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UZBEKISTAN: WATER SUPPLY ENERGY EFFICIENCY PROJECT – PHASE II FEASIBILITY STUDY

Project No.: 2024.011483

Environmental and Social Audit and Assessment:
Non-Technical Summary

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Contents

ABBREVIATIONS

CAREC	Environmental Centre for Central Asia
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
ESAA	Environmental and Social Audit and Assessment
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
EU	European Union
HQ	Headquarter
IWC	irrigation water conveyance
kV	kilo volt
LLC	Limited liability company
m	meter
MoA	Ministry of Agriculture
MoWR	Ministry of Water Resources
NGO	Non-governmental Organization
NTS	Non-Technical Summary
PIP	Priority Investment Program
PR	Performance Requirement
PS	Pump Station
PS&E	Pumping Stations and Energy (Department)
RoU	Republic of Uzbekistan
RWBI	Regional Water Basin Irrigation (Department)
SE	State Enterprise
sec	second
SEP	Stakeholder Engagement Plan
SGB	Self-Government Body
TIIAME	Tashkent Institute of Irrigation and Agricultural Mechanization Engineers
UNECE	United Nations Economic Commission for Europe
WCA	Water Consumers Associations

1 Introduction

This Non-Technical Summary (NTS) provides a summary of the "Uzbekistan: Water Supply Energy Efficiency Project – Phase II – Feasibility Study" Project (hereafter the Project) settings in terms of environmental and social baseline conditions, environmental and social impacts and recommended mitigation and enhancement measures in order to meet the European Bank for Reconstruction and Development (EBRD) Environmental and Social Policy and associated Performance Requirements (PRs) (2019).

The Project is categorised "B" in accordance with the EBRD Environmental and Social Policy (2019), which requires elaboration of an Environmental and Social Audit and Assessment (ESAA) of the Project to be carried out against the EBRD Environmental and Social Performance Requirements (PRs).

The purpose of the NTS is to provide the public with simple and accessible basic information on the content and key findings of the ESAA. In addition to this NTS, the Stakeholder Engagement Plan (SEP) will be disclosed to the public.

2 Poject background and description

2.1 Background and rationale for the Project

In February 2018, the Ministry of Water Resources (the Ministry or the MoWR) was established to improve the management of the country's water resources and to modernize the IWC infrastructure. The Ministry is responsible for the operation of the country's IWC infrastructure and overall implementation of the government's vision for the sector.

The IWC infrastructure includes water intake facilities, pump stations and main and small water conveyance canals that supply water to the farm-level systems. It is managed by the MoWR through 13 regional departments, each of which operates and maintains its own irrigation cluster. The MoWR also controls, among others, several state unitary enterprises responsible for production and repair of IWC equipment, a design institute and a consultancy responsible for construction supervision.

The irrigation system operated by the Ministry include about 28, 569 km of inter-farm and main canals[1]. In addition, about 150,000 km of on-farm canal are under the operation of farmers. Water is supplied to irrigation canals both by gravity, mainly main canals, and by pressure systems ("machine canals").

About 57% of the land under irrigation in the RoU receives its water through pressured (machine) irrigation systems, a development associated with the relief of the country. The main sources of water for irrigation are the Syr Darya river and the Amu Darya river in the flat part of their basins, with the river bed being the lowest in absolute measurements. The main canals are constructed along isohypses with a minimum slope. Water supply to higher sections is provided by numerous pump stations. The area of land irrigated with water provided by pump stations varies from 50 ha to 100,000 ha and more. Currently 1,688 pump stations (PS) with 5,231 pumps are operated by the MoWR ensuring pressured irrigation of around 2,449.8 k ha of agricultural lands.

The Ministry has approached the European Bank for Reconstruction and Development ("EBRD") with a request to finance modernization of 228 PSs used for IWC across the country and ancillary IWC infrastructure (the "Project"). A December 2018 Cabinet of Minister's Decree refers to the activities under the Project as a key element for the improvement of water resource management in the RoU[2].

In February 2023, the EBRD and the RoU signed the loan agreement to finance the Project's Phase I, which covers 118 PS located in the Fergana Valley (the "Project's Phase I"). The EBRD and the RoU are considering the preparation of the Project's Phase II for financing, which includes 110 PS located in the Republic of Karakalpakstan and nine provinces of the country. For this, an update of the Feasibility Study, including the E&S reports, for the Project's Phase II is required. The EBRD has commissioned an international experienced consultant (the "Consultant") – an association of the consulting firms CECT Consulting, inženiring in svetovanje d.o.o. (Slovenia, Lead Consultant) and Ecoline International Ltd. (Bulgaria, Sub Consultant) - to assist the EBRD and the Client in conducting the Feasibility Study for the Project's Phase II. The Feasibility Study will form the basis for appraisal of the Project by the EBRD and the Government of the RoU.

This document is the NTS prepared for the Project's Phase II. It constitutes the update of the Phase I NTS and incorporates the additional information from the E&S analysis prepared to inform the EBRD's decision-making for the Project's Phase II.

2.2 Project description

The service life of around 60% of the pumping equipment operated by the MoWR has expired. Physical and moral depreciation of the PSs and their components leads to considerable electricity losses. The rehabilitation and/or modernization of 80% of large, 50% of medium and 30% small size PSs is required.

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1 *Ministry of water resources of the Republic of Uzbekistan, downloaded 22 October 2024 from https://data.egov.uz/eng/data/6109306c1a64fdd0373a8df5 (dated 27-04-2023).*

2 *https://lex.uz/docs/4096609.*

Currently, the operation of those PSs is ensured through the costing and frequent repairs. Of the existing pressure pipelines of the PSs, 10% or (300 km) requires urgent replacement[3].

As noted above, in February 2023, the EBRD and the RoU signed the loan agreement to finance the Project's Phase I, which covers 118 PS located in Fergana, Namangan and Andijan provinces of Fergana Valley Region (the "Project's Phase I"). The MoWR will be the final beneficiary of the Project, but it will have a limited role in its daily management. The MoWR's Centre for Implementation of Foreign Investment Projects in the Water Sector (the "Centre") is responsible for the Project's development and implementation. As part of the Project's Phase I implementation, the Centre has established the Project Implementation Unit, which is supported by a Project Implementation Support consultant.

The scope of the Project Phase II includes the rehabilitation/reconstruction of the 110 PSs located in the Republic of Karakalpakstan and nine provinces of the country (**Table 1)**, as well as modernization of the pumping and auxiliary equipment installed.

Table 1 Provincial distribution of the Project PSs, Phase II

Province	# of pump stations	Irrigation command area (ha)
Republic of Karakalpakstan	11	17,010
Khorezm province	9	17,150
Tashkent province	19	7,548
Syrdarya province	7	15,914
Jizzakh province	3	1,850
Sukhandarya province	23	198,835
Kashkadarya province	8	10,151
KMK (in Kashkadarya province)	2	14,058
Bukhara province	3	18,750
ABMK (in Bukhara province)	2	53,427
Navoi province	9	14,186
Samarkand province	14	15,234
Total	**110**	**384,113**

Source: CECT Feasibility Study Report, 2024

The irrigation water infrastructure components and description of technical measures proposed to be performed within the Project are *inter alia* the following[4]:

- Replacement of pump units, including for each pump the set of isolation valves, internal conduits, retention valves;
- Replacement of 6 (10)/0.4 kV transformer substations, electrical cabinets, 6 and 0.4 kV switchgears, power cables (from the transformer substation to the pump engine), other necessary electrical equipment;
- Installation of instrumentation and automatic control systems. It is assumed that the engines (0.4 kV) will be equipped with an engine soft starter or a frequency changer to regulate the water supply in response to changing weather conditions or actual water consumption required;
- Reconstruction or construction of the PS buildings. At this stage, based on an analysis of the official inspection reports on the technical condition of the pump stations as provided by the MoWR, new construction of pump station building is foreseen for pump stations, where the pumps are installed outside buildings. As an alternative, for pump stations with a capacity of up to 5 m^3/s, it is proposed to consider purchase of modular pump stations in containers designed for use in hot climate conditions. For the remaining pump stations, the typical reconstruction of the building requires repairs of the roof, internal and external plastering, painting of exterior walls, repairs and painting of metal structures (bridges, overpasses, telphers), repairing of water protection pavement, installing windows and new doors;

[3] *Ibid.*
[4] *CECT Feasibility Study Report, 2024.*

- Reconstruction of water intake structures, including the replacement of waste protection grilles, fish protection structures, repairs of intake chambers, replacement of suction pipelines (with an assumed average length being 20 m) (NB: no dredging is envisioned);
- Landscaping of the pump station territory, including restoration of internal roads, stairways (if available), the restoration of the surface cover after completion of earth works (i.e. after pipe re-laying), reconstruction of latrines and premises for personnel (where such are absent or in need of repair), restoration of fences surrounding the territory of the pump stations, etcLandscaping of the PSs territory, including fencing.

The date of commencement of construction and its duration will be determined at a later stage.

3 Regulatory environmental and social framework and compliance

3.1 Compliance with national requirements

The national requirements for environmental and social assessment will be met through development of the Environmental Impact Assessment (EIA) of the Project's Feasibility Study and/or the Priority Investment Plan. The national EIA will be conducted pursuant to the Law on Environmental Expertise[5].

The national environmental legislation is comprised of a number of laws and regulations. The list of legal acts applicable to the Project included but not is limited to:

- The Law on Nature Protection (1992);
- The Law on Water and Water Use (1993);
- The Law on Waste (2002);
- The Law on Protected Natural Areas (PNA) (2004);
- The Law on Environmental Control (2013);
- The Law on Protection and Use of the Wildlife (1997).

3.2 Compliance with the EU and EBRD requirements

The Project is being structured to meet the relevant EBRD's requirements, as set out in EBRD's Environmental and Social Policy 2019. Based on the review of the available information, the following EBRD Performance Requirements (PRs) are considered as applicable to the Project:

- PR 1: Assessment and Management of Environmental and Social Risks and Impacts;
- PR 2: Labour and Working Conditions;
- PR 3: Resource Efficiency and Pollution Prevention and Control;
- PR 4: Health, Safety and Security;
- PR 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement [6];
- PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources[7];
- PR 8: Cultural Heritage[8];
- PR 10: Information Disclosure and Stakeholder Engagement.

The EBRD, as a signatory to the European Principles for the Environment[9], is committed to promoting the adoption of EU environmental principles, practices and substantive standards[10] by EBRD-financed projects, where these can be applied at the project level, regardless of their geographical location. When host country regulations differ from EU substantive environmental standards, projects will be expected to meet whichever is more stringent.

5 *The Law on Environmental Expertise, last amended 2017, available at: https://lex.uz/acts/9760 in Russian.*
6 *Land acquisition impacts might occur for the PSs where building construction and area fencing is envisioned*
7 *Biodiversity impacts might occur due to allocation of land plots for PSs construction and area fencing as well as during construction operations*
8 *In case earth works are required an archaeological chance find procedure shall be developed and properly maintained*
9 *The European Principles for the Environment (EPE) were adopted by the Council of Europe Development Bank, the EBRD, European Investment Bank, Nordic Environment Finance Corporation and Nordic Investment Bank.*
10 *Substantive environmental standards of the European Union are contained in EU secondary legislation, for example, regulations, directives and decisions.*

4 Current environmental and social situation and considerations

Air quality. The main sources of air pollution are metallurgy, energy, production of building materials, oil, gas, and mining industries, as well as automobile transport[11]. The current level of air pollution, as well as the predicted increase of air pollution, underscores the importance of the development and implementation of energy diversification measures. Atmospheric emissions from automobile transport are attributed to vehicles' technical conditions, fuel quality, and improper traffic management.

Visual amenity and landscape. The Project facilities (the PSs and related infrastructure) are located in river valleys close to the courses of rivers and canals. The PSs are not visible when located on higher terrain; however, the PSs are visible when both the PSs and residential area are located at the bottom of a valley.

Some PSs are also visible in residential areas located higher in relief than the PS.

Most of the PSs are located in agricultural areas that are relatively far from settlements. Visual impact thus appears when PSs are located in close vicinity to roads and bridges.

Geology and seismic activity. The territory of Uzbekistan is part of the Turan Platform, which originated in the Late Paleozoic Age and has a multiply folded basement that includes sedimentary, metamorphic, and igneous rocks from the Late Proterozoic to Early Triassic Ages. The platform cover consists of weakly deformed sedimentary rocks from the Jurassic Age. The south-eastern part of the platform underwent secondary tectonic activity, which resulted in the appearance of a new orogenic belt – the Tien Shan Mountains. Accordingly, approximately 55% of the Country's territory is located in the zone of expected seismic intensity VII (MSK scale) and its eastern and south-eastern parts – where large cities and the capital-city, Tashkent, as well as numerous industrial units, are located – fall into the zones of intensity VIII and IX.

Hydrogeology and hydrology, water resources. The water resources of Uzbekistan consist of renewable surface and groundwater, as well as return water from anthropogenic use (sewage and drainage water), and comprise surface run-off from the Syr Darya and Amu Darya rivers (55%), smaller rivers (33%), groundwater (about 10%), and collector and drainage run-off (2%).

Water resources are mainly formed in transboundary river basins – the Amu Darya and Syr Darya. These basins are the main water suppliers for Uzbekistan. The Amu Darya and Syr Darya basins are mainly generated from melt water (60%). Additional water supply is provided by rain and glacial waters.

The area of Aral Sea, located in both Kazakhstan and Uzbekistan, has decreased critically Mismanagement of this valuable sea by the overuse of its tributary rivers is now recognized as one of the world's worst environmental disasters.

Soil – pollution and erosion. The soils of Uzbekistan vary depending on latitude and altitudinal zonation, which, in turn, is associated with specific climatic conditions and vegetation . The soils of the desert zone, occupying 14 million hectares (32%), are formed in the most arid and harsh conditions. Desert zone soils have low fertility, low humus content (<1%), low absorption capacity, high carbonate content, and are vulnerable to salinization. The soils of the sierozem belt (light, typical, and dark sierozem) cover an area of 6.7 million ha (15%) and are common above the lower margin of the piedmont plains from 200 to 700-900 meters above sea level. The hydromorphic soils (meadow desert and meadow alluvial types) occupy 3.8 million ha (7% of the total area).

Special protected areas. The most important 37 protected natural areas for biodiversity conservation currently occupy 4.64% of Uzbekistan's territory, amounting to a total area of 2,079.2 thousand ha[12]. They include seven areas with the highest level of protection, natural reserves (188.3 thousand ha); one landscape natural protected area, landscape sanctuary (628.3 thousand ha); two biosphere reserves (111.7 thousand ha); three national natural parks (558.2 thousand ha); one national park, "Durmen" (32.4 thousand ha); ten

11 *Decree of the President of Uzbekistan "On approval of the Conception of Environmental Protection of the Republic of Uzbekistan up to 2030 (from 30.10.2019 # УП5863)*
12 *The Strategy for Biological Diversity Protection in the Republic of Uzbekistan for the period of 2019-2028, 2019*

natural monuments (3.8 thousand ha); twelve wildlife sanctuaries (572.4 thousand ha); and the Bukhara special nursery "Dzheyran" (16.5 thousand ha).

There are also two wetlands (the Aydar-Arnasay Lake System and Lake Dengizkul) designated as Wetlands of International Importance by the Ramsar Convention (total area of 558.4 thousand ha) and 52 Important Bird Areas, including four Important Bird Areas in danger, designated by BirdLife International[13].

Flora and vegetation. There are five main types of natural ecosystems in Uzbekistan - deserts and semi-deserts, foothills and low-mountains, mountain ecosystems, river and coastal ecosystems, and wetlands. Each ecosystem provides specific habitats for plants and animals; the interaction of these ecosystems provides environmental sustainability within Uzbekistan's territory. The total biodiversity of Uzbekistan includes 27 thousand species.

The flora of Uzbekistan includes more than 11 thousand species of higher vascular plants, mushrooms, mosses, lichens, and algae. The number of higher vascular endemic species is 8%, of which 10-12% are relic endemic species. The Red Data Book of Uzbekistan (2009) includes 321 species of vascular plants and 3 species of mushrooms[14]. 18 species have the status of "apparently extinct".

Fauna. The fauna of Uzbekistan includes more than 15.6 thousand species[15]. The endemic species of Uzbekistan and Central Asia include 55 species and subspecies of terrestrial vertebrates. The highest level of endemism is inherent in fish (more than 50%) and reptiles (50%); less endemism is observed in mammals (14%) and birds (1.7%).

The Red Data Book of Uzbekistan (2009) includes 184 species of animals, of which there are 24 species of mammals, 48 species of birds, 16 species of reptiles, 17 species of fish, 3 species of annelids, 14 species of mollusca, and 60 species of arthropods. The IUCN Red List for Uzbekistan included 91 species of global concern.

Population. From 1926 to 2017 the population of Uzbekistan rose more than 8 times, i.e. from 4,621 million to 32,519 million. In general, the population of Uzbekistan continues to grow, albeit at a slower pace than at any time since 1950. In 1974-2019, the annual growth of population declined from 2.63% in 1974 to 1.08 % in 2019. During 1960-2018 the annual population growth was decreasing from 3.705 % in 1967 (the highest rate) to 1.735% in 2018.

According to estimates[16], the population of Uzbekistan will grow at 25-40% by 2050. Uzbekistan experienced positive natural increase combined with net emigration. The share of 25 to 64 aged population is expected to peak around 2047. These conditions can yield an opportunity for accelerated economic growth known as the "demographic dividend". To benefit from the demographic dividend, government should invest in education and health, especially for young people and create conditions conducive to sustained economic growth.

Economic profile, poverty and unemployment. According to official data[17], in 2019, GDP growth accelerated to 5.6% compared to 5.4% in 2018 and 4.5% in 2017, while the growth of the GDP deflator index slowed to 19.2% in 2019 against 27.5% in 2018 and 19.4% in 2017.

In 2017- 2019 the gross value added by agricultural sector was around one third of GDP. At the same time, its share is decreasing from 34.0% in 2017 to 28.1% in 2019. This shrinking is, *inter alia*, the result of decreasing of sown area from 3,778.3 thousand ha in 2000 to 3,396.0 thousand ha in 2018.

According to the WB[18] Uzbekistan is considered Lower middle income country on a per capita basis with a Gross National Income (GNI) per capita USD 2,160 in 2015 (163 out of 217) and USD 2,000 in 2017

13 *http://datazone.birdlife.org/country/uzbekistan/ibas*
14 *The Strategy for Biological Diversity Protection in the Republic of Uzbekistan for the period of 2019 -2028, 2019*
15 *The Strategy on Biological Diversity Protection in the Republic of Uzbekistan for period 2019 -2028, 2019*
16 *World population Prospects, 2019: Data Booklet. UN Department of Economic and Social Affairs [public domain] Source: https://population.un.org/wpp/Publications/Files/WPP2019_DataBooklet.pdf*
17 *Source: The State Committee of the Republic of Uzbekistan on statistics https://stat.uz/uploads/doklad/2019/yanvar-dekabr/en/1.pdf*
18 *Source: Creative Commons Attribution license [CC BY IGO 4.0] via World Bank Data*

(142 out of 190). This indicator is lower of that of emerging market and developing economies (5.03 thousand), and world average (10.86 thousand).

The regional differences exist in per capita income. In 2017-2019, the per capita income is higher than the average national indicator in Bukhara, Navoi, Tashkent, and Khorezm provinces. These provinces are also strong industrial contributors. In the meantime, in Andijan, Surkhandarya, and Syrdarya provinces with the share of Agriculture in GRP higher than 30% this indicator is lower than average national.

In 2010-2018 the unemployment rate increased from 5.4% to 9.3%. This is the result of a new generation entering the labor market. The youth unemployment is about two times higher than the general unemployment rate, which is at 19.8% compared to 10.1% respectively (UNDP Human Development Report, 2016).

According to official data, households[19] with low income constitute 12.3% (2016), 11.9% (2017), and 11.4% (2018). The share of population below the National poverty line is decreasing from 17.7% in 2010 to 11.4% in 2018. However, data about the share of population below the national poverty line by provinces is not available.

Gender issues. Uzbekistan is a country of high human development with the HDI score of 0.710 (2017) that corresponds to a rank of 105 out of 189 countries. However, there is gender disparity of HDI value for female (0.687) and male (0.726) population because of fewer average years of education of females and their much more limited access to economic resources.

For female farmers, there is no gender-disaggregated statistics for farm managers across the country. According to the FAO study on Gender, agriculture and rural development in Uzbekistan[20] shows that de facto owners of around 10% of farms are not the legally registered ones, and as a rule, the de facto owners of such farms are females. The management is carried out by females, but the farm is de jure registered in the name of a husband or son.

During focus group discussions with female farmers of the Project the irrigation was pointed out as one of the key challenges for female farming. None of them believed that there is an unjust distribution of water for female and male farmers, but the problem is acute for all farmers: either there is no water in the system, or the pressure is weak - the water does not reach the slopes.

19 *Data of State Committee of the Republic of Uzbekistan on Statistics based on survey of selected households*
20 *http://www.fao.org/3/ca4628en/ca4628en.pdf*

5 Summary of environmental benefits, potential adverse impacts, mitigation and management measures

5.1 Air quality

There are several emissions sources to be derived during the PSs rehabilitation, such as engines of construction and transport equipment, demolition and earthworks, welding and metal processing, etc.

Proposed mitigation measures:

- using construction machinery (excavators, loaders, bulldozers, etc.) compliant with requirements set in the Regulation (EU) 2016/1628[21];
- not allowing engines to run at idle during operation breaks;
- performing regular maintenance and preventive repairs of special equipment and vehicles.

5.2 Climate change impact and climate-resilience actions

The Project's scope envisions replacing irrigation pump units (pumps and engines) with those having similar technical characteristics as the existing ones but more energy efficient. This will reduce energy consumption. As the main source of electric power generation in Uzbekistan is thermal electric power stations, which use organic fuel, the mentioned reduction in energy consumption will lead to a decrease in GHGs emissions resulting in climate change mitigation.

The design of the Project Phase II will include the climate-resilient design measures against i) flooding, and ii) extreme temperatures for relevant project components.

5.3 Impact on geology and hydrology

The implementation of the PS Rehabilitation Project does not have a direct impact on the geological and hydrogeological characteristics of the Project area. The impact can be expected from the implementation of the "**Concept of the Development of Water Management Sector of the Republic of Uzbekistan for 2020-2030**" adopted in February 2020, which envisions repair and renewal of irrigation canals, and can potentially lead to reduction of irrigation water losses.

5.4 Hazardous substances and materials

The operation of the PSs, in particular, the pumps and electrical equipment, is accompanied by the use of hazardous substances and materials. These are mainly lubricating and transformer oils, as well as fuels and lubricants for maintenance of vehicles.

The hazardous substances and materials will be also generated during demolition and rehabilitation operations at the PSs (oil waste and asbestos-containing waste, mainly used for roofing).

Since some of the transformers installed at the PSs were produced in the 1960s and 1970s it is likely that polychlorinated biphenyl (PCB) containing transformer oils are used. Measures for reduction and elimination of emissions from the deliberate production and use of chemicals are regulated by the Stockholm Convention on POPs (hereinafter referred to as the Convention). The RoU ratified the Convention on May 8, 2019[22].

21 *Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC. Available through* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R1628

22 *Law of the Republic of Uzbekistan "On ratification of the Stockholm Convention on persistent organic pollutants (Stockholm, May 22, 2001)". No. ZRU-535 of May 8, 2019.*

Proposed mitigation measures:

- While replacement of the PSs transformers, remove contaminated soil and dismantling waste, and provide a concrete foundation with sides to collect possible spills of transformer oils;
- Develop a procedure regulating the safe handling of PCB sources (rules, instructions, safety recommendations when working with PCB, etc.);
- Develop a program for staged replacement of the existing PCB containing transformers;
- Develop a corporate procedure for the management of asbestos-containing waste and to monitor its implementation.

5.5 Soil contamination

The PSs areas are characterized by fragmentary contamination of topsoil, mainly due to seepage and spills of lubricating oils used for pumps, transformer oils as well as fuels and lubricants for motor vehicles. In addition, fragmentary contamination is recorded in mixed waste storage areas.

Soil contamination is to be occurred during the following PSs reconstruction operations:

- Dismantling of pumps;
- Dismantling of old transformers and installation of new ones;
- Dismantling of buildings and structures;
- PSs buildings repair and reconstruction/construction operations.

No impacts are expected on soils at the Project's operation stage given the mitigation measures and recommendations of the ESAA are implemented.

Proposed mitigation measures:

- When dismantling of pumps, transformers, demolition of PSs buildings and structures ensure safe excavation and temporary storage of contaminated soils and demolition waste;
- Arrange transportation of contaminated soils and demolition waste to the relevant landfills;
- When designing the foundations for pumps, arrange a special water and oil impermeable coating as well as the due inclination of the foundation to special pits designed to collect oil and water leaks;
- Ensure that the oil-water mixture accumulated in the pits is periodically pumped-out and purified using oil traps; and
- In the design documentation, envision the installation of special pallets (secondary containments) for collecting spilled oils when filling the pumps.

5.6 Impacts on surface water

During the PSs rehabilitation the impact on the quality of surface water due to disturbance of hydraulic structures sediments is likely to be occurred. The impact on quality of surface waters can be also conditioned by the inflow of pollutants through contaminated surface runoff from the construction sites.

At the operational stage, no negative impact is expected against the baseline conditions.

Proposed mitigation measures:

- Discharge contaminated runoffs from the construction sites;
- Promptly clean construction sites from generated construction waste;
- Store the removed sediments in the specially allocated areas of safe disposal or transport to solid waste landfills if high level of pollutants (pesticides, impurities of mineral fertilizers, etc.) in sediments is identified.

5.7 Waste generation and management

The generation of waste of various hazardous classes is expected during the PSs repair and rehabilitation operations, to a larger extent, and at the PSs operation stage, to a less extent.

During the operation period, after the PSs are modernized, the amount of waste is expected to be reduced since the new equipment (pumps, transformers, etc.) will require less maintenance and repair works, and, therefore, less waste will be generated.

Proposed mitigation measures:

- Each provincial ES&E Department should have a waste management manual in place and appointed trained employees responsible for ensuring safe waste management requirements;
- Develop waste management procedure for the Project's contractors and ensure ints implementation through inclusion of the respective provision in Contractor's agreements.

5.8 Traffic impacts

The following types of vehicles will be used during the PSs repair and rehabilitation operations: truck cranes, dump trucks, heavy trucks for transporting heavy equipment and building materials, excavators, refueling trucks for non-mobile construction equipment and machinery, vehicles for transporting construction personnel, etc. The traffic of heavy trucks for transporting construction materials can increase the traffic load, especially on the local municipal roads in rural areas.

No negative impacts are expected during operations.

Proposed mitigation measures:

- Update or install the warning traffic signs/lights at intersections of the relevant regional and local roads as well as near the public facilities where the Project-related traffic increase is foreseen;
- Conduct trainings at schools in those settlements, where the Project-related traffic will significantly impact the baseline traffic loads;
- Agree the conditions and routes for transportation of bulky goods with the Traffic Police authorities.

5.9 Noise and vibration impacts

The major sources of noise during the repair, rehabilitation and construction works will be the operation of i) construction machinery and ii) special vehicles for transportation of construction materials and equipment, as well as removal of construction and other waste.

Operating transformers generate significant noise, vibration and electromagnetic radiation, the level of which depends on their type and capacity. The Project includes replacement of noisy outdated transformers, which will lead to lowering of noise characteristics.

Proposed mitigation measures:

- While elaboration of technical specifications for purchase of pumps and transformers to be replaced to set noise, vibration, and electromagnetic radiation characteristics compliant with the national regulations and the IFC guidelines (whatever is more stringent); and
- For PSs located near the settlements, in the design documentation calculate the maximum acoustic loads expected at the boundaries of the residential area. If the established sanitary and hygienic standards for the residential area are exceeded, it is necessary to elaborate measures to reduce the acoustic loads on the nearest residential buildings.

5.10 Biodiversity impacts

In order to identify the Project covered PSs that are located in protected nature areas and IBAs, as well as to assess the potential impact that the Project PS reconstruction/modernization measures have on biodiversity conservation areas, the following multi-stage approach has been applied by the Consultant.

First, the biodiversity conservation areas clearly beyond the project area (beyond the irrigated areas) were identified. For this purpose, maps of the irrigated areas and protected nature areas (e.g. the map given in the Fifth National Report of the Republic of Uzbekistan on Conservation of Biodiversity, page

16[23]), as well as biodiversity data available on the IBAT and Protected Planet web platforms[24], were analyzed.
Second, the PSs that are near the protected areas or that could potentially be located within the protected areas were mapped, and the PSs located within the protected areas were identified. The coordinates of the screened-in PSs that might potentially fall within the protected areas and IBAs were overlaid with the boundaries of the protected areas and IBAs.

This analysis showed that there are no Project PSs within state nature reserves (the reserves with the stringent protection regimes), nor do any of them fall within the state biosphere reserves.

Only one Humson PS was found to be within the Ugam-Chatkal National Park, within the urban area of Khumsan settlement. However, this PS does not fall within neither Chatkal State Biosphere Reserve, nor Ugam-Chatkal State Biosphere Reserve (both Biospheres are in the southern part of the NP, while Humson is in its western part). The apprx distance from the PS to the closest of the two Biosphere Reserves (Ugam-Chatkal State Biosphere Reserve) is 14km.

Zhaihun and Kora-Yantok PSs are located to the north and north-east of the Amudarya floodlands IBA (near Termez), and there is a wide road between them and the IBA. The PSs belong to a larger hydrological unit.

Proposed mitigation measures:

Implement the measures envisioned in the Project design and ensure all structures are properly maintained (e.g. fences, fish nets, containers for transformers):

- Install fish protection devices at water intakes as per the design, e.g. intake filters, inlet screens, fish screens etc.) that also protect water intakes from debris.
- Place the transformers into special containers, thereby preventing any unauthorized access (including for birds) to the transformers.
- Install fences (on sites where such are currently not present) or repaired them to prevent mammals from entering the PS sites.
- Ensure that mechanical equipment subject to replacement is replaced with more modern one with lower noise emissions.

For the PSs on Phase II located close to Important Bird Areas or bordering the Ugam-Chatkal National Park, avoid any rehabilitation work during breeding season. These PSs are:

- Humson (Bustanlyk)
- Zhaihun (Muzrabat)
- Kora-Yantok (Muzrabat).

5.11 Efficient use of resources

The modernization of the PSs will lead to the savings of both natural and material resources:

5.12 Energy savings

The service life of more than 60% of the pump equipment that is owned by the MoWR has long expired. Physical and moral depreciation of the PSs and their components (pump units, engines and electrical parts)

[23] Available through https://www.cbd.int/doc/world/uz/uz-nr-05-en.pdf.

[24] ***IBAT*** is a multi-institutional work programme that includes BirdLife International, Conservation International, IUCN, and UNEP-WCMC. IBAT provides a basic biodiversity risk screening. The country profile for Uzbekistan is available through https://www.ibat-alliance.org/country_profiles/UZB.

Protected Planet is the most up-to-date and complete source of information on protected areas managed by the United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC) with support from the IUCN and its World Commission on Protected Areas (WCPA). The Country profile for Uzbekistan is available through https://www.protectedplanet.net/country/UZ.

is the main reason for large energy losses. Total annual electricity consumption is estimated to decrease by 250.6 thousand MWh (equivalent to 902,239 GJ) following Project Phase II completion.

5.13 Irrigation water abstraction

Water abstraction within the Project command area will remain within the limits established for canals and pump stations. Within the limits established, replacing pumps to their initial design capacity may lead to a water abstraction increase. At the same time, the introduction of automation will allow better demand-based water delivery to Water Consumers Associations and farmers. In combination with auxiliary measures to reduce water delivery losses and strengthening on-farm water application (envisioned under the Long Term Investment Program of the Government of Uzbekistan), the de-facto per-hectare water volume supplied is envisioned to be reduced, as more precise flow control in volume and time will be provided.

5.14 Visual impacts

The modernization projects for most of the PSs will be implemented within the boundaries of the existing sites without violating the existing height of buildings and structures. That means that the modernization projects will not change the visual perception of the PS sites. It can be though *improved* by repairing the roofs and facades of the PS buildings.

For the "small" PSs that previously belonged to agricultural enterprises, a significant improvement in the visual perception of the sites will be expected via a proper landscaping and fencing of the PS sites, as well as via changing the configuration of the PS facilities, if/where necessary.

Proposed mitigation measures:

- Ensure that design documentation for the "small" PSs modernization is developed considering the features of the area's landscape.

5.15 Impacts on cultural heritage

Before the commencement of construction/earth works, consultations on cultural heritage issues with the competent authorities (RoU Ministry of Culture), local self-government authorities and qualified experts should be conducted. Moreover, the chance finds procedure should be developed and implemented in case of any chance findings.

Proposed mitigation measures:
Develop a chance finds procedure as per the national and EBRD's requirements and train the contractors in applying it.

6 Summary of social benefits, potential adverse impacts, mitigation and management measures[25]

6.1 Socio-economic impacts, benefits and opportunities

The assessment of the Project's impact on agriculture and associate socio-economic development is performed through the scoring approach. The factors such as the share of restored pumping irrigation areas in total, the crop growth rates, the share of agriculture in the provincial GRP and the provincial GRP per capita have been considered while scoring.

The Project Phase II implementation will lead to restoration of pumped irrigation at around 69,225 ha of land, which most likely means that the respective land will be used for crop farming. So, in total, the irrigation area will become 384,133 ha.

Based on the fact that one farm, regardless of the type, cultivates on average 5 ha of land, and that one farm will require three additional workers, the additional employment provided by the project is estimated at 41,535 jobs.

The installation of new pumps will stabilize the water supply to the entire command area, ensuring timely, efficient and more reliable water supply for agricultural production, and will directly benefit all farmers and their households. Based on the fact that one farmer manages an average of 5 ha (private farms and dehkan farms), and one household consists of an average of 5 people, the actual number of rural residents who will benefit from the project is estimated at approximately 384 thousand people.

The introduction of automatic pump control systems and reduced needs for recurrent maintenance will significantly reduce the number of personnel needed, as assigned tasks will only include monitoring of the equipment operation and periodical switching the pumps on and off. There will also be an envisioned reduction in the number of personnel due to the reduced needs for recurrent maintenance and overhaul repairs. The estimated staff reduction is around 200-300 people.

The modernization of PSs stations will ensure more reliable and stable water supply in terms of volumes and schedule to larger areas of land, which will lead to additional profits from agricultural production estimated at approximately USD 51.1 million.

Proposed mitigation measures:

- For the design stage, it is recommended to conduct detailed socio-economic study of the PIP covered areas (including social surveys) to adjust the PIP (if needed and feasible from the strategic/conceptual/cost-benefit perspectives) in terms of socio-economic development of the PIP covered provinces;
- For the construction stage, it is recommended to avoid staff layoff through retraining and transferring them to other positions within provincial/district irrigation departments.

6.2 Impacts on affected communities, facilities and infrastructures

During the PSs reconstruction the direct impact area of up to 50-100 m around the boundaries (buffer zone) of the PSs as well as along the access roads is considered as affected. The sensitive receptors to be potentially found within the buffer zone are the individual houses located in close vicinity of the PSs, overhead transmission lines/towels and open canals. The inhabitants of the individual residential houses located within the buffer zone can be affected by the air emissions, as well as by noise and vibration.

The accidental contacts of construction equipment and transport vehicles with the low voltage overhead transmission lines during the construction stage can lead to property damages and injuries to the workers.

25 *Data presented in this section are based on the CECT Feasibility Study Report, 2024 and ESAA Report, 2024..*

6.3 OHS impacts

The implementation of the Project will be accompanied by simultaneous exploitation of vehicles and construction equipment at the construction sites and various hazardous works, such as fireworks, works at heights, electrical and equipment installation works, which may lead to emergency situations such as fire and ignitions, accidents with operating equipment, injuries of personnel etc.

Proposed mitigation measures:

- Request the Construction Contractor to:
  - Develop detailed EHS Plan for the construction sites in order to reduce/eliminate accidents, incidents and emergencies, and other relevant environmental and OHS risk.
  - Equip the construction sites with appropriate warning visual signs, firefighting means and first aid medical kits;
  - Provide the working personnel with collective and personal protective equipment;
  - Train the personnel on OHS rules to be followed during the work implementation.

6.4 Impacts on public health and safety

Public health and safety impacts from the PS re/construction and operation activities may include:

- The health stress due to air emissions and exposure to noise and vibration;
- Accidental fall into the water and electrocution risk;
- The irrigation water contamination by the runoffs that may cause damage to inhabitants of the nearby individual houses; and
- Project traffic-related accidents, and Project materials-related spills.

Proposed mitigation measures:

- Notify the population that might be affected due to the use of the roads by the Project construction vehicles about the upcoming construction activities through media notifications and/or public discussions;
- Provide adequate security measures to prevent accidents and injuries;
- Use protective fencing around the construction site to prevent public access to the construction site;
- Cover truck beds with tarps during material transportation to the site.
- Install fencing or barriers along the open canals in sections and passing through the settlements and fencing around the power transformers.

6.5 Land tenure impacts

The Project scope includes landscaping of the PSs territory, including fencing. However, the exact list of the PSs to be fenced is not determined yet.

The Consultant's visits to the operating PSs has shown that the territories de jure in right-of-use by the MoWR are usually used as a pasture (**Figure 1**). In the meantime, the significance of "pump stations pasture area" is negligible, since the area is relatively small and the PSs are surrounded by vast areas suitable for grazing.

Figure 1. Domestic animals passing near the water canal and grazing within the area of PSs

The lands under the PSs and their infrastructure were reported to be used by the pumping operating authorities for several decades, however no documents confirming the current land allocation/ ownership were provided. To this end, the MoWR should ensure a due legalization of the land use rights with regard to the lands occupied by/used for PSs and auxiliary infrastructure.

Proposed mitigation measures:

- **During the design stage,** ensure the documents, if exist, confirming the transfer/allocation of the land plots for the facilities of the PS&E Departments are available at the Departments and can be immediately provided to EBRD and its consultants upon request.
- If there are no documents confirming the transfer/allocation of the land plots for the Project PSs to be reconstructed, develop the legally required documents to establish coastlines and ensure the allocation of the due land plots.
- **During the design stage (before starting the construction/rehabilitation works)**, in close cooperation with the respective district administrations, develop a procedure i) identifying farming land users (both legal and informal) leading framing activities at the Project PSs' areas, ii) analysing any land restriction-related complaints received, iii) investigating the extent of the Project-induced impact on their livelihood and iv) confirming that their livelihood will not be affected (or if affected, provide non-cash compensations to those farmers).

6.6 Gender Impacts

The PIP implementation will lead to the opportunities for employment for around 50,000 females across the PIP covered Provinces. The employment opportunities in farming are in crucial importance for the rural females, since in the rural areas opportunities female employment (especially for unskilled females) are very limited.

Recommendation:

During the operation stage, elaborate capacity building/training measures for female farmers and those females who are willing to be engaged in the farming activities.

7 Monitoring and supervision

The MoWR and its Pumping Stations and Energy (PS&E) Departments shall undertake several types of performance monitoring that are presented below.

The proposed mitigation measures have been summarized in the Environmental and Social Management and Monitoring Plan (ESMMP); the ESMMP is as a standalone document to be attached to tender documentation for selection of the Project's contractors.

Environmental Impact Monitoring

Due to minor impacts of the PS and the repair shops during the rehabilitation stage, the PS&E Departments are not legally obliged to undertake regular monitoring of air emissions, noise, vibration, and generated wastes. Nevertheless, it is necessary to develop corporate guidelines for the inventory of wastes and the environmental pollution sources and subsequent monitoring of their impact both at the stage of repair/ rehabilitation work and during operations.

Resource Consumption Monitoring

The MoWR and PS&E Department will undertake continuous monitoring of key parameters for the new pumps and others equipment to enable them to identify any potential for reduction in use of energy and materials (motor and lubricating oils).

Monitoring of working conditions

Monitoring of working conditions at workplaces will be carried out by the PS&E Department following the attestation of workplaces by working conditions at its facilities.

Regular internal audits of compliance with OHS requirements are to be also carried out via the audits by the MoWR's PS&E Departments.

Monitoring of compliance with the EBRD's EHSS requirements

The MoWR and PS&E Departments will annually prepare monitoring reports for the EBRD to report on their EHSS performance and the progress with the ESAP implementation. The EBRD will monitor implementation of the ESAP through review of Annual Environmental and Social Reports, communications with the MoWR and site visits as necessary.

Monitoring of contractors during new equipment installation

The PS&E Departments will undertake weekly checks of the equipment installation sites to verify the contractors' EHS performance (e.g., use of PPE by the Construction Contractors' workers) and will document the findings. Based on the check results, preventive and corrective measures will be applied, if needed.

8 Communications and Grievance mechanism

The MoWR intends to disclose the following Project disclosure package:

- This Non-Technical Summary;
- Stakeholder Engagement Plan, including the Project Grievance Form.

The disclosure package will be publicly available in Russian and English on the websites of the EBRD and MoWR in electronic format. The hard copies can be accessible in the office of the MoWR and its regional PS&E Departments, as well as in the offices of the Project-affected Provincial and District Hakimats.

The public consultation and communication activities will be implemented as outlined in the Project SEP.

In order to enable the potentially affected or any other interested stakeholders to submit their grievances and/or suggestions about the Project's activities the Grievance Mechanism will be established by the MoWR. This Grievance Mechanism will allow the MoWR to respond and resolve the received grievances in a timely and effective manner.

Since the Project owner (MoWR) is a public authority, submission and acknowledgment of grievances should be arranged in line with the RoU Law "*On appeals of individuals and legal entities*" (2017) and the Decree of the RoU's Cabinet of Ministers " *On approval of the Standard Regulation on the procedure for handling appeals from individuals and legal entities in state bodies, state institutions, and organizations with state participation*" No 341 dated 7 May March 2018. According to the national requirements, the maximum period of grievance handling is 15 days (when deemed necessary this period can be prolonged to one month)[26].

All the grievances addressed to the MoWR or to its regional divisions will continue to be registered as required by the national requirements with an addition for handling anonymous grievances. The grievances and inquiries related to the Project will be separated by the responsible person at the MoWR and/or the respective RWBI Departments and will be recorded in the Project Grievance (and Inquiry) Logbook that should be maintained throughout the Project life-cycle.

Stakeholder complaints / suggestions in relation to the Project planning and implementation can be made in writing, by email or by telephone to the following Contact Person:

Sevar Astanov,

Acting Director, Center for Implementation of Foreign Investment Projects in Water Sector

agency@minwater.uz

+998 55 520 1019

https://gov.uz/oz/suvchi/departments/subordinate?active=1242

1a Labzak street, Tashkent City, 100000, Uzbekistan

[26] *RoU Law "On appeals of individuals and legal entities", Article 28*. https://www.lex.uz/en/docs/3336171