Government of Uzbekistan

Uzsuvtaminot

Bukhara Region Water Supply and Sewerage Project (BRWSSP)

Environmental and Social Management Planning Framework (ESMPF)

August 2021

Executive Summary

The Government of Uzbekistan (GoU) plans to initiate the Bukhara Region Water Supply and Sewerage Project (BRWSSP) and seeks financial assistance from the Asian Infrastructure Investment Bank (AIIB) for this purpose. In line with the GoU regulatory and AIIB policy requirements, GoU commissioned a study to address the environmental and social impacts of this project. As an outcome of this study, the present Environmental and Social Management Planning Framework (ESMPF) has been prepared.

At the time of project preparation, the Project Implemenattion Entity (PIE) was the Agency for Communal Services Kommunkhizmat (KKMAT) under the Ministry of Housing and Communal Services (MHCS). However, through a letter dated April 13, 2021, the GoU, through the Ministry of Finance, requested AIIB to change the PIE for the proposed project from the KKMAT under Ministry of Housing and Communal Services to the newly established government-owned joint-stock company Uzsuvtaminot (UZST), which has succeeded all the rights, obligations and liabilities of the previous PIE.

Project Background

GoU has a long-term program to increase the provision of high-quality water supply and sanitation services, strengthen the institutional base and physical infrastructure of operating organizations, improve the sanitary and environmental situation in the regions of the Republic.

The existing water supply and sewage systems in Uzbekistan requires extensive reconstruction since it suffers from a worn-out infrastructure, unstable financial condition and weak institutional capacity. The coverage of water supply services to the population of Uzbekistan is about 68% and of Bukhara region is about 52% (*Feasibility Study of the Design Institute, 2019*).

The pipes in the distribution system have been damaged by corrosion because of being used over a long period of time. The outdated equipment is sometimes filled with water, a situation that again leads to corrosion of the pipes and valves and their rapid collapse. Water is supplied to the network 3-4 times a week for several hours per day. As a result, the population experiences difficulties with the access to water, especially in the summer. Lack of funds, high cost of electricity and high costs of repair, maintenance and materials are among the typical problems for Bukhara region water supply organizations.

Wastewater treatment plants in the region were built mainly in 1970-1980 and are currently worn out and mostly do not work. The existing equipment is outdated and operates with low efficiency if at all.

Because of lack of financial resources, adequate and timely reconstruction of the water supply and sewerage systems has not been carried out. Only about 57% of the Bukhara city population and about 9% of the Bukhara region are provided with the water and sewerage services. To address these issues, the water supply and sewage systems in Bukhara region require extensive reconstruction, modern and efficient equipment, stable financial condition and strong institutional capacity.

Project Overview

The proposed project has been conceived to address the above-mentioned problems and aims to modernize water supply and sewerage systems for improving living standards and wellbeing of the population of Bukhara region.

The water supply sub-projects include mainly construction and rehabilitation of well fields and intakes, main water lines, distribution networks, power transmission lines and pumping stations. The following specific subprojects will be included in the water supply components: i) Provision of clean drinking water to the population of the northern and western parts of Bukhara, Vobkent, Gijduvon, Shofirkon. Rometan and Peshku districts of the Bukhara region while increasing the capacity of the main resource facility – Damkhuja; ii) Reconstruction of water supply systems in the northern and western parts of the Shofirkon and Peshku districts as well as the northern part of the Gijduvon district through the construction and rehabilitation of the water intake structure 'Jilvon' in the Shofirkon district; iii) Construction and reconstruction of the main water pipeline from the Zarafshan water intake structure to Payjuy to provide the population of the southeastern part of the Rometan and Peshku regions; iv) Reconstruction and construction of the main water pipeline from the water intake -Zarafshan - to the water intake - Yakkatut - to provide the population of the Jondor district with drinking water; v) Construction and reconstruction of the water intake structures - Siezpoyon and Kurzhan to provide the population of rural settlements in the northern part of the Kagan region; vi) Construction and reconstruction of water supply systems to provide the population of the Qorovulbozor district; and vii) Construction and reconstruction of drinking water supply systems of Bukhara and Kagan district.

The sewerage sub-projects include mainly the implementation of a centralized sewage system in each district center consisting of collectors, pumping stations and biological sewage treatment plants as well as discharge facilities. The following specific sub-projects will be included in the sewerage components: i) extension with sewage networks and sewage pumping station in Bukhara city; ii) construction of sewage networks, sewage pumping stations and sewage treatment plants in Bukhara district, Jondor district, Rometan district, Shofirkon district, Vobkent district, Gijduvon district, Peshku district, and Qorovulbozor district; iii) construction of sewage networks, sewage pumping station and conveyance of sewage from Kagan district to Bukhara City sewage treatment plant; iv) construction of sewage network and construction of sewage pumping station and conveyance of sewage from Qorakol district to Olot sewage treatment plant; and v) construction of sewage networks, pumping station and construction of sewage treatment plant in Olot for the waste water of both Olot and Qorakol districts.

The Project will also address reduction of loss and leakage of water. Water quality control of potable water will significantly reduce number of waterborne diseases in Bukhara region.

Rationale and Objectives of ESMPF

Since the exact location and detailed design of the interventions proposed under the project are not known at this stage, the present ESMPF including a Resettlement Planning Framework (RPF) has been prepared. The ESMPF describes the overall environmental and social safeguard procedures to be undertaken during the project implementation.

The purpose of the ESMPF is to ensure that the activities are assessed and implemented in conformity with the policies of the Republic of Uzbekistan, the Bukhara Region, the City of

Bukhara as well as the AIIB Environmental and Social Policy (ESP) and Environmental and Social Standards (ESSs). The ESMPF identifies generic impacts of the project activities and identifies generic mitigation measures to address these impacts. It sets out principles and procedures to carry out environmental and social assessment as well as involuntary resettlement planning for the project activities.

Baseline Conditions

Overview. Bukhara region is a large agro-industrial region of Uzbekistan, located in the south-west of Uzbekistan. It is bordered by Turkmenistan, Khorezm, Navoi and Kashkadarya regions and the autonomous republic of Karakalpakstan. The territory of the region consists of a desert plain with distinct hills. The total area of the territory is about 39,400 square kilometers. The region consists of 11 administrative districts, 11 towns, two urban townships and 107 kishlaks (villages). The administrative capital is the city of Bukhara. The old city of Bukhara is a UNESCO World Heritage Site, famous as a "living museum" and a center for international tourism. There are numerous historical and architectural monuments in and around the city and adjacent districts.

Demography. The population of the region was about 1.9 million as of 2018. Representatives of more than 100 ethnic groups live in the region. The majority of the population is Uzbek, with a large group of ethnic Russians and Kirgizes. The average population density is 500 people per square km.

Industry. The priority sectors of the economy in the region include agriculture, oil production and refining, as well as textile and clothing production. The share of small business in the Bukhara region is about 41% (of the total industrial volume). About 2,600 registered and 545 newly established enterprises exist in the region. Bukhara region occupies the 4th position in the Republic by the volume of investments in fixed resources per person for January-December 2018 - 4162,9 thousand sums (or 49,7% of the corresponding period of the previous year).

Topography. The surface of the Bukhara region is wavy, slightly sloping to the north-west, on the most part of which there is the Kyzylkum desert with bumpy and muddy sands, fixed by vegetation and separate elevations. The territory of the region can be divided into the main geomorphological areas - lowlands, foothills, residual, mountains and plains. Soils of irrigated areas are meadow, alluvial, swampy meadows. Light grey, sandy and gypsum soils predominate in the desert-pastoral areas.

Water sources. Water resources in Bukhara region are mainly generated in transboundary river basins. The project area is located in the Amudarya River Basin, which is one of the important surface water sources. The Amudarya River is the largest river in Central Asia in terms of catchment area, 2,600 km long, with a catchment area of 230,000 km^2 and an average annual water flow of 78 km^3. In Uzbekistan, the Amu Darya flows in the south of Surkhandarya province, bordering Afghanistan. The river then enters Turkmenistan, separating the Karakum and Sundukli sands. Further on, the Amu Darya riverbed approaches the border of Uzbekistan in the area of the Kimirekkum sands, and in the south-west of Bukhara and Khorezm regions runs along the border of two countries. Currently, the Amu Darya, passing through the territory of the Republic of Karakalpakstan and disassembling even before that, it does not reach the Aral Sea.

The Amu Darya is one of the most turbid rivers with very high saturation of water with suspended sediment. The highest turbidity is observed during the period of rainfall and snow melting of the lower tier.

The third longest river in Central Asia is the Zarafshan River, which also flows through Uzbekistan (781 km long, 12,300 km^2 of catchment area, with an average long-term water flow of 190 m^3/sec). The Zarafshan originates from numerous tributaries of the Turkestan and Zarafshan ridges and flowing from east to west between these two ranges, it is basically replenished by its left tributaries: Fandarya, Magian and Kshtut. Below Penjikent, the mountains are gradually parting, and the river is already flowing in the plain part of Samarkand and then Navoi region, bounded by the spurs of Zerafshan and Turkestan ridges - Zirabulak and Ziatda mountains, Chumkartau, Nuratau, Karatepa and Aktau ridges. Further the river turns to the south-west, towards the Bukhara oasis, where it actively disassembles irrigation canals, getting lost in the south of the region, not reaching the Kimirekkum sands.

Surface waters of Bukhara region also include lakes - Tudakul, Dengeskul, Zamonbobo, Shorkul and Aydar as well as the Kuyumazar reservoirs. The main purpose of the Kuyumazar reservoir is irrigation. Canals in the area include Amu-Bukhara, Amu-Karakul, Dzhuyzar and others.

Educational and healthcare facilities. There are 528 schools with 325,200 students, 25 gymnasiums with 5,700 students, five academic lyceums and 14 professional colleges with 2,400 students, and three higher education institutions with 9,800 students in the region. A library network has also been developed, including 450 information and resource centers and an information and library service center. The cultural and educational institutions include 148 clubs, 210 houses of culture, three theatres, 27 music and art schools, two cinemas and seven parks of culture and leisure. There are 275 health facilities in Bukhara region, among them 114 are newly established rural family polyclinics, where the population addresses their health problems.

Biodiversity. Bukhara region is home to over 400 species of vertebrates. In the water basins there are 37 species of fish, two amphibian species, 40 reptile species, more than 300 bird species, and about 300 insect species. The most widespread types of ecosystems in Bukhara region include deserts and semi-deserts, river and coastal ecosystems, wetland ecosystems. Conservation and sustainable use of biodiversity is extremely important for the Bukhara region, the territory of which is completely in the arid zone and is vulnerable to climate change, is prone to the phenomena of drought and desertification.

Potential Impacts and Mitigation

The project will generate mostly positive socio-economic benefits due to the improvement of water supply and sanitation (WSS) facilities in Bukhara region. Construction and rehabilitation of WSS infrastructure will significantly improve living conditions, water supply and sanitation, which will have significant effects on the health of population and environment of region in general. At the same time the proposed project activities might generate various adverse environmental and social impacts. These impacts would be associated with physical and economic displacement, damage to crops, generation of solid wastes, hazardous wastes, noise, dust, air pollution, wastewater, impacts on cultural heritage, disturbance to community and traffic, damage to public utilities, influx of labor, health hazards and labor safety issues due to facility siting, civil works and operation and maintenance.

The mitigation hierarchy used for the above impacts calls for impact avoidance as the most preferred approach; where avoidance is not possible, appropriate measures should be adopted to minimize the impact; and where mitigation is not possible or is not adequate, compensatory measures should be adopted. In line with the approach, impacts such as physical and/or economic displacement will be avoided to the extent possible by selecting government-owned land to establish new facilities such as water treatment plant or water distribution units. In case government land is not available and any private land or property is affected by the new facility, full compensation will be provided to the owner either in the shape of replacement land or cost of land.

Similarly, for construction related impacts such as dust, noise, soil and water pollution, appropriate mitigation and control measures would be adopted. These may include water sprinkling; employing noise abatement measures such as using noise canopy for generators if works are carried out near any community or any sensitive receptor; controlling any leakages or spillage of chemicals, fuels, and oils; treating wastewater before releasing; and segregating and appropriately disposing wastes including hazardous wastes. For potential impacts such as health and safety concerns for workers and communities, appropriate protection measures will be employed including use of personal protective equipment by the construction workers, barricading the worksites to stop community members particularly children from entering the work areas, and observing safe driving practices particularly low vehicular speed within/near the communities. All public utilities and infrastructure if damaged by the construction activities would be repaired and restored to pre-project condition or better.

Screening of sub-project activities and identification of Environmental and Social instruments

As locations of sub-projects and types of activities are not clearly designed at this stage, it is important to have appropriate tools for screening these activities for potential impacts and selecting appropriate environmental and social (E&S) instruments to effectively address them.

As the first step, the eligibility of the sub-project against AIIB's Environmental and Social Exclusion List[1] will be determined.

The second step will be categorization of each subproject, in accordance with the criteria presented in **Table ES.1**. According to the category of subproject, the appropriate E&S instrument will be selected to meet both national and AIIB's requirements.

[1] See the Environmental and Social Exclusion List in AIIB's Environmental and Social Framework: https://www.aiib.org/en/policies-strategies/_download/environment-framework/Final-ESF-Mar-14-2019-Final-P.pdf

Table ES.1: Preliminary Categorization and E&S Instruments of BRWSSP Subprojects

Subprojects		Category & E&S Instruments				
		AIIB			National	
		Category	Risk	E&S Instrument	Category	EIA required
Component 1 Water Supply Infrastructure	Construction of new water treatment plants, well fields and intakes, water reservoirs	A	High	ESIA RAP (if applicable)	I or II	EIA report
	Construction of new and rehabilitation of existing main water pipelines, pumping stations, distribution networks and associated facilities	B	Moderate	Brief ESIA/ ESMP RAP (if applicable)	II-III	EIA report
Component 2 Sewerage Infrastructure	Construction of new sewage treatment plants, trunk sewers	A	High	ESIA RAP (if applicable)	I or II	EIA report
	Construction of new and rehabilitation of existing sewerage network at house connections, pumping stations	B	Moderate	Brief ESIA/ ESMP RAP (if applicable)	II-III	EIA report
Component 1 & 2	Facilities to be located at environmentally sensitive sites or to have impacts on cultural heritage	A	High	ESIA	I or II	EIA report

Environmental and Social Monitoring

Two types of monitoring, i.e. environmental quality monitoring and compliance monitoring will be carried out during subproject construction phase. For the environmental quality, the monitoring plan – to be included in the subproject ESIA/ESMP shall specify the monitoring parameters, frequency and methodology of measurement, sampling locations, applicable standards. The monitoring plan shall also describe the links between the environmental parameters and the impacts and mitigation measures. If exceedance of standard is observed, corrective actions will be proposed by the Supervision Consultant and implemented by the contractors in a timely manner. Some environmental parameters, like dust and noise, will be monitored by the contractors under the supervision of the Supervision Consultation; most of the parameters (air, surface water and groundwater and soil) will be monitored by the Supervision Consultant.

Compliance monitoring will focus on the monitoring of compliance of various labor and environment, health and safety (EHS) requirements, implementation of mitigation measures identified in the site-specific ESMP (SSESMP) (to be prepared by the contractor) and corrective measures (if any). Separate monitoring will be carried out for the implementation of RAP if it is developed. Standard checklists prepared during the E&S studies for subprojects will be used to report on compliance issues. The contractors will carry out compliance inspection on a daily basis; the Supervision Consultant will do random supervision of compliance and weekly inspections.

Third-party monitoring agencies will be engaged every half a year to develop semi-annual Environmental and Social Monitoring Reports. The Environmental and Social Monitoring Report will focus on the implementation of the ESMP. It will (i) verify the compliance to regulations, contract agreements, the subproject ESMP and corrective actions (if any), (ii) summarize the monitoring results of environmental quality, capacity building and accidents, (iii) review the implementation of grievance redress mechanism (GRM); and (iv) recommend corrective actions or amendments of the subproject ESMP and SSESMP.

Grievance Redress Mechanism (GRM)

The existing mechanisms of addressing project related complaints in Uzbekistan has been reviewed. In addition to this, two separate Grievance Redress Mechanisms will be established for this project, one for the affected people and one for workers respectively, to supplement the existing system in accordance with AIIB's Environmental and Social Policy (ESP) and applicable ESSs. The GRMs are designed to address concerns and complaints promptly, using an understandable and transparent process that is gender-sensitive, culturally appropriate and readily accessible to all affected people in the Bukhara region as well as workers to be involved in this project.

A two-tier GRM will be established for this project. The first tier GRM will be at the field level, managed by a local Grievance Redress Committee (GRC). The second tier GRM will be at the Project Coordination Unit (PCU) level. The field level of the GRC will comprise Supervision Engineer (with E&S staff in charge), representative of the Contractors, district Suvtaminotand head of the Makhalla Foundation. Aggrieved persons can contact either of them and they will be responsible for receiving, hearing and resolving the grievances. Second level GRC will be chaired by PCU Coordinator, consisting of Senior Environment Specialist of PCU (in charge of on-the-ground work), one representative of the district khokimiyat and one from Bukhara Suvtaminot. The exact GRC members for each subproject will be specified in the ESIA/ESMP/RAP for that subproject.

Consultations

Stakeholder consultation is a two-way process. For stakeholders, the consultation process is an opportunity to obtain project information, to understand its potential impacts, to raise issues and concerns, and ask questions. For the project proponents, the consultation process offers an opportunity to understand the stakeholders and their concerns about the project, their needs and aspirations, and also their suggestions that can potentially help shape the project and its design. Listening to stakeholders' concerns and feedback can be a valuable source of information that can improve project design and outcomes and help the project proponent to identify and control external risks. It can also form the basis for future collaboration and partnerships.

Extensive consultations were carried out during the preparation of the present document. The first round of the consultations was carried in the November-December 2019 by the project proponents and social team in the Bukhara region by utilizing different methods such as focus group discussions (FGDs), in-depth interviews, and workshops. In total, 18 FGDs in nine districts and Bukhara and Kagan cities, around 10 in-depth interviews with key stakeholders, and two public consultations with secondary stakeholders have been undertaken. Separate female FGDs were organized in urban and rural areas in order to focus on examining the gender issues. More than 305 local people were involved in FGDs including 241 women.

During FGDs participants, mostly women, shared the current problems of the water and sewerage supply systems. They stated that in rural areas the access to the potable water is not reliable and they faced with frequent shortage of water delivery services. Even in urban areas of the region people have access to the water for 2-4 hours per day. Because of the low pressure and worn-out pipes the residents of the multiple story houses needed to fetch water from yards or buy it from private service providers. The residents of the apartments stated that have no additional space for the water saving. Although participants from detached houses installed the cement water tankers the quality of delivered water is not satisfied.

During FGD the project proponents and members of the social team shared the various details of the proposed project including its different components and phases. Women from remote areas actively participated in the FGDs and stressed that they urgently need the improvements in the water supply and sanitation sectors. During female FGDs it was revealed that women faced hardships because of widespread water borne diseases and the related expensive treatment.

The vast majority of the FGD participants expressed their willingness to contribute to this project implementation by organizing the group of women leaders, who will inform the local residents about project activities and ensure the households will get access to water supply. They also demonstrated that they have a great desire to cooperate with district Suvoqava and makhalla committees with aim of their own community sustainable development by decreasing the number unemployment and opening new small business enterprises.

On March 1-2, 2020, after the disclosure of the draft ESMPF on the websites of MHCS and Bukhara region Suvokova, around 70 advertisements in Uzbek and Russian languages about the public consultation and disclosure workshop on the draft ESMPF were printed and placed on the public billboards in the Bukhara city including makhalla committees, local authorities, public squares, and district departments of Suvokova. Moreover, information about the workshop was distributed through popular social media groups of the Bukhara region Suvokova, local administration as well khokimiyats and makhallas.

The public consultation and disclosure workshop on the draft ESMPF was held on March 6 2020 at the conference hall of the Bukhara Region Suvokova. Representatives from khokimiyats, makhallas, women committee, youth union, state committee on ecology and nature protection, sanitarian epidemiological station, Bukhara region Department of Management of Natural Resources and Cadastre, and others attended the workshop. During the workshop, information about the project, key elements of the ESMPF, anticipated environmental and social impacts, proposed mitigation measures and GRM were presented to the workshop participants. At the end, the Bukhara region Suvokova specialists shared their contact information for further comments, suggestions and clarifications on ESMPF. In total, 41 participants attended the workshop. Overall

the document was largely accepted by all participants and no major comments to revise the document were received.

A framework has been developed for the consultations to be carried out during the project implementation; see **Table ES.2**.

Table ES.2: Consultation and Participation Framework during Project Implementation

Description	Target Stakeholders	Timing	Responsibility
Stakeholder consultations as part of the preparation of each subproject-specific ESIA, ESMP and RP	• Primary stakeholders particularly communities • Secondary stakeholders	During preparation of each ESIA, ESMP and RP	PCU /Design Consultants
Public awareness campaigns/ scoping sessions to share the ESMPs and RPs with the PAPs, communities and other stakeholders. • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities within subproject area, general public; and line departments/ agencies.	Commencing with the preparation of first ESMP; to be continued there after	PCU /Design Consultants/ Supervision Consultants
• Consultations with the communities during each ESMP and RP implementation • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Before commencement of subproject activities.	PCU / Supervision Consultants
• Establishment of GRM and GRCs • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Before commencement of subproject activities.	PCU
• Grievance redress • Location: various districts in Bukhara region including Bukhara and Kagan cities	• PCU staff; consultants; relevant line departments; and communities (as needed).	Subproject implementation Stage	PCU/ Supervision Consultants
• Informal consultations and discussions. • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Subproject implementation Stage	PCU / Supervision Consultants; contractor
• Consultations with the communities during internal monitoring • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Construction Stage	PCU / Supervision Consultants
• Monthly meetings at project sites	• PCU staff; consultants; and communities (as needed).	Construction Stage	PCU / Supervision Consultants

Description	Target Stakeholders	Timing	Responsibility
• Location: District departments of SUE «Suvoqava»			
• Consultation workshops to review ESMF/ESMP and RP implementation, any outstanding issues and grievances, views and concerns of communities; and actions needed to address them. • Location: District departments of SUE «Suvoqava».	• Rural and Urban Communities at the subproject area; relevant line department; relevant NGOs	Six-monthly during implementation phase	PCU / Supervision Consultants
• Consultations with the Communities relating to the leftover tasks • Location: District departments of SUE «Suvoqava».	• Communities at/around subproject area	After completion of subprojects	PCU / Supervision Consultants
• Consultations with the communities during the site visits by the AIIB Review Missions. • Location: rural and urban communities and district departments of «Suvoqava».	• PCU; Communities at/around subproject area	Construction/ Operation Stage	PCU / Supervision Consultants

Disclosure

According to AIIB requirements, the draft ESMPF was disclosed through official websites of MHCS on Jan 31, 2020 and was also sent to AIIB for disclosure. The executive summary of ESMPF was translated into Uzbek and ESMPF in Russian and were disclosed through the above-mentioned websites and also made available to the affected communities. The final version of ESMPF was disclosed on April 2, 2020. The district departments of Suvokava (now Suvtaminot) will distribute the Uzbek version of the executive summary to the rural and urban local communities within the Bukhara region. Once the subproject-specific ESIAs, ESMPs and RPs are prepared and approved, they will also be disclosed in a similar manner.

The present version of ESMPF will be disclosed in a similar manner by UZST. Subsequently, the subproject-specific ESIAs, ESMPs and RPs will also be disclosed by UZST in a similar fashion.

Resettlement Policy Framework (RPF)

Objective of RPF. The overall objective of the RPF is to provide a policy framework for land acquisition and resettlement for all the subprojects to be implemented under the BRWSSP. The principles underpinning this resettlement framework are: i) either to avoid or minimize the involuntary resettlement impacts; ii) the persons affected by the projects will be better off, or at least not worse off than before involuntary resettlement; iii) their assets and livelihoods affected by the projects will be compensated at full replacement cost; and iv) affected persons will receive assistance to relocate and re-establish/recover their livelihoods. The detailed principles/procedures

of the land acquisition and resettlement are outlined in AIIB SS2 for Involuntary Resettlement, and related laws of GoU.

The purpose of RPF is to provide a set of principles, procedures and guidelines for PCU, to be applied to the subprojects requiring land Acquisition and resettlement. It is a framework to guide the preparation of an RP in compliance with the requirements specified in the AIIB SS2 and law and regulations of GoU. There are gaps between AIIB SS2 requirements and laws and regulations of GoU for land acquisition and resettlement. These gaps have been identified and measures have been defined for addressal in this document.

General principles. The following principles will apply to all activities under the Project: i) Resettlement impacts will be minimized; ii) Project affected persons (PAPs) will be defined inclusively; iii) Meaningful consultation with PAPs and communities; iv) All adverse Project impacts will be identified prior to implementation and losses properly recorded; v) PAPs are entitled to full compensation and rehabilitation measures on an equitable basis; vi) Vulnerable groups will receive special attention; vii) Resettlement planning, budgeting, and implementation will be an integral part of the Project; and viii) GRM, monitoring, and evaluation procedures will verify the effectiveness of resettlement measures.

Entitlement. In accordance with the principles of the present RPF, all displaced households and persons will be entitled to a combination of compensation packages and resettlement assistance depending on the nature of ownership rights on lost assets and scope of the impacts including socio-economic vulnerability of the displaced persons and measures to support livelihood restoration if livelihood impacts are envisaged. The Entitlement Matrix given in **Table ES.3** summarizes the types of losses and the corresponding nature and scope of entitlements, and follows National Laws and ESS 2 of AIIB.

Table ES.3: Entitlement Matrix

	Impact Category	Entitlements		Implementation Guidelines
Section I. TITLE HOLDERS - Loss of Private Property				
1	Loss of Land (agricultural, residential, commercial or otherwise including resident & non-resident landlords)	a	Land for land compensation with a plot of equal value.	Compensation "land for land" is provided to all the PAPs in case of loss of their land by selection of the similar (equivalent) land plots of the equal value/productivity, of comparable location and additional agricultural means. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project
		1.1 Agricultural land		
		a	Land for land compensation with a plot of equal value. *OR* Compensation to recover a new land to the pre-project condition.	Compensation based on market value for lost harvest equal to the average annual income for past 3 years multiplied by 4 times (years).

	Impact Category	Entitlements		Implementation Guidelines
				Unaffected portions of an affected arable plot will also be compensated if the same becomes unviable after impact.
		b	One-time subsistence allowance of equivalent to three months minimum wage income [2] for severely affected households	Households who are losing more than 10% of productive lands.
2	Loss of residential structure (inhabited structures)	***2.1. Inhabited structures***		
		a	*In addition to Compensation for land listed above under S.No.1* 6-month notice in advance to vacate the structures Cash compensation at full replacement costs OR Provision of the alternative house of equal in adjacent territories. In case the alternative house's market value lower than an affected house, then additional cash compensation for the difference will be provided	Evaluation of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		c	One-time subsistence allowance of equivalent to three months minimum wage income [3] for project affected households who are required to relocate due to the project	Households who need to relocate are provided support as part of livelihood restoration
		d	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.

[2] Since September 1, 2019 the minimum wage in Uzbekistan equals to 634 880 UZS, so one-time allowance is 1 904 640 UZS. This number is subject to corrections based on minimum wage rate at the time of census

[3] Since September 1, 2019 the minimum wage in Uzbekistan equals to 634 880 UZS, so one-time allowance is 1 904 640 UZS. This number is subject to corrections based on minimum wage rate at the time of census

	Impact Category	Entitlements		Implementation Guidelines
		e	Rental allowance up to 24 months for affected households who get cash compensation for affected residential structure OR Rental allowance for 1 month who gets an alternative house.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. One-month allowance will be given to households who will be provided a ready alternative house to live.
		2.2. Losses of adjoining substructures to the residential houses such as fences, shed /tents etc.		
		a	Compensation at full replacement cost for affected structure/fixed assets free of depreciation and transaction cost	PAPs must have the right to salvage materials
3	Loss of Commercial structures	a	**In addition to Compensation for Land and Assistance listed above under S.No.1** Cash compensation at full replacement costs OR Provision of the alternative commercial structure of equal in adjacent territories. In case the alternative structure's market value lower than affected structure, then additional cash compensation for the difference will be provided	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable.
		b	6-month notice in advance to vacate the structures	
		c	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		d	One time grant equal to one year of wages for loss of trade/self-employment for the business owner	Provision of compensation will be based on tax declaration or official minimum salary
		e	One-time subsistence allowance of equivalent to three months minimum wage income for	Owners of Commercial structures who need to relocate are accepted as severely affected

	Impact Category	Entitlements		Implementation Guidelines
			owners of commercial structures who are required to relocate due to the project	entities losing more than 10% of their production capacities.
		f	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		g	Rental allowance up to 3 months for lost income during the interruption.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. Provision of rehabilitation assistance if required (assistance with job placement, skills training).
4	Impact to Tenants (Residential/ Commercial / Agricultural)	***4.1 Residential***		
		a	1-month notice to vacate the rental premises	
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		4.2 Commercial		
		a	1-month notice to vacate the rental premises	
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		d	Commercial tenants will receive a one-time allowance for loss of	Provision of compensation will be based on tax declaration or official minimum salary

	Impact Category	Entitlements		Implementation Guidelines
			trade/self-employment provided under 3(c) above in lieu to the owner	
		4.3 Agricultural tenants		
		a	In case of agricultural tenants advance notice to harvest crops OR Compensation for the lost crop at the market value of the 1-year yield	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the Agricultural Department (AD) at respective districts of the project area
5	Impact to trees, standing crops, other properties, perennial and non-perennial crops	a	Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the AD
		b	Compensation for timber trees provided based on replacement cost.	Based on the market value of dry wood volume determined by the AD. Felled trees will be kept by affected households
		c	Compensation for fruit trees will be provided based on replacement cost.	Based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years) plus input costs for trees to reflect the duration from planting to reach the productive stage
Section II. Additional assistance for Women headed households (Title and non-title holders)				
6	Loss of Land / house / shop		One-time subsistence allowance of equivalent to three months minimum wage for women-headed households who are required to relocate due to the project	
Section III. NON-TITLE HOLDERS - Impact to squatters / Encroachers				
7	Impact to Squatters	7.1 Loss of house		
		a	Cash compensation at market value for the structures OR Provision of comparable alternative structures	
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months	

	Impact Category	Entitlements		Implementation Guidelines
			minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project
		7.2 Loss of shop, repair shop		
		a	Cash compensation at full replacement costs for the structures OR Provision of comparable alternative structures	
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	
		7.3 Loss of standing crops		
			Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	
8	Impact to Encroachers	***8.1 Loss of Standing crops***		
		a	2-month notice to harvest standing crops or market value of compensation for standing crops, if notice is not given.	Market value for the loss of standing crops will be decided by the PCU in consultation with the Agriculture Department at respective districts.

	Impact Category	Entitlements		Implementation Guidelines
		8.2 Structure		
		a	1-month notice to demolish the encroached structure	
		b	Compensation at market value for structures without depreciation for the affected portion of the structure	
Section IV. Loss of Livelihood Opportunities				
9	Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers		One-time subsistence allowance of equivalent to three months minimum wage income.	Only agricultural laborers who are in fulltime / permanent employment of the landowner, or those affected full-time employees of the business, will be eligible for this assistance. Seasonal agricultural laborers will not be entitled to this assistance.
Section V. Impact on Vulnerable Households				
10	Vulnerable Households (Women headed household, Low-Income household, a household headed by elderly with no support and household headed physically challenged people)	a	Inclusion in existing safety net programs to ensure the continuation, or increase, of previous income.	One adult member of the displaced household, whose livelihood is affected, will be entitled to skill development. The census team will identify the number of eligible vulnerable displaced persons based on the 100% census of the displaced persons and will conduct training need assessment in consultations with the displaced persons so as to develop appropriate training program suitable to the skill and the region. Suitable trainers or local resources will be identified by BRWSSP safeguard specialist at PCU in consultation with local training institutes. It is recommended to involve local NGOs in this process
		b	One-time subsistence allowance equivalent to three months minimum wage income	
		c	Priority for employment in project-related jobs, training opportunities, self-employment, and wage employment assistance.	
Section VI. Unforeseen Impacts				
Any unanticipated impacts identified during Project implementation will be compensated in full at replacement cost and the entitlement matrix shall be revised if required in case major unanticipated impacts occur during detailed and final design.				

Guidelines for Preparing Subproject RPs

A resettlement plan (RP) will be prepared for each subproject involving resettlement impacts. The key steps in resettlement planning are: (i) social screening; (ii) social impact assessment; (iii) inventory and valuation; (iv) determining eligibility and entitlements; (v) consultation and disclosure of findings; (vi) preparation of RP; (vii) consultation and finalization of RP; (viii) disclosure of the final RP (which analyses and describes the impacts, entitlements, detail of parties involve in project implementation, RP implementation schedule, inventory of eligible PAPs, grievance redress mechanism (GRM), initiation of land acquisition and resettlement process; disbursement of compensation and entitlements, relocation (planning and actual relocation), redressed of grievances, site clearance and handover to contractor for civil works; post resettlement support measures. These steps are summarized in **Table ES.4**.

Table ES.4: Summary of Process for Screening, Preparing and Approving RAPs

Steps	Actions	Responsibility	Stage
1.	Screening of each subproject for resettlement impacts	PCU	As soon as a subproject is identified and initial draft of the subproject technical design is ready
2.	Determining the appropriate safeguard instrument to be prepared (RP or ARP)	PCU	Once screening is complete
3.	Preparation of ToRs for conducting SIA and appointment of consultants	PCU	Mobilization of consultants soon after finalization of subproject design and completion of screening.
4.	Social Impact Assessment • consultations with potential PAPs and other stakeholders • census and inventory • socio-economic survey • identification of vulnerable and severally affected households • assessment of impacts on livelihoods • valuation of land and other assets at replacement cost • determination of compensation for each category of PAPs	RP consultants	After contract award to consultants for RP
5.	Establish GRM and notify GRC at each site of respective subproject	PCU	At preliminary stage of SIA
6.	Preparation of RP/ARP including livelihood restoration plan	RP consultants	Duration depends on nature and scale of resettlement impacts/urgency of subproject preparation
7.	Review of draft RP/ARP	PCU	5 to 7 working days after availability of draft RP/ARP

Steps	Actions	Responsibility	Stage
8.	Finalization of RP/ARP	RP consultant	5 to 7 working days after receiving PCU comments
9.	Approval of RP/ARP by PCU Submission of RP/ARP for the AIIB's compliance review and clearance	PCU	5 working days after receiving revised RP/ARP
10.	Disclosure of A/RAP	PCU/AIIB	Once approved by PCU and AIIB
11.	RP/ARP implementation • confirmation of PAPs and the associated project resettlement impacts, if any • finalization of compensation amount • development of standard operating procedures for making compensation and assistance • complete documents for payments • payment of compensation and assistance • grievance redressal • continuous coordination and communication with PAPs and key stakeholders • documentation and reporting	PCU (with support from consultants)	Before start of civil works
12.	Consultation with PAPs and other and stakeholders	PCU and consultants	Throughout the project duration
13.	Internal monitoring of RP/ARP implementation and reporting	PCU	During RP/ARP implementation
14.	Grievance redressal (on-going)	PCU	At all stages of resettlement planning and implementation
15.	Hiring of Third-Party Monitoring Consultants	PCU	Well in advance before completion of first RP/ARP implementation
16.	Third-Party Monitoring of RP/ARP implementation	Consultants	Once RP/ARP implementation is completed and then after every six months
17.	Taking possession of site	PCU	After completion of payments as per entitlements
18.	Evaluation of post RP/ARP implementation	Consultants	Three months after implementation completion of each RP/ARP
19	RP/ARP Completion Report	PCU	Within two months after completion of RP/ARP implementation

List of Acronyms

AD	Agricultural Department
AIIB	Asian Infrastructure Investment Bank
ARP	Abbreviated Resettlement Plan
BCCS	Behavior Change Communication Strategy
BRWSSP	Bukhara Region Water Supply and Sewerage Project
DCM	Decree of Cabinet of Ministers
DMS	Detailed Measurement Survey
DP	Displaced Person
DSEI	Draft Statement of the Environmental Impacts
E&S	Environmental and Social
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
ESHS	Environment, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMPF	Environmental and Social Management Planning Framework
ESP	Environmental and Social Policy
ESS	Environmental and Social Standard
FGD	Focused Group Discussions
GAP	Gender Action Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOST	A set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification
GoU	Government of Uzbekistan
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
HSE	Health, safety and environment

HSS	Health, Safety and Security
IA	Implementation Agency
IR	Involuntary Resettlement
IT	Information Technology
IUCN	International Union for Conservation of Nature
LRSCD	Land Resources and State Cadaster Department
KKMAT	Kommunkhizmat
MAD	Maximum Allowed Discharges
MHCS	Ministry of Housing and Communal Services
MPC	Maximum Permissible Concentration
MRW	Minimum Refferal Wage
NDC	National Defined Contributions
NGO	Non-governmental organization
O&M	Operation and Maintenance
PAP	Project Affected Person
PC	Public Consultation
PCU	Project Coordination Unit
PPE	Personal Protection Equipment
PPM	Project-affected People's Mechanism
RAP	Resettlement Action Plan
RP	Resettlement Plan
RPF	Resettlement Planning Framework
RoU	Republic of Uzbekistan
SCEEP	State Committee for Ecology and Environmental Protection
SEE	State Environmental Expertise
SEI	Statement of the Environmental Impacts
SES	Socio-Economic Survey
SIA	Social Impact Assessment
SSESMP	Site-Specific Environmental and Social Management Plan
SUE	State Unitary Enterprise
ToR	Terms of Reference

UNFCCC	UN Framework Convention on Climate Change
UZST	Uzsuvtaminot
VLA	valuation of lost assets
WBD	Water Borne Diseases
WDU	Water Distribution Unit
WIU	Water Intake Unit
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

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1 Introduction

The Government of Uzbekistan (GoU) plans to initiate the Bukhara Region Water Supply and Sewerage Project (BRWSSP) and seeks financial assistance from the Asian Infrastructure Investment Bank (AIIB) for this purpose. In line with the GoU regulatory and AIIB policy requirements, GoU commissioned a study to address the environmental and social impacts of this project. As an outcome of this study, the present Environmental and Social Management Planning Framework (ESMPF) has been prepared.

At the time of project preparation, the Project Implemenattion Entity (PIE) was the Agency for Communal Services Kommunkhizmat (KKMAT) under the Ministry of Housing and Communal Services (MHCS). However, through a letter dated April 13, 2021, the GoU, through the Ministry of Finance, requested AIIB to change the PIE for the proposed project from the KKMAT under the Ministry of Housing and Communal Services to the newly established government-owned joint-stock company Uzsuvtaminot (UZST), which has succeeded all the rights, obligations and liabilities of the previous PIE.

1.1 Project Background

The GoU has a long-term program to increase the provision of high-quality water supply and sanitation services, strengthen the institutional base and physical infrastructure of operating organizations, improve the sanitary and environmental situation in the regions of the Republic.

The existing water supply and sewage systems in Uzbekistan requires extensive reconstruction since it suffers from a worn-out infrastructure, unstable financial condition and weak institutional capacity. The coverage of water supply services to the population of Uzbekistan is about 68% and of Bukhara region is about 52% (*Feasibility Study of the Design Institute, 2019*).

The pipes in the distribution system have been damaged by corrosion because of being used over a long period of time. The outdated equipment is sometimes filled with water, a situation that again leads to corrosion of the pipes and valves and their rapid collapse. The existing condition of the pipelines does not allow increase of pressure in the water distribution system. Evidently, any increase in pressure in the current water supply system will lead to a breakdown of pipelines and frequent accidents. Water is supplied to the network 3-4 times a week for several hours per day. As a result, the population experiences difficulties with the access to water, especially in the summer. Lack of funds, high cost of electricity and high costs of repair, maintenance and materials are among the typical problems for Bukhara region water supply organizations.

Wastewater treatment plants in the region were built mainly in 1970-1980 and are currently worn out and mostly do not work. The existing equipment is outdated and operates with low efficiency if at all.

Because of lack of financial resources, adequate and timely reconstruction of the water supply and sewerage systems has not been carried out. As a result, 50 percent of current equipment is not effectively operating, and only about 57% of the Bukhara city population and about 9% of the Bukhara region are provided with the water and sewerage services. To address these issues, the water supply and sewage systems in Bukhara region require extensive reconstruction, modern and efficient equipment, stable financial condition and strong institutional capacity.

1.2 Project Overview

The proposed project has been conceived to address the above-mentioned problems and aims to modernize water supply and sewerage systems for improving living standards and wellbeing of the population of Bukhara region.

The water supply sub-projects include mainly construction and rehabilitation of well fields and intakes, main water lines, distribution networks, power transmission lines and pumping stations. The following specific subprojects will be included in the water supply components:

- Provision of clean drinking water to the population of the northern and western parts of Bukhara, Vobkent, Gijduvon, Shofirkon. Rometan and Peshku districts of the Bukhara region while increasing the capacity of the main resource facility - Damkhuja.
- Reconstruction of water supply systems in the northern and western parts of the Shofirkon and Peshku districts as well as the northern part of the Gijduvon district through the construction and rehabilitation of the water intake structure “Jilvon” in the Shofirkon district.
- Construction and reconstruction of the main water pipeline from the Zarafshan water intake structure to Payjuy to provide the population of the southeastern part of the Rometan and Peshku regions.
- Reconstruction and construction of the main water pipeline from the water intake -Zarafshan - to the water intake - Yakkatut - to provide the population of the Jondor district with drinking water.
- Construction and reconstruction of the water intake structures - Siezpoyon and Kurzhan to provide the population of rural settlements in the northern part of the Kagan region.
- Construction and reconstruction of water supply systems to provide the population of the Qorovulbozor district.
- Construction and reconstruction of drinking water supply systems of Bukhara and Kagan district.

The sewerage sub-projects include mainly the implementation of a centralized sewage system in each district center consisting of collectors, pumping stations and biological sewage treatment plants as well as discharge facilities. The following specific sub-projects will be included in the sewerage components:

- Bukhara city: extension with sewage networks and sewage pumping station, based on an existing feasibility study and final design, to complete the existing sewage system.
- Bukhara district: construction of sewage networks, sewage pumping station and a sewage treatment plant in Gala-Osiyo.
- Jondor district: construction of sewage networks, sewage pumping station and sewage treatment plant.
- Rometan district: construction of sewage networks, sewage pumping station and sewage treatment plant. (**Annex C1**)

- Shofirkon district: construction of sewage networks, sewage pumping station and sewage treatment plant.
- Vobkent district: construction of sewage networks, sewage pumping station and sewage treatment plant.
- Gijduvon districts: construction of sewage networks, sewage pumping station and sewage treatment plant for each district center. (**Annex C2**)
- Peshku district: construction of sewage networks, sewage pumping station and sewage treatment plant in Yangibozor.
- Qorovulbozor district: construction of sewage networks, sewage pumping station and sewage treatment plant near Bukhara Oil Refinery. (**Annex C3**)
- Kagan district: construction of sewage networks, sewage pumping station and conveyance to Bukhara City sewage treatment plant.
- Qorakol district, construction of sewage networks and construction of sewage pumping station. The waste water will then be conveyed to the sewage treatment plant in Olot for treatment and discharge. (**Annex C4**)
- Olot district, construction of sewage networks, pumping station and construction of sewage treatment plant in Olot for the waste water of both Olot and Qorakol districts. (**Annex C5**)

The Project will also address reduction of loss and leakage of water. Water quality control of potable water will significantly reduce number of waterborne diseases in Bukhara region.

1.3 Scope and Objective of Study

The present ESMPF covers environmental and social assessment of all the subprojects listed in **Section 1.2** above.

As the technical evaluation (e.g., feasibility studies) and specific intervention locations under the project will not be completely identified and/or ready and their specific impacts will not be known by project appraisal, the ESMPF including a Resettlement Planning Framework (RPF) has been prepared. The ESMPF describes the overall environmental and social safeguard procedures to be undertaken during the project implementation.

The purpose of the ESMPF is to ensure that the activities are assessed and implemented in conformity with the policies of the Republic of Uzbekistan, the Bukhara Region, the City of Bukhara and AIIB Environmental and Social Policy (ESP) and Environmental and Social Standards (ESSs). It sets out the policies and procedures to assess and address: environmental and social risks and impacts of the activities; involuntary resettlement that is likely to arise from such activities; and impacts on indigenous peoples. The policies and procedures also cover working conditions and community health and safety aspects described in ESS 1. The ESMPF identifies generic impacts of the project activities and identifies generic mitigation measures to address these impacts. The RPF included in the present documents provides the principles and procedures to address the involuntary resettlement impacts of the proposed activities under the project.

1.4 Study Methodology

The present ESMPF has been prepared following the standard methodology consisting of the steps described below.

1.4.1 Review of the project details

At the onset of the study, the project details were obtained from the Ministry of Housing and Communal Services (MHCS) of the Republic of Uzbekistan and its regional departments. These details were studied carefully to fully understand the nature and extent of the project and the activities to be carried out under it. Meetings were held with the representatives of the Design Institute who conducted the feasibility study of the Project.

1.4.2 Review of Policy and Regulatory Requirements

The applicable policies, guidelines and legislations concerning the project's environmental and social aspects were identified. During the study, the applicable national legislations, regulations, and AIIB policies were studied in depth to determine their relevance and applicability to the BRWSSP.

1.4.3 Collecting of Baseline Data

During this phase, primary and secondary data was collected and compiled, in order to develop an initial baseline of the project area's physical, biodiversity, socio-economic and environmental parameters. Subsequent to this, field visits were carried out to the selected sub-project sites on a sample basis. During the field visits, information was collected at and around the sub-project sites on land use, land form, settlements, water resources, flora and fauna, key environmental and social features, any protected areas, any historical, religious or cultural sites, and any environmental and or social sensitivity. Information on the broader water basins was obtained through google-earth map/satellite image. It will also introduce parameters of Kuymazar, Zarafshan reservoirs and other water sources.

Information on biodiversity was collected through the survey and literature review. The Baseline Analysis describes ecosystem, natural vegetation cover, wildlife habitats and protected areas in Bukhara region, near water resources and in downstream areas, flora and fauna, with narrative and maps.

In addition, the social survey was conducted in order to obtain baseline data for the social and economic parameters of the Project area. The social survey using the Rapid Participatory Appraisal method provides a baseline to develop measures for poverty reduction and balanced development option for all target groups, including vulnerable people. The survey tool comprised of a questionnaire to cover 300 households in the project area. This survey was supplemented by Focused Group Discussions (FGD) with female and male community members.

1.4.4 Consultations with Stakeholders

First round of the stakeholder consultations was carried out in project areas of the Bukhara region. Meetings were held with the institutional stakeholders such as Bukhara region Suvokava (Water Supply and Sanitation Department), local khokimiyats (local government), Women's Committee, representatives of civil society and representatives of private water delivery services in order to discuss key environmental and social issues associated or perceived to be associated with the

project. Some initial consultations with the grass-root and institutional stakeholders were carried out during this stage. Purpose of the consultations were to disseminate the project information among the stakeholders and to obtain their views, concerns and apprehensions about the project and its potential impacts. In order to understand women's issues, their current circumstances and aspirations from the proposed project, focused consultations were held with women of local households, authorities, Women's Committee, formal and informal sectors. The ultimate aim of this process was to ensure greater transparency, participation, sustainable project design, and environment- as well as people-friendly project implementation.

1.4.5 Impact Assessment and Management Measures

After the data collection was completed, the impact assessment was carried out to identify potentially negative and positive generic impacts of the proposed activities under the project. The study team identified and assessed all direct and indirect impacts and risks in both short-term and long-term resulting from preconstruction, construction and operation phases of the project.

The social and ecological assessment was used to determine the interaction of proposed project activities and key environmental and social resources. In addition, risk assessment methodology was employed to characterize each specific impact of the project as severely, moderately, or mildly significant. The potential impacts of the project were categorized as major, moderate, minor or nominal based on consideration of the parameters such as: i) duration of the impact; ii) spatial extent of the impact; iii) reversibility; iv) likelihood; and v) legal standards and established professional criteria. Site- and sub-project-specific impact assessment will be carried out as part of the environmental and social assessment of individual sub-projects to be undertaken under the BRWSSP.

1.4.6 Preparing ESMPF

The process and outcome of the environmental and social impact study has been documented in the present ESMPF, which identifies the principles and procedures to conduct environmental and social assessment of the subprojects to be implemented under the BRWSSP. In addition, it describes the responsibilities of project stakeholders, review and approval requirements, monitoring and reporting protocols, as well as plans to enhance institutional capacity through capacity building and training. The ESMPF also includes a generic environmental and social management plan (ESMP), to provide template and guidance for the sub-project specific Environmental and Social Impact Assessments (ESIAs) and ESMPs – to be prepared during the project implementation.

1.5 Study Team

The ESMPF study has been carried out by a multi-disciplinary team of experts. The MHCS contracted IKS Group of Companies to prepare the ESMPF in accordance with the approved ToR. The Study Team included Mr. Tolib Sultanov, Environmental specialist; Mr. Jakhongir Gadaev, Environmental specialist; Ms. Nodira Azizova, Social Impact and Resettlement Specialist; Dr. Nigora Muratova, Social and Gender Specialist, Mr. Jamoliddin Qudratov, Social Safeguard Specialist, Aziz Salomov, the Field Survey Coordinator in Bukhara region; and Elmira Vaisova, IT specialist.

1.6 Document structure

Chapter 2 reviews the existing AIIB's Policy and national regulatory requirements relevant to environmental and social assessment. **Chapter 3** presents a description of the project, its various components, subprojects and other specific information relevant for environmental and social assessment. **Chapter 4** covers an overview baseline of physical, biological, socioeconomic and cultural, water supply and sewerage infrastructure aspects relevant to the project and its potential impacts. **Chapter 5** presents the analysis of generic potential direct, indirect/induced impacts to be caused by the project's construction and operation. The environmental social management plan (ESMP) which defines criteria for subproject classification, the implementation and monitoring mechanism for the mitigation impacts, Grievance Redress Mechanism (GRM) and capacity building is covered under the **Chapter 6**. **Chapter 7** outlines the stakeholder consultations carried out during the environmental and social assessment. Finally, **Chapter 8** presents generic guidelines and principles of resettlement management, entitlement and eligibility matrix - in the form of a Resettlement Planning Framework.

2 LEGAL, POLICY AND REGULATORY FRAMEWORK

This chapter discusses the laws, regulations and policies of the Government of Uzbekistan, the Khokimiyat of the Bukhara region and AIIB's Environmental and Social Policy.

2.1 National Environmental and Social Laws

2.1.1 Overview

The Constitution of the Republic of Uzbekistan (1992) recognize that all natural resources such as land, its subsoil, water, flora and fauna and others are national wealth and protected by the state and they are subject to rational use. The purpose of the Law "On Water and Water Use" (1993) is to regulate water resources, rational use of water for the needs of the population and economic sectors, protect water from pollution, prevent and eliminate the harmful effects of water, improve the condition of water bodies, and protect the rights and legitimate interests of enterprises, institutions, organizations, farms, dehkan farms and citizens.

The Oliy Majlis of the Republic of Uzbekistan is the main Government Institution which identifies and approves the regulation of water related issues, adopts legislative acts on water and water use. In addition, it introduces amendments, determine main directions of state policy in the field of use and protection of water resources and adoption of strategic state water management programs. The Cabinet of Ministers of the Republic of Uzbekistan focuses on regulation of water relations by pursuing a unified state policy in the field of integrated and rational use, management and protection of water resources, coordinates activities of the Ministries, State Committees, Departments, other Legal Entities in the field of integrated and rational use, management and protection of water resources. It also prevents and eliminates the harmful effects of water, establishes the procedure for the formation and using of the water fund.

2.1.2 Uzbekistan National Environmental Legislation and Procedures

Legal Framework in the field of Nature Protection and Management established in the Republic of Uzbekistan, provides to the citizens the rights and duties specified in the country's Constitution. Specific articles that address environment protection issues within the Constitution are:

- Article 50. All citizens shall protect the environment
- Article 51. All citizens shall be obliged to pay taxes and local fees established by law
- Article 54. Any property shall not inflict harm to the environment
- Article 55. Land, subsoil, flora, fauna, and other natural resources are protected by the state and considered as resources of national wealth subject to sustainable use.

Uzbekistan has enacted several supporting laws and statutes for environmental management and is party to several international and regional environmental agreements and conventions. The key national environmental law is the Law on Nature Protection (1992). A brief description of this law and the other supporting laws related to environmental protection is presented below.

The law **"On nature protection"** (1992) states legal, economic, and organizational bases for the conservation of the environment and the rational use of natural resources. Its purpose is to ensure balanced relations between man and nature, to protect the environmental system and to guarantee

the rights of the population of a clean environment. Article 25 of this law states that State Environmental Expertise (SEE) is a mandatory measure for environmental protection, preceded to decision-making process. In addition, article 25 says that the implementation of the project without a positive conclusion of SEE is prohibited.

Law **"On Atmospheric Air Protection"** (1996, amended on 10.10.2006). It describes regulations on atmosphere protection and its objectives. It specifies standards, quality and deleterious effect norms, requirements on fuels and lubricants, production and operation of vehicles and other transport means and equipment, ozone layer protection requirements, obligations of enterprises, institutions and organizations toward atmospheric protection, and compensations for damages from atmospheric pollutions.

Law "**On water and water use**" (1993). It regulates the water resources, rational use of water by the population and economy. The law regulates the protection of waters from pollution and depletion, and prevention and liquidation of harmful effects of water, improvement of water bodies and the protection of the rights of enterprises and institutions, organizations and *dehkan* farms[4] in the field of water relations.

Land Code of the Republic of Uzbekistan (1998). It aims to regulate land relations in order to ensure that present and future generations have science-based, sustainable use and conservation of land, breeding and improvement of soil fertility, conservation and improvement of the environment and creating conditions for equitable development of all forms of land management, the protection of individuals and legal entities' right for land, as well as strengthening the rule of law in this area.

Law **"On Wastes"** (2002, as amended on 2011). It addresses waste management, exclusive of emissions and air and water pollution, and confers authority to the State Committee for Ecology and Environmental Protection (SCEEP) concerning inspections, coordination, ecological expertise and establishing certain parameters with regard to the locations where waste may be processed. Enterprises are responsible for their waste, but, if they recycle, they may be provided with assistance from the state budget, the National Fund for Nature Protection or voluntary payments. The principal objective of this law is to prevent negative effects of solid wastes on people's lives and health, as well as on the environment, reduce wastes generations, and encourage rational use of waste reduction techniques in household activities.

Law **"On Protected Natural Reserves"** (2004) - The purpose of this Law is to regulate relations in term of organization, protection and use of protected natural territories. The main tasks of this Law are the preservation of typical, unique, valuable natural objects and complexes, the genetic fund of plants and animals, the prevention of the negative impact of human activities on nature, the study of natural processes, the monitoring of the environment, the improvement of environmental education.

Law **"On environmental control"** (2013) - The purpose of this Law is to regulate matters in the field of environmental control. The main objectives of environmental control are: (i) prevention,

[4] Dehkan: farmer.'

detection and suppression of violation of the requirements of legislation in the field of environmental protection and rational use of natural resources; (ii) monitoring the state of the environment, identifying situations that can lead to environmental pollution, irrational use of natural resources, create a threat to life and health of citizens; (iii) determination of compliance with the environmental requirements of the planned or ongoing economic and other activities; (iv) ensuring compliance with the rights and legitimate interests of legal entities and individuals, performing their duties in the field of environmental protection and rational use of natural resources.

Law **"On Protection and Usage Objects of Archeological Heritage"** (2009) – regulates matters in the field of protection and usage of objective of archeological heritages, defines ownership rights of such objectives, responsible entities and provides a procedure of archeological investigation of the objectives of archeological heritage.

The Nature Protection Normative Documents. Most important nature protection normative documents issued by government include:

- "Procedure for elaboration and execution of draft standards on maximum permissible emission of contaminants discharged to water bodies including drainage water" (RD 118.0027719.5-91);
- "Procedure for granting permission for special water use" (RD 118.0027714.6-92);
- "Instruction for determining of damage caused to the national economy by underground water contamination" (RD 118.0027714.47-95);
- State Standard - Water quality. O'z DST 951:2011 – Sources of centralized household water supply. Hygienic, technical requirements and classification code; (**Annex A**)
- State Standard - Drinking water. O'z DST 950:2011 – Drinking water. Hygienic requirements and quality control; (**Annex A**)
- SanR&N RoU No.0172-04 Hygienic norms. For the protection of surface waters in the territory of the Republic of Uzbekistan; (**Annex A**)
- "Temporary recommendation on control of underground water protection of the Republic of Uzbekistan". State Nature Committee and Uzbek-gidrogeologiya of the Republic of Uzbekistan, Tashkent, 1991;
- Decree of the Cabinet of Ministers "On approval of Provision on the State Environment Monitoring" (No 49, 3.04.2002);
- Decree of the Cabinet of Ministers "On the Action Program for the Protection of Environment in the Republic of Uzbekistan for 2013-2017" (No 142, 27.05.2013);
- State standard O'z DSt 1057:2004 "Vehicles. Safety requirements for technical conditions" and O'z DSt 1058:2004 "Vehicles. Technical inspection. Method of control";
- SanR&N RoU No. 0293-11 Sanitarian Rules and Norms List of Maximum Permissible Concentrations (MPC) of pollutants in the atmospheric air of populated areas on the territory of the Republic of Uzbekistan; (**Annex A**)

- SanR&N RoU No. 0158-04 Sanitarian Rules and Norms on collection, transportation and disposal of wastes contained asbestos in Uzbekistan;
- SanR&N RoU No. 0267-09 Admissible noise level into the living area, both inside and outside the buildings; (**Annex A**)
- SanR&N RoU №0120-01 Sanitarian Norms of allowed level of noise at the construction sites;
- SanR&N RoU No 0088-99 Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters;
- KMK (Construction norms and rules) 2.01.08-96 "Noise Protection"
- KMK (Construction norms and rules) 2.04.02-97 "Water Supply. External network and facilities";
- Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of the collection and disposal of used mercury-containing lamps. No. 266 of 21.09.2011;
- SanR&N # 233-07 On occupational health and environment protection during production and usage of asbestos contained materials.

The Republic of Uzbekistan is party to a series of **International Environmental Treaties and Regional Agreements** which also contain a series of requirements to be considered while conducting the subprojects ESIA. The country is party to the three Rio Conventions: Convention on Climate Change, Convention on Biological Diversity, and Convention to Combat Desertification. Additionally, the country has signed and ratified the following treaties: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (22.12.1995); Convention on Protection of the World Cultural and Natural Heritage (22.12.1995); Convention on International Trade in Endangered Species of Wild Fauna and Flora (01.07.1997); Bonn Convention on Conservation of Migrating Species of Wild Animals (01.05.1998); Paris Agreement under the United Nations Framework Convention on Climate Change (09.11.2018).

2.1.3 National EIA Rules and Procedures

The national Environmental Impact Assessment (EIA) procedure is regulated by the Law on Environmental Expertise and the Regulation on Further Improvement of the Environmental Impact Assessment Mechanism approved by Cabinet of Ministry Decree No.541 dated 7 September 2020. The regulation defines the legal requirements for EIA in Uzbekistan. SEE is a review process conducted by the Center for SEE under SCEEP (Goskomecologiya) at either the national or the regional level, depending on the project category.

Goskomecologiya on state environmental expertise is a uniform system of State Environmental Expertise, methodological guidance of which implemented by Center for State Environmental Expertise. Pursuant to Section 18 of the Regulation on SEE, the developer must conduct the EIA assessment process in a staged approach, providing the Center for State Environmental Expertise/Regional Center for State Environmental Expertise with EIA documents for review at three distinct stages of the Project. Section 14 of the Regulation on SEE outlines the information

that should be within the documentation at each of these stages. The three EIA stages and their required deliverables are summarized as follows:

- Stage I: The 'Draft Statement of the Environmental Impacts (DSEI)', to be conducted at the planning stage of the proposed project prior to development funds being allocated.
- Stage II: The 'Statement of the Environmental Impacts (SEI)', to be completed where it was identified by the Center for State Environmental Expertise/Regional Center for State Environmental Expertise at Stage I that additional investigations or analyses were necessary. The Statement must be submitted to the Center for State Environmental Expertise/Regional Center for State Environmental Expertise before approval of the project's feasibility study, and therefore before construction.
- Stage III: The 'Statement on Environmental Consequences (SEC)' represents the final stage in the SEE process and is to be conducted before the project is commissioned. The report details the modifications to the project design that have been made from the Center for State Environmental Expertise/Regional Center for State Environmental Expertise review at the first two stages of the EIA process, the comments received through the public consultation, the environmental norms applicable to the project and environmental monitoring requirements associated with the project and principal conclusions.

SEE approval (Center for State Environmental Expertise/Regional Center for State Environmental Expertise opinion) is a mandatory document for project financing by Uzbek banks and other lenders (Section 24) at Stages I and II and for project commissioning at Stage III of the national EIA procedure.

All economic activities subject to SEE are classified into one of four categories:

- Category I — "high risk of environmental impact" (SEE is conducted by the national SCEEP within 20 days, all EIA materials are required);
- Category II — "medium risk of environmental impact" (SEE is conducted by the national SCEEP within 15 days, all EIA materials are required);
- Category III — "low risk of impact" (SEE is conducted by regional branches of (SCEEP) within 10 days, all EIA materials are required); and
- Category IV – "low impact" (SEE is conducted by regional branches of SCEEP within five days, only a draft EIA is required).

2.1.4 Land Code of Republic of Uzbekistan, 1998

The **Land Code** of Republic of Uzbekistan was adopted on 30 April 1998 and subsequently amended few times and the amended version as on 01 August 2019 describes the basic principles of land legislation, roles and responsibilities of various arms of the government in land regulation, land ownership, rights of individuals and legal entities with regard to land, powers and procedure to adopted in withdrawal/redemption of land and rights and obligations of land owner, land user and tenant.

Land is a State property, and individuals can have land plots on the right of lifelong inherited possession, permanent use, term (temporary) use and on lease, while legal entities can have land on the right of permanent ownership, permanent use, term (temporary) use and on rent. When

transferring ownership, economic management rights or operational management rights to an enterprise, building, structure or other real estate, these objects also pass the right of ownership and permanent use of the land plot occupied by these objects and necessary for their use. When individuals transfer ownership (purchase, donation or inheritance, etc.) of a residential house, a garden house, along with the ownership of these buildings goes the right of lifelong inherited ownership of the entire land plot on which these buildings are located.

The withdrawal of a land plot or its part for state and public needs is carried out with the consent of the landowner or in agreement with the land user and the tenant by decision of the Khokim of the district, city, region or decision of the Cabinet of Ministers of the Republic of Uzbekistan respectively.

Rights of landowner, land user, tenant and owner of a land plot include right for compensation of losses caused to him (including lost profits), in case of withdrawal of a land plot, or compensation of expenses in case of voluntary refusal of a land plot. Further, while defining the process of withdrawal/redemption for state or public needs of land plots provided to individuals, it is specified that it should be done after the Khokim of a district, city, region has allocated an equivalent land plot, constructed at a new place by enterprises, institutions and organizations for which land is allocated, production and other buildings to replace the seized and reimbursement in full of all other damages (including lost profits).

Further, the losses caused to landowners, land users, tenants and owners of land plots is to be reimbursed in full (including lost profits) when the state withdraws/redeems or takes land for temporary occupation. The resolutions passed by cabinet of ministers since May 2016 have made many amends to the Land Code provisions with regard to withdrawal/redemption of land and related compensation for losses to citizens and legal entities.

2.1.5 Housing Code of Republic of Uzbekistan, 1998

The Housing code governs the matters relating to citizens, legal entities, government bodies and local government bodies with regard to origins, implementation, change and termination of the property right, right of ownership and use of residential premises; accounting of housing stock; ensuring safety, content and repair of housing stock; control of observance of housing laws of citizens and target use of housing stock.

The housing code apart from dwelling into the ownership of dwelling units, the responsibilities and modalities of transfer and rental, deals with withdrawal of land, wherein, in the event of demolition of residential buildings (apartments) owned by citizens in connection with the withdrawal of land plots for state or public needs, the owners of the property, at their choice and by agreement of the parties, shall be provided with another equivalent well-appointed residential space of an area not less than the social norm of the dwelling area. If in case the market value of building provided exceeds the market value of the demolished house (apartment) or the right to land, the difference is to be paid to the owner.

Further, in case of demolition of residential buildings (apartments) owned by citizens in connection with the withdrawal of land plots for state or public needs, alternate land plot is provided for individual housing construction within the established norm at their choice. In addition, temporary housing is provided on the terms of a tenancy agreement for the period of land development, for a period of up to three years, with reimbursement in full of the market value of demolished houses

(apartments), buildings, structures, trees and crops, as well as the difference between the market value of land withdrawn and the land provided, where the market value of land withdrawn is greater than that of the land provided.

For citizens and legal entities whose houses (apartments) are to be demolished, equivalent residential houses and buildings are provided at their choice at the new place, and transferred to them as property. At the same time, payment of the monetary compensation for the market value of the structure taken down, as well as the difference between the market values of the land provided and the land being withdrawn, in case the market value of the land withdrawn is greater than the market value of the land provided, is made in full.

2.1.6 Resolution of Cabinet Ministers No. 97 dated 29 May 2006

This resolution deals with regulations that determine the procedure for withdrawal/redemption of a land plot or its part, as well as the procedure for calculating the amount of compensation to citizens and legal entities for demolished residential, industrial and other buildings, structures and trees and crops in connection with the withdrawal/redemption of land plots for state and public needs.

The resolution specifies the purpose for which land can be withdrawn/redeemed and demolition of residential, industrial and other buildings, structures and trees and crops can be done. Land can be withdrawn/redeemed for the needs of defense and state security, protected natural territories, the creation and functioning of free economic zones, fulfilment of obligations arising from international treaties, the discovery and development of mineral deposits, construction (reconstruction) of roads and railways, airports, airfields, air navigation facilities and aero technical centers, railway transport facilities, bridges, subways, tunnels, energy systems and power transmission lines, communication lines, space facilities, main pipelines, engineering and communication networks.

Payment of compensation in full as per market value to the owner is made mandatory prior to demolition of structures in case of withdrawal/redemption of land plots. Khokimiyats of the respective districts are obliged to notify the owners of residential, industrial and other buildings, structures and plantings of the decision in writing for signature not later than six months before the demolition. The resolution in unambiguous terms states that self-willed residential, industrial and other buildings and structures shall not be reimbursed. In other words, non-titleholders or those without user right, are not reimbursed for the losses.

In case of withdrawal of seized land plots to enterprises, institutions and organizations, payment of reimbursements, provision of residential buildings (apartments) and provision of temporary housing, as well as covering all costs associated with moving to a new location, by decision of the Khokims of the respective districts (cities) are to be borne by these enterprises, institutions and organizations.

The withdrawal/redemption of land is provided with the following types of compensation: (i) providing citizens with the property of another equivalent well-appointed living space of an area not less than the social norm of the living space and paying the cost of trees and crops; (ii) payment to citizens of the market value of the demolished residential building, other buildings, structures and trees and crops, as well as compensation for losses caused to owners in connection with the withdrawal of the land plot; and (iii) providing citizens with a land plot for individual housing

construction within the established norm with provision of temporary housing under the terms of a tenancy agreement for the period of land development, for a period of up to two years, with full reimbursement of the market value of demolished houses (apartments), buildings, structures and plantings losses caused to owners in connection with the withdrawal of the land.

The affected person does not have the right to salvage material as all materials from the dismantling of demolished houses (apartments), other buildings and structures (except for unauthorized construction) located in the land that is withdrawn, will remain at the disposal of the enterprise/institution for whom land is acquired and who pays for the cost of building. The owner of the structure has the right to salvage material on payment of the cost determined by the Khokims, allowing for depreciation.

2.1.7 Resolution of Cabinet Ministers No. 146 dated 25 May 2011

This resolution was promulgated to further improve the procedure for granting land plots, ensuring the protection of rights of legal entities and individuals to land, improving the architectural appearance of populated areas of the republic, optimal use of their development land in accordance with the Land Code and Town Planning Code of the Republic of Uzbekistan. Further, these regulations establish the procedure for determining the size and compensation of losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production.

The size of losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production are determined by the State Research and Design Institute and its territorial divisions, branches of state enterprises of Land Management and Real Estate Cadastre of the Republic of Karakalpakstan, regions and the city of Tashkent in the respective districts.

Losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production are reimbursed before the new owner, user and tenant is presented with documents certifying the right to a land plot. Further, owners, users, tenants and owners of land plots that are seized, and who are given land, in disagreement with certain amounts of losses and losses of agricultural and forestry production can go to court.

With regard to compensation for losses arising out of withdrawal, redemption or temporary occupation of land plots or their part, the value of the land, which is privately owned by legal entities and individuals; the cost of residential buildings, structures and structures, including facilities whose construction has not been completed, as well as those located outside the designated area, if their further use is impossible due to land acquisition; the cost of fruit, protective and other perennial plantations; the value of unfinished agricultural production; and lost profit, will be reimbursed.

However, unauthorized occupied land by persons is not entitled for the above listed compensation.

Estimation of the cost of residential houses, buildings and structures, including objects, the construction of which is not completed, as well as those located outside the designated area, if their further use is impossible due to land acquisition, is carried out by the Khokimiyats of the respective districts through a commission constituted with the deputy Khokim of the district as its head, consisting of representatives of financial and other departments of Khokimiyats, the state inspector for control over the use and protection of land, the self-government body of citizens, the landowner (land user, tenant) from whom land is withdrawn, representative of the enterprise, institution or

organization which requires the land, and representatives of other competent bodies as required and as decided by the Khokimiyats.

Valuation of fruit bearing, fruit and berry plantations, as well as grafted trees and other perennial plantations is done to include the cost of seedlings and the cost of planting and growing them before the start of fruit bearing or closure of crowns at current prices during the assessment period. Valuation of non-fruit bearing, fruit-berry plantations, as well as grafted trees and other perennial plantations with uncrowned crown, is made according to the actual expenses incurred.

The cost of unfinished agricultural production, which includes the cost of consumed materials (seeds, mineral and organic fertilizers, toxic chemicals, herbicides, etc.) and work actually performed (preparing the soil for sowing, cleaning the irrigation and drainage network, sowing seeds, watering, processing agricultural crops, etc.), is accepted according to primary accounting documents.

The cost of lost profits of legal entities related to the seizure of land plots with the demolition of buildings and structures located on it is determined on the basis of the average annual income for the last three years taken from the financial activity report for the relevant years and the period required for recovery activities in the new location. The period required for the restoration of activities in the new location is the time for obtaining the land plot, the regulatory deadlines for the design and construction of the same facility to be demolished.

The size of lost profits when excluding land from agricultural production is defined as the sum of the average annual net income from the agricultural land excluded from the agricultural production multiplied by four years for which the design will be carried out, their irrigation and the development of new lands cultivation and other work to improve soil fertility. The amount of net income for one year is determined based on the average annual net income for the last 3 years per 1 hectare of agricultural land and multiplied by the area of agricultural land being withdrawn.

2.1.8 Resolution of Cabinet Ministers No. 3857 dated 17 July 2018

This resolution provides for certain measures for improving the efficiency of preparation and implementation of projects with the participation of international financial institutions and foreign government financial organizations.

The resolution provides for compensating for land and structure in accordance with the provisions of the international funding agencies. In Clause 2, it is specified that payment of compensation for the seizure of land, demolition of houses, other buildings, structures or plantings in the framework of projects with the participation of the International Financial Institutions (IFI) / Foreign Government Financial Organizations (FGFO), if provided for by project agreements, is carried out by authorized bodies in accordance with the requirements of the IFI / FGFO.

Further, the resolution deals with procurement procedures, process of entering into project agreements, identification of projects for financing, modalities of financing project preparatory activities, the procedure for conducting loan negotiations and signing of loan agreements, requirements and structure of project implementation units and its obligations and other matters related to procurement and project implementation.

2.1.9 Resolution of Cabinet Ministers No. 5495 dated 01 August 2018

This resolution provides for certain measures for further improving the investment climate, measures to stimulate the attraction of direct investments, strengthen investor confidence in the consistency of government policy in this direction and increase the responsibility of government agencies in working with investors.

The resolution stipulates that the affected person will have the right for prior information about withdrawal of land and its cost and other benefits entitled before a decision is made on the withdrawal of such land.

Further, payment for losses is to be made prior to dispossession of the assets and the resolution in clause 2 specifies that demolition of residential, industrial premises, other buildings and structures owned by individuals and legal entities when seizing land plots is allowed after a full refund of the market value of real estate and losses caused to owners in connection.

The resolution also provides for long lease of non-agricultural land for enterprise with foreign investment and simplified criteria for investment to encourage foreign investment.

The resolution "On Approval of the order of the appointment and payment of social allowances and material (financial) assistance to low income families" dated February 15, 2013 #44. This resolution determines the procedure for the appointment and payment of Makhalla allowances for families with children under the age of 14 years, allowances for child care until the age of two years and allowance for low income families. According to this resolution the following types of families are entitled for allowances:

- families who have lost both parents and children involved in family education;
- families where one or both parents are disabled children;
- widow (er), raising two or more children under the age of 14, living separately from other relatives;
- family with disabled children;
- mothers or fathers who are bringing up the children in a single-parent family. In this case the fact of child rearing mother (father) in an incomplete family established by makhalla;
- families in which one or both parents are unemployed who has been registered at centers to promote employment and social protection of the population as job-seekers;
- single retired persons.

2.1.10 Civil Code of Republic of Uzbekistan, 1995

The civil code confirms the supremacy of international treaty or agreement over the civil code, as such if an international treaty or agreement establishes rules other than those stipulated by civil legislation, the rules of the international treaty and agreement would prevail.

The code describes the bases for the origin of civil rights and duties arise from the bases provided by legislation and that property rights subject to state registration arise from the time of registration of the respective rights to the property, unless otherwise established by a Law. Similarly, the right

of ownership and other rights in things to immovable things, their arising, passage, limitation and termination of these rights are subject to state registration. Fundamentally, the right to a property will stay only if it is registered under the State.

A person whose right has been violated may demand full compensation for the losses caused to him unless a Law or a contract provides for compensation for losses in a lesser amount. Losses means the expenses that the person whose right was violated made or must make to reinstate the right that was violated, the loss of or injury to his property (actual damage), and also income not received that this person would have received under the usual conditions of civil commence if his right had not been violated (forgone benefit). If the person who has violated a right has received income thereby, the person whose right has been violated has the right to demand along with other losses, compensation for forgone benefit in a measure not less than such income.

2.1.11 Labor Code and Employment Law

The Labor Code and Employment Law of the Republic of Uzbekistan are main legislations regulating labor relations of individuals employed with labor contract by enterprises, institutions, organizations of all type of ownership forms, including contracted by individuals. These legislations are considering interests of employees and employers provide efficient function of labor market, just and secure labor conditions, protection of labor rights and employees health, promote to growth of labor productivity, increase of work quality, raising on this matter welfare and social livelihood level of the population.

2.1.12 Elimination of the forced labor in Uzbekistan

The GoU and the International Labor Organization (ILO) are actively cooperating on the elimination of the forced labor. Currently, 14 conventions of the ILO have been ratified, including 8 fundamental ones, which are focused on the preventing of forced labor. The Republic adopted the National Plan of Action for the implementation of ILO conventions, the Country Program on Decent Work is being implemented, the essence and content of which are aimed at developing national labor legislation, the labor market, providing employment, social protection and dialogue with the population according to the ILO methodology. With the direct participation of experts from this organization, the use of child and forced labor in agriculture is monitored.

This project will be implemented based on the national legislation of prohibition of the forced labor in Uzbekistan. In addition to the Labor Code two main documents were approved by Oliy Majlis during two last years. Decree of the Cabinet of Ministers # 349 dated 10 May 2018 “On additional measures on the elimination of forced labor in Uzbekistan” prohibits and provides detail information on types of forced labor, types of governmental organizations and its staff, monitoring mechanism of local governorates (hokimiyats). According to this decree a financial resource of Public Works Fund, which was established under the Ministry of Employment and Labor Relations will be used for any public works in Uzbekistan.

The national legislation was approved by the new law recently approved by Oliy Majlis. On June 21, 2019 the Oliy Majlis of the RoU approved the Law #-545, about Ratification of Protocols to the Convention 29 International Labor Organization 1930 on Forced Labor (Geneva, June 11, 2014). The adoption of this Protocol allows to establish new obligations to prevent forced labor, protect its victims and provide them with access to remedies; create a positive image of Uzbekistan

in relations with the International Labor Organization and strengthen constructive cooperation with international human rights organizations.

2.1.13 Cultural Heritage, the President Decree # 4068, December 19, 2018

The article 49 of the Constitution of the RoU stresses that all citizens of the country are responsible for the preservation of the historical monuments and other cultural values. The Resolution of the President of the Republic of Uzbekistan identifies measures for the improvement of activities for protecting of cultural heritage objects, particularly, in the historical centers such as Bukhara, Samarkand, Khiva and Shahrisabz cities which are included in the UNESCO World Heritage List. This resolution presents responsibilities and tasks of the Ministry of Culture for protection, scientific study, rational use of the cultural heritage objects. It is planned to organize the Main Scientific and Production Administration for the Protection and the use of cultural heritage sites under the Ministry of Culture of the Republic of Uzbekistan, which defines the main tasks of this department as follows:

- implementation of state control on the protection and use of objects of cultural heritage, including objects of archaeological heritage, museum exhibits and collections, as well as cultural values;
- maintaining the state cadastre of objects of cultural heritage, identification, documentation and registration of objects with historical, scientific, artistic or other cultural value, definition of categories and protection zones of objects of immovable cultural heritage, as well as ensuring their rational use;
- implementation of historical and cultural expertise and design estimates documentation, conducting continuous scientific and technical control over the implementation work to preserve the value and uniqueness of objects of cultural heritage.
- establishing close cooperation with scientists, craftsmen, restorers and experts, supporting the development of unique methods, traditions and schools of repair studies, the implementation of public control.

2.2 AIIB Policy Framework

The BRWSSP will trigger not only the local environmental laws and regulations, but also the ESP and ESS of AIIB. Under BRWSSP, ESS 1: Environmental and Social Assessment and Management and ESS 2: Involuntary Resettlement are triggered. The ESMPF will address ESS 1 and the RPF will address ESS 2. Standards on Indigenous Peoples (ESS 3) will not be triggered under BRWSSP.

The AIIB ESP recognizes that environmental and social sustainability is a fundamental aspect of achieving outcomes consistent with its mandate to support water supply and sewerage system development in Bukhara region. The objective of this policy is to facilitate achievement of these development outcomes, through a system that integrates sound environmental and social management into projects.

The Bank requires its clients to manage the environmental and social risks and impacts associated with its Project/subprojects in a manner designed to meet the ESP and the applicable ESSs. The

present ESMPF has been developed in compliance with the ESS1 and ESS2. ESIAs and ESMPs will be developed for all subprojects under the Project following the ESMPF.

Environmental and Social Standard 1 (ESS1)

ESS1 sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).

The Borrower will assess, manage and monitor the environmental and social risks and impacts of the project throughout the project life cycle so as to meet the requirements of the ESS1 in a manner and within a timeframe acceptable to the Bank. The environmental and social assessment will apply a mitigation hierarchy which will:

- Anticipate and avoid risks and impacts;
- Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
- Once risks and impacts have been minimized or reduced, mitigate; and
- Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

Involuntary Resettlement

The objectives of the ESS2: Involuntary Resettlement is to avoid Involuntary Resettlement wherever possible or to minimize Involuntary Resettlement by exploring Project alternatives; where avoidance of Involuntary Resettlement is not feasible, to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-Project levels; to improve the overall socioeconomic status of the displaced poor and other vulnerable groups; and to conceive and implement resettlement activities as sustainable development programs, providing sufficient resources to enable the persons displaced by the Project to share in Project benefits.

Project Categorization

According to the AIIB policy the Project can be assign to one of the following categories:

- **Category A**. A Project is categorized A if it is likely to have significant adverse environmental and/or social impacts that are irreversible, cumulative, diverse or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works and may be temporary or permanent in nature. The Bank requires the Client to conduct an environmental and social impact assessment (ESIA) or equivalent environmental and social assessment, for each Category A Project, and to prepare an ESMP or ESMPF, which is included in the ESIA report for the Project. The ESIA for a Category A Project examines the Project's potential environmental and social impacts, both positive and adverse, compares them with those of feasible alternatives (including the "without Project" situation), and recommends any measures needed to avoid, minimize, mitigate, or compensate for adverse impacts and improve environmental and social performance of the Project.

- **Category B**. A Project is categorized B when: it has a limited number of potentially adverse environmental and social impacts; the impacts are not unprecedented; few if any of them are irreversible or cumulative; they are limited to the Project area; and can be successfully managed using good practice in an operational setting. The Bank requires the Client to conduct an initial review of the environmental and social implications of the Project. On the basis of this review, the Bank, in consultation with the Client, determines the appropriate instrument for the Client to assess the Project's environmental and social risks and impacts, on a case-by-case basis. The Bank may determine that an environmental and social assessment or another similar instrument is appropriate for the Project. The scope of the assessment may vary from Project to Project, but it is narrower than that of the Category A ESIA. As in the case of a Category A Project, the assessment examines the Project's potentially negative and positive environmental and social impacts and recommends any measures needed to avoid, minimize, mitigate, or compensate for adverse impacts and improve environmental and social performance of the Project.
- **Category C**. A Project is categorized C when it is likely to have minimal or no adverse environmental and social impacts. The Bank does not require an environmental and social assessment, but does require the Client to conduct a review of the environmental and social implications of the Project.
- **Category FI**. A Project is categorized FI if the financing structure involves the provision of funds to or through a financial intermediary (FI) for the Project, whereby the Bank delegates to the FI the decision-making on the use of the Bank funds, including the selection, appraisal, approval and monitoring of Bank-financed subprojects. The Bank requires the FI Client, through the implementation of appropriate environmental and social policies and procedures, to screen and categorize subprojects as Category A, B or C; review; conduct due diligence on; and monitor the environmental and social risks and impacts associated with the Bank- financed subprojects, all in a manner consistent with this ESP. A Project categorized as FI is also subject to: (a) the Environmental and Social Exclusion List and applicable host country national laws for all Bank-financed subprojects; and (b) the applicable ESSs for the Bank-financed subprojects that are classified as Category A subprojects (and if the Bank so determines, some or all of the Bank-financed subprojects that are classified as Category B subprojects)[5].

The BRWSSP has been assessed as Category A since it may cause widespread environmental and or social impacts and also the involumtary resettlement impacts. The subprojects to be implemented under the BRWSSP will also be categorized in accordance with the criteria described above. The subprojects under BRWSSP are likely to be either category A or B, depending upon their location, size, and nature and extension of their negative impacts.

[5] For further details on categorization visit https://www.aiib.org/en/policies-strategies/_download/environment-framework/20160226043633542.pdf.

2.3 Comparison of GoU National Legislation and AIIB Policy Framework

A comparison between the GoU national legislation discussed under Section 2.1 and AIIB policies described under Section 2.2 is given in **Table 2.1**. The project will have to comply with both these requirements; in case of any conflict however, more stringent of the two sets of legislation/policy/standard would be applicable to the project.

Table 2.1: Comparison of national legislation with AIIB Policy on Environmental and Social aspects

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
Environmental Policy and Regulations	There are AIIB Environmental and Social Framework, Environmental and Social Policy and Environmental and Social Standards	Environmental assessment and permitting procedure in Uzbekistan is set out in the following laws and regulations: **(i)** The Law on Nature Protection (1992); **(ii)** The Law on Environmental Expertise (2000), and **(iii)** Decree of Cabinet Ministries (DCM) # 541 (2020) on "The Law on Environmental Expertise and the Regulation on Further Improvement of the Environmental Impact Assessment Mechanism" Environmental legislation base consists of the more than 100 laws, by-laws and other regulative documents, such as sanitarian norms and rules, standards and etc.	In most of the cases national requirements and standards for environment quality are matching with AIIB Policy and Standards (For example, Environmental Assessment is compulsory for both requirements). However, there are some parameters when national and AIIB requirements and standards are different (For example, National legislation does not require a preparation of separate EMP or any other environmental documents/plans/checklists for project). In such cases more stringent provisions will apply for the project
Screening and Categorization	AIIB carries out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. In the case where AIIB and national categorization requirements differ, the more stringent requirement will apply. This refers mostly in the case	In Uzbekistan the EIA system is based on the State Ecological Expertise, which is regulated by Law # 73-II On Ecological Expertise (25.05.2000) and by DCM # 541 On approval of the The Law on Environmental Expertise and the Regulation on Further Improvement of the Environmental	AIIB and Uzbekistan project categorization could be harmonized by accepting the following principle: **AIIB (A,B,C)** | **Uzbekistan (I-IV)**

<table>
<tr><th>ASPECT</th><th>AIIB</th><th>NATIONAL UZBEK REGULATIONS</th><th>HARMONIZED FRAMEWORK</th></tr>
<tr><td></td><td>of deciding about Category C subprojects - the national EA legislation doesn’t refer to small scale activities, including construction and rehabilitation of various buildings. In these cases, the client will apply the AIIB criteria.
Categorization into Category A, B, C, FI
The project categorization depends on location, component presenting the highest environmental or social risk, including direct, indirect, cumulative and induced impacts, as relevant, in the Project area.</td><td>Impact Assessment Mechanism (07.09.2020).
The category of the project is defined in accordance with Appendix 1 to DCM # 541.
The Regulation stipulates 4 categories for development:
• Category I (High Risk),
• Category II (Middle Risk),
• Category III (Low Risk),
• Category IV (Local Impact).
If the activity is not included into the Appendix 1 to the regulation, EA is not conducted.
Location of the potential project is not considered during categorization</td><td><table><tr><td>Category A;</td><td>Category I</td></tr><tr><td>Category A</td><td>Category II in same cases</td></tr><tr><td>Category B</td><td>Category II (mostly)</td></tr><tr><td>Category B</td><td>Category III-IV</td></tr><tr><td>Category C</td><td>Not included in the Attachment 1.</td></tr></table>
All potential sub-projects will be reviewed on location in regard to sensitive areas. In this case AIIB categorization will be applied and such sub-projects will not be included into the program</td></tr>
<tr><td>Environmental Impact Assessment Report</td><td>In accordance with Environmental and Social Policy, ESIA processes report for category A projects includes the following chapters: (a) description of the Project; (b) policy, legal and administrative framework, including the international and national legal framework applicable to the Project; (c) scoping, including stakeholder identification and consultation plan; (d) analysis of alternatives, including the “without Project” situation; (e) baseline</td><td>DCM # 541 (2020) defines content of EIA report for project belonged to categories I-III. The report has to include: (i) baseline data, (ii) project description, (iii) anticipated environmental impacts, (iv) waste management, (v) analysis of emergency situation, and (vi) and anticipated changes due to project implementation. Information on applicable laws and regulation usually is presented in “Introduction” part.</td><td>ESIA prepared for sub-projects under this project should be developed in accordance with national requirements, fulfilled with AIIB requirements presented in this ESMPF document and with AIIB information on public disclosure requirements.</td></tr>
</table>

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	environmental and social data; (f) evaluation of environmental and social risks and impacts; (g) public consultation and information disclosure; and (h) development of mitigation, monitoring and management measures and actions in the form of an ESMP or ESMPF. For the category B project, the scope of EA and report should be narrow than for category A projects.	For the projects category IV, the EIA report is more simplified.	
ESMP	ESMP should be prepared and should specify, along with the proposed mitigation activities, a monitoring plan and reporting requirements, institutional arrangements for ESMPs implementation. For sub-projects category B with low impact ESMP checklist has to be filled.	National legislation on EA requires to identify possible impacts, but it does not require a preparation of separate EMP or any other environmental documents/plans/checklists. There is no requirements on environmental monitoring with specification of monitoring parameters and location.	Based on results of sub-projects screening, and impact assessment studies, ESMP will be developed for sub-projects.
Public Consultations and Disclosure	The Sub-borrower is responsible for conducting at least one meaningful consultation for all Categories A, B and C projects to discuss the issues to be addressed in the EMP or to discuss the draft EMP itself.	Conducting of public consultation is not mandatory. It may be conducted, if required at the time of the EIA (second stage of EA). Advertisement on conduction of public consultation have to be announced in the media.	Public consultations will be carried out with the stakeholders, affected people, NGOs for all Category A, B and C subprojects, in line with the AIIB requirements. Questions and concerns raised during public consultations will be reflected in ESMP documents. The feedback received from the Public Consultations will be used to finalize and disclose the E&S instruments.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
Requirements on Cultural Heritages	AIIB ESS1 requires development of Cultural Recourses field-based survey to conserve cultural resources and avoid destroying or damaging them under the Project	Law of RoU "On protection and usage of cultural heritage objects" states that a project's design for rehabilitation of cultural heritage needs to be approved by the Ministry of Culture (former Ministry of Culture and Sport).	During this project implementation of sub-projects that are located close to cultural heritages may be required to develop Cultural Resources Management Plan, in case there is a potential risk of the subproject activities on the cultural heritage. In such cases, design of rehabilitation/construction works will have to be approved by the Ministry of Culture prior to initiating construction works on such subprojects.
Involuntary Resettlement (IR)	Environmental and Social Policy and Environmental and Social Standards (ESS 2 – Involuntary Resettlement).	Uzbek legislation regulating involuntary resettlement: Land Code of the Republic of Uzbekistan (1998); Housing Code of the Republic of Uzbekistan (1998); Civil Code of the Republic of Uzbekistan (1995); Decrees and Orders of the President of the Republic of Uzbekistan (Decree of the President of the Republic of Uzbekistan No. 3857 dated 16 July 2018; Decree of the President of the Republic of Uzbekistan No. 5490 dated 27 July 2018; Decree of the President of the Republic of	In most of the cases national requirements and standards for IR are different from AIIB Policy and Standards in terms of providing support and compensation to PAP without any official titles/legal rights. In such cases the Suvokava (now Suvtaminot) will follow the principles of AIIB's ESP. According to Decree of the President of the Republic of Uzbekistan No. 3857 dated 16 July 2018 "On measures to improve the effectiveness of preparing and implementing projects with the participation of international

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
		Uzbekistan No. 5495 dated 1 August 2018; Order of the President of the Republic of Uzbekistan No. 5491 dated 3 August 2019); Resolutions of the Cabinet of Ministers (No. 97 dated 29.05.2006; No. 146 dated 25.05.2011; No. 911 dated 16 November 2019; No. 44 dated 15 February 2013).	financial institutions and foreign government financial organizations", payment of compensation for securing of land, demolition of homes, other buildings, structures or spaces for implementation of projects, if this is stipulated in the agreement on the projects carried out by the authorized bodies in accordance with the requirements of international financial institutions and foreign government financial organizations. Thus, the Decree confirms that the resettlement costs within the Project will be paid based on assessment documents prepared by Project Coordination Unit (PCU) in accordance with the methodology of AIIB.
Categorization	AIIB carry out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. Type of project categorizations are A, B, C, FI.	According to legislation, there is no categorization in Resettlement documents.	Under the BRWSSP all sub-projects will be screened and categorized using the ESMPF, RPF.
Compensation entitlements	A. PAPs (Project Affected Persons) with the formal title has to be compensated for lost land/other assets. B. PAPs with the legalizable title have right to be compensated for lost	PAPs with the formal title (status) is compensated for lost land/other assets.	PAPs with the formal title will be compensated for lost land/other assets. No reconciliation needed.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	land and assets after the EAs helps them in legalizing their assets. C. PAPs with no legal title are compensated for lost non-land assets.	PAPs with legalizable or no legal title (status). Legalizable are not distinguished and considered non-legal as legalization is a burden of the PAPs. Non-legal PAPs have no right to be compensated for land and non-land assets.	For illegal and legalizable PAPs resettlement assistance will be paid to the project affected persons in accordance with the AIIB policies.
Compensation	A. Permanent loss of land. Replacement land as a preferred option or cash compensation at the full market rate. At least for legal/legalizable PAPs.	A. Permanent loss of land. Replacement land for legal PAPs.	A. Same in principle/application for legal PAPs. Reconciliation needed both for principle and application to allow the compensation of all non-land losses of legalizable and non-legal PAPs. This could be achieved through a special Decree for AIIB project or through the inclusion of additional safeguard covenants into the loan agreements which are equivalent of the international treaty or agreement.
	B. Replacement of leased land. Based on replacement of lost income through cash compensation of gross income x the remaining lease years or through a replacement land lease.	B. Replacement of leased land. Based on lease replacement and compensation in cash all losses including lost profit.	B. Same in principle. Application to be further improved. No reconciliation needed. To be reflected through an instruction for AIIB projects.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	C. Loss of structures/ buildings. Cash compensation at replacement cost for lost item free of depreciation, transaction costs, and other deductions.	C. Loss of structures/buildings. Cash compensation at market cost for lost item free of depreciation, transaction costs, and other deductions.	C. No reconciliation of principles and application needed. However, it is required the establishment of a protocol allowing the compensation of structures/ building at replacement cost, when the salvaged materials remain with the developer or landowner provides full reimbursement to the owner. This can be formalized without legal reform but only a Decree for AIIB projects or through the inclusion of additional safeguard covenants into the loan agreements which are equivalent of the international treaty or agreement.
	D. Loss of indirectly affected items. Non affected parts of an asset no longer usable after impact will have to be compensated as well.	D. Loss of indirectly affected assets. Law requires that all losses including lost profits are to be compensated to all legal PAPs.	D. No reconciliation of principles and application needed.
	E. Business losses. Reimbursement of actual losses plus business re-establishment costs. For application based on tax declared income for a period of business stoppage. In absence of tax declaration based on maximum non-taxable salary.	E. Loss of business. Cash compensation at market value for all damages/opportunity costs incurred. The burden of proving opportunity costs rest on the PAP based on recognized documented evidence but no clear methodology.	E. Application reconciliation needed to define a clear methodology and distinguish short- and long-term losses.
	F. Loss of trees:	F. Loss of unproductive and productive trees. Unproductive as	

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	i) Unproductive. Irrespective of legal land occupancy status compensation at market rate. Application based on tree type/ wood volume or other methods ensuring PAP rehabilitation. ii) Productive. Compensation at replacement cost based for application on various methods: tree reproduction cost, income lost (x tree type x market value of 1-year income x full production years lost). G. Loss of crops. Compensation of crop in cash at market price.	well as productive trees affected by a public project are to be compensated. G. Loss of crops. Loss of crops to be compensated. There are two forms of compensation of loss of crops: i) compensation of uncompleted agriculture production and ii) compensation of lost profit by multiplying four (years) average income for the last three years.	F. Same in principle, different in application. Application reconciliation is needed through a decree for AIIB projects for ensuring systematic law implementation and also by providing compensation by cash. G. No reconciliation for policy is needed but the reconciliation of policy application is necessary to ensure that crops are compensated at the moment close as much as possible to the date of calculation lost profit.
Involuntary Resettlement Planning, assessment, and valuation of impacts	Resettlement Plan (RP). RP preparation includes: a) impacts assessment/PAP census; b) definition of entitlements, income/livelihood restoration strategy, compliance & grievance mechanisms, institutional arrangements; c) consultation results; d) monitoring schemes; e) budget and implementation schedule. RP requires the following surveys:	Resettlement Plan. There are no requirements to prepare integrated and stand-alone RAPs. LAR planning entails similar but less extensive/simpler assessment/survey efforts than AIIB Policy, as detailed below: i. Measurement survey. Land and buildings impacts measured.	RP will be prepared, in accordance with the present ESMPF, in case of resettlement impacts caused by subprojects

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	i. Measurement survey. Measures all affected items. ii. PAP Census. Identifies all PAPs and establishes legitimate beneficiaries based on legal status. iii. Socio-economic survey. Provides background information on PAP' socio-economic features. iv. Valuation survey a) Land: If land market exists based on a survey of recent transactions; without land market based on land productivity/ income; b) Buildings and structures. The replacement cost of materials, labor and transport and special features of building/structure without discounting depreciation, salvaged materials and transaction costs; c) Trees/crops. Based on the methodology detailed in section Compensation.	Other impacts identified but not measured; ii. PAPs Identification. Identifies only legal PAPs; iii. Socio-economic survey. No comparable requirements exist; iv. Valuation survey; a) Land: valued at a market rate based on a transactions survey. Valuation includes transaction costs/third party liabilities; b) Buildings and structures. Replacement cost but the salvaged materials remain with the developer or landowner provide full reimbursement to the owner; c) Trees/crops. If compensated is provided based on the methodology detailed in section "Compensation" section F. and G. or based on an agreed lump sum.	
Procedural mechanisms	A. Information disclosure. Resettlement-related documents to be timely disclosed in the PAP language. B. Public consultation. Meaningful public consultations are to be held with the PAPs. PAPs should be	A. Information disclosure. No disclosure requirement exists. B. Public consultation. Matters of local importance to be publicly discussed with local authorities. But	A. Different in principle and application. Information will be provided during implementation of the BRWSSP. B. Same in principle but different in application. public consultations

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	informed about their entitlements and options, as well as resettlement alternatives. C. Grievance procedure. A Grievance Redress Mechanism (GRM) is to be established for each project. Information on GRM to be communicated to the PAPs. D. Asset acquisition conditions. Property can be acquired only after full compensation is paid to the PAPs.	no requirement to consult directly the PAPs. C. Grievance Procedures. Each state agency/ministry must follow to detail instructions (approved by the government) on registering and reviewing the concerns and claims from citizens. New opportunities for claims are provided by virtual Government websites platforms. D. Asset acquisition conditions. Property can be acquired only after full compensation is paid to PAPs.	will be conducted during implementation of the BRWSSP. C. No reconciliation is needed. However, the existing grievance mechanism may be further strengthened with further supplementary measures D. Same in principle, but unsystematic in the application. Application to be improved in order to ensure the implementation of the ESS 2 requirements.
Assistance to vulnerable and severely affected PAP	The special assistance is provided to the PAPs who recognized as vulnerable. In addition, at their pre-project level of livelihoods should be restored/ improved.	There are no special laws or regulations for livelihood restoration due to land acquisition and involuntary resettlement impact. However, there are a number of legislative documents related to social support and livelihood improvement measures considered by the government of Uzbekistan to consider social allowances and needy families through two Cabinet of Ministers resolutions #44, dated December,	AIIB ESS2 will be followed during the BRWSSP implementation.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
		2013) and to consider disabled people through the Law on social protection of disabled people (#422-dated, March, 2018). Thus, support of vulnerable segments of the population is provided on the regular base by the Government on central and local levels and does not require additional payments in connection with the project implementation.	

3 PROJECT DESCRIPTION

This Chapter provides an overview of the project and its key components. Further details on specific subprojects will be provided in the associated ESIAs/ESMPs.

3.1 Vision of the Program

The Cabinet of Ministries of Uzbekistan approved the Concept of Water Supply and Sanitation Service Improvement Program (hereinafter - the Concept) until 2030 developed by the Ministry of Housing and Communal Services. This Concept of integrated development and modernization of water supply systems and sewerage systems of the Republic of Uzbekistan until 2030 was developed in accordance with the Presidential Decree of the Republic of Uzbekistan from 30 November 2018 No. PP-4040 "On Additional Measures for the Development of Water Supply and Sewerage Systems in the Republic of Uzbekistan". The main aim of the Concept is to provide reliable, safe, affordable, and consistent Water Supply and Sewerage Services for the urban and rural population of the country.

Particularly the level of water consumption per person should reach the international norms. According to the current sanitation norms, the distribution of water supply is 240 liters/ person/day in cities, and 160 liters/person/day in urban settlements and rural settlements. These norms should be achieved by reconstructing of water supply systems, installing individual meter systems, reducing non-production losses and improving management.

The Sanitary Services Concept has three levels. According to the Government Policy, local small treatment plants will be constructed in bigger villages of the rural areas and septic tanks or cesspits will be provided for smaller villages based on the request of the district authorities. The fecal sludge will be evacuated by the state communal or private sector service providers. In general, it is planned to ensure that as for 2030 almost 91 percent of population cover by centralized water supply and 31 percent by centralized sewerage system.

3.2 Project Objectives

The main objectives of Water Supply and Sanitation (WSS) System reforms as follows:

- a phased transition of the industry to self-sufficiency, break-even mode of operation, overcoming the costly mechanism in pricing, creating a competitive environment and alternative structures;
- implementation of institutional transformations aimed at ensuring the diversity of ownership forms and market principles for the functioning of the industry;
- further improvement of state regulation of relations in the field of WSS services, development of an effective mechanism of state control over the state and safety of the housing stock, communal systems;
- pursuing a focused scientific, technical and economic policy to ensure the rational use of resources, and energy savings.

The policy of the improvement of WSS services of the State Unitary Enterprise (SUE) "Suvokava" of Bukhara region is a part of the government's Concept and will be implemented in the frame of

the state programs such as "Obod Qishloq" (Prosperous village) and "Obod Makhalla" (Prosperous neighborhood). "Obod Qishloq" and "Obod Makhalla" state programmes is focused on improving the living conditions of the population, cleanliness and landscaping of streets, creating park areas, planting green plantations for all citizens of the city and rural settlements, utilization of household waste. According to the Presidential Decree # 4040 from 30 November, 2018, it is planned to allocate funds for implementation of the national Address Program "Obod Qishloq" and "Obod Makhalla" which include construction and reconstruction of water supply and sanitation facilities in 2019 in the Bukhara region. According to the National long-term program, by 2045, 100 percent of the population will be covered by water supply and 31 percent by the access to the sewerage system in Bukhara region.

The WSS improvement in Bukhara region includes the construction and rehabilitation of water supply and sanitation facilities and will be funded by the state and AIIB. Special attention is given to increasing of the access to the drinking water. Furthermore, it is emphasized that it is necessary to improve the WSS systems in parallel with the roads, power and gas pipelines in the whole region.

The goal of the WSS systems' management policy is to increase the access to potable water for remote population. For this, it is planned to build and rehabilitate the existing water intake, water supply sewerage networks, as well as to strengthen the material and technical base of water supply organizations, to equip them with modern pumps, machines, mechanisms, to repair and to maintenance the measuring equipment. Moreover, it is planned to install modern information and communication technologies in the WSS sector, including automated systems of recording consumption volumes and services, and also to increase the efficiency of technological processes for the production of drinking water and to ensure its high quality. Besides, the energy and water-saving technologies and equipment will be used.

3.3 Project Overview

3.3.1 Current State of Water Supply System

Currently, due to lack of sufficient financial resources, 48 percent of the population have no access to the centralized water system and almost 91 percent of them encountered with sanitation problems. Therefore, GoU has decided to launch BRWSSP to cover the population of the Bukhara region with water and sanitation infrastructure.

The key challenges for the GoU included outdated WSS system facilities, limited financial resources, and weak institutional capacity. The existing technical and economic indicators of WSS system services in the Bukhara region are presented in the **Table 3.1.** The Wastewater Treatment Plants (WWTP) were built mainly in 1970-1980, most of them are worn out, communication systems and automation, as a rule, do not work. The existing equipment is outdated and operates with low efficiency. Currently, only 57.1% of the population of the country's cities and about 9% of the Bukhara region are provided with its services. In the whole country, only 15.6% of the population is served by centralized sewage systems.

Table 3.1: Current Characteristics of Water Supply in Bukhara Region (2019)

#	Name	Units	Indicators for the SUE "Suvokava" on 01/01/2019
1	Total water supply	tm3 / year	56 302.7
		tm3 / day	154.3
2	Water sales total	tm3 / year	40 401.6
	Including the population	tm3 / year	21.762.7
3	Population size	thousand people	1 870,0
4	Percentage of coverage by centralized water supply	%	**52.0**
5	Per capita specific water consumption (excluding industry)	liters per day per person	61.3
6	Cost of water supply	Uz Sum / m^3	773.8
7	Water tariff:		
	To the population	sum	980.0
	Budget organizations	sum	2,000.0
	To wholesale consumers	sum	2,400.0
8	Collectability of everything	%	97.3
	Including population	%	80.8
	Budget organizations	%	101.0
	Wholesale consumers	%	116.1

Source: Feasibility Study of the Design Institute, 2019

The main part of the population is connected to the Inter-regional Damkhuja and Kuyumozar Water Supply Systems, another part of the population uses alternative sources of water supply such as a water well. The water from these sources does not always meet the requirements of the state sanitarian norms of drinking water. See **Table 3.2** for salient data on water supply in the region.

Table 3.2: Population Covered by Water Supply System

District	population	Number of makhallas[6]	population covered by water supply	Water supply, in %
Bukhara district	163000	15	101875	62.5
Jondor district	170158	51	11328	6.6
Kagan district	76079	24	34768	45.7
Qorovulbozor district	18596	5	14738	79.3
Peshku district	120190	10	54362	45.2
Rometan district	138637	7	47063	33.9
Bukara city	278500	65	277580	99.6
Kagan city	60700	20	60700	100

Source: Feasibility Study of the Design Institute, 2019

In 2019, the feasibility study of the Design Institute revealed the following problems in the WSS systems:

- outdated and pre-emergency pumping and technological equipment at the facilities;
- chlorination and dosing equipment were installed more than 25 years ago and needs to be replaced; lack of automation;
- absence or inoperative state of flow meters;
- consumption of the electricity is too high due to the low efficiency of pumping equipment;
- the state budget for repairs and modernization is too small and repairing and preventive measures are not carried out properly;
- unauthorized water connections have been used as a water supply network;
- Old pipelines and facilities have become worthless, and not repaired properly due to lack of funds;
- most pipelines are steel, without internal insulation, corroded;
- water quality deteriorates due to rust in steel pipes;
- water quality in local wells does not meet the requirements of the National Standard of Drinking Water,

[6] Uzbek name of local community

- the share of loss from leaks is about 30 percent.

3.3.2 Current State of Sewerage System

The Design Institute examined that there is no centralized sewerage system in the project area in the Bukhara region. The majority of the population is using sanitation systems such as latrines and septic tanks which were constructed by the communities themselves.

In addition, it was revealed that:

- There is no centralized sewerage system in Olot city.
- There is no centralized sewerage system in Qorakol city.
- There is no centralized sewerage system in the Rometan city. The central hospital in Rometan city has a separate sewerage treatment facility, which are located in the southern part of the city.
- Industrial enterprises have their own sewerage system in the Qorovulbozor district.
- In 2018, a Sewerage Pumping Station and the collector were built in Gijduvon district.

3.3.3 Main Tasks of Project

- increasing the drinking water supply to the population particularly in rural areas;
- improving the reliability of water supply systems;
- reduction of losses and water leaks;
- implementation of effective technological processes, structures, equipment for the production and disinfection of drinking water,
- technical re-equipment and reconstruction of existing facilities;
- organization of metering of the supplied and drinking water sale and installation of metering devices;
- reduction of energy costs for water production;
- development of an effective tariff policy for stimulation water supply;
- conducting information and educational activities on water supply and sanitation;
- institutional strengthening of the management and operation of the water supply system.

These measures will improve the WSS systems and ensure continuous (24/7) access to high-quality drinking water supply system to the population.

3.4 Project Components

BRWSSP comprises the following three components:

Component 1 — Investment in Water Supply Infrastructure: Construction and rehabilitation of well fields and intakes, main water lines, water treatment facilities, pumping stations and distribution networks. See **Figure 3.1** for an overview of the water supply component.

Component 2 — Investment in Sewerage Infrastructure: Construction of centralized sewage systems in district centers consisting of collectors, pumping stations and biological sewage treatment plants as well as discharge facilities. Extension of sewerage network in Bukhara City. See **Figure 3.2** for an overview of the sewerage component.

Component 3 — Capacity Building and Implementation Support

- ***Component 3a — Capacity Building:*** Improving business practices of Bukhara «Suvoqava» with regards to Asset Management, Operation and Maintenance, Client Management and Complaint Handling, Billing and Collection. The areas of capacity building will be further defined and agreed during preparation based on the client's needs.
- ***Component 3b — Project Implementation and Management Support:*** Project management and implementation support to assist the Implementation Agency (IA) in ensuring seamless coordination, efficient implementation and compliance with the relevant policies.

3.4.1 Component 1. Water Supply System

The Component 1 of the project is focused on:

- Reconstruction of Ibn-Sino pumping station at Kuyumazar Reservoir with increasing the capacity of pumps that supply water to Shahrud Water Treatment Plant (WTP) to 208,000 m^3 /day;
- Reconstruction of water supply line No.1- 26 km long (from Ibn-Sino pumping station to WTP Shahrud, Diameter: 1000 mm).
- Reconstruction of water pipes No. 2 and No. 3 in the sections of 2.5 km on each water pipes (from Ibn-Sino pumping station to WTP Shahrud, diameter: 1000 mm) with construction of a chamber with shut-off valves.
- Construction of a filtration station at the Shahrud WTP with productivity of 100,000 m^3/day,
- Construction of a water reservoir in front of the 2nd lifting pump station with a capacity of 2000 m^3;
- Reconstruction of buildings and structures with increasing the capacity of the unit to 200,000 m^3/day to provide centralized water supply to Bukhara, Kagan, Jondor, Rometan and Peshku districts;
- Construction of a 14 km (diameter: 700 mm) water pipeline from the Shahrud WTP to the Zarafshan Water Intake Unit (WIU) system;
- Reconstruction of the Zarafshan WIU will increase the capacity of the pumping station of the lift No.2 for water supply to the rural settlements of Jondor, Rometan and Peshku districts of Bukhara region;
- Reconstruction and construction of magistral and supply water pipelines with household connections in urban and rural areas of Bukhara region.

Table 3.3 presents detailed project activities by districts based on the findings of the Feasibility Study.

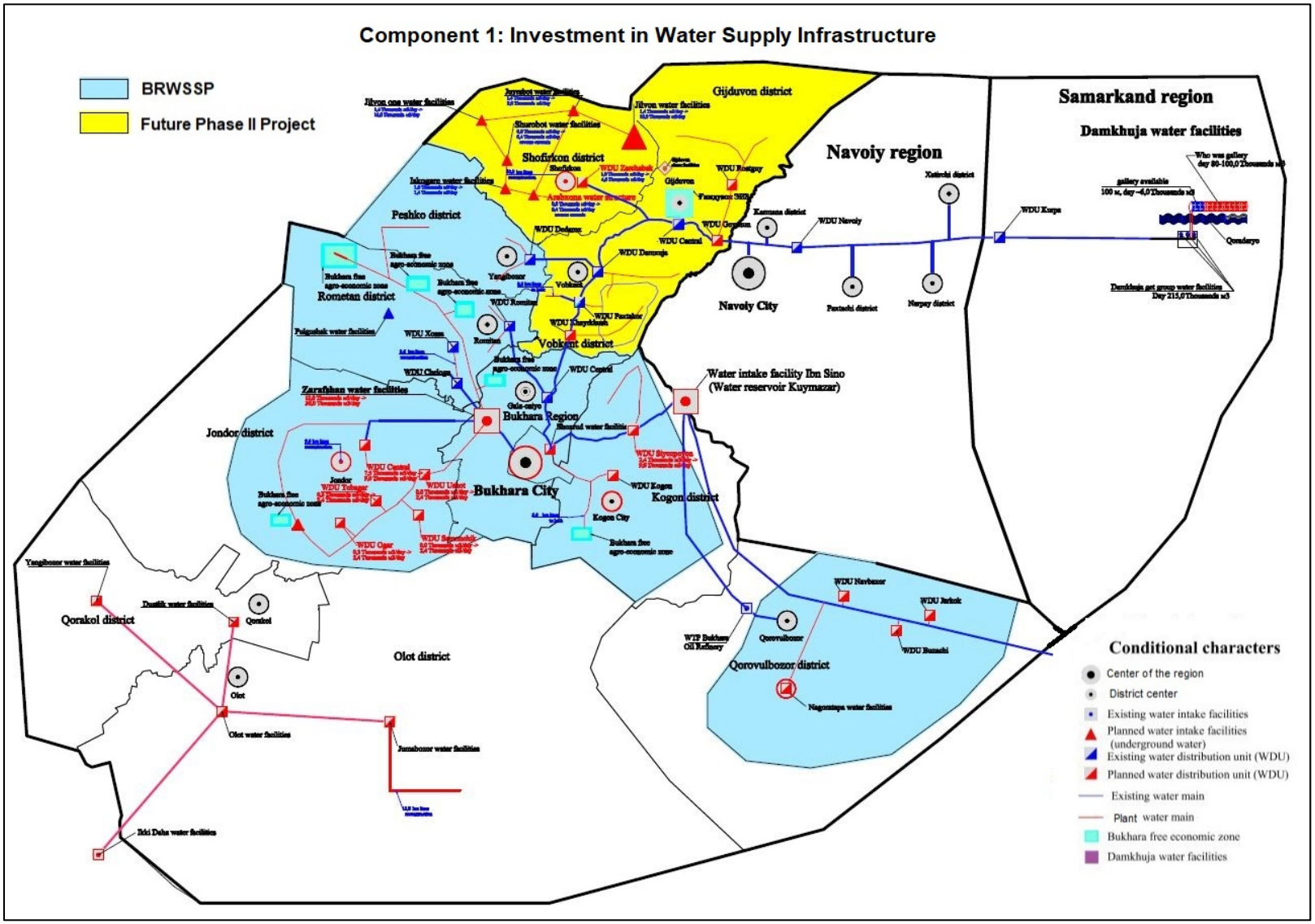

Figure 3.1: Water Supply Component

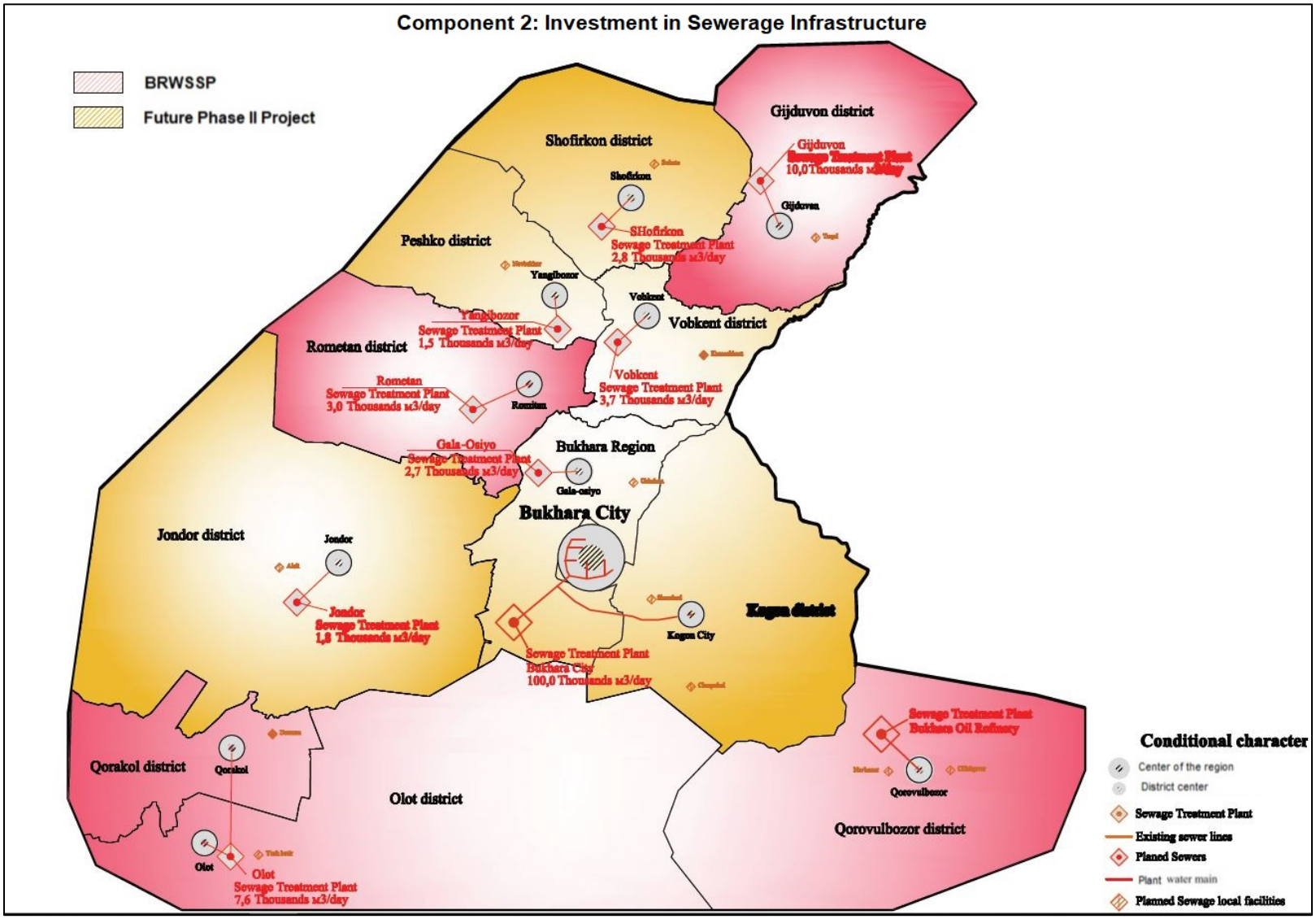

Figure 3.2: Sewerage Component

Table 3.3: Project's Construction and Reconstruction Activities

	Name of activities	Units
1.	**Bukhara city**	
1.1	Reconstruction of Water Distribution Unit (WDU)	1
1.2	Reconstruction of water pipes and networks	281,5 km
1.3	Construction of household connections	511,1 km
1.4	Installation of meters	17039
1.5	Construction of the bridge "Ring Water Pipe" - the existing water pipe "Zarafshan-Bukhara" F700mm	1,5 km
2.	**Kagan city**	
2.1	Reconstruction of WDU Kagan	1
2.2	Reconstruction of water pipes and networks	98 km
2.3	Construction of household connections	325,3 km
2.4	Installation of meters	17039
3.	**Bukhara district**	
3.1	Reconstruction of WDU	6
3.2	Reconstruction of water pipes and networks	39 km
3.3	Reconstruction of water pipes and networks	231,8 km
3.4	Construction of household connections	1414 km
3.5	Installation of meters	35358
3.6	Construction of pipelines until settlements	28,8 km
4.	**Jondor district**	
4.1	Reconstruction of WDU	7
4.2	Reconstruction of water pipes and networks	16,8 km
4.3	Construction of WDU	5
4.4	Reconstruction of water pipes and networks	239,4 km
4.5	Construction of household connections	1606 km
4.6	Installation of meters	40149
4.7	Construction of pipelines until WDU	4 km
4.8	Construction of pipelines until settlements	143 km
4.9	Construction of the magistral pipelines	49,2 km
5.	**Kagan district**	
5.1	Reconstruction of WDU (including the filter installation)	2
5.2	Reconstruction of water pipes and networks	90,6 km
5.3	Construction of WDU	6. (including towers – 2)
5.4	Construction of household connections	572 km

	Name of activities	Units
5.5	Installation of meters	14300
5.6	Construction of pipelines until settlements	27 km
5.7	Construction of pipelines until WDU	7,9 km
5.8	Construction of the magistral pipelines	12 km
5.9	Construction of bridge «Oynasoz – Huja Yakshaba» D160mm.	1,3 km
6	**Qorovulbozor district**	
6.1	Construction of WDU (including the construction of the filter installation)	2
6.2	Reconstruction of WDU	32,9 km
6.3	Construction of household connections	128 km
6.4	Installation of meters	3217.
6.5	Construction of pipelines until WDU	1 km
6.6	Construction of pipelines until settlements	8,6 km
6.7	Construction of water pipelines and networks	25,8 km
7.	**Peshku district**	
7.1	Reconstruction of WDU	5
7.2	Reconstruction of water pipes and networks	138,5 km
7.3	Construction of household connections	1329,3 km
7.4	Construction of WDU	1
7.5	Installation of meters	33233
7.6	Construction of pipelines until WDU	7,9 km
7.7	Construction of pipelines until settlements	56,5 km
7.8	Construction of water pipelines and networks	168,8 km
7.9	Construction of the magistral pipelines	48 km
7.10	Construction of bridge «Yangibazar – piopeline «Zarafshan-Peshku», D300мм.	1,5 km
8.	**Rometan district**	
8.1	Reconstruction of WDU	6
8.2	Reconstruction of water pipes and networks	33,6 km
8.3	Construction of WDU	1
8.4	Construction of household connections	1093 km
8.5	Installation of meters	27331
8.6	Construction of pipelines until WDU	5,4 km
8.7	Construction of pipelines until settlements	50,7 km
8.8	Construction of the magistral pipelines	31 km

Sourse: Feasibility Study of the Design Institute, 2019

Salient information on the key elements of the water supply system in the region is provided below. Related maps are given in **Annex B.**

Damhuja system

Since 1994, Damkhuja is an interregional water supply system with a capacity of 260,000 m^3/day, and suppli Samarkand, Navoi and Bukhara regions with high-quality drinking water.

The Bukhara water supply system was established on the basis of the Damkhuja regional water supply and intraregional underground and surface sources. The capacity of the Bukhara water supply system is about 126,000 m^3/day.

Currently, the cities of Bukhara, Gijduvon, Vobkent and the district of Gala-Osiyo, as well as some agriculture areas of the Bukhara region are connected to the Damkhuja system. This system will not be affected by the proposed project.

Ibn-Sino Pumping Station and Pipeline Networks

On the outlet Amu-Bukhara channel of the Kuyumazar reservoir, hydraulic structures were constructed for water intake by the Ibn-Sino pumping station.

Water from the Kuyumazar pump station Ibn-Sino with volume of 208,000 m^3/day through three pipelines with a length of 25.2-25.4 km (two existing and one planned) is fed to the Shahrud Water Treatment Plant/Distribution Unit, located in the eastern part of the Bukhara city. See **Figures 3.3** to **3.5** for the map/photos of t e pumping station.

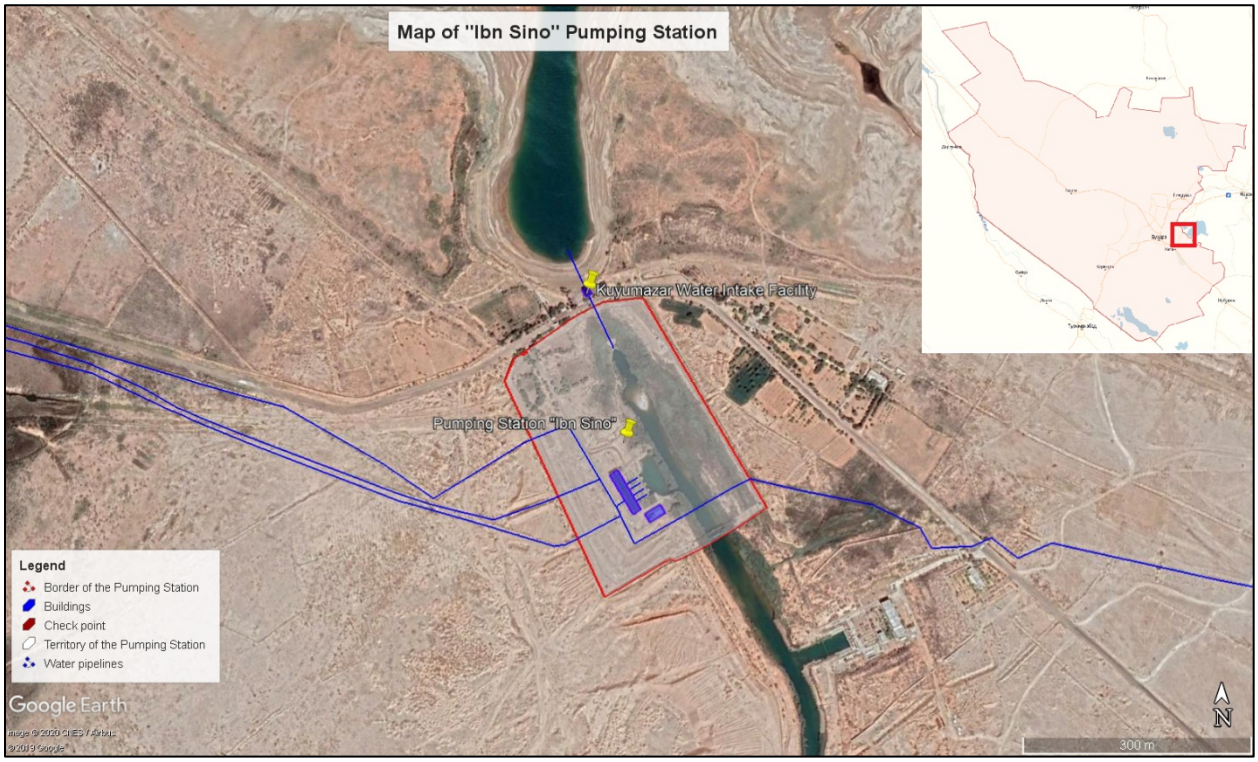

Figure 3.3: Ibn Sino Pumping Station besides Kuyumazar Water Reservoir

Figure 3.4: Pumping Station Water intake

Currently, the pumping station supplies about 71,000 m^3 per day of untreated water to the Shahrud filling station in Bukhara. The pumping station has eight pumps. To supply water to the city of Bukhara, four pumps with a capacity of 3200 m^3/hour were installed. These pumps were installed in 2005 under a loan from the Kingdom of Spain (replacement of two pumps is required). Water supply to Kasan Mubarek is carried out by two pumps with a capacity of 1250 m^3/hour.

Figure 3.5: Ibn Sino Pumping Station

Power supply to the pumping station of the 1st lift of Ibn Sino is carried out from two complete switchgears, which are worn out and require replacement. High-voltage power lines connected to the Kuyumazar substation with a total length of four km also require replacement. Equipment is obsolete in the indoor switchgear. The on-site and security lighting does not meet modern requirements and the norms of Rules for the installation of electrical installations.

This project involves reconstruction of the water intake facilities and Ibn Sino pumping station with aim to increase their water supply capacities until Shahrud WTP until 208,000 m3 per day.

According to the data of the regional Suvoqava, pipelines of the Ibn Sino pumping station were constructed during Soviet times and need urgent replacement because of often accidents.

Shahrud Water Treatment Plant/Distribution Unit

The Shahrud facility is operating since 2013 after the reconstruction (see **Figures 3.6** and **3.7**). The current capacity is 100,000 m^3/day. Ibn-Sino pumping station supplies water to Shordud

WTP/WDU through three pipelines, with diameter of 1000 mm, located in north-eastern part of the city. There are also water supply facilities which provide water through Zarafshan WDU and Kagan WDU potable water to population of Bukhara city and Bukhara district.

Figure 3.6: Shahrud Water Treatment and Distribution Station

Figure 3.7: Pumping stations of II and III lift

Water after settling in horizontal settling tanks enters the filter station. After filtration, it is fed to the tanks located in front of the lifting pump station, from where it is pumped to the clean water tanks.

The centers of Shofirkon, Vobkent, Rometan, Peshku and Bukhara district are provided from the Damkhuja inter-regional pipeline. The rest of the water flows into the reservoirs of the Shahrud WTP/ WDU.

After mixing in the tanks and decontamination, the water is pumped by the pumping station to the network of the Bukhara and Kagan cities, and Bukhara district.

Water from the Kuyumazar pumping station is supplied to the town of Mubarek. Rural settlements of the Qorovulbozor district are connected to the Kuyumazar-Mubarek water pipeline and use water that does not comply with standards for drinking purposes.

Zarafshan Water Intake Unit

Currently, construction and reconstruction of the Zarafshan Water Intake Facility (WIU) (see **Figure 3.8**) is funded by the State. Water from the Dzhuyzar canal enters the existing site of the WIU at the earthen sump. At the entrance to the sump, a flocculation chamber device will be installed. Having passed the flocculation chamber, water enters the settling tanks. Water from the sumps is taken by the pumping station of the 1st lift and fed to the filter station. Filter washing is done by submersible pumps installed in a 2000 m^3 water tank. After the filter station, water is supplied to the water tanks, chlorinated, and a pumping station of the 2nd lift is supplied through the existing water pipelines to the city of Bukhara and the Jondor and Bukhara districts.

The project will consider the construction of water intake facilities; reagent farm; filter station; electrolysis; tank with filter washing pumps, production and laboratory building.

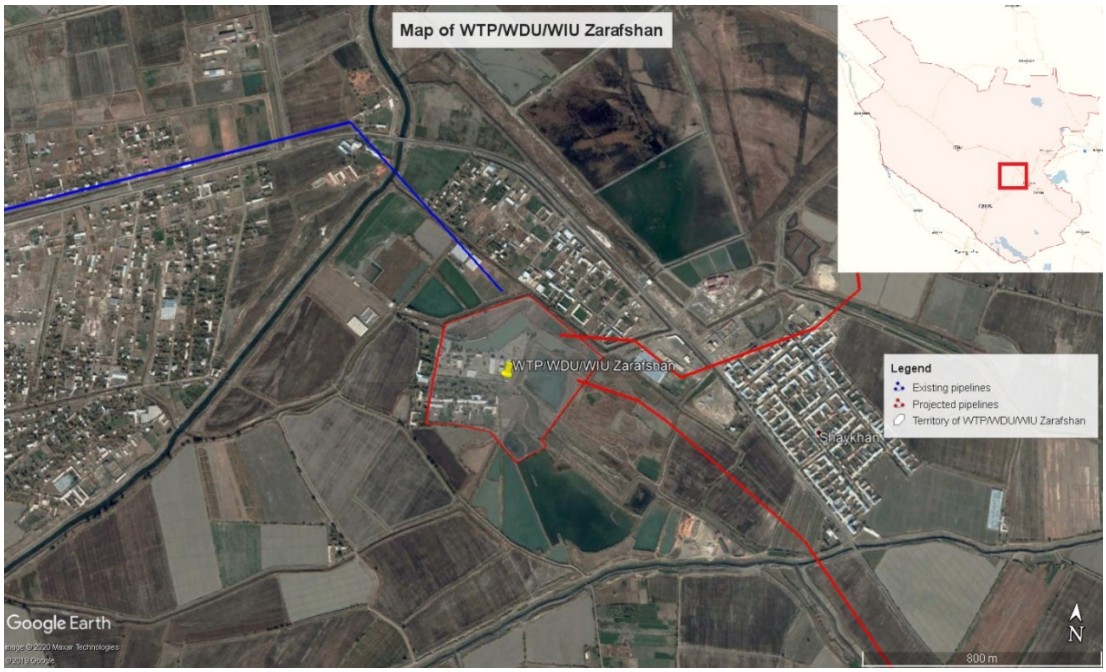

Figure 3.8: Zarafshan Facility

3.4.2 Component 2 – Sewerage System

The following activities are planned under the Component 2:

- Rometan district: construction of sewerage networks, sewage pumping station and sewage treatment plant.
- Gijduvon district: construction of sewage networks, sewage pumping station and sewage treatment plant for the district center.
- Qorovulbozor district: construction of sewage networks, sewage pumping station and sewage treatment plant near the Bukhara Oil Refinery Factory.
- Qorakoldistrict, construction of sewage networks and construction of sewage pumping station. The waste water will then be conveyed to the sewage treatment plant in Olot for treatment and discharge.
- Olot district, construction of sewage networks, pumping station and construction of sewage treatment plant in Olot for the waste water of both Olot and Qorakoldistricts.

Bukhara region population suffers from persistent WSS service limitations in both urban and rural areas. The Soviet-era centralized wastewater systems are dilapidated and as a result, vast quantities of untreated wastewater are discharged into rivers, surface impoundments, and groundwater resources. Surface water pollutants often far exceed maximum allowable concentrations. Networks and treatment facilities need immediate rehabilitation. These deficiencies have resulted in WSS service inequalities, environmental deterioration, and public health threats, in turn causing constrained economic growth. Traditional separation of gender roles where women are primarily responsible for domestic chores results in women's poverty, and the lack of reliable WSS service increases this burden. Remote areas of Bukhara region already face the challenges of having aging public infrastructure, unreliable public services, and limited financial resources now face additional stress due to rapid population growth.

3.4.3 Component 3: Capacity Building and Implementation Support

Subcomponent 3a — Capacity Building: Improving business management practices of Bukhara Suvoqava related to management, operation and maintenance, client, complaint, and billing systems management. The specific areas will be further defined and agreed based on the client's needs in the next stage of the project.

Increasing the capacity of Suvoqava in the next fields: enterprise management, mass media and social information strategies and public awareness. These activities will include capacity building in project management, monitoring and coordination, through the provision of goods and consulting services, including financial and technical project's audits, training, and financing of operational costs.

The engineers of the Design Institute proposed that this component will strength the management and consumer orientation capacity of «Suvoqava» by training their staff and organizing mass/information media and public awareness campaigns. In order to achieve the above stated measures, the Project will help «Suvoqava» to improve their staff's skills in diagnosing infrastructure conditions and carrying out preventive maintenance. It will also influence on Behavior Change Communication Strategies (BCCS) by improving public hygiene and water

saving practices, educating the population regarding (a) the expected health and environmental benefits, and (b) the need for regular payment of fees to support the improved WSS system, as well as the ways in which consumers will ensure better service quality. Consumer orientation training will help staff to better respond to customer problems/ complaints and will teach them to conduct periodic customer satisfaction surveys. The methods of receiving and handling complaints, online database, reporting and corporate governance will also be strengthened.

Subcomponent 3b — Project Implementation and Management Support: Project management and implementation support aims to assist the Implementation Agency (IA) in ensuring seamless coordination, efficient implementation and compliance with the relevant policies.

3.5 Estimate Project Cost

The overall project coordination and implementation will be conducted by UZST. The Bukhara region Suvtaminot will be responsible for operation and maintenances of water supply and sewerage systems in the frame of this project.

According to the Feasibility Study, the total cost of the project is estimated to be about 438 million US dollars. AIIB will provide about 385 million US dollars or 85.4% of the total cost of the project, while the Republican budget funds are about 53 million US dollars (14.6%).

4 Environmental and Social Baseline Conditions

This Chapter describes the baseline environmental and social conditions of the entire project area. More specific baseline conditions will be described in the subproject-specific ESIAs/ESMPs.

4.1 Physical Environment

4.1.1 Climate

Climate conditions in Bukhara region is influenced by three main factors: general circulation of atmosphere, solar radiation inflow determined by geographical location, and terrain. The territory of Bukhara is characterized by features of sharply continental climate with large seasonal and daily fluctuations of air temperature.

One of the features of the climate is a long summer. In summer over the territory of Bukhara region is often located thermal depression, which is a low-mobility area of low pressure with typical for its clear, dry and hot weather. The Kyzylkum desert is a hotbed of intense air mass transformation during the warm season. Autumn (September-December) is warm, in the second half cloudy, with rains. Winter (December-February) is mild, unstable, with prevailing cloudy weather. Spring (February-April) is characterized by unstable weather, with cloudy cool days followed by sunny and warm days.

In general, the territory of the Bukhara region belongs to the arid zone. The precipitation is brought mainly by wet air masses. The distribution of atmospheric precipitation in the region is uneven and closely connected with the altitude of the area above sea level. Usually, a considerable amount of precipitation falls in autumn-winter and spring periods.

4.1.2 Precipitation

In winter, precipitation is most often in the form of drizzling rain, sometimes there are snowfalls, but no stable snow cover is formed. Snow remains for no more than 15 days. In spring, precipitation is mainly in the form of brief showers. In summer, the weather is hot, dry and there is practically no precipitation. Autumn is warm, overcast and rainy in the second half. Almost 60% of precipitation falls in January - April. The annual amount of solar radiation is 150-160 kcal.

The average annual rainfall in the Bukhara region is low - 133 mm, in the city of Bukhara 142 mm, and in Qorakol118 mm. The duration of fogs, usually in winter, is 64 hours per year. Average annual evaporation reaches values of 250 mm, higher than annual amount of precipitation.

4.1.3 Temperature

In the Bukhara region, according to national standard (KMK 2.01.01-94), the absolute minimum temperature of -18 ^{o}C is registered in January. Absolute maximum is recorded in July and is equal to +44 ^{o}C. The average annual air temperature in the areas of the project area was 15.8 ^{o}C, with an absolute maximum in July + 46.0 ^{o}C, the minimum in January -17.0 ^{o}C. In winter, daytime air temperatures are usually positive (3-7 ^{o}C), while at night they are negative (-9 to -14 ^{o}C). See **Figure 4.1** for average, minimum and maximum temperatures in Bukhara region.

Figure 4.1: Temperature in Bukhara Region (*Source: https://invest.gov.uz/ru/regional-map/buharskaya-oblast/)*

4.1.4 Wind Speed

In Bukhara region the average wind speed is 3.3 m/sec. In summer time sand and dust storms are possible. The most typical for this area are winds with speeds of 2-3 m/s (38%) and 4-5 m/s (33%). Winds with speeds of 4-5 m/sec and more are especially dangerous as they carry harmful substances over long distances. The predominant wind direction is from north (39%); see **Table 4.1** for details.

Table 4.1: Wind Data of Project Area

Average annual wind direction repeatability, %	
North	39
Northeast	7
East	8
Southeast	4
South	6
Southwest	3
West	7
Northwest	26
Average annual wind speed, m/s	3.3

4.1.5 Humidity and Pressure

Air humidity in Bukhara region depends on the season, precipitation, ambient temperature, air pressure and other factors.

The average monthly humidity in the Bukhara region in January is 77 per cent and the atmospheric pressure is 747 mm Hg. In March, 62 percent, atmospheric pressure 744 mmHg. In June 28 percent, air pressure 740 mmHg, in September 35 percent, air pressure 736 mmHg, in December 71 percent, air pressure 748 mmHg. Average annual atmospheric pressure in Bukhara region is 742 mmHg, and air humidity is 51 percent. See **Figure 4.2** for details.

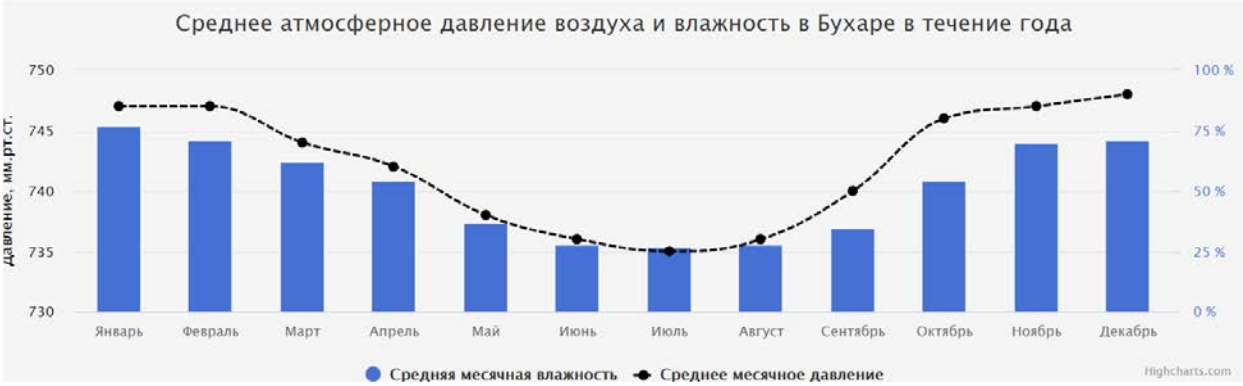

Figure 4.2: Humidity and Atmospheric Pressure in Bukhara Region (*Source: https://global-weather.ru/archive/buxara_buxarskaya_oblast)*

4.1.6 Topography

The surface of the Bukhara region is wavy, slightly sloping to the north-west, on the most part of which there is the Kyzylkum desert with bumpy and muddy sands, fixed by vegetation and separate elevations. See **Figure 4.3** for the topography of the area.

The territory of the region can be divided into the main geomorphological areas - lowlands, foothills, residual, mountains and plains. Soils of irrigated areas are meadow, alluvial, swampy meadows. Light grey, sandy and gypsum soils predominate in the desert-pastoral areas. The freezing depth of ground is 0.57 m.

Figure 4.3: Topography of Bukhara Region

(*Source: https://www.cbd.int/countries/?country=uz)*

4.1.7 Hydrology

Water resources of Bukhara region consist of a number of surface and ground waters, as well as return water from anthropogenic use (sewage and drainage water). Water resources are mainly generated in transboundary river basins. The project area is located in the Amudarya River Basin, which is one of the important surface water sources. The Amudarya River is the largest river in Central Asia in terms of catchment area, 2,600 km long, with a catchment area of 230,000 km^2 and an average annual water flow of 78 km^3. It accounts for half of the annual flow of Central Asia. The two main tributaries of the Amudarya - Panj and Vakhsh - originate in the Gissaro Alay, Pamir and Hindu Kush mountain ranges. In Uzbekistan, the Amu Darya tributaries provide 6 km^3 of water, which is about 7.5% of the total flow. In Uzbekistan, the Amu Darya flows in the south of Surkhandarya province, bordering Afghanistan. The river then enters Turkmenistan, separating the Karakum and Sundukli sands. Further on, the Amu Darya riverbed approaches the border of Uzbekistan in the area of the Kimirekkum sands, and in the south-west of Bukhara and Khorezm regions runs along the border of two countries. Currently, the Amu Darya, passing through the

territory of the Republic of Karakalpakstan and disassembling even before that, it does not reach the Aral Sea. See **Figure 4.4.**

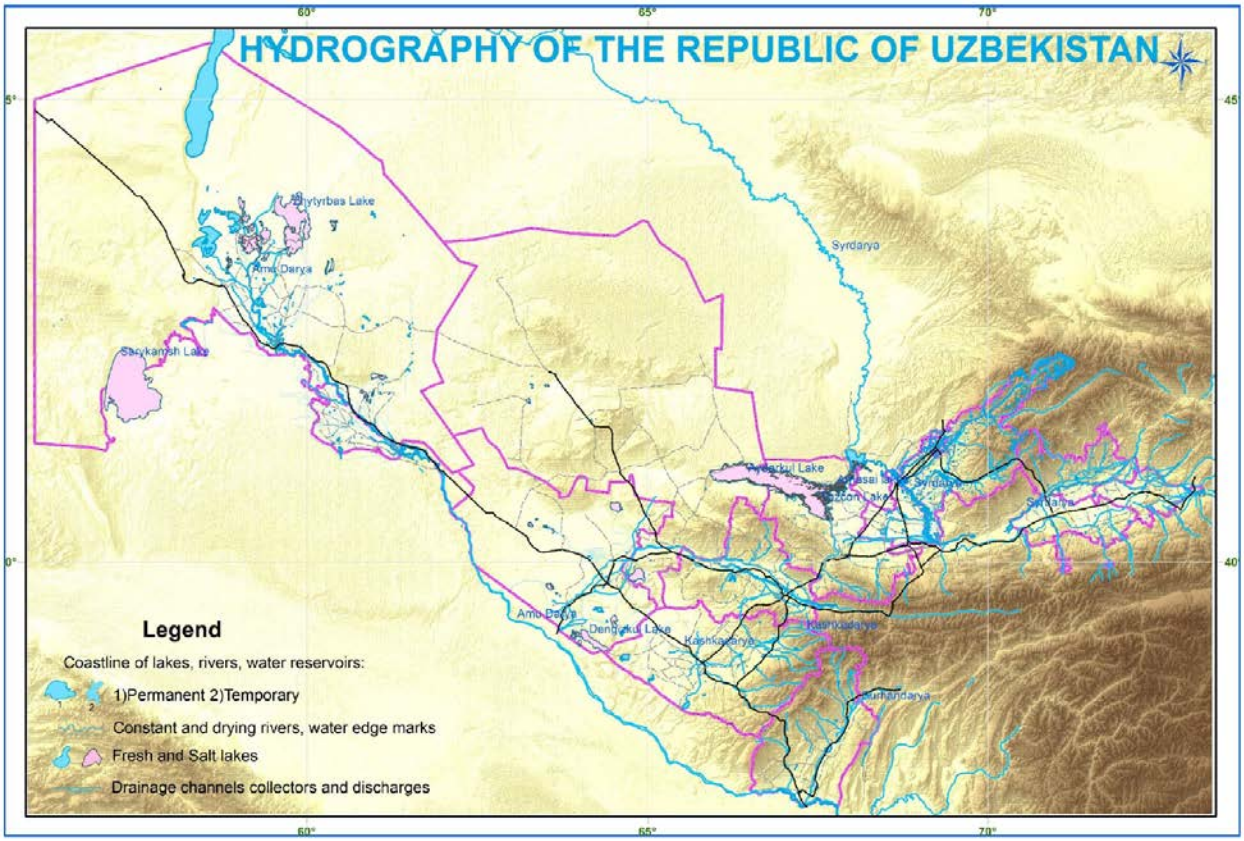

Figure 4.4: Key Water Resources of Bukhara Region

(*Source: https://www.cbd.int/countries/?country=uz*)

The Amu Darya is one of the most turbid rivers with very high saturation of water with suspended sediment. The highest turbidity is observed during the period of rainfall and snow melting of the lower tier.

The third longest river in Central Asia is the Zarafshan River, which also flows through Uzbekistan (781 km long, 12,300 km^2 of catchment area, with an average long-term water flow of 190 m^3/sec). The Zarafshan originates from numerous tributaries of the Turkestan and Zarafshan ridges and flowing from east to west between these two ranges, it is basically replenished by its left tributaries: Fandarya, Magian and Kshtut. Below Penjikent, the mountains are gradually parting, and the river is already flowing in the plain part of Samarkand and then Navoi region, bounded by the spurs of Zerafshan and Turkestan ridges - Zirabulak and Ziatda mountains, Chumkartau, Nuratau, Karatepa and Aktau ridges. Further the river turns to the south-west, towards the Bukhara oasis, where it actively disassembles irrigation canals, getting lost in the south of the region, not reaching the Kimirekkum sands.

Surface waters of Bukhara region also include lakes - Tudakul, Dengeskul, Zamonbobo, Shorkul and Aydar as well as the Kuyumazar reservoirs. The main purpose of the Kuyumazar reservoir is irrigation. Canals in the area include Amu-Bukhara, Amu-Karakul, Dzhuyzar and others.

4.1.8 Groundwater Recharge

Water released from the irrigation areas and industries is another source of water, but due to its relatively high mineralization, it is also a source of environmental pollution. Today about 93% of this water is the collector-drainage water, while the rest is agricultural and industrial waste ++.

Groundwater is unconfined, and during the high flow period it is located at a depth of 0.7 to 1.5 m from the ground surface, and during the low flow period at a depth of 1.6 to 4.5 m. Capillary elevation is between 0.5 and 4.8 m. Maximum availability of ground waters is observed in February - April, minimum - in December. The main sources of ground water supply are underground inflows from the adjacent territory, infiltration from the Zarafshan river and Amu - Bukhara canal.

Drainage of the irrigated lands in Bukhara region is not adequate, a situation which leads to swamping and salinization of a large part of the irrigated land. The total length of the collector-drainage network has increased significantly in recent years, mainly due to the construction of the West Rometan, North Bukhara, Dengizkul, Main Karakul, Parallel and Central Bukhara collectors. Mineralization of Collector-Drainage Water (CDW) on the average in the region varies between 3.8 and 4.2 g/l.

The main part of the collectors' flow is discharged into natural depressions and hollows located outside the irrigated zone. For example, the West Rometan, Makhankul, Gurdyush and Main Qorakolcollectors discharge into the Salt Lake, the Karakyr Depression - into the Severobukhara Depression, and the Agitma Depression - into the Agitma depression.

4.1.9 Water Sources

The water sources in the area are discussed below; salient information is given in **Table 4.3**.

Surface Water Sources

The Kuyumazar Reservoir is located in a natural depression 24 km north-east of Bukhara. The reservoir is a seasonally regulated reservoir. The main purpose of the reservoir is irrigation and drinking water supply. See **Table 4.2** for salient data of the Reservoir.

Table 4.2: Key Parameters of Kuyumazar Reservoir

	Parameters	Value
1.	Year of commissioning	1960
2.	Full volume (mln. m^3)	310.0
3.	Useful volume (mln. m^3)	263.0
4.	Dead volume (mln. m^3)	47.0
5.	Surface area (Km^2)	17.2
6.	Length (km)	5.25

	Parameters	Value
7.	Width (km)	3.27
8.	Maximum depth (m)	22.8
9.	Dam Height (m)	23.5
10.	Dam Length (m)	100.0

The reservoir is filled mainly from the Amudarya River through Amu-Bukhara Machine Canal. The water quality of the Kuyumozar reservoir, except for turbidity, meets the requirements for sources of drinking water. The Kuyumazar Reservoir is constructed mainly for irrigation purposes. During the growing season, the water level for irrigation of cotton is reduced. As a rule, this leads to increased water turbidity. In addition, when watering agricultural land for salt washout, the water level also decreases. Usually this happens in autumn and winter. During such periods, water turbidity can rise to values of 50-70 mg/l; otherwise, the turbidity does not exceed 1.2-2.0 mg/l.

Juyzar canal (Zarafshan Water Intake)

The Juyzar canal (which transports water from the Amudarya River) from which water is supplied to the Zarafshan junction is considered as the second source of drinking water supply for the nearby districts of Bukhara region.

The quality of water in the Juyzar canal, except for its turbidity, meets the requirements for the drinking water supply. Water hardness is at least 6.2-9.0 mg/l. Currently, the reconstruction of Zarafshan Water Treatment Plant is underway to bring its capacity to 30,000 m^3/d.

Damkhuja Water Supply System

The Damkhuja system with a design capacity of 215,000 m^3/day is considered as a source of water supply in Bukhara Region. The Samarkand, Navoi and Bukhara regions are connected to this System. The expected yield of the system can be enhanced to 268,000 m^3/day. Groundwater from Zarafshan field meets the requirements of national standards for drinking water. From this system, 50,000 to 58,000 m^3 per day of water is supplied to the Bukhara Region.

Groundwater flow for the Damkhoja system is formed at the outlet of the Zarafshan river from a mountain gorge in the area adjacent to the Pervomayskiy hydro system. Groundwater is formed due to infiltration from the Zarafshan, Akdarya and Karadarya rivers, and also from the irrigated fields.

In the eastern part of the valley, from the Pervomaiskiy junction to the town of Kattakurgan, three sections are important: Verkhne-zerafshan-skoye (Chapanatinskoye and Karasuiskoye), Karadarya and Damkhuja, which can be used for drinking water supply.

Further coverage of water demand in Bukhara region can be achieved through the development of the Karadarya section of Damkhuja water intake system.

Groundwater Deposit in Jilvon

In Bukhara Region, according to the hydro-geological study of the State Unitary Enterprise "Uzbekhydrology", a groundwater deposit at Jilvon was identified. The explored water reserves in

the Duoba area are about 26,000 m^3/day. Water quality meets the requirements of the national standards for the drinking water supply.

Local Groundwater Intakes (wells)

Settlements in the Jondor, Rometan and Peshku districts exploit groundwater of the area through boreholes. However, water quality in these wells does not meet the national standards for the drinking water supply.

4.1.10 Water Quality

Proper selection and determination of classes of surface and underground water sources, adequate methods of water treatment are defined by the national standards for drinking water supply. These standards are applicable for the following:

- all sources of centralized water supply,
- newly designed and reconstructed household and drinking water supply systems to the population,
- water supply systems that supply water simultaneously for household and production purposes.

In case of determining the suitability of any source for domestic and drinking water supply, it is necessary to analyze data on sanitary assessment and occurrence of underground waters, as well as surface water supply source, sanitary condition of the territory above and below the water intake upstream, water quality and quantity, location of water intake facilities, and forecast of sanitary condition of the source itself. The data collection and study of conditions necessary for selection of a water supply source is organized by the design institution with involvement of research institutes of hygiene profile and institutions of Sanitary Epidemiological Service.

In order to avoid construction of excessively complex treatment facilities on future water supply system, the water composition of surface and groundwater sources selected for centralized water supply must meet a number of requirements:

- dry residue not more than 1000 mg/l (in agreement with the Sanitary and Epidemiological Service authorities, up to 1500 mg/l is allowed);
- chloride content - not more than 250 mg/l (350 mg/l is allowed);
- sulfate content - not more than 400 mg/l (up to 500 mg/l is allowed);
- total hardness - not more than 7 eqv. mg/l (up to 10 eqv. mg/l is allowed).

It should be noted that, depending on the quality of water and the degree of treatment required to bring it to meet the standard, water bodies suitable as sources of domestic and drinking water supply to the population are divided into three classes, which are determined on the basis of laboratory analysis on the indicators given in **Tables 4.3** and **4.4**.

Water supply sources and water intakes must be protected from pollution by the organization of sanitary protection zones in accordance with the sanitary legislation in force in the country. (**Annex A**).

Table 4.3: Water quality indicators for underground water supply sources by classes

Parameters	Water quality parameters by classes		
	1	2	3
Turbidity, mg/l, no more than	1,5	1,5	10,0
Chromaticity, degrees, no more than	20	20	30
Hydrogen index (pH)	6-9	6-9	6-9
Iron, mg/l, no more than	0,3	5,0	10,0
Manganese, mg/l, no more than	0,1	1,0	2,0
Hydrogen sulfide, mg/l, no more than	missing	missing	3,0
Fluorine, mg/l, no more than	0,7	0,7	5,0
Permanganate oxidation, mgO_2/l, no more than	2,0	5,0	10,0
Number of Escherichia coli group bacteria (E. coli) in 1 liter, no more than	3	100	1000

Source: Source: Sanitary rules and norms of hygienic assessment, determination of classes of surface and underground water sources, their selection for centralized economic and drinking water supply of population of Uzbekistan (SanR&N RU N 0200-06)

Table 4.4: Water quality indicators of surface water supply sources by classes

Parameters	Water quality parameters by classes		
	1	2	3
Turbidity, mg/l, no more than	20	1500	10000
Chromaticity, degrees, no more than	30	50	100
Smell, scores, no more than	2	3	4
Hydrogen index (pH)	6,5-8,5	6,5-8,5	6,5-8,5
Iron, mg/l, no more than	0,3	1,0	3,0
Manganese, mg/l, no more than	0,1	1,0	2,0
Fluorine, mg/l, no more than	0,7	0,7	0,7
Permanganate oxidation, mgO_2/l, no more than	7,0	15,0	20,0
BOD complete in mgO_2/l, no more than	3,0	5,0	7,0
Number of lactose positive E. coli in 1 liter, no more than	1000	10000	50000

Source: Source: Sanitary rules and norms of hygienic assessment, determination of classes of surface and underground water sources, their selection for centralized economic and drinking water supply of population of Uzbekistan (SanR&N RU N 0200-06)

In case of a source is found with chemical substances in water, the content of these substances in **Tables 4.3** and **4.4** should not exceed the maximum permissible concentration (MPC) for water used for drinking and domestic purposes and in compliance with national standards. In case of a source detected of several chemicals of 1 and 2 hazard classes in water with the same limiting sanitary and toxicological indicator of harmfulness, the sum of ratios of detected concentrations of each substance separately to its MPC should not exceed 1 (unit).

From underground water sources of class 1, only those water quality in which all indicators given in the **Table 4.3** meet the requirements of the standard of Drinking water should be considered; water sources of class 2 and 3 should be pre-treated (see **Table 4.5**).

For surface water sources, class 1 includes those where, in order to obtain water that meets the requirements of the standard of drinking water, it is necessary to filter it with or without coagulation, as well as disinfection of water (see **Table 4.6**).

Table 4.5: Classes and methods of water treatment of underground water sources

Number of classes	Recommended methods of water treatment
Class 1	Water quality meets the requirements of the standard "drinking water. Hygienic requirements and quality control".
Class 2	Water quality has deviations in individual indicators from the requirements of the above standard, which can be eliminated by aeration, filtration, disinfection; or sources with variable water quality, which manifests itself in seasonal fluctuations of dry residue within the limits allowed for drinking water and requires disinfection.
Class 3	Bringing water quality to the requirements of the above mentioned standard requires additional treatment methods provided in Class 2, as well as methods such as pre-filtration, the use of various reagents and other treatment methods.

Source: Source: Sanitary rules and norms of hygienic assessment, determination of classes of surface and underground water sources, their selection for centralized economic and drinking water supply of population of Uzbekistan (SanR&N RU N 0200-06)

Table 4.6: Classes and methods of water treatment for surface water sources

Number of classes	Recommended methods of water treatment
Class 1	To obtain water that meets the requirements of the standard "drinking water. Hygiene requirements and quality control", requires disinfection, filtering with or without coagulation.

Number of classes	Recommended methods of water treatment
Class 2	Coagulation, sedimentation, filtration, disinfection are required to produce water that meets the requirements of the above standard; if phytoplankton is present, microfiltration is required.
Class 3	Bringing water quality to the requirements of the above standard for drinking water is possible only with the use of treatment methods specified in class 2, with the use of additional methods - additional clarification stage, oxidation and sorption methods, as well as more effective methods of water disinfection and other treatment methods.

Source: Sanitary rules and norms of hygienic assessment, determination of classes of surface and underground water sources, their selection for centralized economic and drinking water supply of population of Uzbekistan (SanR&N RU N 0200-06)

See **Table 4.7** for the water quality of various water sources of the area discussed above.

Table 4.7: Water Quality in Bukhara Region

No.	Source name	Temperature	Smell point		Taste	Chromaticity	Turbidity	pH	Oxidability	Ammonia	Nitrites	Nitrates	Alkalinity	Total Rigidity	Calcium	Magnesium	Chlorides	Sulfates	Dry residual	Iron	Fluorine	Residual chlorine
		°C	20°	60°	point	degree	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg.eqv.md3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3	mg/dm3
2018																						
1.	Kuyu-Mazar	18,7	0,00	0,07	0,01	8,4	0,6	7,3	1,5	0,052	0,026	12,9	3,1	7,8	4,5	3,3	170,7	319,6	784,9	0,1	0,2	
2.	Damkhuja	18,7	0,00	0,00	0,00	2,8	0,1	7,0	1,0	0,013	0,004	3,3	4,8	6,6	3,4	3,2	24,5	158,1	632,8	0,1	0,2	
3.	Shahrud	19,5	0,00	0,00	0,00	7,0	0,5	7,2	1,3	0,040	0,020	11,1	3,5	7,5	4,3	3,2	143,1	280,1	731,8	0,1	0,2	0,60
4.	Zarafshan	18,6	0,00	0,31	0,14	10,4	0,9	7,2	1,8	0,053	0,031	13,2	3,1	7,9	4,5	3,4	152,5	315,6	770,8	0,1	0,2	0,85
5.	Juyzar	18,2	0,25	1,00	0,83	33,8	46,9	7,1	5,7	0,595	0,073	15,1	3,2	7,9	4,7	3,3	155,7	340,3	819,1	0,1	0,2	
2017																						
1.	Kuyu-Mazar	17,0	0	0	0	7,3	0,7	7,3	1,4	0,040	0,030	14,3	3,3	7,8	4,6	3,2	172,5	248,2	856,0	0,1	0,2	
2.	Damkhuja	18,0	0	0	0	4,5	0,2	7,0	1,0	0,010	0,006	5,1	4,9	6,7	3,5	3,2	26,2	150,2	709,9	0,1	0,2	
3.	Shahrud	17,6	0	0	0	6,0	0,5	7,1	1,3	0,030	0,021	12,0	3,7	7,4	4,2	3,2	127,3	218,1	807,3	0,1	0,2	0,59
4.	Zarafshan	15,4	0	0	0	11,1	1,2	7,3	1,8	0,053	0,045	12,3	3,3	7,5	3,6	2,5	123,0	196,1	678,5	0,1	0,1	0,81
5.	Juyzar	17,9	0	1	1	22,0	18,2	7,1	3,6	0,071	0,052	14,7	3,5	7,7	4,4	3,3	151,1	243,9	859,2	0,1	0,2	

Source: Feasibility Study of the Design Institute, 2019.

4.1.11 Soils

Transitional hydromorphic soils of desert zone formed on deposits of different genesis and age are distinguished within the limits of Bukhara region. Grey-brown soils on the periphery of irrigation zone have different composition: from sandy-brown to medium loamy sandy soils. Gray-brown meadow soils are transitional from typical desert grey-brown soils to azonal meadow soils. In mechanical composition they are different from heavy loamy to sandy soils.

Irrigated meadow - takyr soils are found only in the upper part of the Bukhara delta of the Zarafshan river. They are formed among meadow soils on elevated relief elements with weakening of moisture by groundwater at a depth of 3-5 m. [7]

4.1.12 Geology

The Bukhara region belongs to the Bukhara-Khiva Fault located within the northeast side of the Amudarya syneclise. In Hercynian, and possibly in before Hercynian time, a series of steamship faults - the Predkyzylkum, Bukhara, and Amudarya faults - occurred here, which dissected the territory from the south-east to the north-west, causing a stepped structure of the consolidated foundation. From the north, the region is bounded by the Predkyzylkum Fault, which separates it from the Kyzylkum Rift Zone, and from the south by the Amudarya Steamy Rift, which separates it from the Bagadjinskiy Stages. Within the territory of the Bukhara-Khiva Fault, the Bukhara and Chardzhou stages, separated by the Bukhara Steam Fault (or Uchbash Karshi Flexural Bursting Zone) are distinguished. See Figure 4.5 for the geology of the area.

4.1.13 Seismicity

Bukhara region is in a seismic hazard zone. Severe earthquakes of more than 5 magnitude as in Uzbekistan occur approximately once or twice within 2-3 years. Seismicity of the region is 7-8 points. See **Figure 4.6** for a seismic map of the area.

[7] http://www.cawater-info.net/bk/improvement-irrigated-agriculture/files/kulmatov-rasulov-nigmatov.pdf.

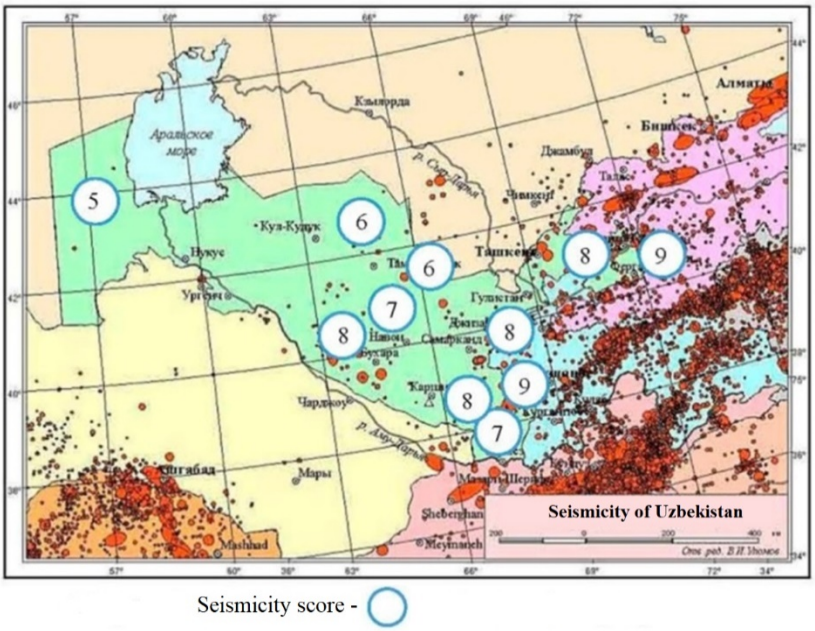

Figure 4.5: Seismicity of the Area

4.1.14 Land Use and Land Cover of the Area

The nature and condition of the vegetation cover in the planned works area is determined by the types of developed soils and the degree of anthropogenic impact on them.

Pelitophytic vegetation are developed on loamy gray-brown soils, represented by ephemeris-jusanovic, keirekuvo-ephemeroid-jusanovic, bohalyyshev-singhrenov-jusanov communities and their anthropogenic modifications.

During overgrazing, as a result of anthropodynamic succession, valuable fodder plants are replaced by non-eatable adraspan, which usually dominates in plant communities on grey and brown soils near settlements.

Woody-shrubby and herbaceous vegetation with different growing seasons in sandy ecosystems attracts a diverse entomofauna and provides forage for insect and plant birds, arm-wings, reptiles and mammals.

4.2 Description of Ecological Environment

4.2.1 State of Biodiversity

The biodiversity of Uzbekistan includes about 27,000 species known at the moment. Among them higher vascular plants, mosses, lichens, mushrooms and algae make up about 11,000 species, and representatives of fauna - more than 15,600 species. The endemism of higher vascular plants in Uzbekistan is about 8 per cent. Relict endemics account for 10-12 per cent of the total number of endemic species.

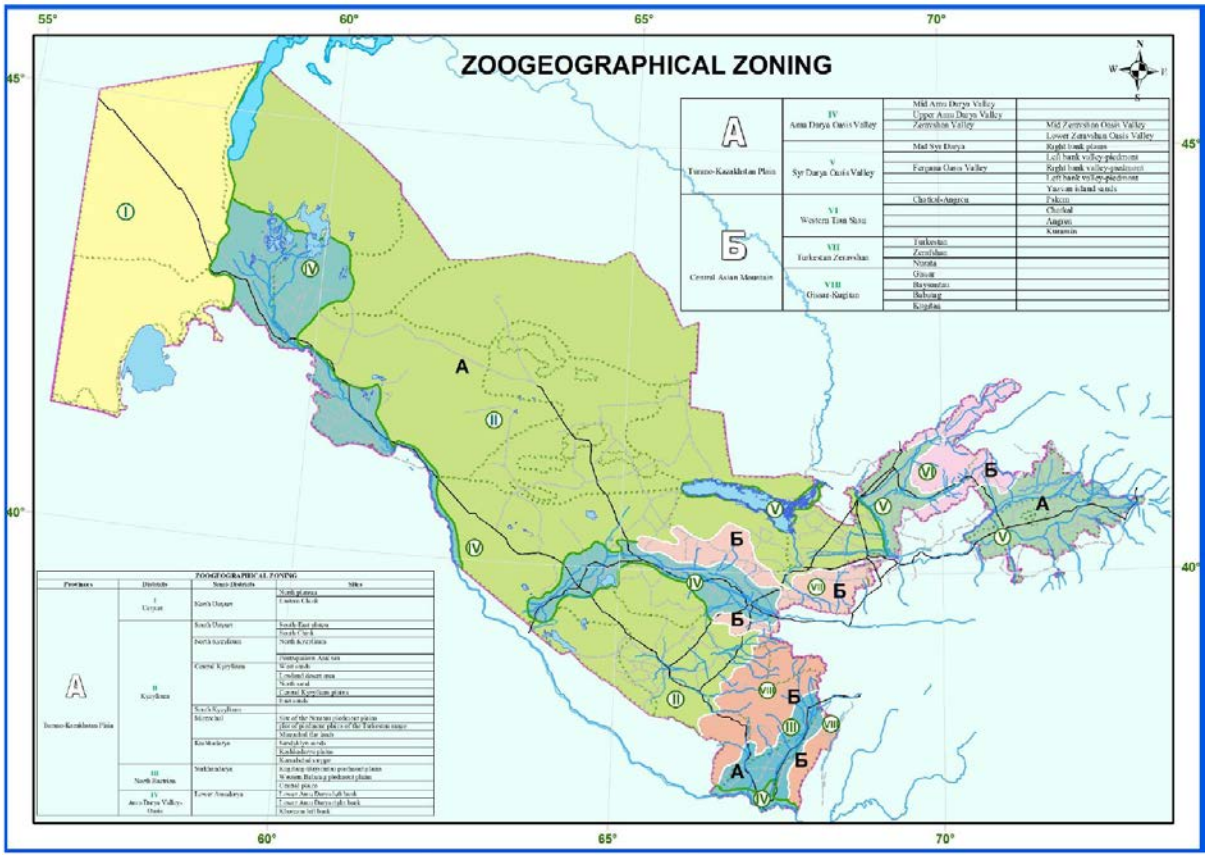

Figure 4.6: Geographic Zoning

(*Source:* *https://www.cbd.int/countries/?country=uz*)

At present, the vertebrate animals of Uzbekistan, which include species registered on the territory of the country for the entire period of zoological research, is represented by five classes and includes 715 species, including 77 species of fish, three species of amphibians, 61 species of reptiles, 467 species of birds and 107 species of mammals.

Bukhara region is home to over 400 species of vertebrates. In the water basins there are 37 species of fish, two amphibian species, 40 reptile species, more than 300 bird species, and about 300 insect species.

4.2.2 Ecosystem Diversity

The territory of Uzbekistan is characterized by a great variety of natural ecosystems. Desert ecosystems are widely represented in flat regions, and in mountainous regions, where altitude zonality is well defined, several zonal and climatic zones corresponding to the main types of mountain ecosystems are clearly defined. River and coastal ecosystems are located in both plain and mountain regions, forming specific habitats in each of them. Wetland ecosystems are mainly found in the flatlands of the country. See **Figure 4.8** for the ecosystem of the area.

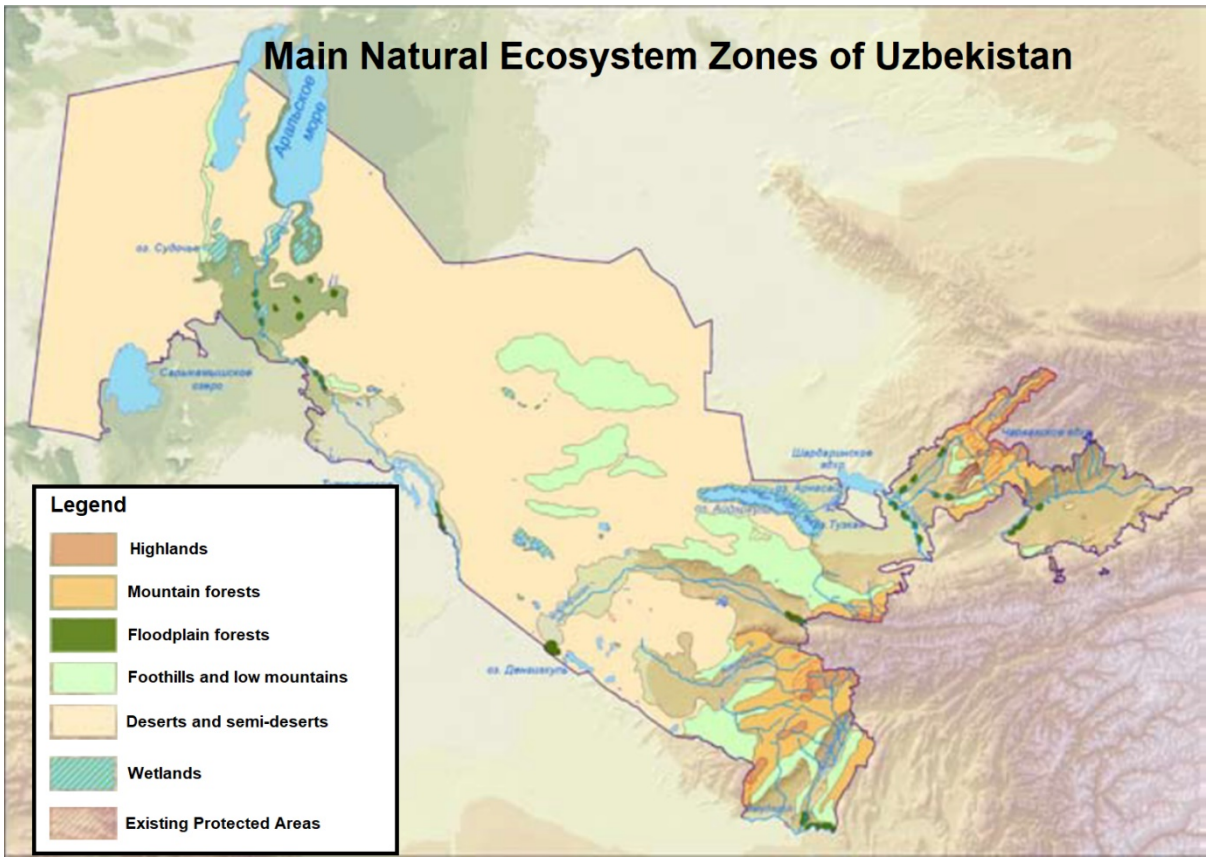

Figure 4.7. Main natural ecosystems of Uzbekistan

(*Source:* *https://www.cbd.int/countries/?country=uz*)

The following types of natural ecosystems are typical in the territory of Uzbekistan:

- highlands
- mountain ecosystems;
- river and coastal ecosystems;
- foothills and lowlands;
- deserts and semi-deserts;
- wetland ecosystems.
- existing protected areas.

The most widespread types of ecosystems in Bukhara region are: deserts and semi-deserts, river and coastal ecosystems, wetland ecosystems. Conservation and sustainable use of biodiversity is extremely important for the Bukhara region, the territory of which is completely in the arid zone and is vulnerable to climate change, is prone to the phenomena of drought and desertification.

4.2.3 Endangered Species

General degradation and fragmentation of natural ecosystems, which are intensified by anthropogenic impacts, has led to a reduction in the range and abundance of both rare and resource (hunting) species in Uzbekistan. Such species have an increased risk of extinction in the wild and are recommended for inclusion in the Red Data Book.

There are 207 species and subspecies of animals in various categories of rare and endangered species, 184 of which are listed in the Red Data Book of Uzbekistan (2009), including 24 mammal species, 48 bird species, 16 reptile species, 17 fish species, three ringworm species, 14 mollusk species, and 60 arthropod species.

The International Union for Conservation of Nature (IUCN) Red List includes 73 species and subspecies of animals whose future is of global concern.

4.2.4 Protected Natural Areas

At present seven reserves (188.3 thousand hectares), a complex landscape reserve (628.3 thousand hectares), two biosphere reserves (111.7 thousand hectares), three national nature parks (558.2 thousand hectares), a complex landscape reserve (628.3 thousand hectares), two biosphere reserves (111.7 thousand hectares), three national parks (558.2 thousand hectares), a national park “Durmen” (32.4 ha), 10 natural monuments (3.8 thousand ha), 12 wildlife sanctuaries (572.4 thousand ha) and the Bukhara Specialized Nursery "Jeyran" (16.5 thousand hectares), as well as forest and forest hunting farms (11.121 million hectares) exist in the Bukhara region (***Source:*** *https://www.cbd.int/countries/?country=uz*).

The system of protected areas in Bukhara region includes the Kyzylkum State Reserve located in two administrative districts and two regions of the Republic of Uzbekistan: Rometan district of Bukhara region - 1467 hectares and in Khazorasp district of Khorezm region - 8844 hectares. See **Figure 4.8** for the Protected natural areas

Bukhara specialized nursery "Djeyran" is located in the south-west of the Kyzylkum desert, 42 km from Bukhara and 12 km. from the village of Qorovulbozor, was established in May 1977 as a specialized nursery for gazelles. There are more than 800 gazelles in the center. Besides, bustard, kulan, Bukhara deer (chongul) live here. Monitor lizard (genus Varanus), polecat, marble ducks breed in natural conditions, pelicans, swans, red geese and many other wild birds can be found in spring and autumn.

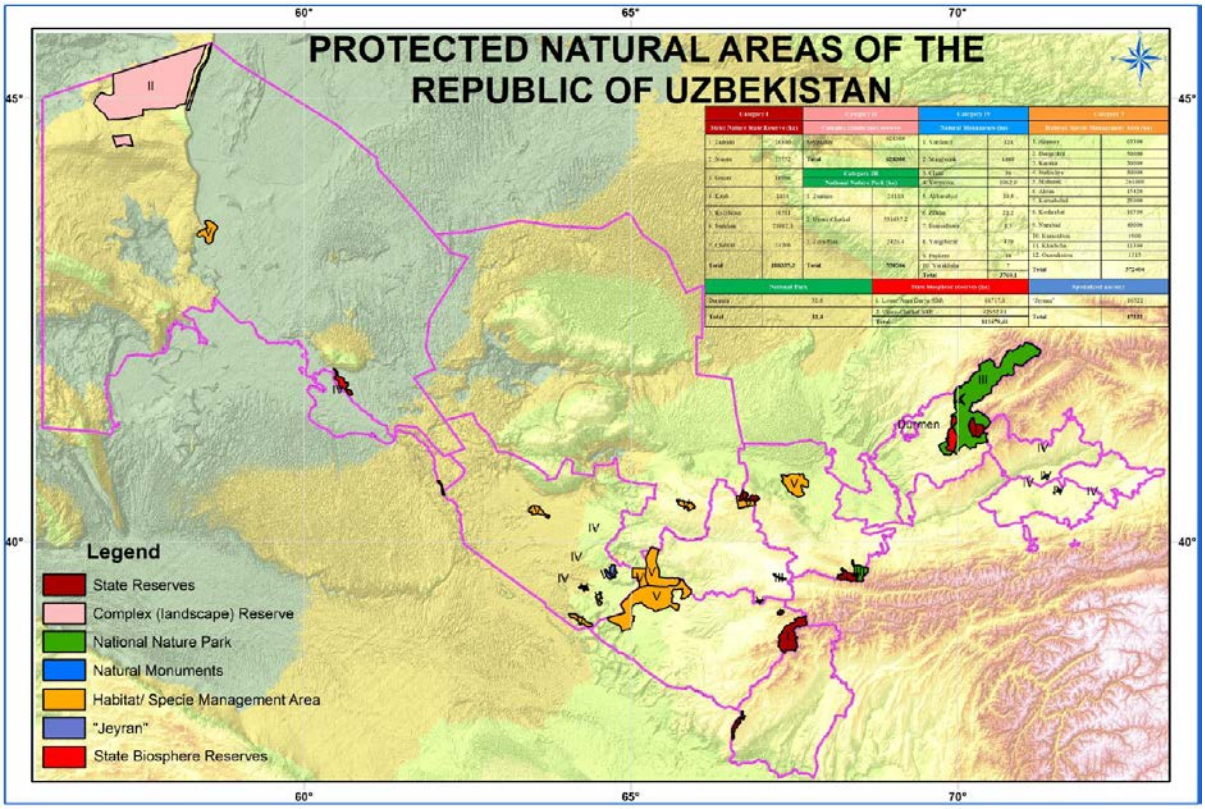

Figure 4.8: Protected Natural Areas of the Republic of Uzbekistan

(*Source:* *https://www.cbd.int/countries/?country=uz*)

4.3 Climate change

Recognizing the importance of climate change issues and taking adaptation and mitigation measures, Uzbekistan signed the UN Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto Protocol in November 1998, which was ratified on August 20, 1999. Uzbekistan also signed in April 2017 and ratified in November 2018. Paris Agreement. Thus, the country undertook quantitative commitments on its implementation, presenting the National Defined Contributions (NDC) - to reduce specific greenhouse gas emissions per unit of GDP by 10% by 2030 from the 2010 level.

The signing of the Paris Agreement requires a country to take actions aimed at reducing greenhouse gas (GHG) emissions and adapting sectors of the economy and population to the adverse impacts of climate change.

The country has a number of interrelated environmental and economic problems and needs, including inefficient use of natural resources, negative impact of climate change, waste management, degradation of environmental systems. The most pressing challenges include the following: limited natural resources (natural gas and coal reserves will be sufficient only for the next 20-30 years, oil reserves are already virtually depleted; there is a growing shortage of water and degradation of land resources); accelerated industrialization and population growth will significantly increase the economy's need for resources, exacerbating negative anthropogenic impacts on landscapes, threats to biodiversity and increasing GHG emissions.

The energy intensity of the economy of Uzbekistan is three times higher than the world average, and the level of greenhouse gas emissions remains one of the highest in Central Asia.

The trend of reducing biological diversity, land degradation, salinization of soils, violation of the hydrological regime of rivers, desertification of significant territories continues.

The "Strategy of the Republic of Uzbekistan on transition to "green" economy" has been developed (approved by the Decree of the President of the Republic of Uzbekistan #4477 from 04/10/2019) for sustainable development of economy, reduction of greenhouse gas emissions in Uzbekistan. The strategy provides for a significant increase in the share of energy from renewable sources in the energy balance by 2030. To increase their share in the structure of generating capacity to 19.7 percent by 2025. Double the indicator of energy efficiency improvement by 2030. Halve the carbon intensity. Ensure universal access to affordable, reliable and modern energy supply. Substantially increase water use efficiency in all sectors of the economy and ensure overall access to safe drinking water.

4.3.1 Key aspects of Uzbekistan's adaptation to climate change

Uzbekistan is among the countries most vulnerable to climate change. The increase in average annual air temperatures in Uzbekistan occurs against the background of high natural variability, which causes significant inter-annual fluctuations. The rates of warming are higher than the average rates observed on a global scale. On average in Uzbekistan the warming rate is 0.27 ^{o}C for 10 years.

There is an increase in the number of significant positive temperature anomalies throughout Uzbekistan and in all seasons of the year. Calculations show that the increase in air temperature in Uzbekistan will continue in accordance with already observed trends and by 2030 will be 1.0-1.4 ^{o}C. With the overall warming of the climate in the future, the probability of intense "heat waves" increases and the probability of cold waves persists.

In the next 40-50 years, warming in the region will result in a slight decrease in vegetative runoff. In the long-term perspective it is possible to reduce the runoff of some rivers in the Amudarya river basin by 7-22%, in the Syrdarya river basin - by 4-5%. Minimal changes are expected for large rivers, while maximum changes are expected for small rivers in the foothill zone.

It is estimated that by 2021-2040, the average moisture deficit in Uzbekistan is expected to increase by 11-14% relative to the baseline period.

4.3.2 Climate change in Bukhara region

According to the composite indicator, Bukhara region belongs to the medium vulnerable group of regions in Uzbekistan.

The water resources management system of the oblast annually faces problems in managing water allocation between users caused by climatic conditions each year. Dry years are the most difficult to manage due to lack or low precipitation and high temperatures in the autumn-winter period. Water inflow into reservoirs in such years is minimal, with small rivers practically drying out in summer. Water availability falls to 60-65%.

Heavy precipitation in spring is often accompanied by dry winter, which practically puts water resources management in a difficult situation. On the one hand, reservoirs are not sufficiently filled, as they are formed due to melt water, and on the other hand, mudflow during the spring period brings destructive water consumption, which is practically not retained by reservoirs due to high consumption on small rivers and in the upper reaches of the rivers forming

reservoirs. In most cases, such debris flows have to be discharged to avoid the destruction of river beds and canals.

As the climate in Bukhara region warms, the number of days with abnormally high air temperatures will increase, which may lead to lower crop yields.

4.3.3 Possible dangerous hydrometeorological phenomena in Bukhara region

Drought

Due to possible reduction of vegetative flow and increase in water consumption in the sectors of the economy as a result of climate change and intensive population growth, the risks of extreme dryness and drought are significantly increasing, especially in the lower reaches of the Amudarya basin rivers.

Heat waves

An increase in the number of days with "heat waves" will be observed in the Bukhara region. An indicator of the risk of dangerous "heat waves" is the number of days with high air temperature. The results of the assessment of changes in the repeatability of high air temperatures show that by 2050 it is possible to increase the repeatability of air temperatures above 39 ^{o}C by 1.5-2 times relative to the base period.

Due to the expected increase in the overall variability of precipitation and its daily maximum, an increase in the repeatability of heavy precipitation, rainfall and hail can also be expected.

Mudflow and floods

Mudflow is widespread in mountainous and foothill areas of Uzbekistan and can be a cause of flooding. The country's mudflow zones are: Fergana Valley (Andijan, Namangan and Fergana provinces); Zeravshan Valley and the Sansar River Valley (Jizzak, Navoi and Samarkand provinces); the Chirchik and Ahangaran river basins (Tashkent province); the Kashkadarya River basin (Kashkadarya province); and the Surkhandarya and Sherabad River basins (Surkhandarya province). The territory of Bukhara Province is not part of the selective zone of Uzbekistan.

At the same time in Bukhara region there are dams of reservoirs, though they are not high, but we cannot exclude the possibility of a breakthrough. Therefore, all hydraulic structures, regardless of their parameters and functional purpose, are subject to the Law of the Republic of Uzbekistan "On safety of hydraulic structures". (1999) are subject to periodic inspection, both in terms of their safety and in terms of their ability to perform their functions (technical reliability). The main tasks of ensuring the safety of hydraulic structures must be carried out by their operating organizations.

Impact of climate change on public health in the Oblast

Climate change affects human health through a complex system of factors. The direct consequences are loss of life and injuries as a result of mudflows, floods, "heat waves", the frequency of which increases. Indirect effects are manifested in the increased incidence of infectious, vector-borne diseases and lack of clean drinking water.

Impact of climate change on biodiversity

Climate change is intensifying land degradation and desertification, and thus affecting biodiversity. These processes are particularly active in a number of districts of the region, in

the Kyzylkum desert and in the foothill areas. Such trends in the future will intensify the transformation and fragmentation of desert, foothill and lowland ecosystems.

Climatic factors affect the functioning of aquatic and terrestrial ecosystems through changes in surface runoff, which, depending on the water content of the years, undergoes significant fluctuations. When flood regimes change and water flows in rivers decrease, riparian vegetation areas decrease and floodplain river ecosystems further degrade.

Measures for adaptation to climate change

Due to climate change in Bukhara region, water deficit will increase. Necessary adaptation measures include: more efficient use of available water resources; widespread introduction of water-saving technologies in agriculture, industry and the public utilities sector; improvement of irrigation infrastructure in order to reduce water losses and its cost per unit of production; transition to the use of highly saline irrigation water; and increase of mechanization and automation of water distribution in river basins and irrigation areas;

Drought forecasting, development of early warning systems and drought preparedness is the main strategy for adaptation to climate change.

Adaptation measures to reduce risks and negative impacts of weather hazards include: development and improvement of monitoring and warning systems; strengthening rapid response and protection capacities.

Adaptation measures to climate change in the health sector; stricter control of drinking water and food quality during hot periods; raising awareness of the population - especially the most vulnerable groups (children, women, elderly people) about the impact of climate change on health.

In order to stabilize the environmental situation, reduce negative environmental and social impacts of climate change, and conserve biodiversity, it is necessary to: improve water resources management; strict compliance with sanitary and environmental standards; develop an environmental monitoring system for water and coastal ecosystems; integrated management of water ecosystems, restoration of fishing potential and main components of ecosystem biodiversity.

4.4 Description of Social Environment

The objectives of this primary survey are to a) understand present water supply status and related issues such as the perceptions of the beneficiary communities; b) assess the impacts of the proposed project on the beneficiary population; and c) assess key community level issues and impacts that might be incorporated into the design, implementation and maintenance of the project. To this end a quantitative and qualitative research among the beneficiary communities was conducted on a sample basis. For quantitative research, a household questionnaire was developed, tested and administered with the sampled beneficiary community households to collect the information on relevant aspects. Also, a qualitative research through Focus Group Discussions (FGDs) with beneficiaries including women was conducted to triangulate the quantitative data obtained through household survey.

The household survey and FGDs were conducted during first two weeks of December 2019. The data collected was computerized and processed in a customized database after scrutiny. The raw data is cleaned, and data analysis was done using a statistical package. The findings of the primary survey are presented in following sections.

4.4.1 Research Methodology for Social Survey

A. Data Collection

Data is collected in order to obtain current baseline information about the socioeconomic characteristics of the project area, which is important for the preparation, design, implementation and post-construction management of the Project, including:

- Description and analysis of the socio-economic conditions of first priority of the Project covers nine districts of the Bukhara region including Bukhara and Kagan cities;
- Possible socioeconomic benefits of the Project, primarily for vulnerable groups of the population;
- Analysis of water supply and sanitations problems for population, impact of access to water and sewerage systems on life quality and living standards of population;
- Analysis of water and sewerage demand for the support of main Project objective study, i.e. rehabilitation and construction of water delivery system;
- Analysis of the problems related to potable water shortage including health issues;
- Analysis of coping strategies used by the population where water shortage exists;
- Assessment of the potential negative impacts of the Project;
- Analysis of the gender aspects of the access to water supply and sewerage system;
- Provision of information for Gender Action Plan.

B. Selection of Indicators

Indicators for the research instruments are selected in compliance with the Terms of Reference and the AIIB Guidelines for Social and Poverty Analysis. The indicators were clustered into the following groups:

- **Demographic indicators** – size, composition and structure of the surveyed households; age, gender and ethnic identity of the members of the surveyed households;
- **Education and employment indicators** – level of educational attained, sectoral structure and status of employment, economic activity, secondary employment of the members of the surveyed households with gender disaggregated data by district and in the entire Bukhara region;
- **Living standards and quality of life indicators** – amount and structure of income and of expenditures, poverty rate, access to municipal services;
- **Potable Water supply and sanitation issues/ health indicators** – sources and consumption of potable water, quality of water.

C. Sampling Design

Both quantitative and qualitative methods of data collection were used for the socio-economic survey. This included a review and analysis of available information about the sub-project area (using official statistics in the first instance), findings from the extensive household survey, in-depth interviews with key informants and focus group discussions.

It was planned to conduct 12 FGDs in the nine districts of the Bukhara region of the Project's first priority phase. Two out of the 12 FGDs were conducted in the Bukhara and Kagan cities which are covered with centralized water supply systems. Six female and four mixed FGDs

were organized for population in rural districts of the Bukhara region. In average 12 women (two elderly, four middle aged, four young mothers, two adolescents) participated in the each female FGD. The representatives of the healthcare, education, small business and local authorities participated in the mixed FGDs as well. In addition, face-to-face interviews have been taken from the officials of project stakeholders and Bukhara region Suvoqava department.

In compliance with the goals and objectives of the socio-economic survey, in December 2019, 300 households were interviewed within nine districts of the Bukhara region, including Bukhara, Kagan, Peshku, Rometan, Qorovulbozor, Jondor, Karakul, Olot, Gijduvon and also Bukhara and Kagan cities. Selection of makhallas for social assessment was conducted based on the problems associated with water supply and sewerage systems and their location. Local makhallas located in the central parts of the Karakul, Olot, and Gijduvon districts were chosen for the identification their challenges with water supply and sewerage systems. In the rest of the districts makhallas located in the central and remote areas were chosen. Because Bukhara and Kagan cities are covered by water supply for almost 100%, 15 respondents in each city were selected for the interviews (see **Table 4.8**).

Table 4.8: The number of respondents by districts

	District/City	Population	Number of Respondents
1.	Bukhara	163,000	40
2.	Jondor	170,158	42
3.	Rometan	138637	34
4.	Qorovulbozor	18000	24
5.	Peshku	120190	30
6.	Kagan	81472	20
7.	Karakul	25,830	30
8.	Olot	13,790	30
9.	Gijduvon	45,490	30
10.	Bukhara city	278500	15
11.	Kagan city	60700	15
	Total	**1,389,374**	**300**

Source: Feasibility Study of the Design Institute, 2019

Selecting households for the survey was done by random sampling based on the list of all households, provided by makhallas. Team leader of the social survey provided every interviewer by: 1) the list of populated localities where interviewer should have sampled the households and have conducted interviews; 2) corresponding weighted average number of households, which should have been interviewed in each makhalla.

To ensure the probabilistic sampling, households were sampled with using "a random start" process. Within a household, the head of family or the most informed family members were selected as a respondent.

D. Procedures for Data Collection

The data collection in the field was conducted in November – December 2019. During the pre-field phase, two questionnaires for the household survey and for FGDs were developed; the briefing of field staff (interviewers and supervisors) was held to train them in using research instruments and sampling. The research instruments (questionnaire and guidelines for FGD) for the survey are attached in the **Annex D1** of the main report.

In total, five interviewers were hired, in addition to a supervisor, an IT programmer, a data input operator and a translator into Uzbek. On December, 2019 all interviewers participated in the pre-field training. Additionally, detailed discussions on the questionnaire and its content including in-depth analysis of every question, their types and respective proposed answer options, questionnaire format and size were held.

E. Secondary Information

During the preparatory phase, a brief review of relevant official statistics will be carried out on the basis of the selected indicators, specifically:

- administrative data
- demographic statistics
- geographical and climate information
- data on labor and employment
- data on social infrastructure facilities (educational establishments and medical institutions)
- information about access to municipal infrastructure (electricity, natural gas and water supply)

The data of the State Committee of the Republic of Uzbekistan on Statistics (Bukhara Region State Statistics Committee are used as a basic source of secondary information. In addition, information was supported by the department of economy and statistics of local Khokimiyats and at times at local self-governance bodies.

4.4.2 Description of Project Area

Socio-economic situation. Bukhara region is a large agro-industrial region of Uzbekistan, located in the south-west of Uzbekistan. It is bordered by Turkmenistan, Khorezm, Navoi and Kashkadarya regions and the autonomous republic of Karakalpakstan. The territory of the region consists of a desert plain with distinct hills. The total area of the territory is about 39400 square kilometers. The region consists of 11 administrative districts, 11 towns, two urban townships and 107 kishlaks (villages). The administrative capital is the city of Bukhara. See **Figure 4.9** for a map of the Region and its surroundings.

Figure 4.9: Bukhara Region

4.4.3 Demographics

The population of the region was about 1.9 million residents by October 1, 2018. Representatives of more than 100 ethnic groups live in the region. The majority of the population is Uzbek, with a large group of ethnic Russians and Kirgizes. The average population density is 500 people per square km.

According to preliminary data, as of January 1, 2019, the number of permanent population of Bukhara region was 1899,5 thousand people (5.7% of the Republic's total population). Thus, the number of urban population was 706,1 thousand people (37.1 % of the total population), rural population (as of January 1, 2019).

Fertility. In 2018, the number of births in the Bukhara region amounted to 40.2 thousand people and the birth rate was 21.3 ppm. There is an increase in the birth rate (from 20.0 in 2017 to 21.3 ppm in 2018).

Mortality. The number of deaths in 2018 amounted to 8.0 thousand people and, compared with the corresponding period January-December 2017 (8.3 thousand people), decreased by 336 people, respectively, the mortality rate was 4.2 ppm (in January-December 2017 - 4.5 ppm).

The total number of deaths for 2017 is 160,7 thousand people. In the structure of total mortality, 59.7 percent (95,900) were blood circulatory diseases, 9.5 percent (1,519) neoplasms, 6.6 percent (10,600) accidents, poisonings and injuries, 5.7 percent (9,922) digestive diseases, 4.7 percent (7,528) respiratory diseases, 1.7 percent (2,719) infectious and parasitic diseases and 12.1 percent (1,1948) other diseases.

4.4.4 Socio-economic profile

The priority sectors of the economy in the region are agriculture and sectors such as oil production and refining, as well as textile and clothing production. The share of small business in the Bukhara region was about 41% (of the total industrial volume). About 2,600 registered and 545 newly established enterprises exist in the region. Bukhara region occupies the 4th position in the Republic by the volume of investments in fixed resources per person for January-December 2018 - 4162,9 thousand sums (or 49,7% of the corresponding period of the previous year).

One of the significant projects in Bukhara region with attraction of foreign investments and loans under the state guarantee of the Republic of Uzbekistan during 2018 were the projects on reconstruction of treatment facilities and sewerage systems in Bukhara city and the project on improvement of drinking water supply in Olot and Qorakoldistricts of Bukhara region funded by World Bank.

Table 4.9 presents population by districts covered by the centralized water supply. The majority of the population is connected to the inter-regional Damkhoja and Bukhara Kuyumozar systems, while another part of the population uses alternative sources of water supply, mainly wells, where water does not always meet the requirements of the State Standard for drinking water (FS 2019).

Table 4.9: Population covered by water supply

District/City	Population size	Number of local makhallas	Population with water supply, persons	The share of population, %
Bukhara	163000	15	101875	62.5
Jondor	170158	51	11328	6.6
Kagan	76079	24	34768	45.7
Qorovulbozor	18596	5	14738	79.3
Peshku	120190	10	54362	45.2
Rometan	138637	7	47063	33.9
Bukhara city	278500	65	277580	99.6
Kagan city	60700	20	60700	100

Source: Book1.1 Technical feasibility study by PIU «O'zbekkommunalloyihaqurilish», 2019.

Although number of people in rural areas is more than in urban areas, they have less access to potable water and their water consumption is much less in comparison with urban residents. This factor negatively impacts on incomes prevalence of water borne diseases among remote population. The FS presents that the highest rate of the per person water consumption observed in Bukhara city (117.7 liters/day/person) and Kagan city (114.7 liters /day/person), and the lowest consumption in Jondor (18.2 liters /day/person) and Peshku (18.9 liters /day/person) (see **Table 4.10**).

Table 4.10: Water consumption per person by districts (2018)

	Description	Water consumption (liters/day/person)
1	Bukhara Region	62,7
2	Bukhara city	117,7
3	Kagan city	114,7
4	Bukhara district	45,4

	Description	Water consumption (liters/day/person)
5	Jondor district	18,2
6	Kagan district	101,4
7	Qorovulbozor district	99,5
8	Peshku district	18,9
9	Rometan district	20,2

Source: Book1.1 Technical feasibility study by PIU O'zbekkommunalloyihaqurilish, 2019.

Education

The State statistics present that there are 528 schools with 325,200 pupils, 25 gymnasiums with 5,700 pupils, five academic lyceums and 14 professional colleges with 2,400 pupils, and three higher education institutions with 9,800 pupils in the region. A library network has also been developed, including 450 information and resource centers and an information and library service center. The cultural and educational institutions include 148 clubs, 210 houses of culture, three theatres, 27 music and art schools, two cinemas and seven parks of culture and leisure.

Healthcare

There are 275 health facilities in Bukhara region, among them 114 are newly established rural family polyclinics, where the population addresses their health problems (see **Table 4.11**).

Table 4.11: Medical institutions in Bukhara Region

Types of medical facilities	Quantity
Outpatient clinic	216 (including 93 rural family policlinics)
Dispensaries (Skin and Venereology, TB, Psychoneurology, Endocrinology, Narcology, Cardiology)	6
Medical centers	10
Hospitals with hospital beds	31
District medical associations	11
Rural District Hospital	1
Overall	275

Source: State.com stat.RoU, 2019.

Waterborne Diseases

In 2019, there was a significant increase in acute intestinal diseases and Hepatitis A in the Jondor and Olot regions, where people have more challenges regarding access to centralized water supply and sanitation services. In 2019, the incidence of acute intestinal diseases in the Jondor region increased by 20% and 30% for Hepatitis A in the Olot district, compared to 2018 (see **Table 4.12**). According to the number of treated patients with infectious diseases Bukhara region is on the 4th place out of the 13 regions in the Republic.

Table 4.12: Water Borne Diseases in Bukhara region (2018 and 2019)

Description	intestinal diseases		Viral hepatitis A		Dysentery	
	2018	2019	2018	2019	2018	2019
Bukhara city	438	398	163	172	0	0
Kagan city	22	23	9	11	0	1
Olot district	105	110	44	113	0	0
Bukhara district	70	56	80	58	0	1
Vobkent district	45	29	47	32	4	0
Gijduvon district	211	90	80	58	0	1
Jondor district	171	214	44	61	0	0
Kagan district	64	73	20	20	1	2
Qorakoldistrict	137	77	47	52	1	0
Qorovulbozor district	15	16	36	16	2	1
Peshku district	86	55	23	23	0	0
Rometan district	146	135	20	28	4	2
Shofirkon district	97	73	108	59	3	3
Bukhara region	1607	1349	721	685	15	10

Source: State Statistics of Bukhara Regional Center of the State Sanitary Epidemiological Center, 2019.

According to the State Statistics Committee of the Republic of Uzbekistan, despite the fact that in 2018, the number of children under 5 first-time infectious and parasitic diseases in the Republic remained the same as in 2017, but the data on the same diseases in Bukhara region increased by 80% respectively (see **Table 4.13**).

Table 4.13: Incidence of infectious and parasitic diseases in children under 5 for the first time in their lives

Area	Absolute number		children under 5 (per 1000)	
	2017	2018	2017	2018
Republic of Uzbekistan	71564	71432	20,8	20,6
Bukhara region	1440	7012	7,8	37,7

Source: State Statistics Committee of the Republic of Uzbekistan, 2019.

4.4.5 Findings of Social Survey

This section described the results of the socio-economic survey in the Bukhara region. It presents the results of the household survey and FGDs related to water supply and sewerage systems and examines WSS services problems.

Demographic features of the households

The household survey covered 300 respondents (households) with about 1636 inhabitants living in their households. From the total number of respondents, 65% were men and 35% werewomen. Almost 53 % of households have a family size between four and six members, whereas about 3 % are families have 10 or more members. These data coincide with the results of FGD, where the family size in urban areas is smaller than in rural households. It should be noted that out of the total number of the population in households (1636), children under 19 years old make up about 30%, the same general structure of the population in demographic indicators is confirmed by the general republican statistical indicators. According to the survey results, the percentage of women who retired is slightly higher than that of men, which is 41.9 and 58.1% respectively.

In total, 18 FGD (two FGDs in each district) as well as face-to-face interviews have been undertaken from the officials of project stakeholders and Bukhara region Suvoqava department in the nine districts of the Bukhara region and Bukhara and Kagan cities.

More than 300 participants took active part in the FGDs in December 2019 within nine districts of the Bukhara region, 241 of them were women (see **Table 4.14**) the list of participants of the FGDs is provided in **Annex D2**.

Table 4.14: FGD Participants

City/districts	Date	Total participants	Women participants
Peshku	30.11.2019	48	36
Jondor	30.11.2019	34	24
Qorovulbozor	31.11.2019	24	13
Karakul	31.11.2019	31	23
Bukhara district	01.12.2019	31	27
Bukhara city	01.12.2019	34	31
Kagan city	02.12.2019	20	18
Kagan district	03.12.2019	22	22
Olot	03.12.2019	20	16
Rometan	04.12.2019	22	12
Gijduvon	04.12.2019	19	19
Total participants		305	241

Source: Socio-economic Survey in Bukhara Province, 2019.

Occupational details

According to the survey results, the percentage of women who retired is slightly higher than that of men, which is 58.1% and 41.9%, respectively. The survey revealed that majority of female and male respondents are employed in the public sector and constitutes around 48% and 39% respectively. The share of men who have their own business/or self -employed (10% /13%) is two times more than females (5%/ 7%). The number of unemployed women is significantly higher than men and composed 23% and 6% respectively. This is explained by the reason that women mostly occupy professions of teachers and nurses. Because the number of vacancies in the healthcare and education sector are limited, specifically in rural areas, the number of unemployment among women is significantly higher than men. That is why the share of men (23%) in transport, construction, communication services is relatively higher than women (10%). See **Table 4.15** for details.

Table 4.15: Number of employed women and men

	Women		Men	
	Total	**%**	**Total**	**%**
Agriculture	20	5,1	31	7,8
Non-Agricultural Sector (transport, construction, industry, communications, trade, services, etc.)	40	10,3	92	23,3
Public Sector (health care, education, management, law enforcement agencies, etc.)	186	47,7	153	38,7
Have their own business / business / private enterprise	18	4,6	39	9,9
Self-employed	29	7,4	52	13,2
Unemployed	91	23,3	22	5,6
Others	6	1,5	6	

Source: Socio-economic Survey in Bukhara Province, 2019.

Housing patterns

The survey revealed that type of water and sanitation challenges have strong correlation with type of accommodation. According to the survey results, 88% of respondents live in detached houses and 12% in the apartments of the multi-story houses.

Water supply problems

The residents of the detached houses have problems with access to potable water, its saving, high cost of the water delivery services whereas respondents from apartments encounter with 2-4 hours access to the water, have no additional space for its saving, and low water pressure in the tubes. The vast majority of the both group respondents stated that the quality of the water in the entire region is very poor. The survey revealed that, in average, each household used 54 liters/per person/per day including watering gardens and livestock. This figure is lightly lower

than official data of Suvokova provided in the FS by Institute in 2019. See **Table 4.16** for details.

Participants of the Kagan district FGDs stated that, in average, a family of five people consumes 50-80 liters of water per day. Depending on the area, the cost of daily water consumption varies from 5,000 to 24,000 sums per day. The monthly expenditure on water consumption ranges from 150,000 to 700,000 sums. In the case that household is located far from the Water delivery service unit the cost has been proportionally increased.

Table 4.16: Average daily water consumption by household (Liters per Day)

Drinking, cooking	6.4
Household needs (cleaning, bathing, washing, washing machines)	16.7
For flushing	5.6
Watering the yard/plot	18.3
For feeding the live stock	6.9
Total	54.2

ource: Socio-economic Survey in Bukhara Province, 2019.

Challenges of the water supply

The survey examined that respondents have major problems with access to water supply as well as encountered with poor quality of water. For example, from those who have access to the centralized water supply 38% are suffering from frequent water interruptions, 47 % from low water pressure and 21% answered that have no access to water supply for more than a week. The vast majority of respondents (100%) stressed that the water quality is unsatisfactory because of the specific smell (29%), salty taste (29%), external substances (29%) and cloudy tint (29%) of the water. This data correlates with high number of Water Borne Diseases (WBD) in the Bukhara region and particularly in the rural areas; see **Table 4.17**.

Table 4.17: Status of Water Supply Problems

Description	**Total Respondents**	**%**
There were no problems	28	9,3
Frequent water supply interruptions	114	38
Water supply stopped for more than a week	62	20,7
Low water pressure	142	47,3

Source: Socio-economic Survey in Bukhara Province, 2019.

In addition, this survey revealed that centralized water supply system operates mostly 2-4 hours per day. Heads of the local WSS systems shared that cannot provide the 24/7 water supply

because of worn out pipes and equipment at the WTP, WWTP, WDU and WIU. Almost 40% from those who have an access to centralized water shared that water is available for 2-4 hours per day whereas only 26% (mostly live in Bukhara and Kagan cities) have permanent water suppl (see **Table 4.18**)

Table 4.18: Hours of water supply (hours/ per day)

Hours	Total	%
1-2 hours	15	5,0
2-4 hours	118	39,3
Half day	20	6,7
24 hours	77	25,7
0 hours	70	23,3

Source: Socio-economic Survey in Bukhara Province, 2019.

Water quality is one of the main concerns of the respondents, participants of the FGDs as well as of staff of regional departments of Suvokova. During FGD in Peshku district residents noted that the district Water Distribution Unit "Sadir" is located in Dehdaroz mahalla, and is the main source of drinking water for district's residents. Due to lack of finance for maintenance, repair and old technical equipment the quality of water is unsatisfactory. There are external algae in the buildings and reservoirs, and chlorination is practically not carried out. This does not meet the sanitary hygiene requirements of the storage facility, therefore, various herbs and weeds appear in the water. The data obtained from the survey correlates with results of the Feasibility Study conducted by the Design Institute in 2019 which stressed the quality of the potable water does not satisfied to the state sanitary norms.

During FGDs, participants expressed different opinions about water quality. For example, in Karakul, Olot, Peshku and Korovulbazar districts , potable water supplied by tank trucks is satisfactory and suitable for drinking, cooking and so on. However, the water quality of tanker trucks in Jondor and Kagan districts is very poor and not suitable for cooking and drinking. For this reason, people buy drinking water in gallons from private providers. However, this water is also characterized as poor quality.

> Sometimes the quality of the 20 litre water rarely supplied as " Clean Water" does not meet the requirements. The day after opening and consuming the water, there is an unpleasant smell from the plastic tank.
>
> 35-year-old male participant of Qorakol district

Residents of Bukhara, Kagan cities and visited districts emphasized that the centralized water supply system by 80-90% is provided through iron pipes 30-35 years old which is also one of

the reasons of the poor water quality. Because of poor water quality respondents stated that they need provide additional time and resources for cleaning water which negatively impact on economic status of the family. For example, in average 53% from interviewed stressed that they boiled and 20% filtered for cooking and drinking water. The same water is using for bath purposes too. As result the households will spend additional amount for the power and gas supply. See **Table 4.19** for details.

Table 4.19: Water Treatment

	Cooking		Drinking		Bathing	
	Total	**%**	**Total**	**%**	**Total**	**%**
Chlorination	0	0	0	0	0	0
Boiling	158	52,7	177	59	146	48,7
Filtering	60	20	60	20	62	20,7
No	82	27,3	63	21	92	30,7

Source: Socio-economic Survey in Bukhara Province, 2019.

The survey explored that the residents of the detached houses have more opportunities for collecting and saving big volume of water. Almost 77 % of respondents who is living in the detached houses answered that they regularly storage the potable water for their household consumption. About 23% of surveyed answered that they have no opportunities for water storage. This data was confirmed by the participants of the FGDs in the rural and urban settlements. Mostly residents from of the apartments and detached houses stated that they have no financial opportunities for construction of the storage water tanks.

Income and expenditures of the households

The survey presents that salaries from public sector (34%) and from non-agricultural entrepreneurial activities (21%) (including the resale of agricultural products) constitute the main sources of income of the population. Pensions for retirement are considered as one of the stable sources of income as well and compose 8%. The rest share of incomes from makhalla committees have minimal size. Almost 64% of respondents have no seasonal influence on their incomes. However, because of hot summer in the Bukhara region the consumption of water during summer has more demand than in winter. See **Tables 4.20** to **4.21** for details

The share of expenditures for bottled water constituted only 1%. During FGDs respondents from rural areas stated that they could not afford the purchase of the bottled water. Despite of that they are ready to pay for increased tariffs for the centralized water supply.

Currently, the respondents spent almost 8% for their treatment purposes. As this survey presents the number of WBD is significant in the whole region and particularly in the rural areas. That is why households spent in average from 100,000 to 500,000 UZS for treatment from WBD.

Table 4.20: Income Status in Bukhara Region

Types of income	**%**
1. From the sale of own agricultural products, incl. livestock products	9,4
2. From non-agricultural entrepreneurial activities (including the resale of agricultural products)	21,3
3. From work on hiring in agriculture (in shirka , dehkan and farmer households, not belonging to family members, agricultural income mardikors, etc.)	8,2
4. From work on hiring in non-agricultural sector (enterprises, organizations, firms, including non-agricultural mardikors)	34,3
5. Pensions by age, for long service	6,3
6. Pensions and disability benefits	8
7. Makhalla benefits for low-income families	0,1
8. Makhalla benefits for families with children 2-18 years old	0,1
9. Makhalla benefits for caring for a child under 2 years	0,1
10. All other types of benefits (unemployment, grants, sick leave, loss of breadwinner, etc.)	0,5
11. Other incomes	11,7
Total	100%

Table 4.21: Number of poor and well-off in households

	Number of households	%
Poor	136	45,3%
Non-poor	164	54,7%
Total	300	100%

Source: Household Survey in Bukhara region, by 2019.

Table 4.22: Types of Expenses

Types of expenses	**%**
1. Buying food for the family and buying food for meal taken outside	32,3
2. Buying bottled drinking water/car delivery/water tanker	1,2
3. Clothing and footwear for children and adults	16,4

Types of expenses	**%**
4. Detergents, Sanitary and Hygiene Goods (COSTS FOR emptying AND cleaning OF TOILETS NOT TO BE CONSIDERED!)	2,3
5. Charges for payment of drinking water, including costs for delivery, installation, repair of water pipes, construction / purchase of potable water storage tanks (buckets, flask, house , cistern, barrel, etc.)	1,8
6. The cost of housing (rent, taxes, payment for the house, gas, electricity, telephone, fuel costs)	10,1
7. Expenses for maintenance, emptying, construction, repair of sewerage and toilets, disinfection, etc.	1,0
8. Repair, construction of housing, purchase of construction materials	6,5
9. Transport, taxis and minibuses, gasoline	6,5
10. Education and purchase of school supplies, books, school contributions	2,9
11. Health: Medications, diagnostics and services of doctors and nurses	7,9
12. Purchase of durable goods (TV, furniture, household appliances, carpets, etc.)	3,9
13. Household goods for home and land	1,3
14. Other expenses (livestock, activities, etc.)	5,9
Total	100%

The survey revealed that only 3 % of preschools, 2 % of schools and 0.3 % of colleges/ lyceums have a centralized sewerage system. About 45.3% of Early Childhood Care Centers and 44.3% of schools use centralized water supply respectively. During visits to the schools it was revealed that management tried to provide their students with potable water from different sources. For example in Jondor and Peshku didtricts management purchased water for their students (**Figure 4.22**). In some areas, water for schoolchildren is also purchased in small bottles because even the tap water sometimes not even suitable for laundry.

As medical staff of the local policlinics shared during FGDs, children's pre-schools and state general education schools buy water from tank trucks once a week and store it in concrete pools that do not meet sanitary requirements. During the cold season this water cannot be used, so this creates favorable conditions for the emergence and spread of various infectious diseases such as hepatitis A, dysentery and other intestinal diseases. It should be noted that in 2018-2019 (during the last year) 7 pre-school institutions were built in Peshku region, due to

the poor quality of construction works, none of them has sewage systems.

Participants of the FGD in Bukhara, Kagan, Qorovulbozor and Jondor districts stated that almost all preschools do not have centralized sewerage systems; in addition, although water

pipes have been installed in some areas, the lack of water inside the building causes great discomfort when washing dishes, washing, bathing and toilets.

Figure 4.10: Water Availability in a secondary school of Peshku district

To sum up, the following water supply problems were identified during the survey:

- Low pressure and hourly water supply in apartments, as they survey presented 12% in the apartments of the multi-storey houses with small kitchens where there is no place to store large volumes of water.
- Lack of hygienic and sanitary standards of cleanliness in multi-story residential buildings for respondents who used outdoors shared toilets located near their houses.
- Because of the frequent water supply interruptions and lack of access to the centralized permanent water supply system residents of the rural and urban districts spent additional time for water collecting from different water sources. As a result, they faced with lack of time for additional education, leisure, and business development.
- Harm to the health and well-being of the family. The fact that water trucks do not arrive at a certain day or time creates great inconvenience. Such inconveniences include

wasting time waiting for the car, inability to go to the market, return to work, ask for neighbors, etc. This situation in the family often causes stressful situations in the family, which is related to the distribution of responsibilities.

- Old pipes and the inability to withstand high pressures cause serious problems in water supply. For example, in multi-story buildings, water without high pressure does not reach the upper floors, and high pressure often causes unforeseen water supply failures and interruptions. Cracks in pipes cause drinking water to enter surface water and wells, resulting in overfilling of wells and accelerated wear and tear of existing pipes. Currently, most of these pipes are in need of replacement.
- Worn-out WSS facilities.
- High level of the salinity of the water.

4.4.6 Results of Social Survey regarding Sewerage System

In the survey of 300 households in two cities and nine districts of Bukhara region, only 7% of respondents have access to the centralized sewerage system.

According to the FGD results, with the exception of cities and districts with centralized water supply in the region, autonomous self-modeled pump stations are used and water is extracted for residents to wash their toilets. Some people use the water in ditches to store the water before it is pumped.

Most respondents release waste water in a special drainage pit in the inner garden of the house (50%), almost one third (30.3%) in the garden in their own yard, as well as those who live in apartment buildings in a drainage pit in the public yard (8.3%).

The lack of a sewerage system in the main part of Bukhara region deteriorates sanitary and hygienic conditions. In particular, residents of the district use deep pits in their houses to provide a local sewerage system for the toilet. They cover it with cement concrete and leaving a 20x20 or 30x30cm hole for periodic cleaning of the pit. Such sites are made as close as possible to the entrance to the building to provide access to special vehicles to clean the waste.

There are cases of water-borne illnesses among households, such as diarrhoea, abdominal pain and others, which are most common with children (33 %) (see **Table 4.23** for details). The duration of such diseases in men and children is five days, while in women the disease retreats a day earlier.

Table 4.23: Presence of abdominal pain, diarrhea in the family members of respondents during last 6 months

Respondents' answers	Man		Woman		Children	
	# of respondents	%	# of respondents	%	# of respondents	%
Yes	54	18	71	23,7	98	32,7
No	246	82	229	76,3	202	67,3
Total	300	100	300	100	300	100

Source: Household Survey in Bukhara region, by 2019.

Based on the findings, the population of this region spends on average 100,000 to 500,000 UZS to treat water-related diseases. There are some situations (8.5%) where expenditures exceed more than one million UZS.

A survey of interviewees who had no centralized sewage system and were using a pit latrine/tank in their yard indicated that 39% had recently cleaned their pits. Among them 43% had cleaned the pits on their own, 26% had used the services of a cleaning company and 16% had used the services of farmers respectively. Those respondents who use the services of cleaning vehicles only 26% are satisfied with the quality of their work.

According to FGD results, depending on the size, depth of the pit and number of households, these pits are cleaned one, two or three times a year. The cost of cleaning varies from 50,000 to 180,000 UZS. Such cleanings are carried out in spring and summer at the request of farmers at low prices to use waste as mineral fertilizer crops. The use of human waste by farmers is carried out in two stages, the first stage is buried in agricultural fields and after 4-6 months, it is used for fertilization.

> The majority of districts lack the centralized sewerage system. Each household has one autonomous pit in the yard, and on average up to 120-200 thousand UZS per year is allocated to clean the pit. Sometimes household toilet waste can be purchased by farmers, especially in spring, and used as fertilizer for land and plots.
>
> *A 48-year-old woman in the FGD of the Rometan District.*

There is no centralized sewerage system in Olot, Korakul, Rometan, Jondor and Gijduvon districts, but a sewerage system has been organized in multi-story buildings, especially those built as model buildings, as well as in some public hospitals and gardens.

> It is noteworthy that between 2018 and 2019 (during the last year) seven pre-school institutions were built in the Peshku district, due to poor quality of construction works, none of them has sewerage system.
>
> *Preschool teacher, 36 years old, FGD in Peshku District.*

In Bukhara city and district as well as in Gijduvon district, toilet wastes are collected as a general rule in separate pits. Some pits remain uncovered. It was mentioned that some residents

in the center of Jondor district constructed latrines, but due to lack of water for flushing, they take water from ditches to wash the toilet.

The multistoried houses in the center of the district have one toilet for 100-120 people, which is difficult to use because sanitary conditions of the toilets are extremely bad. Separate pits in the yard are also excavated for washing waste and sewage. Toilet waste is disposed of on the ground once a year and used as fertilizer on private gardens.

Problems are mainly caused by outdated sewers and damaged piping. In particular, there is salinization and destruction of walls in the city of Bukhara. According to the population opinion, the sanitary and epidemiological supervision does not carry out any awareness-raising campaigns on the implementation of chlorination and sanitary regulations. Although disinfection is carried out by the population on a regular basis, their efforts do not work properly.

It was noted that due to incorrect connection of sewer pipes in some central sewerage systems of Kagan city and Rometan district, there are cases of water leakage from sewerage pipes to the walls, and unpleasant odors spreading.

In addition to the aforementioned, wastewater disposal challenges are common in Kagan town, Korakul and Korovulbazar districts. Due to lack of sewerage system in multi-story buildings, unpleasant smells, plenty of mosquito- flies appear especially in the summertime in apartment blocks. It is almost impossible to stay indoors without installing mosquito nets/screens on apartment windows in multi-story buildings.

In general, residents of Bukhara region were happy about the proposed project. In their view, the priorities in terms of expenditure, they consider the improvement of water quality/potable water supply (52%), construction of new pipelines to the areas not covered by the water supply system (34%), and improvement of water supply pressure (8%) the most important aspects.

Willingness to pay for Sewerage Service

The survey found out that 42% of respondents were ready to pay 800 UZS and 36 % - 1200 UZS. Please see **Table 4.24** for details.

Table 4.24: Cost of Sewerage Services

	Number of Respondents	**%**
800 UZS	*125*	*41,7*
900 UZS	*27*	*9*
1000 UZS	*40*	*13,3*
1200 UZS	*108*	*36*
Total	300	100%

4.4.7 Social Protection

Social protection systems in Uzbekistan provide certain means of livelihood for low-income families. According to the Decree of the Cabinet of Ministers of the Republic of Uzbekistan № 44 (15 February 2013) "On approval of the regulation on the procedure for allocation and disbursement of social benefits and allowances to low-income families" the procedure for

allocation and disbursement of allowances by mahallahs to families with children under the age of 14 years, allowances for child care up to the age of two years and a subsidy for low-income families was determined; see **Table 4.25** for details.

Table 4.25: Procedure for the awarding and payment of social allowances and material assistance to low-income families

	Social allowances types	Amount of payments from 01.01.2019 from the minimum refferal rewage (MRW)
I	Allowance for families with children under 14 years of age, of which:	
	single-child families	60% MRW (*121 638 UZS*)
	a family with two children	100% MRW (*202 730 UZS*)
	a family with three or more children	140% MRW (*283 822 UZS*)
II	Allowance for the care of a child under 2 years of age	200% MRW (*405 460 UZS*)

Source: **Annex D5** to the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 44 of February 15, 2013.

From September 1, 2019 it was introduced to replace the minimum wage:

- minimum wage of 577170 UZS;
- base estimated amount of 202730 UZS;
- basic calculation of pension at the rate of 202730 UZS.

According to the survey, 5% of the surveyed in Bukhara region are low-income. Most poor households are located in the most remote areas. The survey results show that one third of the households surveyed spend their monthly income on food. 1.8% of respondents have expenses for drinking water, including expenses for delivery, installation, repair of water pipes, construction/purchase of storage tanks for drinking water.

The level of income of the interviewed households members is less than half of 635,000 soums. The number of poor and non-poor families was 45% and 55% respectively.

5 Impact Assessment and Mitigation

This Chapter identifies the key potential environmental and social impacts due to project activities based on the analysis of subprojects during pre-construction, construction and operation phases, assesses their significance, and proposes appropriate mitigation measures to address these impacts.

5.1 Impact Assessment Methodology

The significance of potential impacts was assessed using the risk assessment methodology that considers impact magnitude and sensitivity of receptors, described below. The same methodology shall also be applied in E&S studies to the impact assessment for subprojects under this project.

5.1.1 Impact Magnitude

The potential impacts of the project have been categorized as major, moderate, minor or nominal based on consideration of the parameters such as: i) duration of the impact; ii) spatial extent of the impact; iii) reversibility; iv) likelihood; and v) legal standards and established professional criteria. These magnitude categories are defined in **Table 5.1**

Table 5.1: Parameters for Determining Magnitude

Parameter	Major	Medium	Minor	Nominal
Duration of potential impact	Long term (more than 35 years)	Medium Term Lifespan of the project (5 to 15 years)	Limited to construction period	Temporary with no detectable potential impact
Spatial extent of the potential impact	Widespread far beyond project boundaries	Beyond immediate project components, site boundaries or local area	Within project boundary	Specific location within project component or site boundaries with no detectable potential impact
Reversibility of potential impacts	Potential impact is effectively permanent, requiring considerable intervention to return to baseline	Baseline requires a year or so with some interventions to return to baseline	Baseline returns naturally or with limited intervention within a few months	Baseline remains constant

Parameter	Major	Medium	Minor	Nominal
Legal standards and established professional criteria	Breaches national standards and or international guidelines/obligations	Complies with limits given in national standards but breaches international lender guidelines in one or more parameters	Meets minimum national standard limits or international guidelines	Not applicable
Likelihood of potential impacts occurring	Occurs under typical operating or construction conditions (Certain)	Occurs under worst case (negative impact) or best case (positive impact) operating conditions (Likely)	Occurs under abnormal, exceptional or emergency conditions (occasional)	Unlikely to occur

5.1.2 Sensitivity of Receptor

The sensitivity of a receptor has been determined based on review of the population (including proximity / numbers / vulnerability) and presence of features on the site or the surrounding area. Each detailed assessment has defined sensitivity in relation to the topic. Criteria for determining receptor sensitivity of the Project's potential impacts are outlined in **Table 5.2.**

Table 5.2: Criteria for Determining Sensitivity

Sensitivity Determination	Definition
Very Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or minimal opportunities for mitigation.
Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or limited opportunities for mitigation.
Mild	Vulnerable receptor with some capacity to absorb proposed changes or moderate opportunities for mitigation
Low	Vulnerable receptor with good capacity to absorb proposed changes or/and good opportunities for mitigation

5.1.3 Impact Significance

Following the determination of impact magnitude and sensitivity of the receiving environment or potential receptors, the significance of each potential impact has been established using the impact significance matrix shown below in **Table 5.3.**

Table 5.3: Significance of Impact Criteria

	Sensitivity of Receptors			
Magnitude of Impact	**Very Severe**	**Severe**	**Mild**	**Low**
Major	Critical	High	Moderate	Minimal
Medium	High	High	Moderate	Minimal
Minor	Moderate	Moderate	Low	Minimal
Nominal	Minimal	Minimal	Minimal	Minimal

5.2 Summary of Assessed Impacts

The impact assessment concluded that the Project will generate mostly positive socio-economic benefits due to the improvement of water supply and sanitation (WSS) facilities in Bukhara region. Construction and rehabilitation of WSS infrastructure will significantly improve living conditions, water supply and sanitation, which will overall have significant effects on the health of population and environment of region in general. At the same time the proposed project activities might generate various adverse environmental and social impacts. These impacts would be associated with physical and economic displacement particularly related to land acquisition for the new facilities, generation of wastes, noise, dust, air pollution, wastewater, impacts on cultural heritage, disturbance to community and traffic, health hazards and labor safety issues, due to facility siting, civil works and operation and maintenance.

The project's potential environmental and social impacts have been assessed with the methodology described in **Section 5.1** above. The key impacts are summarized in **Table 5.4**; the potential impacts are discussed in the subsequent sections.

Table 5.4: Summary of Potential Impacts and their Significance

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Significance after Mitigation
Improved water supply system	Long term	Local	Yes	Certain	Major	-	High positive	N/A
Improved sewerage system	Long term	Widespread	Yes	Certain	Major	-	High positive	N/A
Impacts related to Project siting								
Impacts on community facilities and places of religious significance	Short term	Local	Yes	Likely	Medium	Low	Minimal impact	Minimal impact
Land acquisition and resettlement	Medium term	Local	Yes	Likely	Major	Mild	Moderate	Low
Loss of farmlands and income	Short term	Local	Yes	Certain	Major	Mild	Moderate	Low
Environment impacts during construction phase								
Land cover and land use changes	Short term	Within project boundary	Yes	Certain	Medium	Mild	Moderate	Moderate
Loss of trees and crops	Short term	Local	No	Certain	Medium	Mild	Moderate	Moderate
Loss of fertilized soil	Long term	Local	Yes	Certain	Major	Severe	High	Moderate
Impacts on borrow areas	Short term	Widespread	No	Certain	Medium	Severe	High	Moderate
Air pollution	Short term	Widespread	Yes	Certain	Major	Mild	Moderate	Low
Noise and vibration	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Low
Water pollution	Short term	Widespread	Yes	Likely	Medium	Mild	Moderate	Low
Soil contamination	Medium term	Local	Yes	Certain	Medium	Severe	High	Moderate
Solid wastes	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Low

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Significance after Mitigation
Hazardous wastes (including used asbestos pipes)	Short term	Local	Yes	Certain	Medium	Severe	High	Moderate
Occupational health and safety	Short term	Local	Yes	Likely	Medium	Severe	High	Moderate
Site clearance and restoration	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Low
Social impacts during construction phase								
Impacts on cultural resources	Short term	Local	Yes	Likely	Medium	Mild	Moderate	Minimal
Temporary blockage of access to community facilities such as shops, houses and schools, etc.	Short term	Local	Yes	Likely	Medium	Mild	Moderate	Low
Disturbance to the traffic	Short term	Widespread	Yes	Certain	Major	Severe	High	Moderate
Disturbance to public utilities (electricity, telecom cables, gas pipes and etc.)	Short term	Widespread	Yes	Likely	Medium	Severe	High	Low
Community health and safety	Short term	Widespread	Yes	Likely	Medium	Severe	High	Low
Influx of workers and labor issues	Short term	Widespread	Yes	Likely	Medium	Mild	Moderate	Low
Environmental impacts during O&M								
Impacts on groundwater	Long term	Local	No	Likely	Medium	Severe	High	Moderate
Generation of wastes including hazardous materials	Long term	Local	Yes	Certain	Major	Mild	Moderate	Low
Increasing of sewage due to increase of water supply	Long term	Widespread	Yes	Certain	Major	Mild	Moderate	Moderate
Air pollution	Long term	Widespread	Yes	Certain	Major	Mild	Moderate	Low

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Significance after Mitigation
Noise and vibration	Long term	Local	Yes	Certain	Major	Severe	High	Moderate
Water pollution	Long term	Widespread	Yes	Certain	Major	Mild	Moderate	Low
Water consumption	Long term	Widespread	No	Certain	Major	Mild	Moderate	Moderate
Occupational health and safety	Short term	Local	Yes	Likely	Medium	Severe	High	Moderate
Social impacts during O&M								
Emergency situations	Short term	Local	Yes	Occasional	Medium	Severe	High	Low

5.3 Impacts associated with project siting and mitigation measures

5.3.1 Impacts on community facilities and places of religious significance

The project facilties particularly new sites may impact or damage the community facilities and or sites/buildings of religious significance. This will have undue imapcts on the associated communities. Attempts will be made to avoid such community facilities and religious sites when selecting the sites for new project facilities or carrying out works on the existing ones. Any damages caused to such community facilities and religious sites will be repaired at no cost to the community.

5.3.2 Land acquisition and physical and economic displacement

In Uzbekistan, the land is state property. During the survey conducted for some proposed sites, it has been observed that people without title are carrying out cultivation or having structures on the government land, some of which belongs to the state unitary enterprise (SUE) Bukhara Suvokova (now Suvtaminot). In these sites, physical or economic displacement of non-title holders are envisaged. Thus, in these areas the affected people's income/livelihood loss will be compensated in accordance to the provisions of ESS 2 of AIIB's ESP. There are other locations of proposed new facilities, which are yet to be identified. It is possible that people using those lands, both title holders and non-title holders could be physically or economically displaced. This could include loss of farm lands and associated farm income.

During the process of detailed design, efforts will be made to avoid or minimize physical and economic displacement of communities including loss of farm income. A Resettlement Policy Framework (RPF), provided later in the document, has been formulated and an entitlement matrix is also developed to address such impacts.

5.4 Impact during the construction phase and mitigation measures

5.4.1 Changes in land cover

As analyzed above, if constructions would be conducted on agricultural land, the land cover will be changed. Excavation, clearing of the construction site, movement of construction equipment will have a negative impact on the land cover. The soil layer must be collected and laid in specially designated places. Lay temporary roads without damaging trees and shrubs. Construction work, placement of building materials should be carried out at a distance of at least two meters from the green zone. Land should be rehabilitated before construction is completed. Reclamation will be carried out where it is possible after completion of the work.

For construction of new facilities like water treatment plant, sewage treatment plant and pumping stations, etc., the change of land cover will be permanent. For pipeline constructions, the impact is temporary and reversible, considered to be moderate. After implementing the mitigation measures, the residual impact is low.

5.4.2 Loss of trees and crops

During construction, the felling of trees and vegetation and the damage of existing trees and crops should be avoided as much as possible. Trees and shrubs suitable for transplantation should be dug up and used for landscaping. If tree felling cannot be avoided, more trees need to be planted. This work should be carried out in accordance with the Decree of the Cabinet of Ministers of the Republic of Uzbekistan dated January 17, 2019 No. 43 "On the procedure for planting, care, felling and inventory of trees and shrubs on lands not included in the state forest fund". Compensation for loss of crops will be paid to the owners in light with the principles laid out in the RPF (provided later in the document).

5.4.3 Impacts on soil

There will be two types of impacts on soil. One is the impact on fertile soil. The significance of such impact is considered high. During construction, the fertile soil layer suitable for future use should be removed and temporarily stored. After completion of construction, the fertile soil layer should be returned to its place. During the biological phase of reclamation, a whole range of work is carried out to restore soil fertility. After a 3-year period of the biological phase of reclamation, land can be included in agricultural land. For the sites that the land cover is permanently changed, the fertile soil should be handed over to the concerned authority for reuse. After implementing the mitigation measures, the residual impact is moderate.

The other type of impact is soil contamination. The soil at the construction sites may be polluted by leak of fuel, wastewater and disposal of wastes. The significance of such impact is high. Measures should be taken to prevent leaks during filling and transportation of fuels and lubricants. The residual fuels and lubricants should be collected separately and stored at designated place. Construction waste (cut down trees, paper, glass, plastic, debris) should be collected separately and stored in special containers before disposal and removal. After completion of construction work, the entire area should be cleaned and landscaped. After implementing the mitigations, the residual impact is considered moderate.

5.4.4 Effects of borrowing areas

The use of a significant amount of sand, gravel, cement during construction leads to various impacts to the borrowing areas. Such impacts are considered high.

Crushed stone and gravel should be imported from specially designated quarries (having licenses for the extraction of building materials). In quarries, regulatory requirements for environmental protection must be followed. Similarly, the sand should be obtained from licensed suppliers. When carrying out construction work, transportation of construction materials should be carried out strictly along the designated routes, in order to minimize the possibility impacts on receptors. With the mitigation measures, the residual impacts on borrowing areas will be moderate.

The construction activities may need significant quantities of soil, which need to be obtained from borrow areas. These borrow areas may cause a number of adverse impacts, including loss of fertile soil, damage to cultivation fields, soil erosion, devaluation of land value, and safety hazards.

Mitigation measures include: borrow areas will not be selected inside cultivation fields; borrow areas will be kept up to 1 m deep; borrow areas will be restored to minimize safety hazards, blockage of routes, or devaluation of land.

5.4.5 Air pollution

Air pollutants are mainly dust from various construction activities like excavation, materials storage, landfilling, foundation works, etc. and emissions of particulate matters, nitrogen oxides, carbon monoxide, sulfur dioxides, hydrocarbons and maybe toxic substances from vehicles and construction equipment. Such emissions of chemicals from vehicles and equipment are estimated to be low and do not extend to significant distances from the transportation routes and construction sites. The air pollution during construction is temporary and reversible so it is estimated as moderate.

To reduce emissions, it is required to use vehicles and construction equipment with engine and fuel that meet the national standards. If necessary, exhaust silencers and smoke traps can be installed on working equipment. To prevent dust, bulk material should be covered at the construction sites. If necessary, treated wastewater from the construction site and labor camp can be reused for watering at places where the impacts on communities are significant. With the mitigation measures, the impact of air pollution could be reduced to low level.

5.4.6 Noise and vibration.

Various construction activities will cause noise and vibration. Noise from vehicles and construction equipment will also affect receptors near the construction sites and along the transportation routes. The vibration may affect the stability of nearby structures. Exposure to noise will be temporary with reversible effects. They are estimated as moderate.

The noise level requirements are reflected in the Laws of the Republic of Uzbekistan "On the sanitary and epidemiological well-being of the population" (2015), "On the protection of public health" (1996), "On the protection of atmospheric air" (1996) and others. In the sanitary rules and norms of SanPiN RoU N 0325-16. permissible noise levels at workplaces are determined. The Uzbek standards are compared with the standards recommended in World Bank Group Environmental, Health and Safety Guidelines. The applicable noise level standards are presented in **Annex A**.

If the noise level exceeds the established standards, it is necessary to apply mitigation measures, including fencing the project sites, using vehicles and equipment in good conditions, forbidding horns in populated areas, and optimizing the construction schedule (e.g. piling works not at night) to minimize the impacts on nearby communities. Meanwhile, monitoring shall be carried out to inform the mitigation measures, especially monitoring of vibration near the cultural heritage or historic buildings. After implementing the mitigation measures, the residual impacts are estimated as low.

5.4.7 Water and Soil Contamination

Surface water and groundwater may be contaminated by wastewater, sewage, solid wastes and liquid wastes and fuel and oil leakage from construction sites and labor camps. Such impact is temporary and reversible, so it's estimated as moderate.

Trenches should be used to drain surface runoff and drainage water. Septic tanks will be installed for simple treatment of sewage. Measures should be taken to avoid leakage of fuel and lubricants. Residual fuel and lubricants must be collected and stored in separate waterproof tanks. Construction and household wastes should be removed timely. If the mitigation measures are implemented properly, the residual impacts will be low.

5.4.8 Solid wastes

In the process of construction and reconstruction of the water supply and sewage systems, solid waste is generated including scrap metal (wastes from rehabilitation, residues of welding electrodes), construction waste (debris), household wastes and sludge from the septic tanks. If not well managed, wastes can generate dust and contaminate water, so it is estimated as moderate.

Construction and household wastes should be collected and stored in separate containers at waterproof sites before disposal and disposal. Collected household wastes and construction wastes should be taken to landfills for the disposal of solid waste in agreement with local administrations and sanitary services. It is encouraged to recycle and reuse the wastes if possible. If the mitigation measures are implemented properly, the residual impacts will be low.

5.4.9 Hazardous waste (eg, asbestos pipes)

During the construction of the water supply and sewerage system, hazardous waste is not generated. However, 30-40 years ago, asbestos pipes were used for the sewage system. The risk of rehabilitation works related to asbestos is considered as high.

If asbestos pipes are discovered and removed during the rehabilitation works under this project, pipes or their fragments should be stored in places where they will not be destroyed while awaiting removal in accordance with sanitary standards, the rules of SanPiN RoU N 0158-04. All asbestos waste should be stored in containers, bags. Waste transportation to the landfill can be carried out by road and rail. Work must be carried out in accordance with SanPiN RoU N 0127-02 "Sanitary rules for the inventory, classification, storage and disposal of industrial waste." Asbestos-containing waste should be disposed of at landfills for solid household waste (MSW) and unused solid industrial waste (SanPiN RoU N 0127-02).

The contractors shall prepare an Asbestos Management Plan for approval from the Supervision Consultant. They should also submit an application for waste disposal to the State Committee for Ecology of the Republic of Uzbekistan. An example of Asbestos Management Plan is provided in **Annex E** for reference. All other hazardous wastes will be stored separately and disposed in accordance with the applicable standards. With the management plan, the risk can be controlled to the moderate level.

5.4.10 Occupational health and safety

Given the attributes of the construction activities under this project, the risk to workers' health and safety is high. The contractors should comply with national occupational health and safety (OHS) regulations and prepare OHS Plans. Violations of OHS regulations can result in personal injury or accidents.

In general, the exposure of workers to hazards should be minimized by implementing Codes of Practices and strengthening administrative management. The contractors should ensure working conditions at the construction sites and living conditions in labor camps meet the OHS requirements spelled out in the bidding documents. At least, the contractors should prepare and implement an OHS plan, provide necessary personal protect equipment (PPE), carry out regular toolbox talks and provide medical and sanitation facilities and hygiene food. With the implementation of OHS Plan, the risk is estimated as moderate.

5.4.11 Site cleaning and restoration

After the completion of the construction activities, the left-over construction material, debris, spoils, scraps and other wastes from construction and camp sites can potentially create hindrance and encumbrance for the local communities in addition to blocking natural drainage and/ or irrigation canals. The impact is assessed as moderate.

The contractors will be required to remove all left-over construction material, debris, spoils, and other wastes from the construction sites in a timely manner. The camps sites will be completely cleaned and restored in original condition to the extent possible. No waste disposal will be carried out in the streams and rivers. With these measures implemented, the residual impact is considered low.

5.4.12 Impact on cultural heritage

According to AIIB's ESP, cultural resources include movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Bukhara, which is situated on the Silk Route, is more than 2,000 years old and owns abundant cultural resources/ heritage.

Some of this project's components, especially the water supply and sewage system, will be constructed in or near the historic center of Bukhara. Various construction activities, including excavation, piling, pressing of backfill materials and other activities that will generate vibration impacts, may lead to damages to historical buildings if not well managed. At the detailed design stage, the Detailed Design Consultant shall hold consultations with the cultural heritage authority in Bukhara and relevant department of United Nations Educational, Scientific and Cultural Organization (UNESCO). The proposed locations of new facilities should avoid any lands with monuments on. For linear facilities, the designed alignments should stay as far way from the identified cultural heritage as possible. In this way, the potential impacts on the cultural heritage are moderate.

For the site activities that are located close to cultural heritage sites (e.g. rehabilitation of existing pipelines near cultural heritage), it may be required to develop a Cultural Resources Management Plan, in case there is a potential risk of the site activities on the cultural heritage. In such cases, design of rehabilitation/construction works will have to be approved by the Ministry of Culture and reviewed by the Bank prior to initiating construction works on such site-specific activities. For the constructions in vicinity of historic buildings, frequent monitoring of vibration will be carried out in coordination with the cultural heritage authority in Bukhara and relevant department of UNESCO. The potential impact on tourism due to constructions close to tourism sites will be temporary; access to such sites could be blocked or restricted for a temporary period. This impact will be mitigated through good management of construction schedule (such as avoiding tourism peak season and or carrying out the construction activities during the night time); providing safe access (e.g. temporary bridge over open trenches) to those tourism sites. The Cultural Resource Management Plan mentioned above will detail all such measures to minimize if not totally eliminate any impact on tourism activities. These measures will be designed in consultation with and implemented in coordination with the cultural heritage authority. On the other hand, improvement in the quality of water supply and sewage treatment will have positive impact on the tourism sector.

During the constructions, a Chance Find Procedure will be prepared and implemented by relevant parties in the case of archaeological finds. Works will continue after obtaining permission from relevant authorities. If managed well, the residual impacts on cultural heritage should be minimal.

5.4.13 Temporary blocking of access to community facilities

The access to facilities, shops/businesses and houses might be blocked during the construction of new and rehabilitation of existing water supply and sewerage pipes. If the access is fully blocked, it might cause temporary loss of business. If not well managed, the excavated open trenches would bring risk to the community safety. Such impact is estimated as moderate.

To address the risk, the contractors should fence the construction site or install visible signs and lights at the open trenches. In addition, paths should be provided over the trenches to the facilities. In the case of fully blocking, the contractors should arrange bypass roads and crossings for pedestrians and cars and inform the community with the plan prior to the construction. If any business/economic loss is foreseen, the compensation should be agreed and paid in accordance with that laid out in the RPF (provided later in the document). With these measures, the residual impact will be low.

5.4.14 Disturbance to traffic

Laying pipelines through crossroads can lead to temporary disturbance to the traffic. The contractors should minimize the impact on traffic and ensure pedestrians' safety.

The contractors should prepare site-specific traffic management plan to address the negative impacts on the traffic. In general, the contractors should provide temporary bypass for the vehicles and pedestrians, install temporary traffic lights, signs and fences, and coordinate with the traffic authority to divert the traffic during the constructions.

5.4.15 Disturbance to public utilities

It is planned that the new water supply and sewage system will be laid along linear structures such as roads. However, either construction of new or rehabilitation of existing pipes will require excavation, which may lead to damage to other existing underground public utilities, e.g. telecom and electricity cables and gas pipelines, etc. If the damage happens, the impact could be high.

At the phase of detailed design, the State Architectural and Construction Expertise will coordinate with relevant authorities of municipal infrastructure (electricity cables, telecom cables, highways, and urban roads etc.). In the case of work on crossing the railway lines, coordination with the Joint Stock Company "Uzbekistan Temir Yollari" and other supervisory authorities is required. During the construction phase, the contractors shall follow the instructions from each relevant authority and cooperate with the authority to prevent damages to the existing public utilities. If the measures are implemented carefully, the residual impact is estimated as low.

5.4.16 Community health and safety

Community health and safety impacts during the construction include, among others, dust, noise, and vibration from construction vehicle transit, traffic safety and communicable diseases associated with the influx of temporary construction labor. Significance of these impacts is assessed as high.

To minimize the impacts on communities, the contractors shall include community health and safety aspects into the OHS Plan. The labor camps should be located at least 500 away from the communities; the labor camps and construction sites will be fenced. The traffic safety issue will be addressed in the Traffic Management Plans to be developed by the contractors. The community will be informed about the nature of construction activities and the associated health and safety risks including risk of communicable diseases (sexually transmitted infections); awareness raising of the communities will be carried out for this purpose with the help of posters, signage, and other similar means. Liaison with the community will be maintained. With these measures, the residual impacts on community health and safety are estimated to be low.

5.4.17 Influx of Workers and labor issues

The influx of workers from other parts of the country can potentially cause conflict between the project personnel and the local community. This could be because of differences in culture, religion, social norms and acceptable social behavior. In addition, the construction activities can potentially affect the women activities and movement. Any such impact can be detrimental to the project since it can potentially cause tension between the project and local communities and even disruption of construction works. Given the cultural and social attributes in Uzbekistan and many unskilled workers for this project will be from Bukhara region, the risk of social conflict due to labor influx is considered as moderate.

The World Bank Guidance Note [8] will be used to address potential impacts caused by temporary project induced labor influx. The contractor will prepare and implement a Code of Conduct for all site personnel and provide training on the Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate. All site personnel will be provided awareness and training to prevent communicable diseases, sexually transmitted infections, Human immunodeficiency virus (HIV) infections / Acquired Immune Deficiency Syndrome (AIDS). Privacy of women will be respected; routes and places used by them will be avoided as far as possible. If the measures are implemented, the residual impact is estimated as low.

Forced labor is a potential issue in Uzbekistan. The national labor legislation strictly prohibits the use of forced labor. If any contractor is identified using forced labor, the PCU should report the case to the Ministry of Employment and Labor Relations (MoELR) and actions will be taken, according to national legislation. In addition, the PCU has the right to suspend work or payments if the contractor is in breach of any of its obligations to implement an ESMP. This will also be addressed through training for PCU, Suvokova (now Suvtaminot), PMC and contractors. No child labor will be engaged by the project or its contractors.

5.5 Impacts during operation and maintenance

5.5.1 Air pollution

During the operation of sewage treatment plants (STP), the unpleasant odor can annoy the local community. In addition, emissions of hazardous gases, such as chlorine, can adversely affect neighboring residents. The operation of other facilities (water supply and sewage system) under this project will not generate air emissions. The impact is assessed as moderate.

The impact of odor from STPs will be addressed first at the detailed design phase. The ESIA for STP should assess the minimum distance from sensitive receptors in the downwind direction. The detailed design will also include deodorization technology applied to specific facilities in the STP. Greening will be conducted at the boundaries of the STP, which can also alleviate the odor. With the measures, the residual air pollution during the operation phase is considered low.

5.5.2 Noise and vibration generation

During the operation phase, noise and vibration will be generated mainly from running pumps, agitators and other equipment in water treatment plants and STPs. The impacts of noise and vibration to nearby receptors can be high.

To reduce the impact of mechanical noise and vibration, the pumps and fans will be installed on vibration-isolation bases. The equipment that generates noise and vibration will be installed in buildings with soundproof windows, which can significantly reduce noise. Greening at the

[8] http://pubdocs.worldbank.org/en/863471511809509053/ESS2-FactSheet-WB-ESF.pdf.

boundaries of the STP can also mitigate the noise. With the measures, the residual air pollution during the operation phase is considered moderate.

5.5.3 Water resources balance

This project aims to extend the coverage of drinking water supply to 100% in Bukhara region. The total consumption of drinking water until 2045 was calculated in accordance with the established standards for water consumption per person KMK 2.04.02-97 “Water supply. External networks and constructions". The standards are shown in **Table 5.5**. Taking into account the growth of the population of the Bukhara region, drinking water consumption will reach 467,213 cubic meters per day by 2045, see **Table 5.6**. The pressure on water resources will increase. However, it is predicted that more measures will be taken to improve the efficiency of water use, so the water consumption per capita will decrease in the period of 2025-2045. The impact is assessed as moderate.

As introduced in Section 4.1.9, there will be six water sources that supply water to Bukhara region by 2045. According to the research, the total water supply will reach 476.21 thousand m^3 per day. The results are presented in **Table 5.7**. The analysis of water resources balance shows that the water resources can afford the increase of water consumption in Bukhara region in 2045. However, the total water supply and pressure on national resources will significantly increase compared to the baseline. The residual impact is also estimated as moderate.

Table 5.5: Established standards for water consumption per person

Title	Specific average daily water consumption l / day per person	
	2025*	**2045***
A city with a centralized sewage system with a population of more than 100 thousand people	240	220
A city with a centralized sewage system with a population of less than 100 thousand people	220	210
Urban-type villages	130	120
Rural settlements (including livestock watering)	110	105

Table 5.6: Estimated volumes of water consumption in cities and districts of Bukhara region

Name of regions and localities	Population	Year 2045												
				consumption m^3 / day.										
		Number of people covered by the central water supply	Specific water consumption l / day per person	Population	Industry	Unrecorded expenses 0.5%	Total daily average	Coefficient of daily unevenness	Estimated expense	Medium l / sec.	General coefficient of daily unevenness	Maximum. l / s	Med.	Max.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bukhara region														
Bukhara city	370 000	370 000	220,0	81400,0	20350,0	4070,0	105820,0	1,135	120106	1390,1	1,19	1657	5004,4	5964
Kagan city	83 000	83000	210,0	17430,0	4357,5	871,5	22659,0	1,135	25718	297,7	1,53	456	1071,6	1642
Gijduvan district	371 000	371 000	110	40810,0	4081,0	2040,5	46931,5	1,1	51625	597,5	1,29	769	2151,0	2768
Gijduvan	62 000	62000	120	7440,0	744,0	372,0	8556,0	1,1	9412	108,9	1,60	174	392,2	625
Alat district	144 500	144 500	85	12282,5	1228,3	2456,5	15967,3	1,1	17564	203,3	1,42	288	731,8	1036
Alat	26 500	26500	100	2650,0	265,0	530,0	3445,0	1,1	3790	43,9	1,40	62	157,9	222
Bukhara district	233 000	233000	110	25630,0	2563,0	1281,5	29474,5	1,1	32422	375,3	1,18	442	1350,9	1590
Galaasia	31 000	31000	120	3720,0	372,0	186,0	4278,0	1,1	4706	54,5	1,40	76	196,1	275

Vabkent district	170 000	170000	105	17850,0	1785,0	892,5	20527,5	1,1	22580	261,3	1,28	336	940,8	1208
Vabkent	30 000	30000	120	3600,0	360,0	180,0	4140,0	1,1	4554	52,7	1,40	74	189,8	266
Zhondor district	244 000	244000	110	26840,0	2684,0	1342,0	30866,0	1,12	34570	400,1	1,28	514	1440,4	1849
Zhondor	18 000	18000	140	2520,0	378,0	126,0	3024,0	1,12	3387	39,2	1,50	59	141,1	212
Kagan district	111000	111000	110	12210,0	1221,0	610,5	14041,5	1,12	15726	182,0	1,42	258	655,3	928
Karakul district	192 000	192000	85	16320,0	1632,0	2448,0	20400,0	1,1	22440	259,7	1,28	333	935,0	1201
Karakul	39 000	39000	100	3900,0	390,0	585,0	4875,0	1,1	5363	62,1	1,43	89	223,4	319
Karaulbazar district	16 000	16000	110	1760,0	176,0	88,0	2024,0	1,1	2226	25,8	1,45	37	92,8	135
Karaulbazar	14 000	14000	120	1680,0	168,0	84,0	1932,0	1,1	2125	24,6	1,52	37	88,6	135
Peshku district	190 500	190500	90	17145,0	1714,5	857,3	19716,8	1,1	21688	251,0	1,30	325	903,7	1171
Yangibazar	9 500	9500	110	1045,0	104,5	52,3	1201,8	1,1	1322	15,3	1,60	24	55,1	88
Rometan district	176 000	176000	110	19360,0	1936,0	968,0	22264,0	1,12	24936	288,6	1,30	374	1039,0	1347
Rometan	28 000	28000	140	3920,0	588,0	196,0	4704,0	1,12	5268	61,0	1,42	86	219,5	311
Shofirkan district	227 000	227000	110	24970,0	2497,0	1248,5	28715,5	1,1	31587	365,6	1,30	474	1316,1	1706
Shofirkan	27 000	27000	120	3240,0	324,0	162,0	3726,0	1,1	4099	47,4	1,42	67	170,8	242
TOTAL	2 813 000	2 813000		347 723	49 919	21 648	419 289		**467 213**	5 408		7 011	19 467	25 240

Table 5.7 Water supply capacity in Bukhara Region

	Status	Water consumption thousand m^3/day	Name of the source and their supply (thousand m^3/day)					
			Damkhuja (water conduit, groundwater) **Samarkand, Navoiy, Bukhara**	**Surface water intake facility "Zarafshan" (Juyzar river)** **Bukhara district** **Funded from the state budget.**	**Water intake facility «Kuyu-Mazar»** **(Kuyu-Mazar water reservoir)**	**Water intake facility Dvoynik (Surface waters of the Amu-Bukhara Canal)**	**Underground water intakes (for all wells in the region)**	**Water intake facility Duoba and Kokcha** **Jilvon (Ground water source)** **Shofrikan district**
1.	Existing volume	126.23	41.93	11.13	70.97	-	2.2	
2.	**Increase in water intake** **in 2045**	**467.21**	**153.03**	**30.0**	**208.7**	**49.82**	**-**	**26.30**

5.5.4 Increased sewage due to increase of water supply

During the operation phase, the sewage discharge will increase due to enhanced volume of water supply and water consumption in Bukhara region. According to the government's policy, a three-pronged approach has been adopted to address sanitation and wastewater management. Firstly, at Bukhara city level, this Project will finance expansion of the sewage system; secondly, at the district level, the sewage system will be constructed under this Project. However, the centralized sewage system under this Project will not cover rural areas. The impact is considered as moderate.

At the third level, the sewage in rural areas will be treated by decentralized facilities, i.e. septic tanks or cesspits at households. The residual fecal sludge will be emptied on a regular basis through private or communal service providers. However, due to the significant increased volume of sewage in rural areas, the residual impact is still estimated as moderate.

5.5.5 Water pollution

During the operation of STP, the discharge of effluent may cause pollution of surface water. The quality of discharged effluent and water bodies that will receive the effluent have not been determined at this stage. According to national regulations, the Feasibility Study of this project provides the standards that the surface water must reach where the complete mixing of the effluent and the surface water finishes. At the detailed design stage, the receiving water bodies will be selected in accordance with national regulations. The standards of effluent from the STPs will be calculated based on the quality and water flow of the receiving water body. During the operation, if the effluent can constantly meet the proposed standards, the impacts on receiving water body will be low.

5.5.6 Generation of wastes

During operation and maintenance, solid wastes will be generated from water treatment plans, STPs, pumping stations including sludges, used filter membranes, residual oil and lubricant, domestic wastes, and chemical residuals. Other chemical residues primarily consist of suspended solids precipitated from the drawn water and reagents added during the cleaning process, such as lime and coagulants. The impact is estimated as moderate.

The amounts of sludge generated during water and sewage treatment can be minimized by optimizing coagulation processes and aeration process. The wastes generated in water treatment plant, STPs and pumping stations will be collected, classified and stored separately. The sludge will be dewatered at separate place in the plants. All of the wastes shall be handed over to certificated organizations (Goskomekologiya, etc.) for disposal at designated locations. In this way, the residual impact is assessed as low. The ESIAs for water treatment plants and wastewater plants shall clarify the methods for final disposal of sludge.

5.5.7 Impacts on groundwater

In districts of Damkhoja and Jilvon, drinking water will be supplied through groundwater deposits. If the groundwater is over extracted, it may lead to saltwater insrusion, aquifer overdraft, groundwater depletion and land subsidence. The impact of groundwater extraction is assessed as high.

The operational reservoirs of these deposits will be registered with the State Commission for Mineral Reserves under the State Committee of the Republic of Uzbekistan for Geology and Mineral Resources. Permissions of increasing the groundwater intake will be issued by Uzbekhydrology considering groundwater resources and safety issue. The operation of the deposits should follow national safety codes. Water withdrawals should consistently follow the permissions. In addition, regular monitoring of groundwater level and quality in the wellfield shall be carried out during the operation phase to provide feedback to water extraction. In this way, the residual impacts will be moderate.

5.5.8 Occupational health and safety

During the operation and maintenance (O&M) phase, the OHS risks vary across facilities under this project, including water treatment plant, STP, water supply pipelines and sewage pipelines. As the risks to workers that are responsible for maintenance of sewage pipes are high due to the high gas concentration in the closed space in the pipes. The overall OHS risk of this project is assessed as high.

Bukhara Suvtaminot will prepare OHS plans for different facilities. Among others, the OHS requirements may include fencing the tanks, codes for electricity works, codes for work-at-height, PPE, and specific codes for maintenance of sewage pipes. With the implementation of OHS plans, the risk is estimated as moderate.

5.5.9 Emergency Situations

Possible accidents at pumping stations, water treatment plants, sewage treatment plants may be caused mainly by the failure of equipment, electrical equipment, valves and fittings. The most frequent damages on water conduits are violations of the tightness of joints and the integrity of pipelines (the formation of longitudinal and transverse pipe cracks). In this case, water can spill onto the surface through water wells or seep into the ground in places of damage. Damage to shut-off and control valves (gate valves) can occur due to violation of bolted joints, mechanical damage or destruction of well structures. For STPs, accident discharge of untreated wastewater can contaminate the surface water and soil and harm community health. The risk is considered high.

The ESIAs for subprojects should include Emergency Response Plans (ERPs) and establish the emergency responding mechanism from the plants/facilities to Suvokova (now Suvtaminot). The risks to the community should also be analyzed and evacuation plan, if needed, should also be included in the ERPs. With the ERP, the impact of emergency accidents is estimated as low.

6 Environmental and Social Management Plan

This chapter describes institutional arrangements for management of environmental and social risks and impacts of this project, followed by procedures for screening, development and clearance of environmental and social instruments for the subprojects. It also presents a generic Environmental and Social Management Plan (ESMP), monitoring framework, capacity building program for stakeholders and a Gender Action Plan, aiming at providing guidance to the E&S work at subproject-level. Lastly, the Grievance Redress Mechanisms (GRM) for project-affected people (PAP) and workers are discussed in this chapter.

6.1 Institutional Arrangements

A Project Coordination Unit (PCU) has been established under the government-owned joint stock company - Uzsuvtaminot, for the implementation of this project. Prior to the construction, a Detailed Design Consultant will be assigned to develop the detailed design for subprojects. A Supervision Consultant will be selected acting as supervision engineer during the construction phase. After the completion of construction, Bukhara Suvtaminot will be responsible for Operation and Maintenance (O&M). These institutions will take responsibilities in environmental and social management during different phases of the project. **Figure 6.1** presents the institutional arrangement. The responsibilities in environmental and social management of each party is explained in this section.

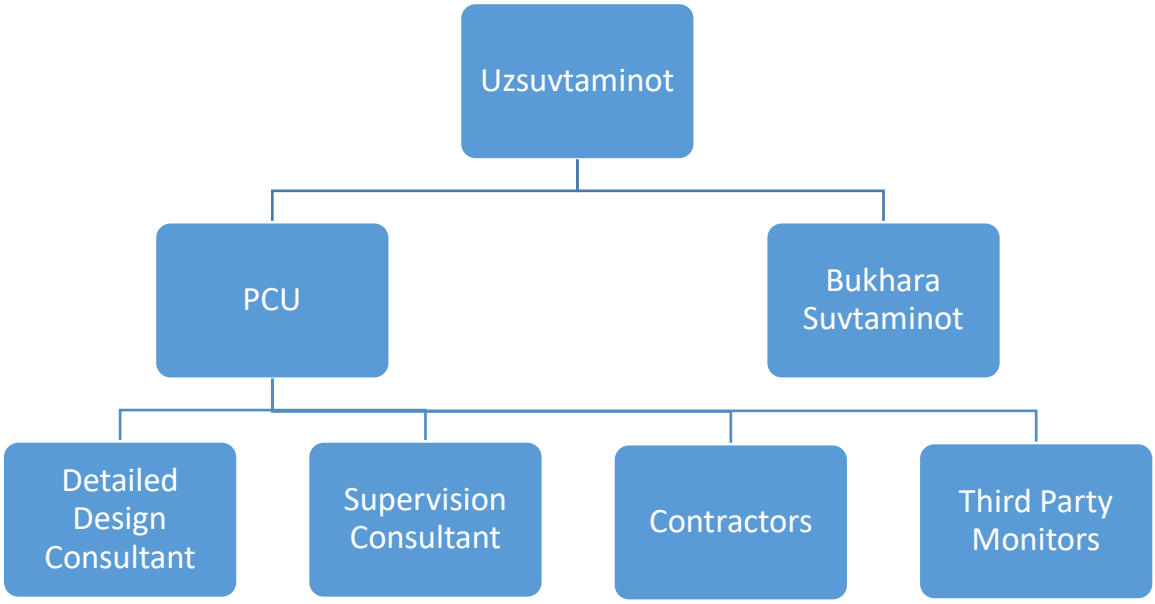

Figure 6.1: Institutional Arrangement of Environmental and Social Management for BWSSP

6.1.1 MHCS, Uzsuvtaminot and Project Coordination Unit

The MHCS has been responsible for the preparation of the BWSSP and submitted the Feasibility Study of the project for national clearance. To meet the requirements of AIIB's ESP, MHCS appointed IKS to develop this ESMPF.

The GoU has established the state joint- stock company "Uzsuvtaminot" (UZST), in order to improve the system of state regulation, management and operation of drinking water supply and sewerage facilities. A PCU, under UZST has been established at the national level to coordinate and implement the project until the operation phase. The PCU will be led by a Coordinator and staffed with technical, environmental and social, procurement, and financial management specialists. In particular, the PCU will hire one Senior Environmental Specialist and one Social Specialist. The two E&S specialists will be based in Bukhara and oversee the E&S management of this project and coordinate with various stakeholders in E&S aspects.

The main duties of PCU's E&S specialists would be to ensure that the project activities are implemented in compliance with the AIIB's ESP and National EIA regulations and procedures. Their major responsibilities will include:

(a) leading all environmental and social related issues at national, Bukhara region and district level;
(b) supervising the development of E&S instruments (documents) for subprojects as defined in this ESMPF;
(c) overseeing the Detailed Design Consultant to receive national environmental clearances for subprojects and coordinating with AIIB for acceptance of E&S documents;
(d) ensuring the integration of environmental, social, health and safety (ESHS) and labor requirements and code of conduct for workers in the bidding documents and contracts;
(e) overseeing the Supervision Consultant's work in E&S aspects;
(f) coordinating with Supervision Consultant to ensure that the contractors develop site-specific ESMPs (SSESMP) and comply with all ESHS and labor requirements;
(g) establishing the GRMs for affected people and workers respectively as defined in this ESMPF and ensure they are functional through the project lifetime;
(h) appointing certificated third-party monitoring organization to conduct external environmental and social monitoring as required in the subproject ESMP and to prepare the monitoring reports;
(i) documentation of E&S related issues, providing E&S inputs to project progress reports, and submitting semi-annual environmental and social monitoring reports to AIIB as required in this ESMPF;
(j) identifying E&S training needs and organizing training for all parties involved in ESMPF/ESMPs implementation.

6.1.2 Bukhara Suvtaminot

Bukhara Suvtaminot will be involved in the review of the detailed design, evaluation of bids, selection of consultants and contractors, review of project progress reports, and coordination needed, particularly, while carrying out construction works in existing Suvtaminot facilities. Bukhara Suvtaminot will also be responsible for environmental and social management (including occupational, health and safety issues) of the completed facilities during the O&M phase. It will be required to submit semi-annual environmental and social monitoring reports to AIIB, to be prepared by certificated third-party monitoring organization.

6.1.3 Detailed Design Consultant

In E&S aspects, the Detailed Design Consultant will be responsible for the development of E&S instruments (ESIA, ESMP and/or Resettlement Action Plans) for subprojects as required in the ESMPF. The consultant should appoint a qualified team to prepare the required E&S documents. The preparation of the E&S instruments shall follow the procedures and requirements elaborated in this ESMPF so they could meet the requirements in AIIB's ESP. Meanwhile, the environmental assessment documents shall also meet national regulations. The Detailed Design Consultant will be responsible for getting the environmental clearance from national/regional environmental authorities and other required permits, with the support from PCU. The E&S documents will also be submitted by PCU to AIIB for acceptance.

6.1.4 Supervision Consultant

The Supervision Consultant will be responsible to supervise the work of all the stages during construction. It shall include an E&S team with qualified and adequate professionals. The Supervision Consultant will take major responsibilities in E&S management during the construction phase, including:

(a) Supervising and guiding the contractors to prepare SSESMPs by following the ESMPs for subprojects;
(b) Carrying out E&S supervision to ensure successful implementation & monitoring of SSESMPs;
(c) Getting all national permits regarding ESHS prior to the construction;
(d) Ensuring compliance with national regulations in terms of environmental protection, health and safety and labor issues;
(e) Implementing the monitoring plan defined in the subproject ESMPs and conducting regular monitoring of the compliance related to ESHS and labor issues;
(f) Monitoring and assessing environmental and social performance and efficiency of mitigation measures, as well as identify non-compliance issues or adverse trends in results, and put in place corrective measures;
(g) Liaison with the communities and Makhalla heads in the project area, other stakeholders on environmental and social issues related to the project; and keeping the local communities informed of the environmental and social compliance of the project and properly address their concerns, if any;
(h) Leading the grievance redress mechanism (GRM) at the field-level as suggested in the GRM section of this ESMPF;
(i) Providing E&S inputs to the project progress reports; documents the E&S supervision and regularly reporting to the PCU regarding ESMP implementation including GRM.

6.1.5 Contractors

The contractors should ensure full compliance with environmental and social requirements related to construction activities, as laid down in the subproject ESMP. The contractor should form a team consisting of environmental, safety and health and labor professionals. The contractors shall ensure adequate budget to meet all of the ESHS and labor requirements in the bidding documents. They will be required to prepare SSEMSPs based on subproject ESMPs and to implement the SSEMSP under the supervision of the Supervision Consultant. The contractors will also develop Code of Conduct for workers. The Contractors will ensure that all the workers are properly briefed in ESHS matters in terms of the Dos and Don'ts while they

work on the project. The Contractors will strictly follow national regulations on labor issue. In particular, forced labor and child labor are strictly forbidden in this project.

6.2 Methodology and Procedures of E&S Work for Sub-projects

This section provides guidance on screening process of subprojects, preparing E&S instruments, procedures of national approval and AIIB clearance under the Project and integrating requirements on environmental, social, health and safety (ESHS) into construction contracts and contractors ESMPs.

6.2.1 Screening of sub-project activities and identification of E&S instruments

As locations of sub-projects and types of activities are not clearly designed at this stage, it is important to have appropriate tools in place to assist PCU in screening these activities for potential impacts and selecting appropriate E&S instruments to effectively address them.

As the first step, PCU E&S staff will check on eligibility of the sub-project against AIIB's Environmental and Social Exclusion List[9].

The second step will be categorization of each subproject. The PCU E&S staff will guide the E&S specialists from the Detailed Design Consultant to determine the environmental category of the subproject in accordance with national DCM # 541 (2020) and the E&S category in accordance with AIIB's ESP. Table 6.1 presents the preliminary assessment of categorization of the potential subprojects under this project and.

According to the category of subproject, the appropriate E&S instrument will be selected to meet both national and AIIB's requirements. The requirements on E&S instruments are also summarized in **Table 6.1**.

Table 6.1: Preliminary Categorization and E&S Instruments of BWSSP Subprojects

Subprojects		Category & E&S Instruments				
		AIIB			National	
		Category	Risk	E&S Instrument	Category	EIA required
Component 1 Water Supply Infrastructure	Construction of new water treatment plants, well fields and intakes, water reservoirs	A	High	ESIA RAP (if applicable)	I or II	EIA report
	Construction of new and rehabilitation of existing main water	B	Moderate	Brief ESIA/ ESMP	II-III	EIA report

[9] See the Environmental and Social Exclusion List in AIIB's Environmental and Social Framework: https://www.aiib.org/en/policies-strategies/_download/environment-framework/Final-ESF-Mar-14-2019-Final-P.pdf

Subprojects		Category & E&S Instruments				
		AIIB			National	
		Category	Risk	E&S Instrument	Category	EIA required
	pipelines, pumping stations, distribution networks and associated facilities			RAP (if applicable)		
Component 2 Sewerage Infrastructure	Construction of new sewage treatment plants, trunk sewers	A	High	ESIA RAP (if applicable)	I or II	EIA report
	Construction of new and rehabilitation of existing sewerage network at house connections, pumping stations	B	Moderate	Brief ESIA/ ESMP RAP (if applicable)	II-III	EIA report
Component 1 & 2	Facilities to be located at environmentally sensitive sites or to have impacts on cultural heritage	A	High	ESIA	I or II	EIA report

As compared in Chapter 2, there are some differences in the categorization and required actions between AIIB's ESP and national environmental legislation. As shown above, for Category A subprojects with significant environmental and/or social impacts, or at sensitive locations, an ESIA shall be prepared to meet the requirements of AIIB's ESP. Such subprojects would be categorized as I or II in national system. An EIA shall be submitted for national environmental clearance. For category B subprojects, a brief ESIA or an ESMP shall be prepared in accordance with AIIB's ESP. An EIA report will be needed for national clearance for Category II or III subprojects.

In accordance with national legislation, EIA and further actions are not required for existing objects if: (i) planning rehabilitation/ repairing of some of the object's facilities be conducted without extension of the scope of land, and (ii) during the operation phase, consumption of natural resources and generation of wastes, discharges and emissions will not increase. The legislation does not require a preparation of separate ESMP or any other environmental documents/plans/checklists. However, in such cases, E&S documents are still needed in accordance with AIIB's ESP. Since, more strictly requirements need to be applied to this project, for those subprojects that are not included in the list of mandatory state environmental expertise (Attachment #1 to CRM # 541, 2020), but subprojects categorized as B in AIIB's ESP, the development of ESMP is required.

6.2.2 Process of National EIA Clearance

EIA stages. As introduced in Chapter 2, the process of EIA clearance in accordance with the National Legislation includes four steps for Category I-III projects:

(a) based on the preliminary project description prepare the Draft Statement of the Environmental Impacts (DSEI) which should be presented to the SEE for its review and approval;

(b) based on the detailed project design prepare the ESMP for the project implementation phase (the description of the ESMP is presented below);

(c) during projects implementation and before its commissioning – when needed (this is specified in the decision of the SEE on the Statement draft of environmental impacts), - prepare the Statement of the Environmental Impacts;

(d) before commissioning the project prepare Statement on Environmental Consequences (SEC).

First stage - Draft Statement of Environmental Impacts (DSEI). This document should be prepared by sub-project beneficiary and/or by a consultant hired on its behalf. The DCM # 541 (2020) specifies the content of DSEI. The content of document for project category IV projects is different from content of DSEI developing for Category I-III projects. The full DSEI should specify a large spectrum of environmental and social issues, based on the technical and economic substantiation of the sub-project and in particular the following: (a) environmental, social and economic baseline; (b) situational plan showing existing recreational areas, settlements, irrigation, reclamation facilities, farmland, power lines, transport communications, water, gas pipelines and other information about the area; (c) description of project activities and used technologies; (d) expected emissions, discharges, wastes, their negative impact on the environment and ways of neutralization; (e) warehousing, storage and disposal of wastes; (f) analysis of the alternatives of the proposed or existing activity and technological solutions from the perspective of environmental protection, taking into account the achievements of science, technology and best practices; (g) organizational, technical, technological solutions and activities, excluding the negative environmental impacts and mitigating the impact of the expertizing object on the environment; (j) analysis of emergency situations; and (i) forecast environmental changes and environmental impacts as a result of the implementation of the expertizing object.

The DSEI has to be reviewed and approved by the national level of Center for Environment (for the projects belong to Category I- II) or provincial level of Regional Center for State Environmental Expertise (for the projects belong to Category III-IV) under State Committee of Ecology and Environmental protection (national and provincial level accordingly). The State Environmental Expertise confirms the project Category and specifies the main issues on what the project beneficiary has to be focused during the next steps of the EA process and during project implementation (construction or rehabilitation activities).

Second stage – development of ESMP needs to be done in accordance with instructions provided in the national guidelines.

Third stage – development of SEI. This stage has to be implemented if it is required in Environmental Conclusion issued by DSEI. Usually such documents are developed to fulfill information provided into DSEI or provide investigation on indicated parameters. SEI needs to be developed before construction activities launching.

Fourth stage – development of Statement on Environmental Consequences (SEC) (for subprojects belonged to Categories I-III) will need to be developed prior the selected subprojects will start operation.

6.2.3 Subprojects Environmental and Social Impact Assessment

In addition to EIA for national clearance, E&S documents defined in the above table should also be prepared in compliance with AIIB's ESP, because there might be gaps between national requirements and AIIB ESP. The domestic EIA may not include details on costs of mitigation measures and the institutions arrangement for the implementation, detailed monitoring plan, or social impact assessment. Resettlement Action Plan (RAP) is also required where physical and economic displacement is envisaged. The requirements on development of RAP is detailed in Chapter 8 of this ESMPF.

For Category A subprojects, an ESIA accompanied by ESMP will be developed by the E&S team of the Detailed Design Consultant. The key steps of conducting an ESIA study include: i) reviewing the draft detailed design of the subprojects and identifying project activities; ii) reviewing alternatives considered during the design and comparing them in aspects of technical readiness, environmental and social impacts and cost; iii) carrying out baseline analysis through primary survey, monitoring and desk review of secondary data, as well as stakeholder mapping; iv) scoping environmental and social impacts of various project activities and analyzing their attributes; v) assessing each environmental and social impact and proposing mitigation measures; vi) preparing ESMP to address the impacts and stipulate the management of environmental and social impacts, including the grievance redress mechanism; vii) conducting stakeholder consultations and disclosing the information; viii) providing feedback to the design team and integrating environmental and social considerations into the detailed design.

For Category B subprojects, a brief ESIA or a standalone ESMP will be prepared by the E&S team of the Detailed Design Consultant. Compared to a full ESIA for Category A project, every step for developing a brief ESIA can be simplified proportionally to the significance of the environmental and social impacts of the subproject. A standalone ESMP will also include a brief description of the subproject, baseline information and impact assessment, in addition to the management plan.

6.2.4 Stakeholder Consultations

Chapter 7 of this ESMPF sets out a framework for stakeholder consultation during project implementation. The E&S team of the Detailed Design Consultant will follow the requirements in the framework and conduct consultations with stakeholders mapped for each subproject.

The stakeholder consultations will be carried out throughout the E&S studies. Once the E&S documents are prepared, they are subject to public consultation meetings. During the public consultation meetings, ESIAs, ESMPs and/or RAPs documents will be distributed to all interested parties and local communities, by posting them on the web sites and by putting hard

copies in the project areas. Minutes of public consultation meetings will be recorded and included in the final E&S documents. At the consultation meetings, the E&S team of the Detailed Design Consultant in cooperation with the PCU E&S experts will present the ESIA, ESMP and/or RAP (project, its location and implementation schedule, overview of the E&S study process, and any conclusions on impacts, proposed mitigation measures and benefits) to the participants. The subproject information should be defined as preliminary or intermediate, indicating that input from participants can still be applied to subproject design. Participants will be invited directly (not by order) to submit comments and corrections to what is presented. Adequate and convenient contact information will be provided for use by participants.

The public consultation meeting on the ESIA, ESMP and/or RAP of a specific subproject will include an announcement of PCU meeting on the website and local mass media at least two weeks before the session, with a brief description of the project, location and specific contact details (including telephone numbers). In addition, the E&S team of the Detailed Design Consultant, in collaboration with the PCU, will make an announcement in the local, district Hokimiyats about holding a public consultation meeting by means of a written short booklet together with an invitation to participate in the meeting. Documentation of the consultations should be submitted to PCU E&S staff.

Versions of the E&S documents in Russian and Uzbek and records of stakeholder consultations should be posted in a public place close to the construction site, as well as on the websites of UZST and Suvokova (now Suvtaminot).

6.2.5 AIIB Acceptance

The E&S documents (ESIAs, ESMPs and RAPs) for the subprojects will require prior-review and acceptance by AIIB.

6.2.6 Information Disclosure.

For all approved subprojects, the PCU will ensure that printed copies of the final ESIA, ESMP and/or RAP in the local languages are available in a public place.

The PCU will post the final E&S documents on the websites of UZST and Bukhara Suvtaminot. Before the final approval of the subproject, the UZST will also submit the final documents to the AIIB for its own records.

6.2.7 Integration of ESIA requirements into project documents

The bidding documents for each subproject shall include requirements on ESHS specified in the ESMP, and the ESMP shall be attached to the bidding documents and then to the construction contracts. The implementation of the ESMP shall be properly budgeted and reflected in the construction contracts.

6.2.8 Site-specific ESMP

The contractors will translate the subproject ESMP into site-specific ESMP (SSESMP), which will include specific mitigation measures and ESHS management plans to suit the project site conditions. The SSESMP will be submitted to the Supervision Consultant for review. The updated SSESMP after review will be submitted to E&S staff of PCU for approval.

6.3 Generic Environmental and Social Management Plan

The primary objective of the Generic ESMP is to propose possible measures to mitigate adverse environmental and social impacts and enhance positive impacts resulting from the subprojects activities that are identified in Chapter 5. Besides, it also addresses any unexpected or unforeseen environmental and social impacts that may arise during construction and operational phases of the subprojects.

The Generic ESMP clearly lays out:

a) the measures to be taken during both construction and operation phases of a subproject to eliminate adverse environmental and social impacts, or reduce them to acceptable levels;

b) the actions needed to implement these measures; and

c) a monitoring plan to assess the effectiveness of the mitigation measures employed.

6.3.1 Generic Mitigation Plan

According to the analysis in Chapter 5, most of the adverse impacts of subprojects could be minimized or eliminated by adopting standard mitigation measures. This section describes the standard mitigation measures that could be applied to the subprojects under BWSSP. **Table 6.2** shows "general impacts" and suggested mitigation and enhancement measures. It also assigns responsibility for implementation of mitigation and enhancement measures. The subproject specific impacts need to be identified during the ESIA of the subproject and a subproject ESMP will be prepared in line with the Generic ESMP. This is to be conducted by the Detailed Design Consultant who prepares the subproject detailed design.

The subproject ESMPs should provide series of management plans that can provide guidance for site-specific ESMPs to be developed by the contractors. The management plans to be included in subproject ESMPs include but not limited to:

- Air Quality Management Plan
- Water Quality Management Plan
- Noise and Vibration Management Plan
- Soil Quality and Erosion Management Plan
- Waste Management Plan
- Asbestos Management Plan
- Construction Site Management Plan
- Labor Camp Management Plan
- Flora and Fauna Management Plan
- Traffic Management Plan
- Utilities Relocation Plan
- Occupational Health and Safety Plan
- Emergency Response Plan
- Chance Find Procedures
- Borrow Area and Quarry Management Plan

Table 6.2: Generic Environmental and Social Management Plan

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
Impacts associated with project siting				
1.	Community and cultural aspects	Impacts on community facilities and places of religious significance	The sites for new facilities will avoid the community facilities and or religious buildings/sites to the extent possible. In case of any unavoidable damage to these facilities, complete repair and restoration will be carried out. It is necessary to fence construction sites, install bridges over trenches and provide lighting. If necessary, safe bypasses and crossings for pedestrians and cars will be made.	Contractor, local Hokimiyats
2.	Land Use	Land acquisition may be necessary and may result in physical and or economic displacement.	When designing, select land for the construction of water intake facilities, sewage treatment plants and other facilities, so as to avoid or minimize physical and economic relocation. If this cannot be done, apply the Resettlement Policy Framework (RPF) developed for this project and provided later in the document.	State Unitary Enterprise (SUE) "«PCU»", SUE "O'zbekkommunalloyiha qurilish".
3.	Land use	Loss of farmlands and income	Compensation will be paid to the farmers in accordance to the criteria provided in RPF and entitlement matrix mentioned above.	State Unitary Enterprise (SUE) "«Suvoqava»", SUE "O'zbekkommunalloyiha qurilish", Khokimiyats districts
Impacts during construction				
4.	Land form	Changes in land cover and land use	The soil layer must be collected and placed in specially designated places. Align temporary roads without damaging trees and shrubs. Construction	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			work, placement of building materials should be carried out at a distance of at least two meters from the green zone. Land should be rehabilitated before construction is completed. Reclamation will be carried out where it is possible after completion of the work.	
5.	Land form	Impacts of borrow areas	Crushed stone and gravel should be imported from specially designated quarries (having licenses for the extraction of building materials). In quarries, regulatory requirements for environmental protection must be followed. Similarly, the sand should be obtained from licensed suppliers. When carrying out construction work, transportation of construction materials should be carried out strictly along the designated routes, in order to minimize the possibility impacts on receptors. Borrow areas will not be selected inside cultivation fields; borrow areas will be kept up to 1 m deep; borrow areas will be restored to minimize safety hazards, blockage of routes, or devaluation of land.	Contractor
6.	Soil resources	Loss of soil including fertilized soil	The fertile soil layer suitable for future use should be removed and temporarily stored. After completion of construction, the fertile soil layer should be returned to its place. During the biological phase of reclamation, a whole range of work is carried out to restore soil fertility. After a 3-year period of the biological phase of reclamation, land can be included in agricultural land. For the sites that the land cover is permanently changed, the	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			fertile soil should be handed over to the concerned authority for reuse. Measures should be taken to prevent leaks during filling and transportation of fuels and lubricants. The residual fuels and lubricants should be collected separately and stored at designated place. Construction waste (cut down trees, paper, glass, plastic, debris) should be collected separately and stored in special containers before disposal and removal. After completion of construction work, the entire area should be cleaned and landscaped.	
7.	Air Pollution	Emissions from combustion working fuel technicians. Driving dust in conjunction with bulk transport of materials. Emissions of pollutants substances in welding, insulation, finishing and other construction works. Smoke. Toxic emissions from waste incineration at the construction site	To reduce emissions, it is required to use vehicles and construction equipment with engine and fuel that meet the national standards. If necessary, exhaust silencers and smoke traps can be installed on working equipment. To prevent dust, bulk material should be covered at the construction sites. If necessary, treated wastewater from the construction site and labor camp can be reused for watering at places where the impacts on communities are significant.	Contractor
8.	Noise and vibration	High noise levels lead to reduced attention and increased errors in the performance of various types of work and, in general, deteriorates human health. Increased vibration leads to the destruction of structures of buildings, equipment. It's worsening health.	Use vehicles and equipment in good conditions, forbidding horns in populated areas, and optimizing the construction schedule (e.g. piling works not at night) to minimize the impacts on nearby communities. Meanwhile, monitoring shall be carried out to inform the mitigation measures, especially monitoring of vibration near the cultural heritage or historic buildings.	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			Covers of generators' engines, air compressors' and other actuators shall be closed; the equipment shall to be placed as far away from residential premises as possible.	
9.	Water Pollution	Leaks of oil products in operation of vehicles. Pollution and clogging of water bodies. Wastewater pollution during construction. Improper disposal of solid and liquid waste.	Trenches should be used to drain surface runoff and drainage water. Septic tanks will be installed for simple treatment of sewage. Measures should be taken to avoid leakage of fuel and lubricants. Residual fuel and lubricants must be collected and stored in separate waterproof tanks. Construction and household wastes should be removed timely.	Contractor
10.	Soil Contamination	Violation of the soil of the plant layer. Soil compaction. Contamination with oil products, sewage.	When preparing the construction site, the top fertile soil layer suitable for further use should be removed and temporarily stored separately from the remaining earth materials. Upon completion of the excavation works, the fertile soil layer returns to the place where it was taken. Land reclamation measures are being taken. Measures should be taken to prevent leaks during pouring and transport of fuels and lubricants, to ensure collection of fuels and lubricants and disposal of their residues. Organize the collection of construction as well as other waste.	Contractor
11.	Solid wastes	Pollution of soil, water resources, atmosphere. Negative effect on workers' health.	To organize the collection of construction and household waste on a special waterproof site in separate containers before utilization and removal. Collected household waste will have to be disposed of in landfills in agreement with local administrations and sanitary services. It is	Contractor, Hokimiyats, sanitary services.

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			encouraged to recycle and reuse the wastes if possible.	
12.	Hazardous wastes (including used asbestos pipes)	Pollution of soil, atmospheric air, deteriorating health.	Disposal of asbestos-containing waste in the landfill should be carried out according to special instructions developed in accordance with Sanitary Regulations of the Republic of Uzbekistan No 0127-02 "Sanitary rules for inventory, classification, storage and neutralization of industrial waste". Disposal of asbestos-containing waste should be carried out in landfills for municipal solid waste (MSW) and non-recycled industrial solid waste (SanR&N RU N 0127-02). All other hazardous wastes will be stored separately and disposed in accordance with the applicable standards.	Contractor, Hokimiyats, sanitary services.
13.	Occupational health and safety	Workers' health and safety	The exposure of workers to hazards should be minimized by implementing Codes of Practices and strengthening administrative management. The contractors should ensure working conditions at the construction sites and living conditions in labor camps meet the OHS requirements spelled out in the bidding documents. At least, the contractors should prepare and implement an OHS plan, provide necessary personal protect equipment (PPE), carry out regular toolbox talks and provide medical and sanitation facilities and hygiene food.	Contractor
14.	Site cleaning and restoration	The construction activities, the left-over construction material, debris, spoils, scraps and other wastes from construction and camp sites can	To remove all left-over construction material, debris, spoils, and other wastes from the construction sites in a timely manner. The camps sites will be completely cleaned and restored in	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
		potentially create hindrance and encumbrance for the local communities in addition to blocking natural drainage and/ or irrigation canals.	original condition to the extent possible. No waste disposal will be carried out in the streams and rivers.	
15.	Loss of trees and crops	Damage and cutting down of green spaces. Violation of the natural of animal habitats.	Transplantation and fencing of stored trees. The necessary tree felling is consistent with by environmental authorities. All designated natural animal habitats and immediately adjacent to the area of the project work shall not suffer or be used in any way during the work, and all employees shall be prohibited from hunting, fodder harvesting and grazing, tree cutting and other activities detrimental to such areas and territories. If there are large trees growing close to the work area, they should be clearly marked and protected by a fence protecting the trees and root systems against damage. In the course of work, it is forbidden to pass and park cars, the work of mechanisms closer than 1 m from the boundary of the tree crown. If these requirements cannot be met, a special protective coating must be placed to protect the root system.	Contractor
16.	Cultural Heritage	On the land plots allocated for construction no historical, architectural monuments, monuments or attractions have been found to date. It is possible to find archaeological finds during the construction works. (accidental discoveries)	Chance find procedures to follow: • The worker or group (identifier) who identified or exposed the burial ground must cease all activity in the immediate vicinity of the site. • The identifier must immediately inform his/her supervisor of the discovery.	Contractor, SUE "Suvokawa", regional khokimiyat, department of culture.

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			• The supervisor must ensure that the site is secured and control access. • The supervisor must then inform the relevant personnel in charge on site, at least the following Community Liaison (CL), Environmental Control (EC) and Health and Safety (HS). • Further, the supervisor has to inform the PCU about the discovery after making all necessary provisions to secure the discovery, barricading etc. • The PCU shall inform the regional khokimiyat of Bukhara region, the department of culture, and other authority responsible for cultural heritage. • The construction should not proceed until the permission from authorities is received. At the detailed design stage, the Detailed Design Consultant shall hold consultations with the cultural heritage authority in Bukhara and relevant department of United Nations Educational, Scientific and Cultural Organization (UNESCO). The proposed locations of new facilities should avoid any lands with monuments on. For linear facilities, the designed alignments should stay as far way from the identified cultural heritage as possible. In this way, the potential impacts on the cultural heritage is moderate. For the site activities that are located close to cultural heritage sites (e.g. rehabilitation of existing	

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			pipelines near cultural heritage), it may be required to develop a Cultural Resources Management Plan, in case there is a potential risk of the site activities on the cultural heritage. In such cases, design of rehabilitation/construction works will have to be approved by the Ministry of Culture and reviewed by the Bank prior to initiating construction works on such site-specific activities. For the constructions in vicinity of historic buildings, frequent monitoring of vibration will be carried out in coordination with the cultural heritage authority in Bukhara and relevant department of UNESCO. The potential impact on tourism due to constructions close to tourism sites will be temporary; access to such sites could be blocked or restricted for a temporary period. This impact will be mitigated through good management of construction schedule (such as avoiding tourism peak season and or carrying out the construction activities during the night time); providing safe access (e.g. temporary bridge over open trenches) to those tourism sites. The Cultural Resource Management Plan mentioned above will detail all such measures to minimize if not totally eliminate any impact on tourism activities. These measures will be designed in consultation with and implemented in coordination with the cultural heritage authority.	
17.	Temporary blockage of access to community	Blockage of shops/businesses and houses. Temporary loss of business. Community safety	The contractors should fence the construction site or install visible signs and lights at the open trenches. In addition, paths should be provided over	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
	facilities such as shops, houses and schools, etc.		the trenches to the facilities. In the case of fully blocking, the contractors should arrange bypass roads and crossings for pedestrians and cars and inform the community with the plan prior to the construction. If any business/economic loss is foreseen, the compensation should be agreed and paid in accordance with that laid out in the RPF	
18.	Disturbance to the traffic	Temporary disturbance to the traffic.	To prepare site-specific traffic management plan to address the negative impacts on the traffic. To provide temporary bypass for the vehicles and pedestrians, install temporary traffic lights, signs and fences, and coordinate with the traffic authority to divert the traffic during the constructions.	Contractor
19.	Disturbance to public utilities (electricity, telecom cables, gas pipes and etc.)	During construction and reconstruction of water supply and sewerage networks, no negative impact on social facilities is expected	At the phase of detailed design, the State Architectural and Construction Expertise will coordinate with relevant authorities of municipal infrastructure (electricity cables, telecom cables, highways, and urban roads etc.). In the case of work on crossing the railway lines, coordination with the Joint Stock Company “Uzbekistan Temir Yollari” and other supervisory authorities is required. During the construction phase, the contractors shall follow the instructions from each relevant authority and cooperate with the authority to prevent damages to the existing public utilities.	Contractor
20.	Community health and safety	Occupational Injuries	The contractors shall include community health and safety aspects into the OHS Plan. The labor camps should be located at least 500 away from the communities; the labor camps and construction sites will be fenced. The traffic safety issue will be	Contractor

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			addressed in the Traffic Management Plans to be developed by the contractors. The community will be informed about the nature of construction activities and the associated health and safety risks including risk of communicable diseases (sexually transmitted infections); awareness raising of the communities will be carried out for this purpose with the help of posters, signage, and other similar means. Liaison with the community will be maintained.	
21.	Influx of workers and labor issues	Conflict between the project personnel and the local community. The women activities and movement. Tension between the project and local communities and even disruption of construction works.	To prepare and implement a Code of Conduct for all site personnel and provide training on the Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate. All site personnel will be provided awareness and training to prevent communicable diseases, sexually transmitted infections, Human immunodeficiency virus (HIV) infections / Acquired Immune Deficiency Syndrome (AIDS). Privacy of women will be respected; routes and places used by them will be avoided as far as possible. The World Bank Guidance Note32 will be used to address potential impacts caused by temporary project induced labor influx.	Contractor
Impacts during operation and maintenance.				
22.	Impacts on groundwater	In districts of Damkhoja and Jilvon, drinking water will be supplied through groundwater deposits. If the groundwater is over extracted, it may lead to saltwater insrusion, aquifer	The operational reservoirs of these deposits should be registered with the State Commission for Mineral Reserves under the State Committee of the Republic of Uzbekistan for Geology and Mineral Resources. Permissions of increasing the	State Unitary Enterprise "«Suvoqava»", control organizations "Uzbekhydrology", “Goskomgeologiya”

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
		overdraft, groundwater depletion and land subsidence.	groundwater intake will be issued by Uzbekhydrology considering groundwater resources and safety issue. The operation of the deposits should follow national safety codes. Water withdrawals should consistently follow the permissions. In addition, regular monitoring of groundwater level and quality in the wellfield shall be carried out during the operation phase to provide feedback to water extraction.	
23.	Generation of wastes including hazardous materials	Water resources, soil, atmospheric air.	Minimizing the amount of solids generated during water treatment by optimizing coagulation processes; removal of lime mud by burial, if allowed, with a limited level of its application to the soil to reduce the risk of metals in plant tissues and groundwater, removal of iron and aluminum sludge by burial. Sludge generated in the horizontal settling tanks during raw water clarification is pumped and stored in sludge collectors and then transported to the storage site. At the same time, the customer must determine the place of storage and obtain permission from the relevant environmental organizations (Goskomekologiya, etc.).	State Unitary Enterprise "«Suvoqava»", sanitary epidemiological stations, environmental organizations.
24.	Increasing of sewage due to increase of water supply	The sewage discharge will increase due to enhanced volume of water supply and water consumption in Bukhara region.	According to the government's policy, a three-pronged approach has been adopted to address sanitation and wastewater management. Firstly, at Bukhara city level, this Project will finance expansion of the sewage system; Secondly, at the district level, the sewage system will be constructed under this Project.	State Unitary Enterprise "«Suvoqava»", sanitary epidemiological stations, environmental organizations.

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			At the third level, the sewage in rural areas will be treated by decentralized facilities, i.e. septic tanks or cesspits at households.	
25.	Air Pollution	Unpleasant smell, emissions of hazardous gases of chlorine and other reagents used. Influence on personnel airways.	All technological equipment of water supply and sewerage system must be in good operating condition. To ensure constant control over the operation of the equipment so that emissions of harmful substances into the atmosphere do not exceed permissible concentrations. Heating, ventilation of buildings under reconstruction and newly designed, emissions into the atmosphere should not increase background concentrations.	State Unitary Enterprise "«Suvoqava»", sanitary epidemiological station, environmental organizations.
26.	Noise and vibration generation	It worsens the health of workers. Increased vibration leads to the destruction of structures of buildings, equipment. effects on animals and soil microflora.	To reduce the impact of mechanical noise and vibration on the rooms adjacent to the ventilation chambers, it is necessary to provide for the installation of pumps and fans on the vibration isolating bases. To use the device of flexible inserts between fans and ducts, reducing noise levels; to cover the places of passage of pipelines and ducts through building constructions with mineral wool, fiberglass along the perimeter of the hole; the internal layout of buildings provides insulation of premises; the territory of objects is green, which also reduces the noise level. Noise and vibration generating equipment is installed in buildings, which significantly reduces the noise level.	State Unitary Enterprise "«Suvoqava»", sanitary epidemiological station.
27.	Water pollution	The discharge effluent of Sewerage Treatment Plants may cause pollution of surface water.	According to national regulations, the Feasibility Study of this project provides the standards that the surface water must reach where the complete mixing of the effluent and the surface water	State Unitary Enterprise "«Suvoqava»", sanitary epidemiological stations,

No	Environmental and Social Parameters	Issues/Impacts	Mitigation Measures	Responsibility
			finishes. At the detailed design stage, the receiving water bodies will be selected in accordance with national regulations. The standards of effluent from the STPs will be calculated based on the quality and water flow of the receiving water body.	environmental organizations.
28.	Water consumption	Increasing the pressure on water resources	It is predicted that more measures will be taken to improve the efficiency of water use, so the water consumption per capita will decrease in the period of 2025-2045.	State Unitary Enterprise "«Suvoqava»", Ministry of Water Resources
29.	Occupational health and safety	Traumatism, disability of workers	Include mandatory training all employees of HSS, EPD, HSE. Provide the necessary funds Personal protection (PPE), training on how to use them for workers. Take the necessary measures to comply with fire safety regulations in accordance with the regulations.	State Unitary Enterprise "«Suvoqava»", personnel of water supply and sewerage enterprises
30.	Emergency cases	Atmospheric air, soil, water resources. The local population.	Accidents at pumping, water treatment stations, sewage treatment plants are mainly caused by the failure of process equipment, instrumentation, shut-off and control valves. As well as the unstable power supply to these facilities. A number of instructions, measures and activities should be in place to prevent the occurrence of emergencies and actions if they occur.	State Unitary Enterprise "«Suvoqava»", personnel of water supply and sewerage enterprises.

6.3.2 Generic Monitoring and Reporting Plan

Environmental and social monitoring during subproject implementation should provide information about its actual environmental impacts, social consequences, the effectiveness of mitigation measures and compliance with the subproject ESMP. Such information enables the PCU and the Supervision Consultant to evaluate the success of mitigation measures and compliance of the contractors' activities as part of project supervision and allows corrective action(s) to be implemented in a timely manner, when needed.

The subproject ESMP will identify the objectives of two types of monitoring, i.e. environmental quality monitoring and compliance monitoring and lay out the detailed plans for the two types of monitoring. For the environmental quality, the monitoring plan shall specify the monitoring parameters, frequency and methodology of measurement, sampling locations, applicable standards. The monitoring plan shall also describe the links between the environmental parameters and the impacts and mitigation measures. If exceedance of standard is observed, corrective actions will be proposed by the Supervision Consultant and implemented by the contractors in a timely manner. Some environmental parameters, like dust and noise, will be monitored by the contractors under the supervision of the Supervision Consultation; most of the parameters (air, surface water and groundwater and soil) will be monitored by the Supervision Consultant.

Compliance monitoring will focus on the monitoring of compliance of various labor and ESHS requirements, implementation of mitigation measures identified in the SSESMP and corrective measures (if any). Separate monitoring will be carried out for the implementation of RAP if it is developed. Standard checklists prepared during the E&S studies for subprojects will be used to report on compliance issues. The contractors will carry out compliance inspection on a daily basis; the Supervision Consultant will do random supervision of compliance and weekly inspections.

Third-party monitoring agencies will be engaged every half a year to develop semi-annual Environmental and Social Monitoring Reports. The Environmental and Social Monitoring Report will focus on the implementation of the ESMP. It will (i) verify the compliance to regulations, contract agreements, the subproject ESMP and corrective actions (if any), (ii) summarize the monitoring results of environmental quality, capacity building and accidents, (iii) review the implementation of GRM; and (iv) recommend corrective actions or amendments of the subproject ESMP and SSESMP. The monitoring of implementation of RAP is elaborated in Chapter 8 of this ESMPF.

Similarly, during the operation phase, Bukhara Suvtaminot will engage a third-party monitoring agency to monitor the ESHS performance of the facilities under the BWSSP. Semi-annual Environmental and Social Monitoring Reports will be prepared.

Separately, AIIB experts will also carry out annual site-specific visits to review compliance. As mentioned above, in the case of non-compliance, the PCU would investigate the nature and reason(s) for non-compliance, and a decision would have to be made on what is needed to bring a sub-project into compliance, or whether financing should be suspended.

6.4 Environmental and Social Reporting

Results of environmental and social performance including monitoring activities and results shall be properly documented and reported. In accordance with national legislation in Uzbekistan, each

contractor will perform a logbook with information of conducted training on environmental, health and safety for workers and another logbook for accidents registration during the civil works. In case of instrumental monitoring, original records of monitoring results also need to be kept in the separate file for records.

Prior to the commencement of the civil works, the contractors with assistance of the Supervision Consultant will develop a format for site inspection to optimize a process of ESHS supervision and include it in the SSESMP. Contractor's monitoring could be in form of checklist with list of mitigation measures to be implemented during construction, their performance status and some explanations as required.

The responsibility of reporting with the Supervision Consultant will include: (i) incorporating ESHS monitoring results into the Quarterly Project Progress Report; (ii) supporting the third-party monitoring agencies to prepare the semi-annual monitoring report. In order to prepare the reports, the Supervision Consultant will collect data and logbooks from the contractors and compile results of monitoring and inspections conducted by itself.

The reports prepared by the Supervision Consultant will be submitted to the PCU for review and record. The PCU is responsible for submitting the semi-annual monitoring report to AIIB. In particular, the PCU will be responsible for managing and maintaining GRM database and documenting the process and final results of the grievance. The information of GRM will be included in the semi-annual reporting.

Any accident that involves fatality and significant injury should be reported to AIIB by the PCU immediately.

A third-party agency will be engaged for monitoring the implementation of RAPs and preparing progress report. The PCU will be responsible for submitting progress monitoring reports completion reports of RAP implementation to AIIB.

During the operation phase, Bukhara Suvtaminot will be responsible for preparing and submitting semi-annual monitoring reports to AIIB, with assistance of a third-party monitoring agency.

6.5 Capacity Building and Training Program

The implementation of the ESMPF requires specific knowledge for stakeholders engaged in different phases of the project implementation. The project will support relevant training on environmental and social topics, e.g. the ESMPF implementation, ESIA, ESMP and RAP preparation and implementation, AIIB ESP and ESS (ESS1, ESS2), and environmental and social management of construction sites, etc. For this purpose, before the civil works starts, the PCU will organize a series of training for its E&S staff and E&S experts from the Detailed Design Consultant, and the Supervision Consultant. The training will include the basic requirements of the AIIB ESP and National EIA rules and procedures, as well as case studies in this regard. The training activities will continue also during the construction phase when the consultant will provide training to the contractors regarding environmental and social compliance, monitoring and supervision.

The capacity building in environmental and social aspects will be conducted for the following stakeholders:

(i) **PCU 's E&S staff:** With external assistance, the PCU will organize training for its staff, especially E&S staff and engineers on AIIB ESP, ESMPF, screening of subprojects, preparation of subproject ESIA, ESMP and RAP, management of the Supervision Consultant, and supervision of the implementation of RAP and ESMP and GRMs. The aim is to improve the E&S staff's capacity in environmental and social management of the BWSSP.

(ii) **Detailed Design Consultant:** The PCU will organize training for the Detailed Design Consultant on AIIB ESP, national EIA regulations and comparison with AIIB ESP, showcases of subproject level E&S documents. Through the capacity building, the Detailed Design Consultant is supposed to be able to prepare subproject ESIA, ESMP and RAP that meet AIIB requirements.

(iii) **Supervision Consultant:** The PCU will organize training for the Supervision Consultant on AIIB ESP, ESHS in ESMPs, development of SSESMP, environmental and social management and supervision at construction sites, monitoring and reporting and GRMs.

(iv) **Contractors:** The Supervision Consultant will organize training for contractors on development and implementation of SSESMP, ESHS inspection at sites, monitoring and reporting, and GRMs.

A separate training on handling, collection and disposal of hazardous materials (PCBs and asbestos materials) and protection of cultural heritage during the construction will be provided to Supervision Consultant and contractors before starting respective works. As per national requirements the contractors will have to conduct Health & Safety training for workers with indication in special logbook that will be kept on each construction site.

The positive impacts of this project due to improved water and sanitation will be supplemented by awareness generation of the community on i) responsible consumption given that the resources are finite, ii) appropriate environmental, domestic and personal hygiene for better health outcomes, iii) appreciation of the fact that water is an economic good and for continued services warrants financial contributions from the user community, and iv) better management of septic tanks in rural communities. It is proposed that the PCU and Suvtaminot will develop an awareness enhancement program and engage the communities to address these issues appropriately. The tentative plan of capacity building and training plan is presented below in **Table 6.3**.

Table 6.3: Tentative plan for capacity building and training program

No	Training topics	Time and tentative duration of the training	Trainees	Organizer	Tentative cost
1	Overview on AIIB Policy on safeguards and their implementation during the project cycle. National Environmental requirements for project preparation and implementation	During first year of Project implementation Duration – 0.5 days	Coordinator, engineers, procurement specialist, E&S staff	PCU	2,000 USD

No	Training topics	Time and tentative duration of the training	Trainees	Organizer	Tentative cost
2	ESMPF, screening of subprojects, preparation of subproject ESIA, ESMP and RAP, management of the Supervision Consultant, and supervision of the implementation of RAP and ESMP and GRMs	Before subprojects selection and approval Duration - 2 days	E&S staff; Engineers	PCU	3,000 USD
3	AIIB ESP, national EIA regulations and comparison with AIIB ESP, showcases of subproject level E&S documents, ESHS in bidding documents	Before sub-projects selection and approval Duration - 2 days	E&S team of Detailed Design Consultant; PCU E&S staff and procurement specialist	PCU	3,000 USD
4	AIIB ESP, ESHS in ESMPs, development of SSESMP, environmental and social management and supervision at construction sites, monitoring and reporting and GRMs	Before contracting the contractors Duration– 3 days	EHS specialists of Supervision Consultant	PCU	4,000 USD
5	Development and implementation of SSESMP, ESHS inspection at sites, monitoring and reporting, and GRMs	Before the civil works Duration- 3 days	EHS staff of contractors	Supervision Consultant	4,000 USD
6	Health & Safety, Handling and disposal of hazardous materials	Before starting respective works 1 day	EHS specialists of Supervision Consultant; EHS staff of contractors	Supervision Consultant	2,000 USD
7	Cultural heritage regulatory frameworks	Continuously during the program implementation	PCU, Contractors workers	PCU	4,000 USD
8	Awareness enhancement program	Continuously during the project implementation	Public, Main stakeholders	PCU & Suvtaminot	30,000 USD
	Total				**54,000 USD**

6.6 Gender Action Plan

A tentative Gender Action Plan has been prepared and presented in **Table 6.4**. It will be finalized during the project implementation.

Table 6.4: Gender Action and Capacity Building Plan (Tentative)

Activities	Targets and indicators	Responsibility	Timeframe
Outcome: Ensure that design, planning, implementing activities of the project are gender-sensitive and gender-responsive			
Engage the full-time Gender-Social specialist in the PCU	Gender specialist position is created and filled To ensure that gender indicators are included in design and implementation of the project To establish gender gender-disaggregated database and monitor gender indicators	UZST, PCU, BR SUE Suvokova (now Suvtaminot)	2021
Component 1: Improve access to appropriate sewerage and sanitation services			
Organize regular trainings on increasing gender capacities and gender mainstreaming for the PCU	To develop training modules and handouts for the staff To ensure that gender indicators and concerns are incorporating in BRWSSP design, implementation, and operations	UZST, PCU,	2021-2025
To conduct gender awareness and gender mainstreaming workshops for the UZST, BR Suvokova (now Suvtaminot) and secondary stakeholders such as, Sanitarian Epidemiologic Center (SES), Uzgidromet, Land Cadastr Committee, Ministry of Culture, Women's Committee, local khokimiyats To ensure that at least 30% of training participants are women.	To organize 2 workshops at the design and implantation stage To ensure that project is gender responsive and gender issues are fully addressed gender-related problems in the frame of the Project To raise gender awareness and gender approach of the project stakeholders, To address the gender-related issues in project areas are discussed and solved in cooperation of project stakeholders.	UZST, PCU, Social/Gender Consultant, secondary stakeholders (Sanitarian Epidemiologic Center, representatives of the healthcare and educational establishments, Ministry of Culture, others)	2021-2025
Organize quarterly workshops with local population (target groups are women because they are responsible for taking care for their children and other family members as well as water fetching and	To ensure women empowerment during project implementation stage	UZST, PCU, BR Suvokova (now Suvtaminot), Women's Committee, SES, local khokimiyats, healthcare and educational	

Activities	Targets and indicators	Responsibility	Timeframe
its allocation) on hygiene and sanitation issues as well as prevention of the water-borne diseases At least 30% of women residents participated in the trainings in each district	To conduct ToTs for women-leaders from Makhalla communities, Oila markazi, Women's Committee To decrease number of the WBD at the project area and ensure women empowerment in the project At least 30% of women residents participated in the trainings in each district At least one group in each district is organized The number of WBD will be decreased at least on 20% in comparison with the baseline	establishments, Oila markaz	
To form the female self-help groups (4-6 in each group by district, women-leaders who participated in the previous project trainings) at the communities levels in each district To organize separate room for the women-leaders in the new Resource Centers (RC) in each district The group of women-leaders have conduct regular meetings at the RC and project construction sites	To ensure women's engagement to promote behavioral changes by organization of the food points at the construction sites To achieve economic women empowerment and the behavioral changes At least 2 meetings with local women are organized in each district	UZST, PCU, BR Suvokova (now Suvtaminot), Makhalla district centers centers Women's Committee, Oila markaz, Tabirkor Ayol NGO, Contractors of the Project, Salomatlik Markazi (Healthcare center)	At the implementation stage of the project, 2021-2025
Define and implementation of Behavior Change Communication (BCC) activities targeting of makhalla women leaders, local women, hygiene and environmental sanitation as well as water-borne diseases To conduct minimum 2 seminars with 20 participants in each course at pilot city/districts with around 50% participants being women	To ensure that sanitation conditions of the local households are improved and they are connected to the new centralized water supply and sanitation facilities. Number of new connections with focus on women-headed households at least 50% of attendants are women and young girls Develop and distribute 200 handouts for female participants during trainings to organize mass media campaign for	UZST, PCU, BR Suvokova (now Suvtaminot), district khokimiyat, Women's Committee, Oila markaz, Tabirkor Ayol NGO, Salomatlik Markazi (Healthcare center)	From the beginning of the project 2021 -2025

Activities	Targets and indicators	Responsibility	Timeframe
	increasing the awareness of population at least 5 announcements at the local mass media about BCC activities of the BRWSSP		
Organize quarterly consultation with women and girls during project design and inform the regarding the physical placement and design of both shared and private bathing facilities and toilets To repair shared toilets in the project area and install lights These activities include participation of women-leaders and female local residents of apartments of multistore houses in the urban centers in each district	To build and reconstruct safe sanitation facilities, install lights in the outdoor toilets To ensure that Sanitation facilities are clean and safe for women and young girls To prevent sexual violence and guarantee safe WSS facilities To ensure that separate toilets are available and operating To ensure that outdoor shared toiles located on appropriate distance from multistore houses To develop and hang out posters on walls of the sanitation facilities with contact details of RC women leaders (telephone numbers of RC of each districts, contacts of women-group leaders)	UZST, PCU, BR Suvokova (now Suvtaminot), district khokimiyat, Women's Committee, Oila markaz, Tabirkor Ayol NGO, Salomatlik Markazi (Healthcare center)	2021-2026

6.7 Grievance Redress Mechanisms

A Grievance Redress Mechanism (GRM) for affected people is an arrangement for receiving, evaluating and facilitating the resolution of concerns, complaints, and grievances from people who believe they have been adversely affected by environmental or social impacts of the proposed project, and to inform Project-affected people of its availability. A GRM for workers aims to address workplace concerns.

The existing mechanisms of addressing project related complaints in Uzbekistan has been reviewed. Two separate Grievance Redress Mechanisms will be established for this project, one for the affected people and one for workers respectively, to supplement the existing system in accordance with AIIB's ESP and applicable ESSs. The GRMs are designed to address concerns and complaints promptly, using an understandable and transparent process that is gender-sensitive, culturally appropriate and readily accessible to all affected people in the Bukhara region as well as workers to be involved in this project.

6.7.1 Republic of Uzbekistan's Complaint Handling System

The Law of the Republic of Uzbekistan on the Appeals of Individuals and Legal Entities was introduced on 29 October 2014 and this law replaced the earlier law on Appeal of Citizens that was introduced on 13 December 2012. This law guarantees the right to appeal and prescribes the requirements of an appeal, its form and structure. Further, the timeline for addressing the appeal, the procedure for personal hearing, need for maintaining record of appeals and procedure for second appeal are prescribed.

According to the law, affected persons can submit their grievances through the Virtual reception of the President of the Republic of Uzbekistan, which is an online portal[10]. From February 2018, the online version is updated and presented on this online portal. All citizens of the country can use different options for their appeals.

1. By calling the phone number 0-800-210-00-00 or the short number 10-00;
2. By using the online portal and filling out a special request form on the website pm.gov.uz;
3. By visiting the People's Reception Office. The address of the 14 People's Reception offices in each district of the Bukhara region are provided on its site.

This mechanism assures the constitutional rights of citizens to appeal to the President of the Republic of Uzbekistan. Through this system, any persons in Bukhara region can send their applications, suggestions and complaints to the portal of the President of the Republic of Uzbekistan. After receiving the complaint from the Bukhara region, the responsible person from online portal will provide complainant with contact details of the responsible person from UZST. The UZST will directly request the PCU or Bukhara Suvtaminot to resolve the grievance, with an option of sending the grievance through an email. In the new version of the Virtual Reception, the complainant can indicate **the mahalla** in which they live when

[10] https://pm.gov.uz/ru#/map_app_root

submitting the appeal. This will speed up the solution of the problem, help determine which sector is responsible for the problem resolving.

The online portal has provisions for checking the status of the grievance and further appeal if the appellant has been harassed for raising the grievance. If someone who sends a complaint is persecuted, she/he can quickly report it by pressing a special "button" on the same site. Such messages will be considered promptly and with high priority of involving law enforcement agencies.

6.7.2 Project-level Grievance Redressal Mechanism for Affected People

A two-tier GRM will be established by the PCU for project-affected people (PAP). The Grievances which can be addressed shall include but not limited to:

- Noise pollution due to vehicular traffic, machinery;
- Air pollution due to construction activities;
- Contamination of waterbodies due to disposal of any type of waste such as solid waste from labor camps, construction and demolition waste, oil spills etc.;
- Use of productive land for material transportation or storage or labor camps without necessary permissions from concerned authority;
- Damage to any cultural or physical resources outside the project area;
- Misbehavior of labor with the local community;
- Improper construction site management, improper storage or disposal of waste / debris material, inadequate safety practices, damage to cultural or public properties and issues between the labor force and the local community; and
- Grievances related to land acquisition, compensation and resettlement will include issues such as computation of compensation, land measurement, eligibility, non-inclusion in the list of PAPs, valuation of structures, trees, loss of income or livelihood, etc.

Any significant grievances which may pose a life-and-death scenario should be resolved immediately.

The Project-affected People's Mechanism (PPM) has been established by the AIIB to provide an opportunity for an independent and impartial review of submissions from Project-affected people (PAP) who believe they have been or are likely to be adversely affected by AIIB's failure to implement its ESF in situations when their concerns cannot be addressed satisfactorily through Project-level GRM or AIIB Management's processes. It has been advised that a two-tier GRM will be constituted for the Project in line with the prescriptions of the PPM Policy of the Bank, building on the existing complaint mechanisms.

Two-tier GRM for PAP

A two-tier GRM will be established for this project. See **Figure 6.2**. The first tier GRM will be at the field level, managed by a local Grievance Redress Committee (GRC). The second tier GRC will be at the PCU level, manage by the PCU.

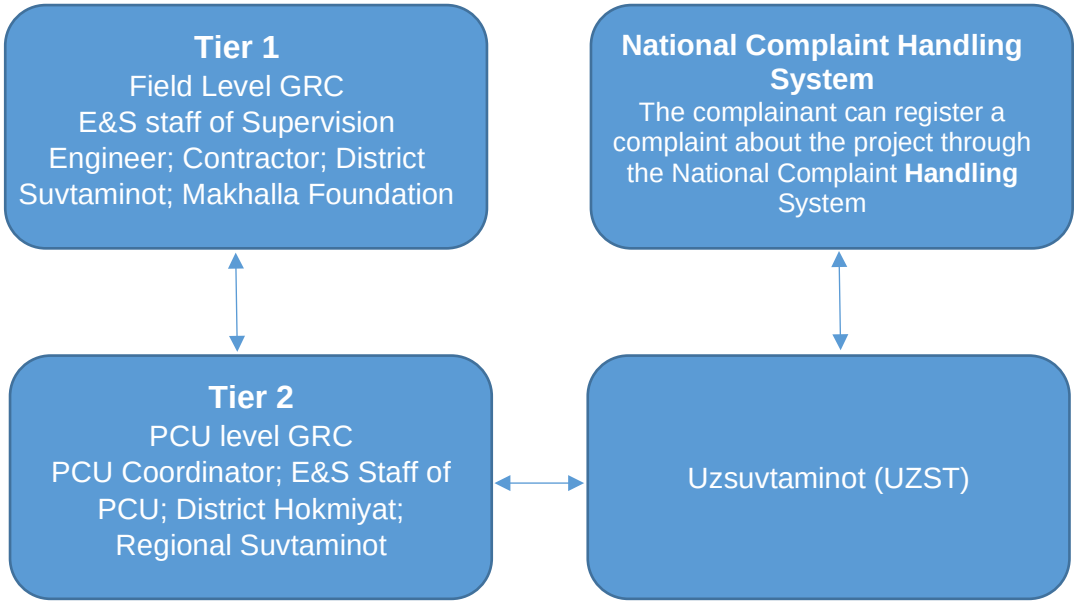

Figure 6.2: GRM for Project-affected People

Tier-1 GRC: the field level of the GRC will compose Supervision Engineer (with E&S staff in charge), representative of the Contractors, district Suvtaminot and head of the Makhalla Foundation. Aggrieved persons can contact either of them and they will be responsible for receiving, hearing and resolving the grievances.

Tier-2 GRC: Second level GRC will be chaired by PCU Coordinator, consisting of Senior Environment Specialist of PCU (in charge of on-the-ground work), one representative of the district khokimiyat and one from Bukhara Suvokova (now Suvtaminot).

The exact GRC members for each subproject will be specified in the ESIA/ESMP/RAP for that subproject.

The use of Uzbekistan's Complaint Handling System. The complainants can register their complains related to this project through national complaint handling system. The statistics will be collected by PCU from Suvtaminot regularly.

The GRM aims to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. The GRM is not intended to bypass the government's inbuilt redressal process, nor the provisions of the statute, but rather it is intended to address PAP's concerns and complaints in environmental and social aspects promptly, making it readily accessible to all PAP and is scaled to the risks and impacts of the project.

The GRCs will continue to function, for the benefit of the affected persons, during the entire life of the project including the defects liability period.

Functions of GRM

The grievances will be received via the following ways:

- Letter to GRCs;
- Telephonic grievances on the phone number linked to GRC members. The grievances received telephonically will be noted in the telephonic grievances register.
- Grievances communicated to any of the GRC members or the field staff of Supervision Consultant/Contractor/PCU verbally by the stakeholders. The GRC members or the field staff should insist the stakeholders to give the written complaint, which will be given to the GRC.

Tier-1 GRM: The complainant can leave the written complaint to any member of the GRC. The process of grievance redress includes the following steps:

a. Grievance received by any member of the GRC will be transferred to the E&S staff of the Supervision Consultant for documentation.

b. The E&S staff will coordinate with the contractors and GRC members to work out a solution.

c. The E&S staff together with head of Mahalla Foundation (if necessary) will communicate with the complainants and agree on the solution.

d. The final solution will be sent to the aggrieved person in writing in 15 days.

The PCU will maintain a registration of all grievances received with details of date of receipt of the grievance, date of hearing, if any, along with nature of complaint/concern, actions taken and date of communication sent to the complainant. Communication, in writing will be sent to the aggrieved person with the date, time and venue of the hearing and make it known that s/he is entitled for a personal hearing. If the complainant is not satisfied with the decision at the first tier, she/he can choose to escalate the grievance to Tier 2 or register in the UZ complaint handling system.

Tier-2 GRM: The decision of the Tier-1 GRC will be final unless the complainant prefers to use the Tier-2 GRM. People who believe they have been significantly affected by the project could also submit grievances directly to Tier-2 GRC without registered in Tier-1 GRM.

a. Grievance received by any member of the GRC will be transferred to the Senior Environmental Specialist of PCU for documentation.

b. The Senior Environmental Specialist will coordinate with the GRC members and concerned stakeholders to work out a solution.

c. The Senior Environmental Specialist will lead the communication with the complainant and agree on the solution.

d. The final solution will be sent to the aggrieved person in writing in 15 days.

e. If the complainant is not satisfied with the decision of the PCU, s/he can choose to register the complaint in the UZ complaint handling system. S/he also have the right to approach the court.

Documentation of Grievances and reporting. The complaint/grievance will be redressed in 15 days at each tire time and written communication will be sent to the complainant at each tier. A complaint log will be maintained both at Supervision Engineer and PCU, with details of complaint lodged, date of personal hearing, actions taken and date of communication sent to the complainant. The Supervision Consultant is responsible for reporting the complaint log to PCU on a monthly basis. The Senior Environmental Specialist of PCU is responsible for gathering the grievance statistics at two tiers and in the UZ complaint handling system, compiling the data in the Quarterly Project Progress Reports and semi-annual Environmental and Social Monitoring Reports, and reporting to AIIB.

Distribution of GRM information

During detailed design of the subprojects, the GRM schemes will be presented in the ESIAs/ESMPs and RAPs. The local residents will be informed of the detailed description of the project and its impacts as well as the GRM information through stakeholder consultations.

Flyers, community billboards and local mass media will be used to distribute the GRM information including the members of the GRCs and their contact information. The same information will be presented at the construction sites as well as community centers. The information of Tier-2 GRC will be announced at websites of UZST, Bukhara Suvtaminot and local khokimiyat.

6.7.3 Project-level Grievance Redressal Mechanism for Workers

According to the lessons learned in various project contexts, there is a need to establish a separate GRM to deal exclusively with those complaints that involve workers employed by the contractors for construction activities. Such grievances may involve wage rates and unpaid overtime work, irregular and partial payments, lack/inadequacy of living accommodations, lack of clean drinking water and sanitation facilities, and lack of medical care, etc.

GRCs will be established to deal with labor grievances, including members who are directly and indirectly associated with the construction work. Specifically, one GRC will include the Senior Engineer from the PCU who is in charge at the worksite as the convener, resident engineer of the Supervision Consultant, a worker's representative, and the contractor's representative. The convener will designate an official to receive the complaints and ensure the complainant does not lose his job and is not intimidated into withdrawing the complaint before the formal hearing.

To ensure impartiality and transparency, hearings on complaints will be held in a non-threatening environment and will remain open to all other workers on the site. The GRCs will record the (i) details of the complaints; (ii) reasons that led to acceptance or rejection of the individual cases, as well as the number of accepted and rejected cases; and (iii) decisions agreed with the complainants. The PCU will keep records of all resolved and unresolved complaints and summarize in the semi-annual report to be submitted to AIIB. The records shall be made available for review as and when asked for by AIIB and other interested entities/persons.

7 Consultation and Disclosure

This Chapter presents the objectives and findings of the initial public and stakeholder consultations which were conducted during the development of the present ESMPF. The Chapter also defines the requirements of consultations to be carried out during the preparation and implementation of subproject-specific ESIAs and ESMPs, in addition to describing the disclosure requirements.

7.1 Objectives of Consultations

Stakeholder consultations (or public consultation) during the environmental and social assessment process of development projects is increasingly considered an important notion and requirements which increases the authenticity and acceptability of assessment itself but more importantly can possibly enhance the quality of decisions making as well. Stakeholder consultation/participation during various stages of developmental projects helps to improve decision making and ultimately leads towards sustainable development.

Stakeholder consultation is a two-way process. For stakeholders, the consultation process is an opportunity to obtain project information, to understand its potential impacts, to raise issues and concerns, and ask questions. For the project proponents, the consultation process offers an opportunity to understand the stakeholders and their concerns about the project, their needs and aspirations, and also their suggestions that can potentially help shape the project and its design. Listening to stakeholders' concerns and feedback can be a valuable source of information that can improve project design and outcomes and help the project proponent to identify and control external risks. It can also form the basis for future collaboration and partnerships.

Specific objectives of the consultation process that has been initiated while preparing the present ESMPF are listed below.

- sharing of information with stakeholders on the proposed water supply and sewerage systems in the Bukhara region and key findings of the ESMPF;
- obtaining their feedback about the project, perceived impacts and preferred mitigation measures, and to collect information on environmental, ecological, and socio-economic baseline in the project area;
- understanding the stakeholders' concerns regarding various aspects of the project, including the existing situation, construction works and the potential impacts of the construction-related activities
- developing and maintaining communication links between the project proponents and stakeholders,
- ensuring that views and concerns of the stakeholders are incorporated into the project design and implementation as much as possible with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.
- managing expectations and misconceptions related to the project;
- Obtaining local and indigenous knowledge about the people living in the project area;
- Interaction with the project affected population and other stakeholders for the collection of primary as well as secondary data relating to the project activities.

- engaging stakeholders for maximization of the project benefits.

7.2 Stakeholder Identification

Stakeholders are considered to be individuals or organizations which have an interest in the proposed project or knowledge that would provide insight into issues or affect decision making related to the proposed project. On the basis of interest and role criteria there are two types of stakeholders for the proposed project as described below.

7.2.1 Primary Stakeholders

The primary stakeholders (also called direct stakeholders) are the grass-root stakeholders, such as project affected persons and general public including women residing in the project area. These are the people who are directly exposed to the project's impacts though in some cases they may not be receiving any direct benefit from the project.

7.2.2 Secondary / Institutional Stakeholders

The secondary stakeholders (also called institutional stakeholders) are the people, department, institutions, and/or organizations that may not be directly affected by the project however they may influence the project and its design. They include project proponent, other concerned departments that may have a role during various phases of the project, regulatory agencies, other relevant departments, non-governmental organizations (NGOs), the broader interested communities including academia and journalists, and general public. For the proposed project, the institutional stakeholders include MHCS, Bukhara Region State Unitary Enterprise - Suvokova, their district departments, khokimiyats, Women's Committees, State Committee of the Land Cadastre, the Ministry of Culture, Uzgidromet, Sanitarian Epidemiologic Station, the State Committee on Ecology and Environment Protection, makhalla communities, and private water delivery services providers.

7.3 Outcome of Consultation Process during Project Preparation

7.3.1 Community Consultations

The first round of the consultations was carried in the November-December 2019 by the project proponents and social team in the Bukhara region by utilizing different methods such as FGDs, in-depth interviews, and workshops. In total, 18 FGDs in nine districts and Bukhara and Kagan cities, around 10 in-depth interviews with key stakeholders, and two public consultations with secondary stakeholders have been undertaken. Separate female FGDs were organized in urban and rural areas in order to focus on examining the gender issues. More than 305 local people were involved in FGDs including 241 women (see **Table 7.1**). The lists of FGDs and photos are attached in the **Annex D4**.

Table 7.1: Participants of Community Consultations

Districts/Cities	Date	Total Participants	Number of women
Peshku	30.11.2019	48	36
Jondor	30.11.2019	34	24
Qorovulbozor	31.11.2019	24	13

Districts/Cities	Date	Total Participants	Number of women
Qorakol	31.11.2019	31	23
Bukhara	01.12.2019	31	27
Kagan	03.12.2019	22	22
Olot	03.12.2019	20	16
Rometan	04.12.2019	22	12
Gijduvon	04.12.2019	19	19
Bukhara city	01.12.2019	34	31
Kagan city	02.12.2019	20	18
Total		**305**	**241**

During FGDs participants, mostly women, shared the current problems of the water and sewerage supply systems. They stated that in rural areas the access to the potable water is not reliable and they faced with frequent shortage of water delivery services. Even in urban areas of the region people have access to the water for 2-4 hours per day. Because of the low pressure and worn-out pipes the residents of the multiple story houses needed to fetch water from yards or buy it from private service providers. The residents of the apartments stated that have no additional space for the water saving. Although participants from detached houses installed the cement water tankers the quality of delivered water is not satisfied.

During FGD the project proponents and members of the social team shared the various details of the proposed project including its different components and phases. Women from remote areas actively participated in the FGDs and stressed that they urgently need the improvements in the water supply and sanitation sectors. During female FGDs it was revealed that women faced hardships because of widespread water borne diseases and the related expensive treatment.

The vast majority of the FGD participants expressed their willingness to contribute to this project implementation by organizing the group of women leaders, who will inform the local residents about project activities and ensure the households will get access to water supply. They also demonstrated that they have a great desire to cooperate with district Suvoqava and makhalla committees with aim of their own community sustainable development by decreasing the number unemployment and opening new small business enterprises. The key outcomes of the consultations are presented in **Table 7.2**.

Table 7.2: Key Suggestions and Comments Received during Consultations

	Concerns and Comments of primary stakeholders	How to address Concerns
1	Will the meters be installed as part of the project?	The final design included the installation of the meters.
2	Is there any final design (list) of planned subproject activities? What types of exact WSS facilities will be constructed in each district?	At present there no exact final design prepared for construction and reconstruction of the WSS subprojects – only a list of proposed activities is currently available. Now the MHCS, regional Suvokova (now Suvtaminot) and local khokimiyat are working on these matters. Therefore, this

	Concerns and Comments of primary stakeholders	How to address Concerns
		ESMPF is developing which will covers and address all generic social and environmental impacts.
3	In case of land acquisition what mechanism for awareness and compensation is developed in this project?	MHCS, regional Suvokova (now Suvtaminot) and PCU will develop ESMP, Land Acquisition & Resettlement Plan (LARP), RAP where the compensation for land acquisition will be determined in accordance with the national regulatory regime and AIIB polices. In addition, PAPs will be invited to the public consultations. PCU Safeguard Specialist will inform them about the accurate procedures of compensation.
4	What organization will be responsible for project impact compensation if any during the project?	In the case of land acquisition, the local khokimiyat will be responsible for the compensation. All compensations will be paid before the implementation phase of the project, the detailed information will be presented to affected person and population during Public Consultations with detailed explanation of their rights and opportunities of using the GRM.
4	In the case of the harvest lost on farmlands, will it be compensated or not?	Yes, harvest lost will be calculated in accordance with AIIB policy and compensation paid.
5	When the quality of potable water in the region will be improved? When the water supply will be permanent 24/7?	After the implementation of this project the quality of water will be better and hours of water supply will be increased in the Bukhara region. This issue will be solved step-by-step during implementation of the all phases of the project.
6	Will the cost of water increase after the project and for how much?	These calculations will be done after the final design, the water tariff can increase after the completion of the project but permanent access to potable water will be ensured.
7	How do women from rural makhallas can participate in the project? Can they organize community groups of activists who will monitor and check project results?	The role of women in household water distribution is very important. The AIIB policy is to empower women of local population during the project implementation. In addition, some activities will be developed in the GAP where women can contribute and also make their own proposals. Formation of community groups is a possibility during the project implementation.
8	The current water quality is very poor. How to avoid the WBD at the house/family level?	Water treatment facilities are included in the project. In addition, mass media campaign will be organized to inform population about measures of cleaning water at the household level.
9	How local population will be informed about the project activities?	By organizing the Public Consultations and meetings with local authorities, district departments of Suvokova (now Suvtaminot) will inform population of project area about the certain activities during construction and reconstruction works.

7.3.2 Consultations with Secondary Stakeholders

The representatives of the state and civil society organizations including the State Unitary Enterprises - Suvoqava of Bukhara region, specialists of provincial and district level water supply agencies, local khokimiyats, Women's Committee of the Bukhara region, State Committee of the Land Cadastre, the Ministry of Culture, Uzgidromet, Sanitarian Epidemiologic Station, the State Committee on Ecology and Environment Protection and other agencies were identified as secondary stakeholders of the project and were involved in public consultations during November – December 2019 (see **Table 7.3**).

During the field trip to the nine of the Bukhara region, the IKS team members conducted interviews and two public consultations with heads of district departments of Suvokova, directors of Kuyumazar WIU, Shahrud WTP/WDU, Zarafshan WDU/WIU and other WSS facilities and studied their proposals related to the waste water and water supply challenges in the districts. Representatives of the State Unitary Enterprise "«Suvoqava»" of Bukhara Region, Regional Committee for Ecology and Environmental Protection, Khokimiyat of Bukhara Region and project areas, Sanitary Epidemiological Service (SES), Department of Hydrometeorology (Bukharahydromet), State Unitary Enterprise "Uzbekhydrology", Regional Department of Culture, management architecture and others participated in the public consultations in December 2019 in the administrative building of Bukhara region SUE «Suvokova».

Table 7.3: List of the secondary stakeholders

	Name of organization	**Date**	**Number of participants**
1.	Bukhara Region khokimiyat/ Administrative department	29 November	3
2.	Bukhara Region Committee of Women	29 November	2
3.	"Yoshlik" NGO	29 November	3
4.	BR Makhalla Committee	29 November	4
5.	Ministry of public education	29 November	5
6.	Medical hospital of Bukhara region	29 November	4
7.	State Committee of the Land Cadastre	20 December	2
8.	Ministry of Culture/ Department of Cultural Heritage	20 December	2
9.	Uzgidromet/ West Uzbek Hydrological Expedition;	20 December	2
10.	Center for Sanitary and Epidemiological Well-Being of the Population	20 December	1
11.	State Committee on Ecology and Environment Protection	20 December	2
12.	Bukhara region khokimiyat/ Construction Department		1

	Name of organization	Date	Number of participants
13.	BR SUE "Suvokova"	20 December	3
	Total		**34**

7.3.3 Consultation and Disclosure Workshop

On March 1-2, 2020, after the disclosure of the Uzbek, Russian, and English versions of the draft ESMPF on the websites of the Ministry of Communal Services and Bukhara region Suvokova (http://www.mjko.uz/articles.php?sub=MzY=pdf), around 70 advertisements in Uzbek and Russian languages about the public consultation and disclosure workshop were printed and placed on the public billboards in the Bukhara city including makhalla committees, local authorities, public squares, district departments of Suvokova. Moreover, information about the workshop was distributed through popular social media groups of the Bukhara region Suvokova, local administration as well by official letters of invitation to khokimiyats, key stakeholders organizations and makhallas (see Annex D6).

The workshop was held on March 6, 2020 at the conference hall of the Bukhara Region Suvokova. Representatives from khokimiyats, makhallas, women committee, youth union, state committee on environmental and nature protection, sanitarian epidemiological station, Bukhara region Department of Management of Natural Resources and Cadastre, and others attended the workshop. During the workshop, information about the project, the present ESMPF, anticipated environmental and social impacts, proposing mitigation measures, environmental and social assessment procedures and GRM was presented to the participants. During the workshop, it was announced that final version of ESMPF, which will incorporate comments received during the workshop, will be re-published on Ministry's and on AIIB websites. In total, 41 participants attended the workshop. The comments received and responses provided during the workshop are presented in **Table 7.4**.

Table 7.4: Comments and Responses

Comments	Responses
Representative of the Makhalla Foundation- during the implementation of the project the cooperation between Makhalla Foundation and Bukhara region Suvokova (now Suvtaminot) will play a crusial role. That is why I would like to propose to work in close collaboration with project engineeres and Contractors. Lack of water supply is a very sensitive issue in the rural areas and in order to avoid conflicts with local residients we need to exchange information.	Deputy Director - It is a very imporatnant point because without local people involvement and without cooperation with mahkalla committes we cannot implement this project. Our PCU staff and social and Gender consultant will work closely with Makhlla Foundation as well as with other key stakeholders of the project
Represantative of the Bukhara Region khokimiyat department of construction – What is the goal of the water supply and sanitation components in the region? What percentage of	Deputy Director –For water supply, the three phases the project will cover almost the whole population of the Bukhara region. For the

Comments	Responses
population will be covered by these two components?	sewerage system only central parts of the districts of the Bukhara region and Bukhara and Kagan cities will be covered.
Head of department of the Bukhara region Ministry of Communal services – This is a very important project for us, that is why we need to professionally contribute to its implementation. How many km of water supply network and Sewerage Treatment Plants is planned to be constructed in this project?	Preliminary it is planned to construct 7500 km of new water supply networks and more than 84 Sewerage Treatment Plants and 600 km of sewerage network.
Head of the local Makhalla – When it is planned to start the project implementation?	Chief Engineer of Suvokova – Currently we need to finalize the feasibility study of the project design and receive the approval of the Cabimet of Ministers. After these prcedures the implementation of the project will start. will
Head of the Shofirkon district Suvokova – Who will pay for the loan?	Deputy Director of the Suvokova (now Suvtaminot) - The loan payments be included in the future water and sewerage system tarrifes.

At the end the Bukhara region Suvokova specialists shared their contact information for further comments, suggestions and clarifications on ESMPF. Moreover, hard copies of ESMPF will be available in Ministry's and Bukhara region Suvokova's departments.

Overall the document was largely accepted by all participants and no major comments to revise the document have been received (see Annex D7 with the details of conducted consultations).

7.4 Consultation and Participation during Project Implementation

The stakeholder consultation in the whole Bukhara region and citizen engagement is an ongoing process and will continue throughout the project implementation. The ongoing consultation process could be scheduled on a regular basis with the stakeholders including but not limited to the concerned government departments, local administration, and the community representatives from the proposed project area with specific focus on women empowerment.

The overarching goal of consultations and community engagement is to support and facilitate the project and ESMPF, ESMP, and RP preparation as well as implementation, to maintain friendly relationships with the communities, to reduce conflicts and project opposition, to effectively address grievances, and to increase project's acceptability. Stakeholder consultations and participation will take place during implementation through the following means:

- Grievance Redress Mechanism (GRM),
- Mass media awareness campaign for all stakeholders,
- Informal consultations during subproject implementation; and

- Formal interactions through periodic workshops, consultation sessions with wider stakeholders especially institutional ones such as Women's Committee, makhallya committee and other relevant NGOs at the community, district and regional levels.

Periodically, the PCU may also hold formal workshops to consult a wide range of stakeholders, communities, members of GRCs, relevant line departments, and NGOs on project activities, ESMPF, ESMP, and RP preparation as well as implementation, any outstanding issues, views and concerns of the communities, and ways and means to address them. The communication framework for the consultation and participation framework is developed for the whole project cycle; see **Table 7.5** for details.

Table 7.5: Consultation and Participation Framework during Project Implementation

Description	Target Stakeholders	Timing	Responsibility
Stakeholder consultations as part of the preparation of each subproject-specific ESIA, ESMP and RP	• Primary stakeholders particularly communities • Secondary stakeholders	During preparation of each ESIA, ESMP and RP	PCU /Design Consultants
Public awareness campaigns/ scoping sessions to share the ESMPs and RPs with the PAPs, communities and other stakeholders. • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities within subproject area, general public; and line departments/ agencies.	Commencing with the preparation of first ESMP; to be continued there after	PCU /Design Consultants/ Supervision Consultants
• Consultations with the communities during each ESMP and RP implementation • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Before commencement of subproject activities.	PCU / Supervision Consultants
• Establishment of GRM and GRCs • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Before commencement of subproject activities.	PCU
• Grievance redress • Location: various districts in Bukhara region including Bukhara and Kagan cities	• PCU staff; consultants; relevant line departments; and communities (as needed).	Subproject implementation Stage	PCU/ Supervision Consultants
• Informal consultations and discussions. • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Subproject implementation Stage	PCU / Supervision Consultants; contractor

Description	Target Stakeholders	Timing	Responsibility
• Consultations with the communities during internal monitoring • Location: various districts in Bukhara region including Bukhara and Kagan cities	• Communities at/around subproject area	Construction Stage	PCU / Supervision Consultants
• Monthly meetings at project sites • Location: District departments of SUE «Suvoqava»	• PCU staff; consultants; and communities (as needed).	Construction Stage	PCU / Supervision Consultants
• Consultation workshops to review ESMF/ESMP and RP implementation, any outstanding issues and grievances, views and concerns of communities; and actions needed to address them. • Location: District departments of SUE «Suvoqava».	• Rural and Urban Communities at the subproject area; relevant line department; relevant NGOs	Six-monthly during implementation phase	PCU / Supervision Consultants
• Consultations with the Communities relating to the leftover tasks • Location: District departments of SUE «Suvoqava».	• Communities at/around subproject area	After completion of subprojects	PCU / Supervision Consultants
• Consultations with the communities during the site visits by the AIIB Review Missions. • Location: rural and urban communities and district departments of «Suvoqava».	• PCU; Communities at/around subproject area	Construction/ Operation Stage	PCU / Supervision Consultants

Overall communications framework will be a key pathway for consultations with primary and secondary stakeholders. In general, the whole pathway will be composed of three levels. The UZST/PCU will be in close internal cooperation with regional «Suvoqava» departments (now Suvtaminot). The main role in strategic communication will be organized through UZST/PCU and regional departments of «Suvoqava» with residents of mahakalla communities, and particularly women. The external way of communication will be based on the communication of the project proponents and representatives of the secondary stakeholders. The secondary stakeholders can be identified and added during different stages of the project in the Bukhara region.

7.5 Disclosure

AIIB requires the MHCS and Regional Suvoqava to ensure that relevant information about environmental and social risks and impacts of the Project are available to all stakeholders including the population of the Project area in a timely and accessible manner. According to this requirement, the draft ESMPF was disclosed through official website of MHCS on Jan 31, 2020 and was also sent to AIIB for disclosure. The executive summary of ESMPF was translated into Uzbek and ESMPF was translated into Russian, disclosed through the above-mentioned website and also made available to the affected communities. The final version of ESMPF was disclosed on April 2, 2020. The district departments of Suvokava (now Suvtaminot) will distribute the Uzbek version of the executive summary to the rural and urban local communities within the Bukhara region. Once the subproject-specific ESIAs, ESMPs and RPs are prepared and approved, they will also be disclosed in a similar manner.

The present version of ESMPF will be disclosed in a similar manner by UZST. Subsequently, the subproject-specific ESIAs, ESMPs and RPs will also be disclosed by UZST in a similar fashion.

8 Resettlement Policy Framework (RPF)

This Chapter provides the principles and procedure for resettlement planning to be carried out during the project implementation.

8.1 Objectives of RPF

The overall objective of the RPF is to provide a policy framework for land acquisition and resettlement for all the subprojects to be implemented under the BRWSSP. The principles underpinning this resettlement framework are: i) either to avoid or minimize the involuntary resettlement impacts; ii) the persons affected by the projects will be better off, or at least not worse off than before involuntary resettlement; iii) their assets and livelihoods affected by the projects will be compensated at full replacement cost; and iv) affected persons will receive assistance to relocate and re-establish/recover their livelihoods. The detailed principles/procedures of the land acquisition and resettlement are outlined in AIIB SS2 for Involuntary Resettlement, and related laws of GoU.

The purpose of RPF is to provide a set of principles, procedures and guidelines for PCU, to be applied to the subprojects requiring land Acquisition and resettlement. It is a framework to guide the preparation of an RP in compliance with the requirements specified in the AIIB SS2 and law and regulations of GoU. There are gaps between AIIB SS2 requirements and laws and regulations of GoU for land acquisition and resettlement. These gaps have been identified and measures have been defined for addressal in this document.

8.2 AIIB Policy

The AIIB screens each Project to determine whether or not it involves Involuntary Resettlement (which covers both physical and economic displacement, as defined in ESS2). Where it is not feasible to avoid Involuntary Resettlement, the PCU/UZST is required to ensure that resettlement activities are conceived and executed as sustainable development programs, providing sufficient resources to enable the persons displaced by the Project to share in Project benefits.

If the Project involves Involuntary Resettlement, the AIIB requires the PCU to prepare a resettlement plan or RPF (as applicable) that is proportional to the extent and degree of the impacts. The degree of impacts is determined by: (a) the scope of physical and economic displacement; and (b) the vulnerability of the affected people. The resettlement plan or RPF complements the broader coverage of social risks and impacts in the environmental and social assessment and provides specialized guidance to address the specific issues associated with Involuntary Resettlement, including land acquisition, changes in land use rights, displacement and need for livelihood restoration.

The AIIB does not endorse illegal settlement; however, it recognizes that significant populations already inhabit both urban and rural land without title or recognized land rights in its countries of operation. Given this situation, the AIIB requires the PCU/UZST to ensure that displaced persons without title to land or any recognizable legal rights to land, are eligible for, and receive, resettlement assistance and compensation for loss of non-land assets, in accordance with cut-off dates established in the resettlement plan, and that they are included in the resettlement consultation process.

8.3 General Principles of Resettlement

The primary goal of the RPF is to ensure that those negatively affected by Project activities, through temporary or permanent losses and impacts, are not worse off after the project implementation, that they are compensated in a participatory and timely basis, and that any mitigating activity is carried out in a systematic and beneficial manner.

The following principles will apply to all activities under the Project:

- **Resettlement impacts will be minimized.** If any resettlement impact, as defined under ESS 2, is identified during screening/detailed design of BRWSSP subprojects then PCU will explore feasible alternative subproject designs and/or configurations to avoid or at least minimize the resettlement impacts.
- **Project affected persons (PAPs) will be defined inclusively.** This means that PAPs are defined as those whose livelihoods and standards of living are adversely affected by project activities - whether through the loss of assets or access to assets, through being deprived of resources, through loss of income sources or means of livelihood, through physical relocation, or through other losses that may be identified during the process of resettlement planning.
- **Meaningful consultation with PAPs and communities.** PAPs and impacted communities have the right to:
  - Receive information on Project developments on an on-going basis;
  - Be consulted on issues pertaining to them, such as resettlement impacts and their compensation, possible measures to restore their livelihoods, allowing participation in the final selection and design of such measures;
  - Get information on Project activities and implementation schedules, such as land acquisition dates, sufficiently in advance of execution;
  - Have access to relevant safeguards documents at a place accessible to them in a form, manner, and language that is understandable to them.
- **All adverse Project impacts will be identified prior to implementation and losses properly recorded.** The following information should be recorded to facilitate the planning, implementation, and monitoring of impacts:
  - Develop an inventory of impacted landholdings and immovable/non-retrievable improvements (buildings and structures) to determine fair and reasonable levels of compensation or mitigation;
  - A census detailing PAP composition and demography, and other relevant socio-economic characteristics.
- **PAPs are entitled to full compensation and rehabilitation measures on an equitable basis.** Compensation must be sufficient, at a minimum, to maintain pre-project living standards. As a principle, the Project should seek to leave PAPs with improved conditions through the inclusion of PAPs in project benefits. All PAPs will be equally eligible to the entitlement, irrespective of social or economic standing, tenure status, or any other discriminating factor.
- **Vulnerable groups will receive special attention.** Particular attention will be paid to adverse impacts on groups/social categories such as the elderly, the physically disabled, women-headed households, child/orphan-headed households, and households below

the poverty line who, because of their social position, may be vulnerable to changes brought about by project activities or excluded from project benefits. Members of these groups are often not able to make their voices heard, and this will be considered in the consultation and planning process, and in the establishment of grievance procedures.

- **Resettlement planning, budgeting, and implementation will be an integral part of the Project**. Any resettlement-associated cost is an upfront investment. All restorative activities and compensation identified as part of the RPF process or subsequent RPs must be completed prior to Project implementation.
- **GRM, monitoring, and evaluation procedures will verify the effectiveness of resettlement measures.** PCU is responsible for monitoring adequate implementation of this RPF as well as any subsequent RPs. This requires that an effective and accessible GRM is in place. All project activities must be in accordance with the AIIB policy (ESS2).

8.4 Eligibility Criteria

The Project Affected Persons (PAP) may be classified in one of the three following groups:

- Those who have formal legal rights to the land they occupy;
- Those who do not have formal legal rights to land, but have a claim to land that is recognized or recognizable under the national laws including those measures put in place by the draft land policy; or
- Those who have no recognizable legal right or claim to the land they occupy.

The process will involve a review of tenure documents owned by occupants, interviews with households and groups in the affected area. Local authorities and Land Resources and State Cadaster Department (LRSCD) concerned with land ownership and management will also hold the consultant. PAPs covered in a) and b) are provided compensation for the land they lose, and other assistance ensuring that they are:

- Informed about their options and rights pertaining to resettlement.
- Consulted on, or offered choices among, and provided with technically and economically feasible resettlement.
- Provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project.

Land for land compensation will be applied to PAPs who might lose their land. All PAPs irrespective of their status or whether they have formal titles, legal rights or not, squatters or otherwise encroaching illegally on land, are eligible for some assistance if they occupied the land before the entitlement cut-off date. Persons who encroach on the area after the socio-economic study (census and valuation) are not eligible for compensation or any form of resettlement assistance. There will, therefore, be a package of compensation and other resettlement measures to assist each category of eligible PAPs to achieve the objectives of the policy.

Eligibility criteria will also be determined by loss of property, loss of wages, and cut-off date. Any person or household, or community who suffers the loss of land, shelter, business, incomes, sources of livelihood because of the Project is eligible for receiving compensation and or assistance to offset such loss enabling restoration of living conditions to a state better or equal to the pre-project situation. The eligibility will be determined on the basis of an impact

survey carried out while preparing the RP and approved by the PCU. The eligibility list provided in the RP will remain the basis for providing entitlements to the non-titleholder PAPs, in case of the titleholders' eligibility will be determined through scrutiny of title deeds or other legal documents admissible and recognized under law as valid ownership documents.

8.5 Entitlement and Eligibility

All involuntary land acquisitions will be compensated at replacement cost as per the ESS 2 and the PAPs will be assisted to re-establish their living standards (affected shelter and incomes) to a level equal or better than their living condition prior to the project. According to Presidential Decree # 5495 (dated on 01.08.2018), a replacement cost, including compensation on market value and losses shall be paid to PAPs. The valuation of affected structures can be valued by independent valuation companies without deducting any depreciation. Land-based compensation is provided by local Hokimiyats on the basis of land acquisition acts at respective districts (cities).

In accordance with the principles of the present RPF, all displaced households and persons will be entitled to a combination of compensation packages and resettlement assistance depending on the nature of ownership rights on lost assets and scope of the impacts including socio-economic vulnerability of the displaced persons and measures to support livelihood restoration if livelihood impacts are envisaged. The displaced persons will be entitled to the following types of compensation and assistance packages:

- Compensation for the loss of land, crops/ trees at their replacement cost;
- Compensation for structures (residential/ commercial) and other immovable assets at their replacement cost;
- Assistance in lieu of the loss of business/ wage income and income restoration assistance;
- Assistance for shifting and provision of the relocation site (if required), and
- Rebuilding and/ or restoration of community resources/facilities.
- Additional assistance to the vulnerable households.

Displaced persons (DPs) meeting the cut-off date requirements will be entitled to a combination of compensation measures and resettlement assistance, depending on the nature of ownership rights of lost assets and scope of the impact, including the social and economic vulnerability of the displaced persons. Unforeseen impacts will be mitigated in accordance with the principles of this RPF.

An Entitlement Matrix has been developed in **Table 8.1** that summarizes the types of losses and the corresponding nature and scope of entitlements, and follows National Laws and ESS 2 of AIIB. The entitlement matrix presents the entitlements corresponding to the tenure of the DPs in the following order.

- Loss of land (agricultural, residential, commercial or otherwise)
- Loss of residential structure (inhabited structures)
- Loss of commercial structures
- Impact to tenants (Residential/ Commercial / Agricultural)
- Impact to trees, standing crops, other properties, perennial and non-perennial crops

- Impact to Squatters
- Impact to Encroachers
- Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers
- The impact on Vulnerable Households
- Unforeseen impacts.

Table 8.1: Entitlement Matrix

	Impact Category	Entitlements		Implementation Guidelines
Section I. TITLE HOLDERS - Loss of Private Property				
1	Loss of Land (agricultural, residential, commercial or otherwise including resident & non-resident landlords)	a	Land for land compensation with a plot of equal value.	Compensation "land for land" is provided to all the PAPs in case of loss of their land by selection of the similar (equivalent) land plots of the equal value/productivity, of comparable location and additional agricultural means. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project
		1.1 Agricultural land		
		a	Land for land compensation with a plot of equal value. *OR* Compensation to recover a new land to the pre-project condition.	Compensation based on market value for lost harvest equal to the average annual income for past 3 years multiplied by 4 times (years). Unaffected portions of an affected arable plot will also be compensated if the same becomes unviable after impact.
		b	One-time subsistence allowance of equivalent to three months minimum wage income [11] for severely affected households	Households who are losing more than 10% of productive lands.
2	Loss of residential structure (inhabited structures)	***2.1. Inhabited structures***		
		a	*In addition to Compensation for land listed above under S.No.1* 6-month notice in advance to vacate the structures	Evaluation of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market

[11] Since September 1, 2019 the minimum wage in Uzbekistan equals to 634 880 UZS, so one-time allowance is 1 904 640 UZS. This number is subject to corrections based on minimum wage rate at the time of census

	Impact Category	Entitlements		Implementation Guidelines
			Cash compensation at full replacement costs OR Provision of the alternative house of equal in adjacent territories. In case the alternative house's market value lower than an affected house, then additional cash compensation for the difference will be provided	fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		c	One-time subsistence allowance of equivalent to three months minimum wage income[12] for project affected households who are required to relocate due to the project	Households who need to relocate are provided support as part of livelihood restoration
		d	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		e	Rental allowance up to 24 months for affected households who get cash compensation for affected residential structure OR Rental allowance for 1 month who gets an alternative house.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. One-month allowance will be given to households who will be provided a ready alternative house to live.
		2.2. Losses of adjoining substructures to the residential houses such as fences, shed /tents etc.		
		a	Compensation at full replacement cost for affected structure/fixed assets free of depreciation and transaction cost	PAPs must have the right to salvage materials

[12] Since September 1, 2019 the minimum wage in Uzbekistan equals to 634 880 UZS, so one-time allowance is 1 904 640 UZS. This number is subject to corrections based on minimum wage rate at the time of census

	Impact Category	Entitlements		Implementation Guidelines
3	Loss of Commercial structures	a	**In addition to Compensation for Land and Assistance listed above under S.No.1** Cash compensation at full replacement costs OR Provision of the alternative commercial structure of equal in adjacent territories. In case the alternative structure's market value lower than affected structure, then additional cash compensation for the difference will be provided	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable.
		b	6-month notice in advance to vacate the structures	
		c	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		d	One time grant equal to one year of wages for loss of trade/self-employment for the business owner	Provision of compensation will be based on tax declaration or official minimum salary
		e	One-time subsistence allowance of equivalent to three months minimum wage income for owners of commercial structures who are required to relocate due to the project	Owners of Commercial structures who need to relocate are accepted as severely affected entities losing more than 10% of their production capacities.
		f	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		g	Rental allowance up to 3 months for lost income during the interruption.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. Provision of rehabilitation assistance if required (assistance with job placement, skills training).
4		***4.1 Residential***		

	Impact Category	Entitlements		Implementation Guidelines
	Impact to Tenants (Residential/ Commercial / Agricultural)	a	1-month notice to vacate the rental premises	
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		4.2 Commercial		
		a	1-month notice to vacate the rental premises	
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		d	Commercial tenants will receive a one-time allowance for loss of trade/self-employment provided under 3(c) above in lieu to the owner	Provision of compensation will be based on tax declaration or official minimum salary
		4.3 Agricultural tenants		
		a	In case of agricultural tenants advance notice to harvest crops OR Compensation for the lost crop at the market value of the 1-year yield	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the Agricultural Department (AD) at respective districts of the project area
5	Impact to trees, standing crops, other properties, perennial and non-perennial crops	a	Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the AD

	Impact Category	Entitlements		Implementation Guidelines
		b	Compensation for timber trees provided based on replacement cost.	Based on the market value of dry wood volume determined by the AD. Felled trees will be kept by affected households
		c	Compensation for fruit trees will be provided based on replacement cost.	Based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years) plus input costs for trees to reflect the duration from planting to reach the productive stage
Section II. Additional assistance for Women headed households (Title and non-title holders)				
6	Loss of Land / house / shop		One-time subsistence allowance of equivalent to three months minimum wage for women-headed households who are required to relocate due to the project	
Section III. NON-TITLE HOLDERS - Impact to squatters / Encroachers				
7	Impact to Squatters	7.1 Loss of house		
		a	Cash compensation at market value for the structures OR Provision of comparable alternative structures	
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project
		7.2 Loss of shop, repair shop		
		a	Cash compensation at full replacement costs for the structures OR Provision of comparable alternative structures	
		b	Right to salvage the affected materials	

	Impact Category	Entitlements		Implementation Guidelines
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	
		7.3 Loss of standing crops		
			Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	
8	Impact to Encroachers	***8.1 Loss of Standing crops***		
		a	2-month notice to harvest standing crops or market value of compensation for standing crops, if notice is not given.	Market value for the loss of standing crops will be decided by the PCU in consultation with the Agriculture Department at respective districts.
		8.2 Structure		
		a	1-month notice to demolish the encroached structure	
		b	Compensation at market value for structures without depreciation for the affected portion of the structure	
Section IV. Loss of Livelihood Opportunities				
9	Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers		One-time subsistence allowance of equivalent to three months minimum wage income.	Only agricultural laborers who are in fulltime / permanent employment of the landowner, or those affected full-time employees of the business, will be eligible for this assistance. Seasonal agricultural laborers will not be entitled to this assistance.
Section V. Impact on Vulnerable Households				
10	Vulnerable Households (Women headed	a	Inclusion in existing safety net programs to ensure the continuation, or increase, of previous income.	One adult member of the displaced household, whose livelihood is affected, will be entitled to skill development.

	Impact Category	Entitlements		Implementation Guidelines
	household, Low-Income household, a household headed by elderly with no support and household headed physically challenged people)			The census team will identify the number of eligible vulnerable displaced persons based on the 100% census of the displaced persons and will conduct training need assessment in consultations with the displaced persons so as to develop appropriate training program suitable to the skill and the region. Suitable trainers or local resources will be identified by BRWSSP safeguard specialist at PCU in consultation with local training institutes. It is recommended to involve local NGOs in this process
		b	One-time subsistence allowance equivalent to three months minimum wage income	
		c	Priority for employment in project-related jobs, training opportunities, self-employment, and wage employment assistance.	
Section VI. Unforeseen Impacts				
Any unanticipated impacts identified during Project implementation will be compensated in full at replacement cost and the entitlement matrix shall be revised if required in case major unanticipated impacts occur during detailed and final design.				

8.6 Cut-off Date

Cut-off dates are essential in the process of drawing up lists to ensure that ineligible persons do not take the opportunity to claim eligibility. The establishment of a cut-off date is required to prevent opportunistic invasions/rush migration into the chosen land, thereby posing a major risk to the subproject.

The cut-off date will be the last date of the census to determine the resettlement impact of each subproject. It is a date, after which people who are not included in the list of PAPs as defined by the census, will not be considered eligible for compensation. The census will be carried out to collect data on the affected households for each subproject. The specific date will be included in each RP and clearly communicated to affected communities. Thereafter, no new cases of affected people will be considered. Unfinished structures would be identified and secured, and unused materials for individuals' constructions will be gathered at the site so that the cut–off survey can estimate PAPs' investment which should be compensated for in lieu of expenses (including labor) incurred until the cut–off date. Because the time period between the cut-off date and the time that actual productive investments (civil works, etc.) would start, special attention needs to be taken to secure the sites from the rush and opportunistic invasion.

These measures could include close consultation with the recognized PAPs, signage that informs the general public of the intended use of the site, and security patrols to identify opportunistic invaders. Further patrols and monitoring of any violation of the cut-off date could be carried out by local hokimiyats (local governments) and be reported to the local resettlement commission in written form. This could also be done both by the local PAPs representatives or the local community.

This process must be in full compliance with the conflict resolution mechanisms discussed in this document. The cut-off date must be communicated effectively to the potential PAPs and surrounding local communities. The local community and traditional leaders will play a crucial role in identifying users of land.

8.7 Guidelines for Preparing RPs

This RPF has been prepared based on the results of (1) review of policies of Uzbekistan and AIIB on resettlement; (2) site survey and social impact screening of project areas to assess possible impacts of land acquisition and resettlement; and (3) consultations and meetings with local stakeholders.

During the project implementation stage, data will be updated fully and suitable to serve the implementation of the resettlement planning, meeting the project objectives and policies.

A resettlement plan (RP) will be prepared for each subproject involving resettlement impacts. the step-wise procedure is described below.

The key steps in resettlement planning are: (i) social screening; (ii) social impact assessment; (iii) inventory and valuation; (iv) determining eligibility and entitlements; (v) consultation and disclosure of findings; (vi) preparation of RP; (vii) consultation and finalization of RP; (viii) disclosure of the final RP (which analyses and describes the impacts, entitlements, detail of parties involve in project implementation, RP implementation schedule, inventory of eligible PAPs, grievance redress mechanism (GRM), initiation of land acquisition and resettlement process; disbursement of compensation and entitlements, relocation (planning and actual relocation), redressed of grievances, site clearance and handover to contractor for civil works; post resettlement support measures. The process starts with assessment and categorization of projects from social perspective as described below:

Screening for Inventory Resettlement

Once a subproject is conceived to be implemented under BRWSSP, the first step in the process would be to conduct screening. The purpose of screening is to assess the scope of involuntary resettlement. PCU will conduct an initial social screening exercise for each subproject to identify type and nature of involuntary resettlement risks and impacts due to proposed activities. The screening exercise will be conducted jointly by the social staff of the PCU, along with technical design team, to fully orient themselves with the potential impacts of the main and associated infrastructure. The screening exercise would thus be conducted for identification of E&S risks and impacts, and categorization of projects based on nature of activities, scale of operations, technology, locations, significance and severity of E&S risks and impacts.

Analysis/Screening of Alternatives to Avoid/Minimize Impacts

One of the key principles with respect to AIIB SS2 for the subprojects to be financed is to avoid and/or minimize land acquisition and involuntary resettlement. At this stage efforts will be made to avoid or minimize the resettlement impacts by exploring alternative design options. It is essential for the PCU/design team to consider how the need for land acquisition and involuntary resettlement can be avoided and/or minimized. The screening results will be documented and reported in a screening checklist. If screening of project impacts would reveal that the project will cause significant social impacts, the technical team jointly with social and environment specialists, will explore all feasible design alternatives to modify the technical

designs of the main and associated infrastructure and construction methodology with an aim to avoid and/or minimize the involuntary resettlement impacts, both temporary and longer-term.

The social team of PCU and design team will maintain close coordination to identify opportunities to avoid or minimize resettlement impacts for screening of each project.

Social Impact Assessment

Preparation of RAP for each subproject with resettlement impacts will require a detailed social impact assessment which will be initiated at early stage as part of planning and design of all subprojects to be implemented. The social impact assessment (SIA) will include initial land acquisition and resettlement impact assessment, screening and involuntary resettlement (IR) categorization of projects, preparation of inventory of lost assets followed by a detailed measurement survey (DMS) and census of PAPs, a socio-economic survey (SES), and valuation of lost assets (VLA). The results of the resettlement and social impact assessment will be presented in an aggregate form in the subproject RP and an impact inventory, linked to respective PAPs, will be annexed in the RP document. However, the publicly disclosed RPs will not include personalized entitlement and compensation.

If results of social screening of a subproject would indicate that the project is likely to lead to risks and impacts associated with involuntary resettlement, and the involuntary resettlement impacts are unavoidable, the next step will be to determine the appropriate safeguards instrument to be prepared. The following guidance will be used to make a decision for a full RP or an abbreviated RP (ARP).

If it is determined that more than 200 people would be affected, then that would require the preparation of a full RP. If less than 200 persons are affected by a sub-project, ARP will have to be prepared in accordance with SS2. This will inform the choice of resettlement and compensation options and help estimate compensation cost. If there is no resettlement impact identified, no RP/ARP is required. However, the project will document the outcome of the screening report that shows there are no land acquisition and resettlement impacts.

For preparing RPs/ARPs, the PCU will conduct the SIA and prepare the instrument through its own staff or consultants depending on their expertise, nature, urgency and scale of resettlement impacts. For substantial risks and impacts, and large subprojects, external consultants would be a preferred option. The PCU and technical design consultants will provide full support to the consultants in conducting SIA and resettlement planning. The sample ToRs for conducting SIA and RP preparation are provided in **Annex F**. The SIA will be carried out based on final conceptual, preliminary or detailed technical design, as appropriate. The SIA will include both quantitative surveys and qualitative assessments, as described below:

- Review of secondary data;
- Census of 100% directly affected households will be carried out to record actual impacts and prepare the inventory of losses;
- Land demarcation and detailed measurement survey (DMS) of the affected land and/or non-land assets;
- Assessment of replacement costs through private negotiations or independent assessments of prevailing market rates of land and other assets;
- Consultations with affected persons and other key stakeholders through focus group discussions, key informant interviews and in-depth interviews to a) obtain PAPs and stakeholder inputs on how to avoid or at least minimize involuntary resettlement; (b)

in-depth analysis of impacts; and (c) identify the needs and preferences of PAPs on involuntary resettlement and development opportunities;

- Socio-economic survey of a representative sample of affected households to prepare a profile of the affected households including demographic and socio-economic details, landownership, usage and productivity and income, scope and nature of involuntary resettlement impacts, including impacts on vulnerable groups of PAPs.

Consultations

Consultations will be conducted with PAPs and other key stakeholders throughout the project lifecycle. The purpose of consultations during resettlement planning is to inform PAPs about the nature and scale of project impacts, and decision making in all resettlement aspects especially eligibility, entitlements, unit rates of compensation, and resettlement and rehabilitation assistance. The PCU will ensure that consultation will continue during the all phases of RAP preparation, implementation, monitoring, and evaluation of compensation payment and assistance.

The consultations with other key stakeholders will also be conducted; these include government departments, civil society/non-profit organizations, non-Governmental organizations, community leaders, public representatives, academia, religious leaders, ethnic minorities and local voluntary organizations.

Preparing Resettlement Plans

The RP/ARP preparation activities will be initiated as part of the preparation of each new subproject involving resettlement impacts. The requirement will be to take the completed detailed design of proposed subproject and carry out a measurement survey and enumeration.

Following the SIA, an RP or ARP will be prepared. The RP/ARP will be prepared in consultation with PAPs, particularly in relation to the cut-off date for eligibility, scale of impacts to income and livelihoods, methods of valuation, compensation payments, potential assistance, and time frame for RAP implementation. The RP/ARP will be submitted to the AIIB for review and clearance.

Valuation of Land and other Assets. As a part of the land acquisition and resettlement planning process, an assessment of replacement costs or asset valuation will also be carried out through independent assessment, which will form the basis for determining the compensation for the affected land and assets at prevailing market rates (can be based on negotiations) in a project area. The census will be based on preliminary engineering/technical designs of the project. The census data will be updated once the final and detailed engineering designs are completed.

Information Dissemination Relating to IR and Mitigation Measures. The PCU will disseminate all information relevant to the land acquisition and other involuntary resettlement impacts, together with social team of consultants that include the orientation on potential social and environment impacts of the project, results of social impact assessment, measures to mitigate the impacts, meaningful consultations, eligibility, entitlements, cut-off-date, RP disclosure, GRM, unit costs for compensation, resettlement and rehabilitation assistance, RP implementation procedures, institutional responsibilities of RP implementation, time frames, cost estimates, monitoring, and the resettlement planning process. During resettlement plan preparation, resettlement information will be disclosed to all PAPs in their own language, and their views and opinions will be taken into consideration in finalizing the plans. The PCU will establish village information centers at locations that are easily accessible by the PAPs. The

site office social staff will be assigned with the responsibility to keep close coordination and communication with the information centers to attend to the inquiries from the PAPs and general public, and to receive any complaints or grievances. These information centers would strengthen trust between PCU, the consultants, the relevant government departments, and the affected persons. The information brochure in local language will also be disseminated to all affected households. The brochure will provide brief project description; summary of project impacts; eligibility and entitlements; valuation of losses at full replacement cost; grievance redressal mechanism; RP implementation procedures, livelihood restoration and improvement plan; implementation procedures; budget; contact details of PCU and site office staff for additional information.

RP Approval, Clearance and Disclosure. Following the incorporation of comments from disclosure, the draft RP will be reviewed and approved by the PCU. It will be ensured that the RP complies with the RPF and after approval, will submit it to the AIIB for compliance review with AIIB policies and procedures prior to providing clearance. The approved RP, together with translation in local language, will be posted on the website of the UZST. The AIIB will also disclose the RP at its website. The translation of the RP will include the Cut-off date. This will exclude the cash compensation amounts to be paid to the PAPs. Any changes to the RP would have to follow the same clearance/ approval procedures and disclosure.

Summary of Process for Screening, Preparing and Approving RPs

Table 8.2 provides a summary of step by step process to determine whether a subproject will result in physical or economic displacements, and whether a RP is required and if so, how to prepare and implement that.

Table 8.2: Summary of Process for Screening, Preparing and Approving RAPs

Steps	Actions	Responsibility	Stage
1.	Screening of each subproject for resettlement impacts	PCU	As soon as a subproject is identified and initial draft of the subproject technical design is ready
2.	Determining the appropriate safeguard instrument to be prepared (RP or ARP)	PCU	Once screening is complete
3.	Preparation of ToRs for conducting SIA and appointment of consultants	PCU	Mobilization of consultants soon after finalization of subproject design and completion of screening.
4.	Social Impact Assessment • consultations with potential PAPs and other stakeholders • census and inventory • socio-economic survey • identification of vulnerable and severally affected households • assessment of impacts on livelihoods • valuation of land and other assets at replacement cost	RP consultants	After contract award to consultants for RP

Steps	Actions	Responsibility	Stage
	• determination of compensation for each category of PAPs		
5.	Establish GRM and notify GRC at each site of respective subproject	PCU	At preliminary stage of SIA
6.	Preparation of RP/ARP including livelihood restoration plan	RP consultants	Duration depends on nature and scale of resettlement impacts/urgency of subproject preparation
7.	Review of draft RP/ARP	PCU	5 to 7 working days after availability of draft RP/ARP
8.	Finalization of RP/ARP	RP consultant	5 to 7 working days after receiving PCU comments
9.	Approval of RP/ARP by PCU Submission of RP/ARP for the AIIB's compliance review and clearance	PCU	5 working days after receiving revised RP/ARP
10.	Disclosure of A/RAP	PCU/AIIB	Once approved by PCU and AIIB
11.	RP/ARP implementation • confirmation of PAPs and the associated project resettlement impacts, if any • finalization of compensation amount • development of standard operating procedures for making compensation and assistance • complete documents for payments • payment of compensation and assistance • grievance redressal • continuous coordination and communication with PAPs and key stakeholders • documentation and reporting	PCU (with support from consultants)	Before start of civil works
12.	Consultation with PAPs and other and stakeholders	PCU and consultants	Throughout the project duration
13.	Internal monitoring of RP/ARP implementation and reporting	PCU	During RP/ARP implementation
14.	Grievance redressal (on-going)	PCU	At all stages of resettlement planning and implementation

Steps	Actions	Responsibility	Stage
15.	Hiring of Third-Party Monitoring Consultants	PCU	Well in advance before completion of first RP/ARP implementation
16.	Third-Party Monitoring of RP/ARP implementation	Consultants	Once RP/ARP implementation is completed and then after every six months
17.	Taking possession of site	PCU	After completion of payments as per entitlements
18.	Evaluation of post RP/ARP implementation	Consultants	Three months after implementation completion of each RP/ARP
19	RP/ARP Completion Report	PCU	Within two months after completion of RP/ARP implementation

8.8 Government Regulations

Starting from January 1, 2020, the Regulation approved by Resolution of Cabinet Ministers No. 911 dated 16 November 2019 comes into force. The procedure for the seizure of land and the provision of compensation is indicated in **Table 8.3**.

Table 8.3: Procedure for land acquisition for state and public needs and the provision of compensation

Stages	Subjects	Mechanism	Deadlines
Stage 1	President of the Republic of Uzbekistan Cabinet of Ministers of the Republic of Uzbekistan	An appropriate decision is made.	As needed
Stage 2	Council of Ministers of the Republic, khokimiyat of Bukhara region	Determine the availability of housing in disrepair or dilapidated condition, including land occupied by unused objects.	As needed
Stage 3	Council of Ministers of the Republic, khokimiyat of Bukhara region	1. Prepares presentation materials on the architectural part of the design documents of the construction object. 2. Sends a request to the construction departments and regional (city) branches	As needed Within 1 working

Stages	Subjects	Mechanism	Deadlines
		of the state-owned land management company and real estate cadastre to obtain an appropriate conclusion and other information.	day after the preparation of materials
	Construction departments	1. Prepares information on the compliance of design documents of the construction project with urban planning standards. 2. Sends materials to the Council of Ministers of the Republic, khokimiyat of Bukhara region.	Within 5 working days
	District (city) branches of the state enterprise of land management and real estate cadastre	1. Prepares a complete list of real estate located on the land, which is planned to be withdrawn. 2. Sends materials to the Council of Ministers of the Republic, khokimiyat of Bukhara region.	
	Council of Ministers of the Republic, khokimiyat of Bukhara region	1. Determines the initial amount of compensation. 2. Sends presentation materials to the Supervisory Board of the Fund.	Within 5 working days
	Fund Supervisory Board	1. Considers presentation materials. 2. Checks for sufficient funds to pay compensation. 3. Agrees or refuses to coordinate the withdrawal of the land. 4. Forwards the decision to the Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions, the city of Tashkent, districts (cities).	Within 3 working days
	Council of Ministers of the Republic, khokimiyat of Bukhara region	Sends documents to the Zhokargi Kenes of the Republic, the corresponding Kengashs of people's deputies for consideration of issues of profit and loss assessment in connection with the seizure of land.	Within 2 working days
	Zhokargi Kenes of the Republic, corresponding Kengashs of people's deputies	1. Decides to review materials and conduct public discussions. 2. Notifies the decision and sends the decision to the Council of Ministers of the Republic, khokimiyat of Bukhara region.	As needed Within 1 working day after the decision
Stage	Council of Ministers of	1. Notifies owners to hold a public	Within 2

Stages	Subjects	Mechanism	Deadlines
4	the Republic, khokimiyat of Bukhara region	discussions. 2. Organizes public discussions. 3. Draws up a protocol/minutes. 4. Publishes a protocol/minutes.	working days Within 15 days On the day of public discussions
Stage 5	Zhokargi Kenes of the Republic, corresponding Kengashs of people's deputies	1. Decides on the seizure or refusal to seize the land. 2. Notifies of the decision.	Within 5 working days after public discussions
Stage 6	Council of Ministers of the Republic, khokimiyat of Bukhara region	Organizes the valuation of the market value of rights to the seized land and real estate, which is planned to be demolished. Along with this determines the cost of: - expenses related to relocation to another place, temporary rent; - lost profits; - other expenses.	In accordance with the agreement between the initiator of the land acquisition and the owner
Stage 7	Council of Ministers of the Republic, khokimiyat of Bukhara region	1. Agree on the type, size and timing of compensation. 2. Draws up an agreement in writing and takes measures for notarization.	In accordance with the agreement between the initiator of the land acquisition and the owner
Stage 8	Council of Ministers of the Republic, khokimiyat of Bukhara region	1. Keeps records of agreement. 2. Provides for the compensation specified in the agreement. 3. Monitors the provision of compensation.	By the time specified in the agreement
Stage 9	Owner	Completely releases residential buildings (takes measures to relocate people living in buildings of a residential building), production facilities and other structures located on a seized land.	By the time specified in the agreement
Stage	Council of Ministers of	1. Prepares a draft demolition decision.	Within 2

Stages	Subjects	Mechanism	Deadlines
10	the Republic, khokimiyat of Bukhara region	2. Sends a draft decision and other documents to the justice authorities.	working days
	Justice authorities	1. Considers a draft demolition decision and documents. 2. Prepares a conclusion (positive or negative) regarding the decision on the demolition. 3. Sends conclusion to the Council of Ministers of the Republic, khokimiyat of Bukhara region.	Within 2 working days
	Council of Ministers of the Republic, khokimiyat of Bukhara region	1. Decides on demolition. 2. Forwards the decision on demolition to the district (city) branches of the state-owned land management company and real estate cadastre, as well as the state tax inspectorates of the regions (cities) and publishes it on its official website and in the media.	As needed Within 1 working day
Stage 11	Council of Ministers of the Republic, khokimiyat of Bukhara region	Organizes the demolition of the property.	As needed

It should be noted that the Regulation approved by Resolution of Cabinet Ministers No. 911 dated 16 November 2019 replaces the previously adopted Resolution of Cabinet Ministers No. 97, which is aimed at determining the procedure for assessing the value of houses, buildings and structures, including objects whose construction is not completed, as well as those located outside the designated area, if their further use is impossible in connection with the seizure of the land.

The procedure for determining the size and compensation for losses of owners, users, tenants and owners of land, as well as losses of agricultural and forestry production is established by the Regulation approved by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated May 25, 2011 No. 146.

The procedure for determining the losses of owners, users, tenants and owners of land, as well as losses of agricultural and forestry production is given in **Figure 8.1**.

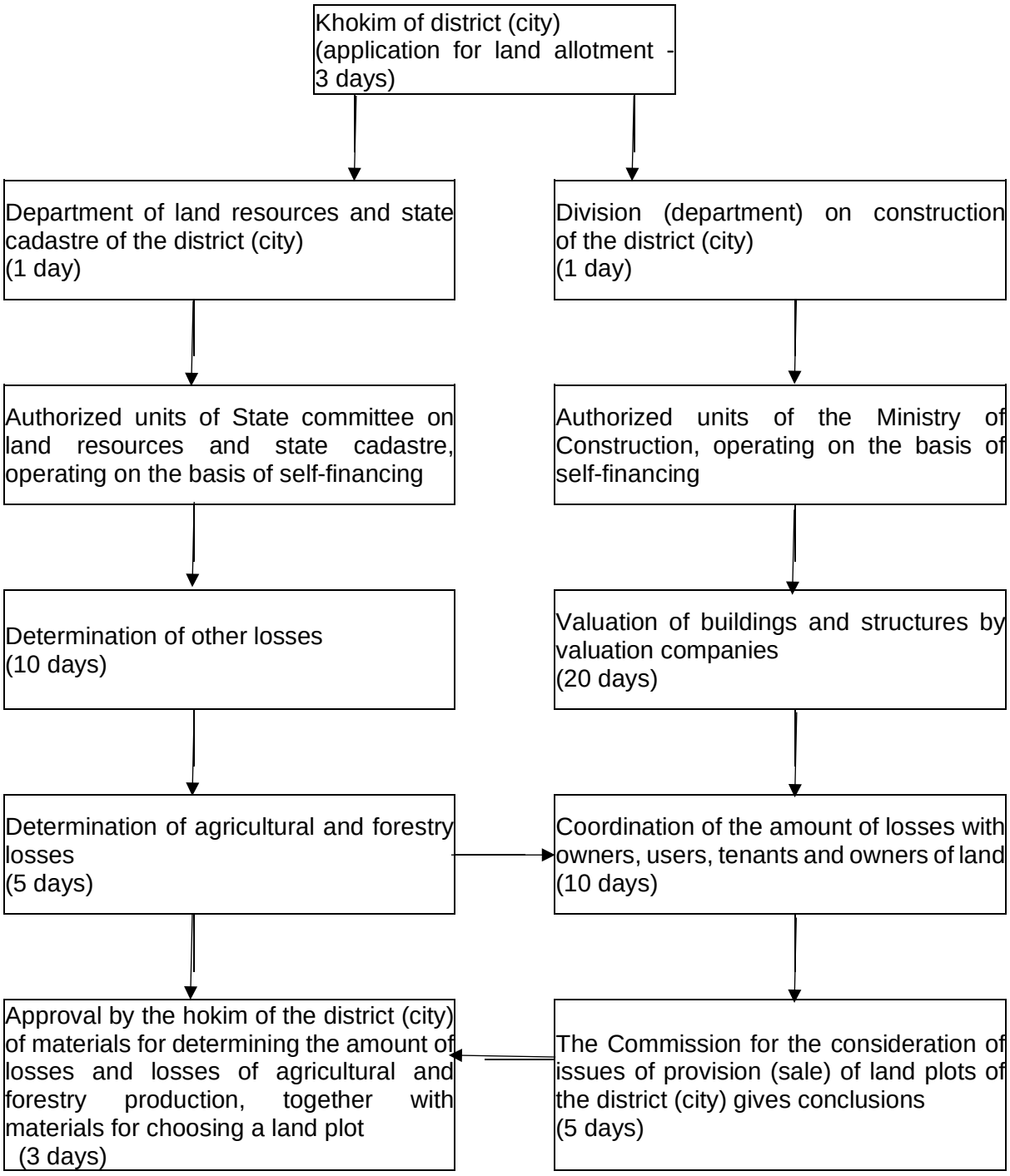

Figure 8.1: Procedure for determining the size of the losses of owners, users, tenants and land owners, as well as losses of agricultural and forestry production

Analysis of previous resettlement documentation including resettlement plans, frameworks shows that there were discrepancies between AIIB ESS 2 policy and Uzbekistan's legislation in the sphere of compensation for involuntary resettlement took place in the investment projects. A comparison between Republic of Uzbekistan Legislations and AIIB's involuntary resettlement safeguards policy that provides gap-filling measures presented in the entitlement matrix. According to the national legislation there is no categorization in Resettlement documents. In addition, The Land Code of Republic of Uzbekistan, 1998, recognizes only

owners (those having lifelong inherited possession rights, permanent users, temporary users and on rent), affected by withdrawal/redemption of land by the State. Wherein, the non-titleholders (self-willed structures) are excluded from the purview of the legislation.

The key difference between the Republic of Uzbekistan and AIIB's involuntary resettlement safeguards policy is with regard to the cut-off date for determining the eligibility for compensation and assistance to all those who are affected by the project irrespective of the ownership title to the land. To bring the policy framework of this project in line with AIIB's requirements, the RPF mandates that in the case of withdrawal of land from owners (those having lifelong inherited possession rights, permanent users, temporary users and on rent), the date of issue of notification by Khokimiyats will be treated as the cut-off date for owners, and for non-titleholders, whom the country legislation does not recognize, the cut-off date for eligibility and entitlement will be the start date of the project census survey.

Furthermore, the main discrepancies included, in public consultation before resettlement activities, detail explanation of entitlements to project affected households, provision of just compensation instead of full replacement cost, carry out socio-economic surveys among PAPs. Uzbek Laws only provide compensation for land that is legally owned by Project Affected Persons (PAPs) and no compensation to encroachers for the same. The AIIB provides for compensation for land to both legal owners and encroachers. AIIB ESS 2 states that where there is a conflict between the Bank and government frameworks, those of the Bank shall take precedence. However, recent Presidential Decree # 3857 clearly defines PCU can use a preliminary assessment document prepared in accordance with the operational policies of international finance institutes (AIIB) as a pre-project document that defines the main parameters of a project implementation.

Persons who take up their residence on the area after the cut-off date are not entitled to compensation or any other form of resettlement assistance. AIIB ESS 2 highlights that particular attention should be paid to the needs of the most vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples, ethnic minorities, and also other categories of displaced persons whose interests may not be protected by national legislation with regard to the compensations for the land plots subject to withdrawal.

A recent change in legislation of Uzbekistan considers the market value of affected property, plantations and crops in consideration of the highest value before the cut-off date while AIIB considers full replacement cost of structures through calculating the cost of materials, type of construction, labor, transport and other construction costs as on date. No deductions will be applied for depreciation or transaction costs. The cost of reconnection of lost water, electricity, gas and telephone connections will be included in the compensation (the new land sites are assumed to have similar services available).

The Bank Policy ESS 2 will prevail in cases of discrepancies between AIIB and Uzbekistan legislation, not just simply in relation to compensation issues but to all issues.

Based on the above comparisons and discussions, an Entitlement Matrix has been developed, that summarizes the types of losses and the corresponding nature and scope of entitlements, and follows National Laws and AIIB's ESS2.

Procedures for Payment of Compensation

A centralized fund for compensation of losses to individuals and legal entities in connection with withdrawal of their land plots for state and public needs under the Cabinet of Ministers of

the Republic of Uzbekistan has been formed. Procedure for payments from this fund are described in **Table 8.4**.

Table 8.4: Procedure for of use of centralized funds for compensation of losses to individuals and legal entities

Stages	Subjects	Mechanism	Deadlines
Stage 1	Legal entities and individuals	Submit applications (apply) to the working bodies of the Supervisory Board of the Regional Centralized Funds for compensation for losses caused to them with the application of the relevant documents.	As needed
Stage 2	Supervisory Board of the Regional Centralized Fund	The Supervisory Boards of the Regional Centralized Funds consider documents submitted by the working body and submit to the Council of Ministers of the Republic of Karakalpakstan, the khokimiyats of the regions and the city of Tashkent request of compensation for losses incurred to individuals and legal entities.	Within 2 working days

Stages	Subjects	Mechanism	Deadlines
Stage 3	Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions and the city of Tashkent	Make an appropriate decision based on the request of the Supervisory Board of the Regional centralized fund for damages caused to individuals and legal entities.	Within 5 working days
Stage 4	Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions and the city of Tashkent	Forwards to the Supervisory Board of the Regional Centralized Fund a decision on compensation for losses incurred to individuals and legal entities.	Within 1 working day
Stage 5	Supervisory Board	Based on the decision of the	Within 3

Stages	Subjects	Mechanism	Deadlines
	of the Regional Centralized Fund	Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions and the city of Tashkent, compensates for losses incurred to individuals and legal entities from the funds of the Regional Centralized Fund.	working days
Stage 6	Supervisory boards of the Republican and Regional centralized funds	Supervises targeted and efficient use of resources, keeps a record of the use of funds, and forms reports in the prescribed manner.	Permanently

8.9 Compensation for Vulnerable Groups

Vulnerable households, including women headed household, low-income household, a household headed by elderly with no support and household headed physically challenged people will be provided with a one-time additional allowance equivalent to three months minimum wage income in accordance with proof provided by Mahalla. In addition, members of vulnerable households will also be prioritized 13 in project related employment. The Mahallas and district government have a record of all households in the communities and will be tapped in identifying and certifying vulnerable households. Encroachers who are found to be vulnerable group will be provided compensation in the form of replacement cost for affected building and structures.

8.10 Methods of Compensation

Individual and household compensation will be made in cash, in kind, and/or through assistance. The type of compensation will be an individual choice. **Table 8.5** describes the forms of compensation.

Table 8.5: Forms of Compensation

Cash Payments	Compensation will be calculated in Uzbek sums. Rates will be adjusted for inflation.
In-kind Compensation	Compensation may include items such as land, houses, other buildings, building materials, seedlings, agricultural inputs, and financial credits for equipment.
Assistance	Assistance include onetime payment, moving allowance, transportation and labor, training.

Making compensation payments raises some issues regarding inflation, security, and timing that must be considered. One purpose of providing in-kind compensation is to reduce inflationary pressures on the costs of goods and services. Local inflation may still occur; thus, market prices will be monitored within the time period that compensation is being made to allow for adjustments in compensation values. The question of security, especially for people who will be receiving cash compensation payments needs to be addressed by the local administration. Local banks and microfinance institutions should work closely with the local administration at this level to encourage the use of their facilities, which will positively impact the growth of the local economies. The time and place for in-kind compensation payments will be decided upon by each recipient in consultation with the LARP.

8.11 Key legal provision related to women and vulnerable groups of the population

The Government of Uzbekistan emphasized the role of gender mainstreaming and achieved a degree of progress in promoting gender equality and empowering women. The adopted "Development Strategy of Uzbekistan for 2017–2021" became the basis for carrying out reforms, developing policies, programs and implementing projects aimed at achieving gender

[13] Applicants should meet eligibility requirements in terms of qualification and skills.

equality and improving the status of women[14]. The last 2 years, the government is opening up on gender-related issues as evidenced by several resolutions of the President of Uzbekistan[15] focused on the measures to achieve gender equality and improving the women life. Another development was a creation of the 'Commission for the Protection of Gender Equality of Women' (CPGEW further Commission)[16] under the Parliament to support the implementation of the government policies related to family and gender equality by developing recommendations, monitoring the implementation of national and international norms, conducting studies, preparing proposals for the Parliament, conducting preliminary review of laws, and considering appeals from individuals and legal entities. In August 2019 two laws on (i) "Guarantees of equal rights and opportunities for men and women"; (ii) "Protection of Women from Harassment and Violence" were approved by the Government. In addition, National Development Strategy for 2017-2021 and Decree of President of Uzbekistan on "Additional measures for ensuring further economic development and enhancing the efficiency of economic policy" were adopted in January 2019. These documents emphasize the structural reforms in 2019-2021 to: (i) remove restrictions on women's participation in all sectors of the economy; (ii) improve the targeting of government programs to increase women's participation in the economy; and (iii) conduct campaigns to promote the culture of professional leadership and entrepreneurship among women.

National gender policy is going hand in hand with AIIB policy and recognizes the importance of gender equality for successful and sustainable economic development and the need for inclusiveness and gender responsiveness in the BRWSSP.

In accordance with the initial social assessments, the vulnerable groups will generally include the following:

- Low-income households as identified by BRWSSP's social assessment and according to local regulations;
- Low-income landholders that have limited productive land (this will be determined by the minimum amount of farmland needed to be a viable farmer in the project area);
- Mentally and physically handicapped people or people in poor physical health; infants, children, and women without assistance, elderly people;
- Low income women-headed households or women-headed households with no other support;
- Other PAP identified by the project management unit and who may not be protected through national land compensation or land titling; or
- Any additional groups identified by the socio-economic surveys and by meaningful public consultation.

[14] The strategy identifies priorities for increasing the socio-political activity of women, strengthening their role in government and society, the active participation of women in peacebuilding processes, increasing economic independence and ensuring the employment of women and young people, especially those living in rural areas.

[15] Presidential Decree No. 5325 of 2 February 2018 "On Measures to Improve Fundamentally the Activities in the Sphere of Supporting Women and Strengthening the Institution of the Family"; Presidential Decree of 27 June 2018, No. PP-3808 "On Approving the Concept of Strengthening the Family Institute in the Republic of Uzbekistan" with the Presidential Decree of 2 July 2018, No. PP-3827; Presidential Decree "On measures for further strengthening the warranties of the labor rights and support to women' entrepreneurship activity" (from March, 7, 2019 г.,№ PD-4235).

[16] Presidential Decree 'On measures to further strengthen the guarantees of labor rights and support women's entrepreneurship' (March 2019).

8.12 Grievance Redress Mechanism

Grievance Redress Mechanism (GRM) presented in **Chapter 6** will be applicable for RP and ARP implementation also.

8.13 Monitoring

PCU will be responsible to conduct the internal monitoring of RP/ARP implementation with the support from the consultants. Some of the key activities that would be monitored include:

- timely payment of compensation and assistance and prior to the commencement of civil works;
- processes followed in the dissemination of information on the project and eligible entitlements as well as the quality of consultations;
- processes followed in the relocation of PAPs as per relocation plan, if displaced;
- provision of replacement cost (towards the cost of structures, shifting and replacement house);
- relocation of all common properties such as toilets, temples, etc.
- the provision on livelihood support measures, training towards rehabilitation;
- provision of work opportunities to PAPs and other community members during civil works; and
- grievances received and redressed by level.

The PCU will also be responsible for record-keeping, management and internal monitoring of the GRM. UZST will also engage consultants for external monitoring and evaluation of the project implementation. The consultants will undertake monitoring and verification of processes and activities of RP implementation and would submit quarterly reports. It would also undertake an end-term evaluation post RP implementation to ascertain if the RP objectives have been achieved. The consultants will identify gaps based on desk reviews and field visits and provide timely inputs for course-correction to the PCU to improve implementation and outcomes. Besides, it will recommend measures necessary to build capacity and provide requisite training to implementation staff and other stakeholders such as civil works contractor.

Monitoring indicators for social and resettlement impacts are shown in **Table 8.6**.

Table 8.6: Proposed Indicators for Social Monitoring Plan

	Issues/activities to be monitored	Indicators
1	General success/acceptability of the compensation/resettlement process	Outstanding (unsigned) individual compensations/resettlement contracts as a percentage of total compensation/resettlement contracts
		The ratio of PAPs remaining supportive of the project against those not supportive
		Level of public consultation measured as the ratio of those that acknowledge having been
		Consulted vs. those that were not consulted. This ratio can be determined by random sampling.

	Issues/activities to be monitored	Indicators
		Actual time of completing resettlement compared to the planned time
2	Project acceptance (or not) by the community	Number of complaints as a percentage of total PAPs
		Number of grievances successfully resolved as a percentage of the total number of grievances
3	Acceptance (or not), of PAPs by the host community	Number of conflicts between PAPs and host community
4	Restoration of areas temporarily disrupted by construction	Area of land restored to cultivation as a percentage of total area of land disrupted
5	Replacement of grazing land permanently displaced by access roads and building construction	Area of new land opened up for cultivation/grazing as a percentage of total original land area cultivated/grazed
6	Quality of life compared with that before compensation/resettlement	Number of larger houses of better quality provided as a percentage of total number of houses in the original settlement
		Number of individuals and families able to re-establish their pre-displacement activities, land, and crops or other alternative incomes, as a percentage of total PAPs
		Pre-project income of vulnerable affected individuals/groups versus their present income
		Number of people participating in project activities compared to total PAPs
		Trends in environmental diseases such as malaria, diarrhea, coughs etc.
		Trends in respiratory diseases
		The trend in HIV/AIDS statistics in comparison with pre-settlement statistics
		Mortality rates after resettlement compared with pre-settlement rates
		Number of PAPs with access to potable water compared with total PAPs
7	Productivity	Pre-project production versus present production (crop for crop, land for land).
		Post-project production per affected household/homestead compared with pre-project income.
		Wildlife conservation and eco-tourism activity on acquired land as per plan

ANNEXES

List of Annexes A

Annex A. List of Applicable National Standards Related to the Project

List of Annexes B

Annex B1 Water Supply System scheme of Bukhara region (Priority - I) (Russian)

Annex B2 The design scheme of the Water Supply System of the Bukhara region (2045) (Russian)

Annex B3 Water supply scheme of Bukhara region (Russian)

Annex B4 Water supply scheme of Jondor district (Russian)

Annex B5 Water supply scheme of Kagan district (Russian)

Annex B6 Water supply scheme of Qorovulbozor district (Russian)

Annex B7 Water supply scheme of Peshku district (Russian)

Annex B8 Water supply scheme of Peshku district (Russian)

Annex B9 Water supply scheme of Rometan district (Russian)

List of Annexes C

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List of Annexes E

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