-regulator

## **1. Introduction**

The Agricultural Productivity and Nutrition Improvement Project (APNIP) for the Kyrgyz Republic is being implemented by the International Development Association (IDA) and financed by the Trust Fund of the Global Program for Agricultural and Food Security (GPAFS). Within APNIP framework the Environmental Management Plan (EMP) prepared and aimed at ensuring that the Project complies with the principles and practices of environmental management and environmental protection policy, and legal requirements of the Government of the Kyrgyz Republic, as well as IDA policy on environmental safety interventions.

The environmental assessment (EA) goals are to identify the subproject's significant impact on surrounding environment (positive and negative), identify appropriate preventive and mitigation interventions aimed to minimize or eliminate any expected irreversible impacts. 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 interventions while implementing the subproject. EMP also establishes the necessary institutional obligations, proposes timing of the implementation of mentioned activities and cost estimates for the subproject's budget. APNIP, in the World Bank environmental risks system, is classified as "B" category. No irreversible or significant impact(s) on surrounding environment is expected.

Based on the general EMP, the Environmental Management and Monitoring Plan (EMMP) for the rehabilitation of WUA "Kara-Kungoy-Ukok-Suu", Kochkor rayon, Naryn oblast has been developed, taking into consideration the specifics of this particular subproject.

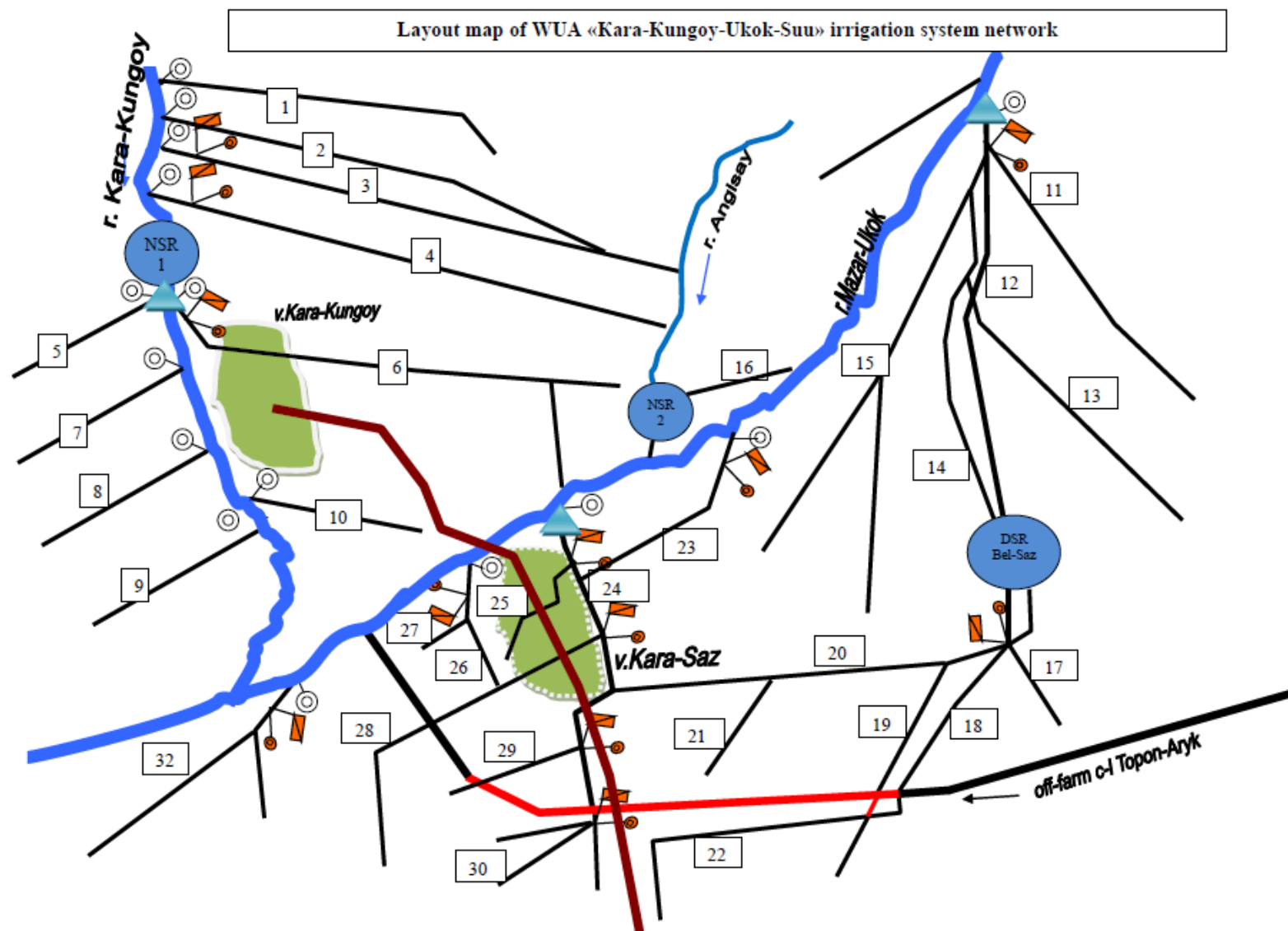


Image 1. Layout map of WUA «Kara-Kungoy-Ukok-Suu» on-farm irrigation network.

Annex to the layout map

№	canals	L km.	Q m3/c	V `000.m³
1	Dyishonbek	1,85	0,30	
2	Myktybek saray	3,64	0,35	
3	Tash-Alysh	3,66	1,0	
4	Eki-Kyzyl	4,35	0,30	
5	Kyrgyzbay	1,5	0,12	
6	Kyshtak	2,13	0,35	
7	Turganbay	1,63	0,15	
8	Kylychbek	2,18	0,20	
9	Uy-Saray	1,0	0,1	
10	Chakitaralma	1,10	0,20	
11	Koy-Soibos-Uch-Bulak	3,96	0,18	
12	Chon-Alysh	3,33	0,5	
13	JUmagul-Alysh	3,34	0,20	
14	earthbed c-1 Chon-ALysh	3,37	0,30	
15	Maychybyr-ustu	3,92	0,5	
16	Sagynbay (prefabs)	0,9	0,1	
17	Kochkorbay	1,22	0,1	
18	Chap-2	1,38	0,2	
19	Tik (prefabs)	2,09	0,20	
20	Chap-Mechit	1,5	0,5	
21	Tik P-2	2,71	0,2	
22	Teksherbek	3,52	0,2	
23	Maychybyr	1,3	0,3	
24	Kara-Saz	3,34	0,6	
25	Kara-Saz (prefabs)	1,4	0,2	
26	Bala-Beyit	3,0	0,4	
27	Bala-Beyit (prefabs)	0,4	0,2	
28	Sakybaev	1,5	0,3	
29	Dyishonakun (prefabs)	0,6	0,2	
30	Chechey	1,0	0,2	
31	Semiz-Bel (prefabs)	1,57	0,3	
32	DSR Bel-Saz			400
33	NSR Kara-Kungoy			170
34	NSR Sagynbay			20
35	off-farm c-1 Topon-Aryk (pump)			

Условные обозначения:	
	- water intake
	- canals
	- motorway Kochkor-Ata-Kungoy
	- cross-regulators
	- off-farm c-1 under repair
	- water monitoring points during (re)construction

## **2. Description of subproject under rehabilitation**

### **2.1. Technical condition of subproject under rehab**

The WUA «Kara-Kungoy-Ukok-Suu» established on March 24, 2003 and on the territories of Kosh-Dobo AO, village Kara-Saz, Kochkor rayon, Naryn oblast, 15km to the south-east from rayon's center Kochkor. The nearest railway station in the c. Balykchi – 75 km, and 200 km off Bishkek. The total irrigated area – 2459 ha. The landscape height – 1900-2100 masl, population – 4295 people, 849 households. The total irrigation system network length – 85.4 km, of which lined – 27.3 km and 58.1 km – earthbed.

### **2.2. WUA's irrigation system description**

Currently, the irrigation water into canals Duyshobek, Myktybek, Tash-Alysh and Kyzyl abstracted from the r. Kara-Kungoy through a river diversion spur(s). The WUA has on its balance NSR “Kara-Kungoy”- 170 th.m<sup>3</sup> and 1 DSR “Bel-Saz”- 400 m<sup>3</sup>. In the riverbed Kara-Kunga there is NSR Kara-Kunga. The deficit in irrigation water delivered to the serviced areas is covered by the NSR, which also supplies the irrigation water to the on-farm canals Kyrgyzbay, Kyshtak, Turganbay, Kylychbek, Chakitaralma, Uysaray and Semiz-Bel.

The river system Mazar-Ukok is also supplying the irrigation water into canals Chon-Alysh-lined, Chon-Alysh-earthbed, Koysoibos, Maychybar-Usta, Maychybyr, Kara-Saz and DSR “Bel-Saz”, the latter receives water from canals Chon-Alysh-lined, Chon-Alysh-earthbed. Currently, canal Chon-Alysh-lined is non-functional. On-farm lined and earthbed canals receive the irrigation water from the DSR “Bel-Saz”. The subproject planned cleaning the NSR, which is filled with water from the river. Kara-Kungoy and repair a water outlet from the NSR. The off-farm network is in satisfactory condition, there are no significant problems, but it requires partial concrete lining of the canal at length about 1.5 km, construction of a water distribution structure and a water outlet with pipe-crossing.

Canals and HTS are in extremely unsatisfactory condition. Due to insufficient canals' throughput, there is a shortage of irrigation water. In many sections of canals' throughput is reduced due to destroyed sections of canals. The water volume in NSR is not sufficient for the accumulation of daily and decade runoff due to sedimentation of the reservoir. Currently, NSR is silted. The irrigation water deficit on serviced areas is covered by the NSR, which urgently require mechanical cleaning. The irrigation water from NSR and DSR delivered into on-farm canals. Below the list of malfunctions found:

- The metal structures of water outlets from the DSR and NSR are in faulty condition and unusable, and require upgrading/replacement. Deformed valve, gearbox and gate shutter, gate seals worn out
- Prefabs and L-shape blocks on certain sections of canals deformed and disintegrated.
- Multiple HTS alongside of a canal are also deformed and disintegrated and having cracks, holes and certain RF-concrete structures subsided.
- Destruction of placed riprap of the upper and lower reaches.
- Absence, incompleteness and/or broken gate-shutters.
- Main water outlet structures have damages on RF concrete, water resistant layer, desilting pools, cushion-well, placed rip-rap constructions of the upper and lower reaches, shutter-gates and threaded-lifts.
- Lack of water regulating and metering HTS.
- There are not enough water outlets on the canals. Water abstraction executed via non-engineering type structures. There are also lack of bridge/pipe-crossings for the network maintenance and for agricultural works execution.

Some canals do not have HP and existing HP on certain canals are faulty or non-functional and therefore water metering is not carried forward. Irrigation fees are paid per irrigated ha, but not for the volumes of water supplied. The subproject planned the construction of 9 HPs, which will allow WUAs to organize water control. To ensure water metering in canals, reduce water losses, increase efficiency and ensure guaranteed water supply and water distribution, the rehab of off-farm and on-farm canals is necessary. Rehab measures will increase the capacity of a canal, improve water metering in canals, reduce water losses, increase efficiency and ensure guaranteed water supply and water distribution.

The recommended canal section for rehab were selected by the commission, in coordination with the PIU engineer of Kochkor RSU and WUA “Kara-Kunga Ukok Suu” representatives. While examining the technical condition of WUA “Kara-Kungoy Ukok Suu” on-farm network e, it was found that the canals are in poor condition and require (re)construction and reassemble them with necessary HTS. The reconstruction of on-farm network will increase the system’s efficiency, reduces water filtration losses, creates easy operation of canals, reduces the alienation areas and soil erosion, and improve the landscape.

While examining canals for rehab and the territory adjacent to them, it has been established:

1. The earthbed canals are overgrown with greenery and their carrying capacity is practically reduced to zero, there was no water in canals;
2. Pipe-crossings and HTS destroyed;
3. Canals are outside of residential areas, thus, (re)construction works will not impact the local population with noisy surroundings, including surrounding air;
4. Greenery overgrows require cutting/felling alongside of canals.

## **2. Description of subproject under rehabilitation**

### **2.1. Off-farm canal “Topon-Aryk” (Pump)**

c-1 “Topon-Aryk” (pump) is on the balance of Kochkor RVK, abstracting water from the r. Joon-Aryk through the pumping station “Kenesh”, and was built in 1978, with the length - 11.8 km in reinforced concrete prefab blocks and monolithic concrete. The command area - 1978 ha, maximum throughput - 2.5 m<sup>3</sup>/s.

Rehabilitation provided for:

- Dismantling of old monolithic concrete;
- Canals’ monolithic concrete lining;
- Rehab of water distribution structure Chyr-Dobo – 1 unit.
- Construction of a water outlet into the canal – 1 unit.

### **2.2. On-farm canals**

The rehab measures on on-farm canals will allow to increase of the canals throughput and efficiency by reducing water losses, ensuring guaranteed water supply and water distribution. After rehab, farmers will receive the required volumes of water and, accordingly, increase the yield of agri crops.

**2.2.1. c-1 «Duyshonbek»:** length – 1,85 km, throughput – 0,3 m<sup>3</sup>/s and in earthbed, command area – 40 ha. For water regulation and distribution purposes it is necessary to build the head water discharge regulator. The rehab planned rehab of water discharge regulator.



**2.2.2. c-I «Myktybek»:** length - 3,64 км, throughput - 0,35 м<sup>3</sup>/s, command area - 43 ha. For water regulation and distribution purposes it is necessary to build cross-regulator. The rehab planned construction of cross-regulator

**2.2.3. c-I «Tash-Alysh»:** length - 3,66 км, command area - 260 ha, throughput - 1,0 м<sup>3</sup>/s, and in earthbed. There are lack of HTS for water regulating and distribution purposes. The rehab planned (re)construction of HTS:

- Pipe-crossing – 1 unit;
- Cross-regulators – 4 units;
- HP - 1;
- Water outlets - 2;
- Main cross-regulator - 1
- Aqueduct - 1

**2.2.4. c-I «Kyzyl»:** length - 4,35 км, command area - 134 ha, throughput - 0,3 м<sup>3</sup>/s. The upper reach of canal – 400 m is in earthbed, thereafter lined with L-shape prefabs (Г-120) and concrete slabs - P-4(II-4). At different sections of the canal some prefabs subsided and broken, which impact the throughput. Also some sections that lined with concrete slabs at length – 0.5 m broken and require replacement. Also joint water-tight seams faulty, resulting in basement wash-off thus slabs impacted with deformation, as concrete lining degrading water losses increase. The subproject planned (re)construction of following:

- |  |          |
|--|----------|
| • The main cross-regulator                                   | 1 unit.  |
| • Cross-regulator  | 1 unit.  |
| • Water outlet   | 1 unit.  |
| • HP   | 1 unit.  |
| • Reassemble HTS with metal structures                       | 1 unit.  |
| • Pipe-crossing  | 1 unit.  |
| • Dismantling, reworking of concrete L-shape prefabs (Г-120) | 30 units |

**2.2.5. NSR “Kara-Kungoy”:** NSR built on the riverbed Kara-Kungoy, commissioned in - 1987. The water capacity of the NSR is not sufficient for daily water supply, as it is heavily sedimented. The water deficit is covered by the DSR. The dam length - 160 м, height - 10,4 м, storage capacity - 170 th.m<sup>3</sup>. The mechanical cleaning at volumes of 40000 м<sup>3</sup> required. The subproject planned following:

- |  |                         |
|--|-------------------------|
| • Mechanical cleaning                            | 40 000 м <sup>3</sup> ; |
| • By-pass canal                                  | 1 unit.                 |
| • Construction of an aqueduct                    | 1 unit.                 |
| • Water outlet repair and gear-box replacement - | 1 unit.                 |

**2.2.6. c-I “Kyrgyzbay”:** length - 1,5 км, command area - 22 ha, throughput - 0,12 м<sup>3</sup>/s and in earthbed. Water supplied from NSR “Kara-Kungoy”. The main water discharge regulator is absent, resulting on the possibility to quickly regulate excess water accumulation from supply canals into the river. Construction of water discharge regulator is necessary.

**2.2.7. c-I “Kylychbek”:** length - 2,18 км, command area - 68 ha, throughput - 0,2 м<sup>3</sup>/s. previously canal was lined with prefabs P-4(II-4), currently all prefabs absent and canal in earthbed, resulting in enormous water filtration losses. Water distribution complicated as water outlets are also absent. To combat water losses the subproject planned lining with rubble concrete at the upper reach of the canal from HM ПК0+00 to HM11+00, at length 1100 м. To improve water distribution, the subproject planned following:

- Construction of 2 water outlets.

- Construction of cross-regulator 1 unit.
- Rubble-concrete lining at length 1100 m.
- Construction of water outlets 2 units.

**2.2.8. c-I “Kyshtak”:** length - 2,13 км, command area - 128 ha, throughput - 0,35 m<sup>3</sup>/s and lined with L-shape prefabs. Water abstraction is river diversion weir. The main cross-regulator is faulty. During many years of operation water discharge structure nearly destroyed. Current condition of cross-regulator subsided, cast in-situ structures are also deformed, motorized discharge shutter-gate dismantled and jammed. Rigid construction of tail reach is absent, water flows underneath of concrete lining, thus, there is no point to rehabilitate it, and construction of a new cross-regulator required. The canal's bed at length of 400 m destroyed, in different sections of the canal L-shape prefabs subsided and broken, the throughput insufficient. Due to long-term operation, the upper reach of canal's concrete lining is destroyed, resulting in technical and water filtration losses. The subproject planned following:

- Dismantling, reworking of concrete L-shape prefabs (Г-120) - 270 units.
- Monolithic concrete lining 400m.
- The Main cross-regulator 1 unit.
- Cross-regulators 2 units.
- HP 1 unit.

**2.2.9. c-I “Maychybyr-Ustu”:** the main water discharge regulator is absent and as a result, there is no possibility to quickly regulate water supply into canal and ensure the excess water discharge from supply canals back to the river. The subproject provides construction of a cross-regulator.

**2.2.10. c-I “Chon-Alysh”:** length - 3,33 км, throughput - 0,5 m<sup>3</sup>/s and in prefabs L-shape blocks. Water abstraction is river diversion weir. During many years of operation, the main cross-regulator nearly destroyed. Current condition of cross-regulator subsided, cast in-situ structures are also deformed, motorized discharge shutter-gate dismantled and jammed. Rigid construction of tail reach is absent, water flows underneath of concrete lining, thus, there is no point to rehabilitate it, and construction of a new cross-regulator required. The canal's bed and slopes are also in faulty condition, the attrition of the canal 65-100%. Damages considered as serious, thus, rehabilitation of canal considered as irrational. Due to long-term operation, the upper reach of canal's concrete lining is destroyed, resulting in technical and water filtration losses. The subproject planned following:

- The main cross-regulator 1 unit.
- Dismantling, reworking of concrete L-shape prefabs (Г-120) 110 units.
- Canal lining 150 m.
- Selective L-shape blocks replacement 50 units.
- Monolithic concrete lining of the canal's bed 30 m<sup>3</sup>
- Cross-regulator in earthbed canal 1 unit.
- HP 1 unit.

**2.2.11. c-I “Koysoybos-Uchbulak”:** length - 4,0 км, command area - 76 ha, throughput - 0,18 m<sup>3</sup>/s and lined with L-shape prefabs (Лп-80). In different location of the canal prefabs broken and cracked impacting water flow. There are also lack of HTS for regulating water delivery and distribution. Construction of additional HTS required. The subproject provides:

- Selective prefabs replacement 100 units.
- Leveling of prefabs by the slope 30 units.
- Cross-regulators 2 units.
- Water outlets 2 units.

**2.2.12. DSR «Bel-Saz»:** water abstraction is from canal Chon-Alysh, the r.s Mazar-Ukok and commissioned in 1983. The storage capacity - 400 th.m<sup>3</sup>, dam length – 150 m, height – 6 m. The reservoir supplies water to AAs “Kosh-Dobo” – 190 ha, and “Ak-Kyia” – 53 ha also irrigation nwater delivered into on-farm canals. The subproject provides following:

- Water outlet shutter-gate replacement – 1 unit.
- Water outlet repair 1 unit.

**2.2.13. c-l ‘Chap-Mechit’:** abstracts water from DSR «Bel-Saz” and supplies water into canal “Kara-Saz”, length – 1.5 km, command area – 400 ha, throughput - 0,5 m<sup>3</sup>/s. The upper reach of canal is lined with L-shape prefab blocks, remaining part in earthbed. In some places L-shape prefabs subsided and broken, throughput hindered. Replacement of faulty L-shape prefabs required, as well as monolithic concrete lining. There are also insufficient number of HTS for water regulation and distribution. Construction of additional HTS required for adequate water supply. Начальная часть канала 55 метров облицовано сборными ж/бетонными блоками Г-120.

- Monolithic concrete lining 90m.
- Dismantling, reworking of concrete L-shape prefabs (Г-120) 30 units.
- Water distribution structures 1 unit.
- Water outlet 1 unit.
- Cross-regulator into canal “Tik” prefab 1 unit.
- HP 1 unit.

**2.2.14. prefab (flume) c-l “Tik”:** abstracts water from canal «Mechit”, length - 2,09 км, supplies water into canal “Topon-Aryk” (pump), throughput - 0,2 m<sup>3</sup>/s and lined with prefabs (flumes) Лп-60. In different locations prefabs subsided and broken, impacting the throughput. Due to long time operation, the concrete lining is faulty, resulting in technical water losses, in some places irrigation water overflowing from prefabs (flumes) edges. The subproject provides following:

- Dismantling prefab flumes Лп-60 330 units.
- Monolithic concrete lining 1977 m.
- Repair of cushion well 1 unit.

**2.2.15. c-l “Tik-2”:** abstracts water from canal «Mechit”, length - 2,71 км, throughput - 0,2 m<sup>3</sup>/s and lined with prefabs (flumes) Лп-60. In different locations prefabs subsided and broken, impacting the throughput. Due to long time operation, the concrete lining is faulty, resulting in technical water losses, in some places irrigation water overflowing from prefabs (flumes) edges. The subproject provides following:

- Dismantling and replacement with new prefab flumes Лп-60 20 units.
- Water outlet 1 unit.

**2.2.16. c-l ‘Teksherbek’:** abstracts water from canal «Topon-Aryk”, length – 3,53 км, throughput - 0,2 m<sup>3</sup>/s and lined with prefabs (flumes) Лп-60. At the upper reach of canal at length 600 m prefabs broken and in some places absent, impacting the throughput. Due to long time operation, the concrete lining is faulty, resulting in technical water losses, in some places irrigation water overflowing from prefabs (flumes) edges. The subproject provides following:

- Dismantling and replacement with new prefab flumes Лп-60 80 units.
- Rubble-concrete lining 500 m.
- Water cushion well repair 2 untis.

**2.2.17. c-l “Maychybyr”:** length - 1,3 км, throughput - 0,6 м<sup>3</sup>/s and in L-shape (Г-120) prefabs provides water into c-l “Kara-saz”, water abstraction via river diversion spur. The main cross-regulator practically destroyed. During long-time operation water discharge structure received serious damages. The lower reach basement is absent, water flows under prefabs, prefabs cracked and broken. The subproject provides:

- |  |                   |
|--|-------------------|
| • Construction of the main cross-regulator               | 1 unit.           |
| • Dismantling L-shape prefabs                            | 270 units.        |
| • Monolithic concrete lining                             | 400 m.            |
| • Dismantling and replacement of L-shape prefabs (Г-120) | 10 units.         |
| • Monolithic concrete lining of canal's bed              | 10 m <sup>3</sup> |
| • Cushion well repair                                    | 1 unit.           |
| • Reassemble cross-regulators' metal parts               | 1 unit.           |
| • HP   | 1 шт.             |

**2.2.18. c-l “Sakybaev” abstracts water from** canal «Kara-Saz” and in earthbed, length - 1,5 км, water distribution hindered due absence of cross-regulators. The subproject provides following:

- cross-regulators 4 units.

**2.2.19. c-l «Kara-Saz” (prefab flumes):** abstracts water from c-l «Kara-Saz”, length – 1,4 км, command area 40 ha, throughput - 0,2 м<sup>3</sup>/s and in prefabs flumes (Лп-60). In different location flumes subsided or broken, impacting the throughput. Due to long-time operation, concrete lining of canal is broken, resulting in technical water losses and overflowing through the canal's edges. The subproject provides following:

- |                                      |            |
|--------------------------------------|------------|
| • Dismantling faulty prefabs (Лп-60) | 150 units. |
| • Refitting prefabs (Лп-60)          | 150 units. |
| • Water cushion well                 | 1 unit.    |
| • Cross-regulators                   | 3 units.   |
| • Rehab of pipe-crossings            | 2 units.   |

**2.2.20. c-l “Duyshonakun” prefabs (flumes):** abstracts water from c-l “Kara-Saz”, length - 0,6 км, command area - 40 ha, throughput - 0,2 м<sup>3</sup>/s and in prefabs (Лп-60- flumes). In different section prefabs subsided and broken impacting throughput. Due to long-time operation concrete lining is broken resulting in technical water losses and water overflowing over the canal's edges. The subproject provides:

- |   |           |
|---|-----------|
| • Dismantling faulty prefabs (Лп-60-flumes) | 30 units. |
| • Refitting prefabs (Лп-60)                 | 40 units. |
| • Cross-regulators                          | 3 units.  |

**2.2.21. c-l “Balabeyit”:** abstracts water from the r. Mazar-Ukok via river diversion spur, commissioned in 1975 and in earthbed, length – 3.0 км, command area – 134 ha, throughput - 0,40 м<sup>3</sup>/s. The main cross-regulator practically destroyed. Due to longtime operation the water discharge structure seriously damaged. Currently, cross-regulator subsided, metal part of it deformed, mechanized gate dismantled. The lower reach basement is absent. The water resisting layer washed off, resulting in water flow underneath of canal. Damages considered as serious, thus, rehabilitation of canal considered as irrational. Construction of a new main cross-regulator required. The subproject planned following:

- |                            |          |
|----------------------------|----------|
| • The main cross-regulator | 1 unit.  |
| • Cross-regulator          | 5 units. |
| • Pipe-crossings           | 1 unit.  |
| • HP                       | 1 unit.  |

**2.2.22. c-I «Balabeyit» prefab (flume):** abstracts water from c-I «Balabeyit», length - 0,4 км, command area - 40 ha, throughput - 0,2 m<sup>3</sup>/s and lined with prefab flumes (JIp-60). In different locations prefabs subsided and broken, impacting the throughput and technical water losses. The subproject provides:

- Dismantling prefabs (JIp-60-flumes) 25 units.
- Refitting prefabs (JIp-60) 25 units.
- Reassemble metal structures 2 units.

**2.2.23. c-I «Semiz-Bel» prefab (flumes):** abstracts water from the r. Mazar-Ukok, length - 1,57 км, command area - 50 ha, throughput - 0,3 m<sup>3</sup>/s and lined with prefab flumes (JIp-60). The main cross-regulator is absent, thus resulting on quickly regulate water delivery and excess water discharge from supply canals into the river. In different locations prefabs subsided and broken, in some sections there are not prefabs, impacting the throughput. The subproject provides:

- Dismantling prefabs (JIp-60-flumes) 60 units.
- Refitting prefabs JIp-60 60 units.
- The main cross-regulator 1 unit.
- HP 1 unit.

Water reservoirs, dams and dikes rehabilitation is not planned. Therefore, the dams safety policy (OP 4.37) is not applicable. The application of the WB's policy OP4.12 (*Involuntary Resettlement*) is not required, since all works will be carried out within the existing irrigation system, without constructing additional facilities that capture lands of an individual landowner and land-user, which could require additional coordination and relocation.

Construction and rehabilitation works deadline: years April 2019- April 2021

### 3. Description of environmental parameters at the site

#### 3.1. Climate

The climate specifics. The average monthly and annual air T° in Table.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
-9,9	-6,0	0,5	0,5	11,0	13,8	16,3	15,0	10,9	4,8	-3,8	-8,2	4,2

- Average maximum air T°C – 3,9.
- Absolute minimum air T°C – 38.
- Estimated air T° C of coldest five days – 30.
- Average air T°C of coldest (ventilation) – 18.
- Estimated air T°C of coldest day – 37.
- The standard depth of seasonal freezing of soil under the open and bare from the snow surface, for coarse soils, cm - 238, sandy loam, fine sand and silty sand – 196 cm, gravel sand, large and medium density, cm - 210.
- Duration of frost-free period, days – 146.
- Average monthly and average annual precipitations, mm

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
10	12	15	16	33	53	31	17	11	6	14	11	209

- Average precipitation maximum, mm -20.
- Days with snow cover - 109.

- Average decade snow cover height, cm – 20.
- Average relative air humidity in 13.00 hours: coldest month of the year – 59%, hottest month of the year – 31%, for m/s Kochkorka.

Average monthly and annual relative air humidity, %

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
62	59	54	52	56	58	60	60	56	55	62	64	58

Average monthly and annual wind speed, m/s.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
1,7	1,7	1,3	2,1	1,9	2,3	2,3	2,0	2,8	2,0	1,7	1,5	1,9

### 3.2. Landscape

In the Kyrgyz Republic, all agricultural land areas considered as potentially erosion-hazardous. One of the extremely negative factors, contributing to water erosion, is landscape slopes. In the subproject WUA “Kara-Kungoy Ukok Suu”, Naryn Oblast, the slope of the area is from 0.015 to 0.05%. Therefore, to prevent erosion processes, caused by irrigation of agricultural lands, it is necessary to use agroameliorative interventions aimed at preventing water erosion of the soil. In the EMP, these measures are proposed for the operation period of subproject. Construction works will not impact on the erosion processes of subproject’s lands, soil and landscape.

### 3.4. Hydrology

The WUA Kara-Ungoy-Ukok-Suu irrigation system is fed from the rr. Kara-Kunga, Mazar-Ukok and rivulet Angisay. The Rivers’ water feeding type is snow-glacial. The flood starts in April, less often in early March and ends in September, rarely in August. The highest annual runoffs observed in June - July. In the surrounding areas there are no entities that discharge hazardous chemicals, pesticides and sewage into the source of irrigation, and that may endanger surrounding environment.

#### Average multiannual runoff of r. Kara-Kungoy

average monthly water flow, m <sup>3</sup> /s												Q <sub>aves</sub> , m <sup>3</sup> /s	W <sub>year</sub> , mln.m <sup>3</sup>
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
0,17	0,15	0,14	0,33	1,26	2,29	2,41	1,69	0,66	0,27	0,23	0,18	0,815	25,68

#### Average multiannual runoff of r. Mazar-Ukok

average monthly water flow, m <sup>3</sup> /s												Q <sub>aves</sub> , m <sup>3</sup> /s	W <sub>year</sub> , mln.m <sup>3</sup>
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
0,14	0,13	0,12	0,29	1,11	2,0	2,10	1,47	0,58	0,24	0,19	0,15	0,71	22,54

#### Average multiannual runoff of r. Angi-Say

average monthly water run-off, m <sup>3</sup> /s												Q <sub>aves</sub> , m <sup>3</sup> /s	W <sub>year</sub> , mln.m <sup>3</sup>
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
0,05	0,04	0,04	0,1	0,37	0,68	0,71	0,50	0,19	0,08	0,07	0,05	0,24	1,62

The GWT is projected area is at depth 80-200 meters.

### **3.5. Vegetation cover**

The vegetation cover: agri crops, trees, grass that will not be impacted, as all (re)construction works will be executed on already existing facilities, and arable agricultural lands will not be disturbed, as all (re)construction work(s) will be outside of their borders. 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 authorized environmental protection agencies/bodies. After rehab works completed, WUA members plan to plant trees to prevent wind erosion and considering access roads.

## **4. Description of procedures related to regular operation works**

### **4.1. Technical supervision on canals and structures conditions**

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 throughput, 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 joint sections construction 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 reworked.

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 prefabs it is prohibited to dissolve various types of fertilizers that may cause destruction of concrete. It is also not recommended the prefabs network operation if water flow temperature is

below -5 - 10°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 a 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. To the constant controlling on 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 lining.

#### **4.3. Looking after wood lines and access roads**

The forest plantations alongside of canals are designed to protect 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 farming 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 the distance between greenery strips of 1.5 - 3 m. The field and on-farm access 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. The roadside cuvettes and canals must be cleaned of dirt and vegetation. To improve 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 and 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.

The preventive repair and a significant part of the current repair, including desilting of canals, vegetation and landslides removal, a minor canal repair(s), repair of structures, buildings and other devices are performed annually without stopping a system's operation.



Major repair is carried out, as required, after 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 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 remain in the off-farm canals network and about 20% inflow 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**

The 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 (sub)projects demonstrate positive impacts on the environment. In fact, many positive impacts of the (sub)projects have been identified during the environmental assessment. Namely, this subproject is aimed at reducing water losses in irrigation schemes, improving water resources management, improving agricultural productivity and improving soil fertility.

The design works require compliance with a number of mandatory requirements, including requirements to comply with noise reduction, air quality, timely removal of solid, liquid household waste and construction debris. The requirements to prevent environmental pollution and negative impact(s) on the population are ensured in the Law of the Kyrgyz Republic "General Technical Regulations for Ensuring Environmental Safety in the Kyrgyz Republic", in the Law "On Production and Consumption Wastes", in the Law "On Air Protection", in SanPiN "Noise at workplaces, in premises of residential, public buildings and in the territory of residential buildings" the Gov.KR dated 11.04.2016. №201.

##### **5.1. Expected positive environmental impact**

The positive impact consists of:

- Water losses reduction;
- Improved water resources management, consisting of construction and rehabilitation of water distribution and water-metering structures;
- Agricultural productivity increase;

- Improved soil fertility by increasing humus while applying an efficient irrigation schedules.

## **5.2. Potential negative environmental impact**

At the same time, while executing irrigation network (re)construction works, there may be some potentially negative impacts on environmental protection conditions in the projected areas and require attention, preventive actions and appropriate mitigation measures during planning, development, construction, operation and maintenance. While performing the planned irrigation networks rehabilitation works, no asbestos-containing materials will be used. It is necessary to mention that previously asbestos cement pipe crossings were used. But they were replaced with structures of more inert materials and, at the moment, problems with asbestos-containing materials are not 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. The 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. Climate change impact**

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
<b>(re) Construction phase</b>								
Construction site location	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	low	reversible	low
Unloading of excavated soil during construction of a new canal's bed and other types of (re)construction workload	landscape and animals' natural habitat degradation	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 vehicles trafficking and heavy machinery	direct	mid-term	immediate	low	average	reversible	high
canals rehab	1) damaging and felling of tree-shrubbery cover;	direct	long term	immediate	high	low	reversible	high
<b>Operation and maintenance phase</b>								
earth-bed canals cleaning while in operation	landscape and animals' natural habitat degradation, local drainage scheme alteration	direct	mid-term	immediate	low	low	reversible	average
increase in irrigation water supply, which increases the volumes of waste water	surface water pollution with agrochemicals, as a result of excessive application of pesticides and mineral fertilizers	indirect	mid-term	delayed	moderate	moderate	reversible	average

increase in surface water volumes leading to the GWT rise due to surface water filtration	pollution of GWT by agrochemicals as result of excessive use of pesticides and mineral fertilizers	indirect	long-term	delayed	moderate	moderate	reversible	average
increase in irrigation water supply that leads to water speed increase	soil erosion, related to existing agricultural production practices and landscape inclination	indirect	long-term	delayed	moderate	moderate	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 measures 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. Excavated soil-vegetation layer will be transferred to the local authorities or WUA members to apply for agricultural purposes or/and landscape improvement. Among the O&M risks, the risk of landscape and animals' natural habitat degradation, while cleaning earth-bed canals and drains, is clear 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 necessity to apply mitigation measures, during O&M, is identified exactly in the process of environmental monitoring.

## **7. Health and safety at work**

In accordance with the KR's legislation requirements, concerning occupational health and safety, as well as the World Bank protective policies, the EMP has developed measures to protect health and safety during the (re)construction work under the subproject, see Table 2. The regulation "Requirements for environmental protection, occupational health and safety to people involved in work and the provision of services at facilities implemented as part of the World Bank's project "Improving Agricultural Productivity and Nutrition" had been developed and approved by the PIU Director's Order No. 8/p, dated March 16, 2018. The regulations are sent to all subcontractors involved in rehabilitation and (re)construction works under this subproject. Control over compliance with safety at a construction site will be carried out by the PIU, state control executed by the State Inspectorate of Environmental and Technical Safety under the Government of the Kyrgyz Republic.

**Table 3: Mitigation plan**

phase	subject	preventive/mitigation activities	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 855 586	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	1) soil transportation to the designated areas, approved by the local authorities; 2) execution of rehab-design interventions	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 cover;	Coordination with the specially authorized environmental protection agency/body cutting greenery plantations that grow outside of a canal's alienation zone	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;	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

		3) Moisturizing the road surface while driving through the residential area territories					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 to execute environmental mitigation interventions; 2) State Ecological Inspectorate
	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) to create registry for health and safety induction and work permit.	n/a	part of the (re)construction works contract	PIU/Contractor	Contractor	1) A Contractor bears responsibility to execute environmental mitigation interventions; 2) State Ecological Inspectorate 3) PIU
	safety of local population	limiting access to (re)construction sites, zones and equipment locations 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) State Ecological Inspectorate 3) PIU
operation	Threats to water quality due to contamination by agrochemicals and drainage monitoring	- best practices on pesticides application, - application of agrochemicals in accordance with recommended norms, - preventing effluent water discharge into canals and surface water objects, - monitoring waterlogging	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspection, approval and coordination with SETI
	Increased of soil erosion	- outreach campaign - rational use of irrigation water and applying water regimes in accordance with the irrigation requirements,	n/a	n/a	AAS/AISP	WUA members	RSU on-site inspections

	Climate change impact	<ul style="list-style-type: none"> <li>- Arrangement of irrigation furrows on the lowest slope (cross-cut furrows);</li> <li>- shortened furrows length;</li> <li>- altering irrigation technology (sprinklers, drip irrigation)</li> <li>- education on environmental mitigation activities;</li> <li>- compliance of irrigation norms and regulations.</li> </ul>	n/a	n/a	AAS/AISP	WUA members	DWRLI
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**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	upper and lower reaches of irrigation system: rr. Kara-Kungoy, Ukok	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	EMP	subprojects under rehab	visual inspection of a subproject	before, during and after (re)construction completion	ensuring implementation of planned activities under EMP	0	insignificant	subcontractor, PIU	subcontractor, PIU
	Salinity, concentration of hydrogen ions, turbidity	Canals under rehabilitation, located upstream and downstream of the rehabilitation site	Field equipment for parameters measurement	At the beginning, in the middle and at the end of vegetation season	assessment of construction works impact	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	salt content in the soil	problematic locations	soil sampling	quarterly	soil quality grading	0	300 USD	AHS	AHS
	Salinity, concentration of hydrogen ions, turbidity	upper reach of WUA's irrigation system – rr. Kara-Kungoy, Ukok	Field equipment for parameters measurement	Before, during and after completion of construction	irrigation and wastewater quality control	0	Insignificant	RSU	RSU

## **8. Stockpiling, transportation and disposal of asbestos containing materials/wastes**

Asbestos-containing materials disposal will be executed in accordance with the local legislation, including construction standards, occupational health and safety regulations, emissions of harmful substances into the atmosphere, disposal/removal of construction and hazardous wastes (in cases of a specific domestic legislation absence, the European Parliament Directive 2003/18/EU, which amends and updates the EU Directive 83/477/EEC on protection of workers against workplace exposure to hazards from asbestos and asbestos containing materials: the air pollution thresholds are 0.1 fiber/cm<sup>3</sup>, and also use the recommended standards Notes: Asbestos: “Health problems at the workplace and in the community”, the World Bank). The asbestos materials are subject to immediate unconditional disposal/entombment in special conditions.

In accordance with the Government of the Kyrgyz Republic’s Order No. 885 "On Management of Hazardous Wastes in the Kyrgyz Republic, December 28, 2015," asbestos-containing wastes should be disposed the following order:

- The process of handling hazardous wastes (waste lifecycle) consists of the following stages: generation, accumulation (collection, temporary storage, stockpiling), transportation, neutralization, recycling, reuse of processed products and disposal/entombment.
- If there is asbestos on a construction site, it should be clearly marked as a hazardous material. Asbestos-containing materials should not be cut or destroyed, as this leads to dust formation. During the (re)construction, all workers should avoid crushing/destroying the asbestos-containing waste, store such waste(s) in designated areas on a construction site and properly dispose thereafter in a special place or landfill.
- When asbestos-containing wastes are to be temporarily stored at a designated area(s)/construction site, they should be properly placed in sealed containers and marked appropriately as a hazardous material. Precautions must be taken to prevent unauthorized disposal of such wastes from a designated area/site.

### **8.1. Storage and stockpiling of wastes**

- The asbestos containing materials extraction should be minimized through the use of efficient technologies
- All asbestos containing materials should be recycled and disposed by the experienced specialists. The specialists are obliged to wear protective outfit (face masks, gloves, uniform)
- The stockpiled wastes, on a designated area(s), should not exceed established volumes/requirements.
- The access roads for removal of industrial and construction wastes from a designated area(s) should not be obstructed.
- While handling asbestos containing wastes, all operating staff members should wear protective outfit (facemask, gloves etc.). Prior to removal of asbestos waste (if necessary) the stockpiled area should be treated with a moisturizing agent to minimize emission of asbestos containing dust. Disposed asbestos should not be reused.
- Storage of inappropriate items, individual protective or working outfit is strictly prohibited at the designated asbestos waste(s) locations.
- During handling operations, all workers should strictly follow the asbestos treatment requirements, and health and safety requirements. All operations should be executed with the use of mechanized machinery, elevating and transportation equipment.
- Hazardous waste(s) should be transported by the superficially equipped Vehicles to the landfill locations, either contracted, or owned. The Vehicles should be designed and used in such a way, as to prevent possible incidents, losses and pollution of the environment, both on the way to the disposal site location, and during the (re)loading of waste from one vehicle

onto another. All types of handling and transportation of waste operations from/to the main and supporting facilities should be mechanized, and an airtight equipment used. It is strictly prohibited, during the transportation, to open the hazardous waste containers.

- Solid and dusty wastes are the subject of transportation in a specially designed containers, equipped with gripping devices for (un)loading by cranes. The transportation of asbestos wastes on the open-bed vehicles and railway cars is strictly prohibited.
- The use of hooks and other sharp tools, while processing the waste, is strictly prohibited.
- The driver of the Vehicle, transporting hazardous waste and authorized accompanying staff only, are allowed on the Vehicle(s). the Driver(s) must be aware of the safe transportation requirements.
- All handling, transportation, (un)loading and disposal of waste must be mechanized. The waste must be transported in such a way, as to prevent transport losses and impact on environment.

## 8.2. Disposal of asbestos containing wastes

Asbestos-containing waste must be disposed in municipal solid waste dumps or non-recyclable industrial solid waste damp-yards.

## 9. Legislative support

In the Kyrgyz Republic, there are a number of environmental protection laws, regulations and requirements, which address the specific issues of environmental protection. Table 5 summarizes the legal norms relevant to the subproject.

**Table 5: The main subordinate legislations, regulations and requirements**

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 the state policy, legislative and institutional basics on water resources management and protection
Law on environmental protection (1999)	It identifies state policy on environmental protection, legislative and institutional basics 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 while designing and implementing of interventions within economic and other types of production activities, storage, transportation and production disposal.
Law on environmental expertize (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 specifically protected natural reservations (2011)	It establishes regulations 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 on the workplaces, in premises of residential, public buildings and	Establishes a sanitary-epidemiological requirements, standardized parameters and maximum permissible noise levels at (re)construction sites, noise classification, permissible noise levels

on the territory of residential buildings" the Governmental decree of the KR, dated 11/04/2016. №201,	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

The Government of the Kyrgyz Republic ratified multiple 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, representing the international importance for the waterfowls main habitat (Ramsar Convention) (2002);
- Convention on right to use international watercourses as transport routes (1997), Agreement on the use of water structures for interstate purposes on the Chu and Talas Rivers (Kyrgyz Republic and Kazakhstan) (2000);
- the United Nations Framework Convention on Climate Change (2000 г.);
- Kyoto Protocol (2003).

## 10. Awareness rising campaign, consultations and public attendance

### 10.1. Public consultations

In accordance with Operational Procedures OP4.01.<sup>1</sup> The WB has special requirements for disclosure of information and public consultations. The disclosure includes introduction of information about the Project affected population (PAP) and other stakeholders, from the Project's early implementation cycle, and throughout lifecycle of the Project. The information disclosure is intended to facilitate comprehensive interaction with the Project affected population, and stakeholders throughout the lifecycle of the Project. Moreover, 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 the objectives and environmental considerations of the subproject.

The Public hearings in WUA "Kara-Kungoy-Ukok-Suu", Kochkor rayon, Naryn oblast, held after no objections by the World Bank obtained concerning the EMP, on 11 December, 2018, which was attended by 35 people: WUA representatives, local authorities, farmers, WUA RSU, design engineers, PIU. The public hearings delivered a general info on the subproject, as well as technical solutions and activities that will be undertaken to prevent and mitigate impact(s). The attendees asked several questions on EMP and which was uploaded on September 5, 2018, APNIP webpage, section "Reports on environment": <http://apnip.water.gov.kg/en/reports/environmental-reports/>.

### 10.2. Grievance redress mechanism (GRM)

**Objective.** The primary target of GRM and population's statements is identification, registry and assistance in solving complaints that were stressed during the Project activities.

**The GRM main principles are:**

- (i) Protection of Citizens' rights;
- (ii) Transparency;
- (iii) Accessibility to a free GRM mechanism and without follow-up prosecution;
- (iv) Appropriateness, from the point of local cultural sensitivities view;
- (v) Personal responsibility for the performance duties;
- (vi) Accountability of during the GRM consideration and applications by the PIU.

Complaints and applications filed in accordance with the established procedure are subject to a mandatory review, refusal to admit is not allowed. Complaints and applications of citizens, without indication of the name and postal address, to which the reply should be sent, are considered anonymous and are not subjected to revision.

The GRM does not hinder the right of citizens to applying into the Judiciary authorities. Citizens have the right to apply to the court, or other state bodies for the resolution of emerging issues related to the violation of their rights, emerged under the Project. For the GRM implementation, the PIU and WUA created a register of complaints and statements from the population. Moreover, anyone can apply to the PIU in an online format at:

<https://mail.rambler.ru/m/redirect?url=http%3A//apnip.water.kg/%25D0%25BE%25D0%25B1%25D1%2580%25D0%25B0%25D1%2589%25D0%25B5%25D0%25BD%25D0%25B8%25D1%258F-%25D0%25B8-%25D0%25B6%25D0%25B0%25D0%25BB%25D0%25BE%25D0%25B1%25D1%258B/&hash=8ef50d487d10168e5d891f2d9dd443cd>

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<sup>1</sup> The World Bank operational procedures 4.01, "Environmental Assessment", Para. 3.

### **10.3. Management of registered complaints**

A local representative of the Subproject should ensure a weekly transfer of received complaints from the PAP to the PIU, as well as the first instance consideration result(s). The local authorities should work with complaints in accordance with the established order and should file the complaints and proposals in the processing registry. The PIU upon receipt of an information, the social consultant should ensure that each complaint has an individual identification number and a progress report in reviewing each complaint reflected in the FRP, which identifies a person(s) responsible for each individual complaint and recording the dates of the following events:

- the date of filing a complaint;
- the date of entering a Complaint(s) Registry in the Project database;
- the date when the information on the proposed solution measure(s) was sent to an aggrieved party (if applicable);
- the response date to an aggrieved party.

The general information on complaints received (number, type of complaint), progress in resolving it and problems encountered, should be included in the Subproject's periodic reporting submitted to the World Bank.

## **Annex 1. The minutes of Public hearings**

### **The minutes of public hearings on environmental protection and social issues in WUA «Kara-Kungoi-Ukok-Suu», Kochkor rayon, Naryn oblast, the World Bank, "APNIP"**

**v. Kara-Saz, Kosh-Dube AO**

**December 11, 2018.**

#### **Attendees:**

**Saparov B. – Head of Kosh-Dube AO;**  
**Masalbekov R. - Engineering coordinator (north), PIU APNIP;**  
**Neronova T. – National environmental consultant, PIU APNIP;**  
**Abdygaziev M. – Design engineer, PIU APNIP;**  
**Orozalieva S. – Public affair specialist, PIU APNIP;**  
**Junusalieva E. – Head of Naryn OSU;**  
**Kojogulova S. – Senior specialist of Kochkor RSU;**  
**Bagaeva.N. – Chief accountant WUA «Kara-Kungoy-Ukok-Suu»**

The public hearing was attended by 35 people; waterusers, representatives from farming entities, WUA members, of which 14 women. The list of attendees is applied.

#### **Chairperson –**

**Masalbekov R. And Abdygaziev M. -** introduced an information concerning the APNIP and informed about projected rehab workload for on-farm network.

**Neronova T. -** has explained about the Kyrgyz Republic's environmental legislation requirements and the World Bank's policy on environmental protection under the Project. The task of environmental assessment is to identify the Project's significant impact on the environment (positive and negative), identify appropriate preventive measures and mitigation measures aimed at preventing, minimizing or eliminating any expected irreversible impact(s). The experience of previous projects shows the positive impact of the Project on the environment. In fact, many positive impacts of projects have been identified during the environmental assessment. Namely, this Project is aimed at reducing water losses in irrigation schemes, improving water management, scaling up agricultural productivity and improving soil fertility.

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

- No asbestos-containing materials will be used for the planned rehabilitation of irrigation networks, noting that previously asbestos-cement pipe crossings were used. But even in the past years they were dismantled and replaced with structures of more inert materials. Thus, no problems with asbestos-containing materials are expected.
- Potentially negative impacts are relatively small and positive economic, social and environmental benefits far outweigh them in environmental assessment. Consideration of these impacts is given below.

The main impact(s) that can be seen as a result of the civil works:

- 1) Soil pollution on construction site.
- 2) Groundwater pollution on construction site.

- 3) Deterioration of the landscape, destruction of the natural habitat of the animal world, changing the local drainage network.
- 4) Air pollution and impact on workers/population during traffic and heavy equipment operation.

The site specific EMP is composed for each of the rehabilitation subproject to prevent or mitigate the negative impact of the construction works. It includes a mitigation and monitoring plan, both for the construction phase, and for the O&M phase. All the risks of the (re)construction phase are easily controlled and eliminated. They can be minimized by properly designing mitigation measures and controlling the Contractor, while carrying out the works.

**Орозалиева С.М.** - delivered the message concerning social aspects under the Project to the participants of the public hearing. In particular, she spoke in detail about the World Bank policy 4.12 "Forced Resettlement", the Policy is aimed at eliminating the risks associated with involuntary resettlement, and by addressing the issues of reducing risks to a minimum. She also stressed that WUA members and councils that are the subject to rehabilitation, should be aware of their options and rights related to resettlement, and take part in consultations concerning possible options for compensation, and would have had the right to choose and be provided with technically and economically feasible alternatives for resettlement. She also noted that during the resettlement, attention should be paid on socially vulnerable population, such as ethnic minorities, female-headed households, the elderly, etc., with appropriate assistance to improve their living standards. In the interest of resettled persons, necessary and accessible mechanisms should be established to review and resolve their complaints either at the spot, or in the PIU office. Each WUA, included in the rehab program, should maintain a register of complaints and currently almost all WUAs have such a register. Moreover, all WUAs have a complaint form and GRM. The ecological and social issues were also discussed, the main goals of which are constant surveillance on public opinion, awareness raising campaign to deliver a message to the stakeholders, while under rehab and modernization of irrigation network. In addition, the PIU site ([www.apnip.water.gov.kg](http://www.apnip.water.gov.kg)) has a separate section on appeals and complaints, where anyone can send their appeal or complaint about the Project's activities. For effective monitoring and management of complaints of the population and GRM, the PIU maintains a database of appeals and complaints.

### Questions:

**Moldokanov S.** – Construction, household and other types of wastes, where they will be transported?

**Neronova T.** - **All types** of wastes will be buried at designated by the local authority landfills and the subcontractor will be in charge for it.

**Mukaev S.** – Tree and shrubbery felling, if permission needed for it?

**Neronova T.** – During surveying of canals it was found that there is some greenery within those zones. Thus, WUA has to compose the formal letter with the request to cut greenery to the Naryn territorial environment protection department, and they will consider this issue. And in accordance with the Water Code of the KR, art.80, a permission for greenery cutting/felling is not required as they grow within a canal's easement zone.

**Usupbaev E.** – Who is in charge to control (re)construction?

**Neronova T.** – A subcontractor is in charge for to adhere to the EMP and will appoint a person responsible. Moreover, the PIU is also bear responsibility to monitor the subproject, as well as SETI.

**Asanova M.** – What is GRM?



**Orozalieva S.** – The main purpose of GRM is to receive feedback(s) from stakeholders involved into the subproject, for instance; if there are some cases of non-compliance with the environmental mitigation activities during (re)construction works.

**Kaziev S.** - Who is eligible to compose a complaint?

**Orozalieva S.** – **Any member of WUA or local resident** is eligible to compose a complaint, which could be done in any moment, either in written, or verbal form during preparation or execution stages.

**Kulchaeva S.** - PAP – what does that mean?

**Orozalieva S.** - A person or a household affected by the subproject, either direct economic and social consequences resulted from:

- a) Forced land plot withdrawal that lead to relocation or loss of dwelling;
- b) Loss of assets;
- c) Loss of income source or livelihood, regardless of whether or not they should, affected people, move to another place;
- d) Forced restriction of access to legally designated parks and protected areas, which leads to adverse effects on the livelihoods of displaced persons.

**Sharsheev O.** - Could you please explain what is “forced relocation”?

**Orozalieva S.** - Forced relocation means forced withdrawal of land plot(s) that directly or indirectly impacts economic or social conditions via:

- a) Loss of advantages from using land plot(s);
- b) Resettlement caused by loss of dwelling;
- c) Loss of assets or access to them;
- d) Loss of income source or livelihood, regardless whether PAP will be relocated;

However, under this subproject, there are no such cases that plan relocation. The subproject does its best to avoid this kinds of forced resettlement.

**Satarov B.** - Where can I compose a complaint?

**Orozalieva S.:-** A complaint(s) will be considered in 4 stages.

1st stage - To the subproject representative appointed by local authorities (person responsible – RSU specialist), either verbally or telephonically. A complaint will be processed within 5 working days. In cases when 1st stage will not be capable to solve an issue, then it will be transferred to stage 2.

2nd stage – A written complaint (an aggrieved party), signed and dated, is sent to the PIU APNIP Director (person responsible – PIU social issues specialist). The specialist registers a complaint and assigns a registry number, studies a complaint and gives an assessment, and following consideration process and informs an aggrieved party. If the 2nd stage will not be capable to solve an issue, then it transferred to the 3rd stage.

3rd stage – A complaint is sent from the PIU to the working group of AO. At this stage a complaint will be considered during 30 days. If the 3rd stage will not be capable to solve an issue, then its sent to the stage 4.

4th stage – A complaint is sent to the court of first instance and is considered at this stage in accordance with judicial procedures. But, the PIU responds to all complaints promptly and in a timely manner, and almost all complaints are resolved locally.

At the end of the meeting, all attendees have supported implementation of the subproject and expressed their gratitude.

**Chairperson**

**Satarov B.**

**Environmental specialist**

**Neronova T.**

**Social affairs specialist**

**Orozalieva S.**

## Annex 2. Photo



Photo №1. C-I “Maychybar”. Main water intake. September 2018.



Photo №2. C-I “Koysoibos”. September 2018.





Photo №3.c-l “Koysoiboz-Uchbulak”. September 2018.



Photo №4. Main water intake on c-l “Kyrgyz-Bay” from NSR. Spetember 2018.



Photo №5, №6. Main cross-regulator on c-l “Kyzyl”. June 2018.



Photo 7. Village “Kara-Soz”, the public hearing, December 2018.