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ESIA SCOPING REPORT – SURKHANDARYA REGION

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1	Matthias Habermeier (Executive Summary, Sections 1.3-1.5, 5.1, 6.2-6.3, 6.4.9, 7.1-7.2, 7.3.1, 7.4.1, 7.4.2 and 8.1) Maia Gachechiladze-Bozhesku (Chapters 2, 9, 10, Sections 1.1-1.2, 5.2, 6.5 with inputs for the baseline from Iuliia Marukha and Nargiza Mavlyan-Karieva, 6.6, 7.4.3, 8.2, 10.2) Olga Demidova (Executive Summary, Chapters 3, 4, 6, Sections 5.3, 5.4.2, 6.4.1-6.4.8, 6.6, 7.3.2, 7.3.3, 7.4.2., 7.4.3, 8.2, 10.1) / 25 November 2024	Markus Lechner / 28.11.2024	
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Disclaimer

The current ESIA Scoping report analyses possible environmental and social impacts associated with the preliminary Project components according to technical decisions as of the beginning of January 2025. The conceptual alternatives for the Project measures were formulated in February-March 2025 and are being evaluated against technical, economic, environmental and social criteria. As soon as the conceptual alternatives for specific Project components are prioritized by the Client, the Project scope will be revisited and will change to include the most feasible components and measures. These most feasible components and measures will be subject to the full-scale ESIA.

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Abbreviations

BMZ	German Federal Ministry for Economic Cooperation and Development
CAS	Conventional Activated Sludge
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
E&M	Electrical and mechanical
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standards
FS	Feasibility Study
GHG	Greenhouse gas
GRP	Gross Regional Product
HPPs	Hydropower Plants
IBA	Important Bird Areas
IFC	International Finance Corporation
ILO	International Labour Organization
KBA	Key Biodiversity Areas
KfW	Development Bank (that funds projects on behalf of the German Federal Government, and primarily the BMZ)
LALRF	Land Acquisition and Livelihood Restoration Framework
LARAP	Land Acquisition and Resettlement Action Plan
LRP	Livelihood Restoration Plan
LWTF	Local wastewater treatment facility
MAC	Maximum allowable concentrations
MFY	Mahalla citizens assembly
NTS	Non-technical summary
O&M	Operations and maintenance
OHS	Occupational Health and Safety
PEA	Project Executing Agency
PNA	Protected Natural Areas
RAP	Resettlement Action Plan
RAS	Return activated sludge
RCM	Resolution of the Cabinet of Ministers

RoU	Republic of Uzbekistan
SanPiN	Sanitary and epidemiological rules and norms
SBR	Sequencing Batch Reactor
SEC	Statement of Environmental Consequences
SEP	Stakeholder Engagement Plan
SER	State Ecological Review
SPNA	Specially Protected Natural Areas
SPS	Sewers and sewage pumping station
SPZ	Sanitary-Protection Zone
TPPs	Thermal Power Plants
Uzhydromet	State Agency for Hydrometeorology
UZS	Uzbek soums
UzStat	Statistics Agency under the President of the Republic of Uzbekistan
WAS	Waste activated sludge
WHO	World Health Organization
WWTP	Wastewater Treatment Plant

Executive Summary

Project Background, Framework and Context

The Project aims to promote sustainable urban development in Surkhandarya Region, Uzbekistan by construction and reconstruction of wastewater systems in the region. It targets a medium-sized city of Termez, regional capital, and five small urban settlements – centres of Boysun, Angor, Oltinsoy, Kizirik, and Muzrabad districts. The Project is to be financed by the KfW Development Bank, Germany in the framework of the agreement between the Government of Uzbekistan and German Federal Ministry for Economic Cooperation and Development (BMZ) on for investments in water and wastewater sector.

The Uzsuvtaminot JSC[1] will be the Project Executing Agency (PEA). It will implement and operate the Project with support of its branch in Surkhandarya (Surkhandarya Suvtaminot JSC, or Suvtaminot).

The feasibility study (FS) for the Project was initiated in September 2024 and include, among others its Environmental and Social Impact Assessment per requirements of the KfW Sustainability Guideline (2024) and WB ESSs. The Project is preliminary assigned category "B+"[2], and the ESIA process includes two phases: the ESIA Scoping focused on the identification of the key E&S Project-related impacts, risks and other issues to be studies in detail at the next assessment phase and the full-scale ESIA. Besides, Bank's standards the ESIA should comply with requirements of the national EHS legislation. Therefore, the planned activities are also subject to the national EIA and the State Environmental Review (SER) procedures. The SER conclusion is among the required Project authorisations.

The current report presents findings of the ESIA Scoping phase. Chapter 2 discusses the legal and regulatory framework for the Project including the analysis of gaps between national and international requirements. Chapter 3 describes the Project components, associated facilities and identifies Project alternatives (based on information on design solutions available to date). Potentially significant E&S impact/risks are identified for construction and operations phases of the Project cycle in Chapter 5. The environmental and socio-economic and cultural conditions are reviewed in Chapter 6. Chapter 7 defines the study area, presents approaches to impact assessment and outlines individual investigation methods for the bankable ESIA. The indicative mitigations / enhancement measures in line with the mitigation hierarchy are proposed in Chapter 8. The stakeholder engagement activities for the Project are outlined in Chapter 9. Finally, the integrated ESIA / national EIA process and preliminary ESIA programme is proposed in Chapter 10.

Project components

The Project activities in Termez include (according to current state of knowledge – design phase commencing):

- reconstruction of the city's wastewater treatment Plant (WWTP) with actual capacity of 25,000 m^3/day (with the 35,000 m^3/day designed capacity);
- rehabilitation of three existing sewage pumping stations (SPSs) and main sewer collectors.
- extension of the main sewer collectors and sewer networks and construction of new SPSs;
- construction of power supply lines to SPSs
- purchase of necessary special equipment for system and establishing a wastewater monitoring laboratory.

[1] Uzsuvtaminot JSC is the specially authorised body for water supply and sanitation responsible for the development and implementation of investment projects with the participation of international financial and foreign governmental financial institutions through centralised investments and private-public partnerships. For information about the organisation refer to https://uzsuv.uz/ru.

[2] Per the KfW's Sustainability Guideline (2024), category B+ refers to a project of substantial risk that may have single significant adverse E&S impacts/risks (https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Richtlinien/Nachhaltigkeitsrichtlinie_EN.pdf).

In five Project districts only greenfield wastewater systems are planned as part of the Project to service parts of Boysun (Boysun District), Angor (Angor District), Qarluq (Oltinsoy District), Sariq (Kizirik District) and Khalkobod (Muzrabad District):

- new WWTPs (within the capacity varying between 2,000 to 4,000 m^3/day), which are to service district centres;
- collecting networks within the towns and
- main sewer collectors connecting the service areas and WWTPs.

The Project would increase the number of people having access to centralised wastewater systems in Surkhandarya Region: in Termez, the wastewater system coverage would increase from 61% to 90% in 2035. It will also increase the capacity (up to 45,000 m^3/day) and considerably improve the performance of the Termez WWTP (at present, the actual efficiency of wastewater treatment is 10-15%.

It is planned to apply the **activated sludge process** for wastewater treatment at all six proposed WWTPs in Surkhandarya Region. The reconstructed WWTP in Termez is planned to be designed as an **extended aeration plant** comprising:

- Mechanical treatment facilities (coarse screen and fine screens, sand and grit removal chambers);
- Biological treatment facilities (aeration tanks and settling tanks);
- Gravity thickeners; and
- Sludge treatment facilities:

  Note: some of the existing settling tanks and aeration tanks may be used at the modernised plant – potentially by placing new aeration tanks into the old tanks.

For **WWTPs five Project district districts** another variation of the activated sludge process is considered – sequencing batch reactors (SBRs) for biological treatment facilities. The key difference with the activated sludge plant is that SBRs do not require separate tanks for aeration and sedimentation; the whole biological treatment occur in a single tank.

Key E&S impacts and risks

Based on the analysis of the preliminary design solutions for the Project and high-level assessment of the current environmental and socio-economic conditions in the Project area the following **key E&S impacts/risks** were identified:

- Permanent land acquisition for WWTPs in five Project districts and new SPSs and the associated impacts:
  - disturbance of soil cover and loss of soil all soil functions at the sites allocated for these facilities
  - loss of agricultural land and related land-based livelihoods of land users/owned/leaseholders (loss of grass-land, crops, plants, land plots, and potentially surface structures).
- Temporary soil impairment during construction of WWTPs, SPS, and sewers;
- Temporary and permanent impairment of the landscape's visual amenity as a result of clearing, introduction of technical structures such as sewage treatment plants, SPSs into the landscape
- Impairment of water ecological functions due to insufficient wastewater quality in the event of an accident, and leaking or overloaded sewers
-
- Temporary impacts caused by noise and vibration within the residential areas during the Project construction works
- Possible occasional nuisance due to odour, noise and/or vibration caused by the WWTPs, SPSs, and sewage collectors within the residential areas and areas for recreation during Project operation phase

- Judging by the situation with the existing WWTP in Termez, odour from and resulting odour nuisance for the neighbouring residential areas is the key factor that may affect the environmental quality of areas in the vicinity of the operational WWTPs.
- The intensity / magnitude of this impact depends on the design solutions (inlet structure, choice of the sludge handling technology (e.g. outdoor sludge drying beds vs. indoor facilities for aerobic sludge treatment)).
- Risk of physical and/or economic resettlement for communities in the vicinity of Termez WWTP site:

  There are residential houses with subsistence land plots and arable land used to crop raising within the sanitary protection zone of Termez WWTP (as presented in the 2015 Termez City Master Plan).

  The SPZs are the buffer zones to be established (as per the national legislation) around the industrial facilities to separate residential areas and other sensitive receptors from harmful air emissions and noise[3].

  The presence of residential houses and agriculture production violates the existing national legislation and may trigger the risk of physical and/or economic displacement unless there is a SPZ Design Document or any decision of competent state bodies, which confirms the reduced SPZ for this WWTP and/or excludes these sensitive receptors from the SPZ. According to the available information, SPZ Design Documents have not been found in the files of Surkhandarya Suvtaminot. In the ESIA envisions focused consultations with local sanitary hygiene and environmental authorities on the SPZ of Termez WWTP.

- Risk for opposition to the WWTP reconstruction component from the local neighbouring communities[4]:

  During the meetings with local (mahalla) authorities a local activist voiced the following concerns related to the Project: 1) in the Project requires site expansion, which may trigger either loss of arable land provided to young families for subsistence agriculture or physical resettlement of houses located close to the site boundary[5], 2) some unexpected E&S impacts related to the WWTP operations may occur ("the situation is bad now and may get worse due to the Project"). The interviewee stressed any displacement will result in opposition to the Project among local residents and may trigger protests. He agreed on the need for resolving the odour issue but was in doubt the new investment would be able to do it (because a few years after the latest WWTP reconstruction project (2013-2015) the odour issue has been aggravating).
  Note: out of ca. 40 meetings/interviews held in October and November 2024 this was the only case when an interviewee demonstrated the pessimistic attitude to the Project and was focused mainly on its potential negative effects.

Other important E&S issues

- The occurrence of rare and/or protected animal and plant species within the Project sites and their vicinities is largely not expected.
- It is assumed that with except for Boysun District no natural habitats and no, respectively only few critical habitats are to be expected in the Project area, while modified habitats with a subordinate importance for biodiversity will dominate.
- Due to the predominant intensive agricultural use and the high percentage of built areas, it can be assumed that ecosystem services in the Project area are of general but not of particular significance.

[3] SPZs are established per the Law on Protection of Atmospheric Air (1996), art. 24. SanPiN № 0350-17 "Sanitary Regulations and Rules for Atmospheric Air Protection of Populated Areas of Uzbekistan and KMK 2.04.03-2019 "Sewage. External networks and structure" define the normative (indicative) size of SPZs for WWTPs and SPSs depending on their design capacity. For instance, for SPSs with capacity of 0.2 to 5 thousand m3/day, the buffer zone is 20 m, for WWTPs with mechanical and biological treatment facilities and the same capacity – 150 or 200 m (depending on the used sludge treatment technology).

[4] Communities bordering the SPZ site: Jomiy MFY (from the north) and Pattakesar-2 MFY (to the south).

[5] The residential properties are very close to the WWTP site the minimum distance between the nearest individual land plots and the WWTP site is 20-30 m in Jomiy MFY (to the north of the site) and 5-10 m in Pattakesar-2 MFY (to the south of the site).

- Representatives of City/district Khokimiyats, competent stage bodies and majority interviewed representatives of local (Mahalla) authorities in the Project area demonstrate support to the Project as a whole. It is largely viewed as beneficial for the target settlements since it is to resolves one of the key social problems - lack of the essential municipal infrastructure.
- The key expectations are improved quality of life of the community members, sanitary and hygiene conditions, and additional incentives for economic development of the newly connected areas. The concerns (if voiced) are related to due consideration of interests of the affected communities and specifically affected parties (e.g. those farmers affected by land acquisition), possible delays in Project implementation (especially delayed construction) and need for prompt restoration of road pavement damaged during the construction of collecting sewers in the areas to be connected.
- The Project is not supposed to trigger social conflicts of between identified different groups within communities.

E&S Categorisation and scope of EIA studies

Based on the knowledge gained up to now, the proposed Project can be tentatively categorised B+ as per of the KfW classification, since it may cause adverse E&S impacts and risks that usually can be mitigated through available mitigation approaches, however there are few potential adverse E&S impacts and risks (see above) that might be significant. It is currently not possible to make the final Project classification due to uncertainty with choice of key technological alternatives and other gaps in the Project design information, and incomplete knowledge of several aspects of local and regional environmental and socio-economic baseline conditions. In the course of the further development of the Project and the ESIA, this classification will be critically examined and revisited.

The deliverables of the ESIA phase will include:

- the ESIA report i presenting findings of the detailed impact assessment,
- Environmental and Social Management Plan (ESMP) detailing the appropriate mitigation/enhancement, management and monitoring measures,
- Non-Technical Summary of the ESIA report, and
- updated Stakeholder Engagement Plan (SEP).

The current ESIA Scoping report includes recommendations for specific impact assessment studies within ESIA. The individual topics comprise:

- protected areas, planning prerequisites, geology and soil, climate and air quality, noise, surface and groundwater, biodiversity and living natural resources, landscape, and climate change;
- population development, a number of socio-economic parameters (economic structure, employment, income and expenditures), social infrastructure, transport infrastructure, public health, cultural heritage.

The key data collection methods applied during the ESIA will be the review of open sources and paid databases, requesting information from competent authorities and reviewing the received qualitative and quantitative information.

The majority of gaps in the available socio-economic information relates to the data on five district centres and some – to Termez City. In order to close the data gaps additional information requests to city/district Khokimiyats have been submitted in end of October – early November, and responses are awaited.

In order to establish the baseline water quality of the receiving water bodies, soil quality for the Project sites for the project sites, air quality and noise levels at the boundary of the residential properties the ESIA team plans to use findings of field investigations to be conducted by the national EIA team (see details below).

The data on site-specific geological and hydrogeological conditions are supposed to be acquired from reports on pertinent intrusive investigations on Project sites and/or from paid archived databases.

With regards to biodiversity studies, it is known (from the research conducted to date) there is no well-founded data on habitats, flora and fauna in the Project area, and therefore, some in-depth investigations may be necessary. They include a partly comprehensive, partly selective mapping of habitat types as well as the recordings of birds, reptiles, and amphibians and macro zoobenthos in representative and potentially biologically valuable areas. Due to objective reasons (time limitations and unsuitable season), these studies can be conducted only at the stage of the detailed design development, not as part of the feasibility study. At this point one can state that since the planned activities are not expected to affect the cores areas of potentially biologically valuable areas and go along its edges, a limited impact on biodiversity is expected. Therefore, the lack of field biodiversity studies within the ESIA should not be an issue.

Due to the very different spatial structures and land uses affected by the Project, a differentiation can be made between two thematic focal points that need to be analysed - while in the urban areas the focus is primarily on socio-economic issues and impacts, in the rural areas the focus is primarily on environmental and nature conservation issues (soil, water, plants, biotopes, animals, landscape).

Integrated ESIA/EIA process

As mentioned above, the Project facilities are subject to the EIA per national legislation requirements, and at present, the Consultant consider the scenario for conducting six EIAs for planned facilities to service Termez, Boysun, Angor, Qarluq, Sariq and Khalkobod.

The national EIA should be commenced as soon as the conceptual design is prepared (presumably in late February 2025). As part of the national EIA studies such field investigations is supposed to be conducted to establish the baseline quality of environmental media: water quality sampling (for receiving water bodies of proposed WWTPs), soil sampling (at the sites of the proposed WWTPs and the existing WWTP), noise and air quality measurements at the proposed the proposed normative SPZ boundaries – where there are residential receptors near the Project sites), biodiversity (vegetation and wildlife) surveys / studies (for the proposed sites in five Project districts (WWTPs, SPSs and collector routes)). The need for cultural heritage studies including archaeological assets to be confirmed. The geotechnical studies to explore site-specific geological and hydrogeological conditions are supposed to be conducted by the pertinent contractors and study outputs will be used in the EIA. The biodiversity studies should be planned so that to capture the optimal time for field observations and recordings (from mid-March to mid-April – depending on the location).

The ESIA will use the results of these field investigations including laboratory tests for the detail impact assessment. Therefore, ESIA and EIA will have common information background.

Stakeholder Engagement and Information Disclosure

At the beginning of the ESIA Scoping a draft **Stakeholder Engagement Plan** was (SEP) has been prepared. It includes an initial identification and analysis of Project stakeholders and a preliminary Stakeholder Engagement Programme. The programme presents information disclosure and stakeholder engagement events during the ESIA preparation and Project design, and pre-construction and construction stages.

The draft SEP as well as the current ESIA Scoping Report are to be disclosed to the general public.

During the ESIA Scoping the ESIA team organised two data collection campaigns during two field trips to the Surkhandarya Region with October trip one focused on Termez and November trip covered five Project districts. The team members conducted consultation meetings and held informant interviews (in all six settlements) and focus group discussions (in Termez only). In total, they took part in 40 meetings with various Project stakeholders engaging with 63 persons. During these meetings, the ESIA team members not only collected data on baseline social and environmental conditions but also presented the Project and tried to understand the stakeholders' expectations and concerns on the Project.

The planned **ESIA disclosure and consultations** include:

- The ESIA scoping consultation meetings in Termez and five Project district centres[6], during the 30-day scoping disclosure of the ESIA scoping report and SEP. During these meetings a Project Scoping Leaflet[7] will be distributed, the Project and potential alternatives will be discussed, as well as potential E&S impacts and further scope of ESIA work; and the initial SEP will be presented and Project Grievance Mechanism explained.
- Relevant stakeholder and public consultation meetings and events following the disclosure of the draft ESIA package (ESIA report, SEP, and Non-technical Summary that will be disclosed for another 30 days). The locations and methods of engagement will be determined taking into account the lessons learnt at the scoping stage.

The public consultations within the **national EIA procedure** are also planned in line with the national good practice provisions. Public meetings will be arranged with support of Suvtaminot and EIA Consultant to present the EIA findings and collect comments of the attendees. The disclosure of EIA materials is not required and not planned.

1 Introduction

1.1 Project Background, Framework and Context

The German Financial Cooperation intends to support the Republic of Uzbekistan (RoU) in the field of Sustainable Urban Development. The *Development Strategy of New Uzbekistan for 2022-2026*[8] highlighted the construction and/or modernisation of municipal water supply and sewage disposal as a priority for the country. The *Water Sector Development Concept for 2020-2030* with its Roadmap[9] also stressed the need for reliable water supply and modernisation of sewage systems. Thus, upon consultations between the Government of Uzbekistan and German Federal Ministry for Economic Cooperation and Development (BMZ), KfW Development Bank has considered providing loans and grants for 190 million EUR for the Project, which includes planned activities in two regions:

- **Surkhandarya Region**: Construction and reconstruction of wastewater systems in Termez City and construction of wastewater systems in district centres of five districts (Boysun, Angor, Oltinsoy, Kizirik and Muzrabad districts); and
- **Fergana Region**: Construction and reconstruction of water supply and wastewater systems in Kokand and Margilan cities.

The Project's objective is to provide improved and sustainable access of the population in the project area to

i) safe drinking water at socially acceptable and cost covering tariffs,
ii) adequate sanitation through sewerage disposal and
iii) improved management capacities as part of integrated urban development.

Uzsuvtaminot JSC[10] will be the Project Executing Agency (PEA). It will implement and operate the Project with support of its branches in Surkhandarya and Fergana Regions. The Project components will be designed in line with the national legislation and KfW and World Bank requirements.

[6] The representatives of mahallas that are the closest to the proposed Project WWTPs in five districts will be invited to the district centres

[7] The Scoping Leaflet will be prepared in Russian, and in Uzbek.

[8] Adopted by the Decree of the President of the RoU No. UP-60. 28 January 2022. https://faolex.fao.org/docs/pdf/uzb208604.pdf

[9] Adopted by the Resolution of the RoU President No. УП-6024, 2020, https://lex.uz/ru/docs/4892946.

[10] Uzsuvtaminot JSC is the specially authorised body for water supply and sanitation responsible for the development and implementation of investment projects with the participation of international financial and foreign governmental financial institutions through centralised investments and private-public partnerships. For information about the organisation refer to https://uzsuv.uz/ru.

The feasibility study (FS) for the Project was initiated in September 2024 and is being developed by joint venture (JV) of GOPA Tech GmbH (Germany), EPTISA (Turkey) and Infratech Consulting (Uzbekistan) as a sub-consultant, collectively referred to as "the Consultant".

As part of the FS, a package of environmental and social impact assessment (ESIA) documentation, commensurate with the Project's currently assigned category of "B+"[11], is being prepared for the Project in line with the environmental and social (E&S) requirements of the national regulations and those of KfW. Two separate ESIA packages are prepared: one for Surkhandarya Region and another for Fergana Region.

This draft Scoping Report is part of the ESIA Package for the Surkhandarya Region and covers Project facilities and activities in this region, only. In this report hereinafter 'the Project' refers to planned activities in Surkhandarya Region only. The description of the Project is provided in **Section 3**.

1.2 Project Area

The Project area comprises the territory of the city of Termez, the capital of Surkhandarya Region, and the following five districts of the region and their centres (since part of the proposed wastewater facilities will be sited outside the district centres' boundaries):

- Boysun Town (Boysun District)
- Khalkobod Urban Settlement (Muzrabad District)
- Qarluq Urban Settlement (Oltinsoy District)
- Angor Urban Settlement (Angor District)
- Sariq Urban Settlement (Kizirik District)

1.3 Existing Wastewater Systems

The information in this section is based on the draft Problem and Potential Analysis Report, draft Technical Report, and Site Visit Reports, GOPAInfra, December 2024.

Termez

Currently, Termez has a wastewater treatment plant (WWTP) with a design capacity of 35,000 m^3/day, which receives the wastewater of about 135,000 inhabitants. Approximately 95,000 inhabitants are connected to the WWTP via the sewer system. A further 40,000 inhabitants have septic tanks, whose wastewater is taken by suction vehicles and fed to the sewage treatment plant (ToR, 2023). The WWTP in Termez is currently operating at limited efficiency and capacity (25.000m^3/day) due to blockages caused by sludge, equipment malfunctions and other problems (GOPA Infra, 2024).

Due to the current state of WWTP, only a pond system is partially operational for limited treatment. The (incompletely) treated effluent is currently discharged into a canal[12], which in ca. 4.5 km enters Amu Darya River. The discharge point is ca. 500 m from the southwestern site boundary, within the Amu Darya River floodplain and the area of restricted access along the state borderline. As reported before and observed during the site visit in October 2024, the wastewater treatment plant is a source of unpleasant odour and causes odour nuisance for the surrounding residential areas.

Furthermore, the entire sewerage system has a length of 109.4 km of which 104 km is a gravity network and 5.4 km is a pressure network (ToR, 2023). The current city area covered by the sewers is only 53%, and there are communities (mahallas) not connected to the centralised system. Only 61% of Termez residents have access to wastewater services.

[11] Per the KfW's Sustainability Guideline (2024), category B+ refers to a project of substantial risk that may have single significant adverse E&S impacts/risks (https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Richtlinien/Nachhaltigkeitsrichtlinie_EN.pdf).

[12] According to data provided by the Department for Ecology, Environmental Protection and Climate Change for Surkhandarya Region.

Many of existing system's elements (sewers and sewage pumping stations (SPS)) are physically worn out and require rehabilitation. At present, the majority of grievances submitted to city branch of Surkhandarya Suvtaminot users are related to sewerage system failures (sewer raptures and SPSs malfunctions which sometimes result in sewage spills).

Five Districts

The five centres lack essential wastewater treatment facilities and sewerage networks. There are local operational small-scale wastewater systems in Boysun, Qarluq, Angor, and Sariq comprising local wastewater treatment facilities (LWTFs) but their coverage is very limited: such facilities serve few multi-storey apartment houses and/or one-two social facilities, and some of these systems are not in satisfactory condition. There is a recently built WWTP with the associated sewerage network in Khalkobod but it is not commissioned yet and it is unclear when this wastewater system will be commissioned.

Therefore, considerable part of wastewater generated within these settlements is discharged into open trenches or transported by vacuum trucks – a temporary and often inadequate solution. This method raises concerns about contamination and hygiene, especially in densely populated areas.

1.4 Project Justification

In view of the expected population growth, the partial connection rate to the wastewater systems and the partly outdated disposal technology, the **wastewater transport and treatment system in Termez** needs an expansion and rehabilitation to reduce E&S impacts from the existing facilities and improve environmental and sanitary conditions.

For five **centres of Project districts** there is a critical need to construct comprehensive sewerage systems. The current lack of infrastructure forces most of the residents and organizations to rely on unsustainable wastewater management practices that compromise both sanitation standards and environmental quality.

Establishing modern treatment facilities and sewerage systems in all six settlements of Surkhandarya Region would improve community health and foster more favourable environment for the region's growing population. In addition, this would also promote economic growth in the serviced areas.

1.5 Aim of the Scoping Report and Scoping Process

The objective of the scoping report is, on the one hand, to describe the Project and realistic alternatives (if such exist) and its key expected effects - both positive and negative - on humans and the environment, and on the other hand, to outline the planned scope of the investigation, the study area and the individual investigation methods for the ESIA.

The E&S scoping exercise will enable to:

- Identify key E&S impacts (both positive and negative) associated with the Project and its associated facilities;
- Analyse potential risks to the Project facilities from the environment;
- Preliminarily outline the areas of influence for Project facilities and Project as a whole;
- Identify the red flags (if any);
- Identify the key Project stakeholders, their concerns and expectations related to the Project.
- Summarise the available baseline information and define the scope of additional E&S studies within the ESIA for the Project.

No dedicated E&S studies have been completed for this Project.

2 Legal Framework

2.1 National Legislation of Uzbekistan

The overarching legal environmental and social framework is set out in the **Constitution of Uzbekistan**[13]. For instance, it establishes the following rights and obligations related to environmental and social aspects:

- Article 19. The Republic of Uzbekistan shall recognize and guarantee human rights and freedoms in accordance with the generally recognized norms of international law and in accordance with this Constitution. Everyone shall enjoy human rights and freedoms from birth. All citizens of the Republic of Uzbekistan shall have same rights and freedoms, and shall be equal before the law, without discrimination by sex, race, ethnicity, language, religion, convictions, social origin, and social status.
- Article 42. Everyone shall have the right to decent work, to free choice of profession and occupation, favourable working conditions that meet the requirements of safety and hygiene, to fair remuneration for work without any discrimination and not below the established minimum wage, as well as the right to unemployment protection as prescribed by law.
- Article 49. Everyone shall have the right to a favourable environment, reliable information about its condition. The State shall create conditions for the implementation of public control in the field of urban planning activities in order to ensure the environmental rights of citizens and prevention of harmful environmental impact. Draft urban planning documents shall be subject to public discussion in the manner prescribed by law. The State, under the principle of sustainable development, shall implement measures to improve, restore and protect the environment, maintain ecological balance.
- Article 58. Women and men shall have equal rights.
- Article 61. It is the duty of citizens to protect the historical, spiritual and cultural scientific and natural heritage of the people of Uzbekistan. The historical, spiritual, cultural, scientific and natural heritage shall be protected by the state.
- Article 62. Citizens shall be obliged to protect the environment.
- Article 68. The land, its minerals, waters, flora and fauna, other natural resources shall constitute the national wealth and shall be rationally used and protected by the state. Land may be privately owned on the terms and in the manner prescribed by law, which ensure its rational use and protection.

Thee national legislation includes many E&S laws applicable to the current Project that will be considered in the ESIA. Most important of these are briefly described below (other legal acts and regulatory standard will be added following the scoping stage depending on the Project needs and potential risks).

2.1.1 Environmental Legislation

The main national environmental law is the **Law on Nature Protection**[14]. This law sets out the legal, economic, and organisational foundations for environmental conservation and sustainable use of natural resources. Its goal is to ensure a balanced relationship between man and nature, protect the ecological system and provide a clean environment for the population. Article 25 of this law states that the state ecological review (SER) is a mandatory measure in the field of environmental protection for the decision-making process.

The **Law on Protection of Atmospheric Air**[15] describes the provisions on the protection of the atmosphere and their tasks. It also specifies norms, quality standards and harmful effects, requirements for fuels and lubricants, production and operation of vehicles and equipment, requirements for the protection of the ozone layer, obligations of

[13] The Constitution of the RoU of 8 December 1992, as updated on 1 May 2023 https://lex.uz/docs/6451070

[14] Law of the RoU on Nature Protection (9 December 1992, No. 754-XII). https://www.lex.uz/docs/7065

[15] Law of the RoU on Protection of Atmospheric Air (27 December 1996, No. 353-I). https://lex.uz/acts/58400

enterprises, institutions, and organisations to protect the atmosphere and compensation for damage from atmospheric pollution.

The **Law on Water and Water Use**[16] regulates water relations, sustainable use of water for the needs of the population and economic sectors, protection of water from pollution, contamination and depletion, prevention and elimination of the harmful effects of water, improvement of the condition of water bodies, as well as protection of the rights and legitimate interests of enterprises, institutions, organisations, farms, and citizens in the field of water relations. To note, the Water Code of the RoU is currently being drafted and may be adopted in the nearest future.[17]

The **Law on Environmental Review**[18] (sometime called 'Environmental Expertise') provides for mandatory expert assessment of the impact of economic activities on the environment and human health and is also the legal basis for expert assessments. Based on the results of the SER, a conclusion is drawn up containing findings on the admissibility of the implementation of the SER object. Implementation of the project (SER object) without a positive SER conclusion is prohibited.

The **Resolution of the Cabinet of Ministers (RCM) of the RoU 7 September 2020 No. 541 on Further Improvement of the Mechanism for Assessing Environmental Impact** (hereinafter – Resolution No. 541)[19] contains requirements for materials of EIA that must be submitted to the SER, determines the order and procedure for SER for various types of planned activities, divided into 4 categories according to the magnitude of the expected impact on the environment, the order for holding public hearings as part of the EIA procedure. Resolution No. 541 defines the List of Activities Subject to SER (Annex 1 to the Resolution) and describes procedures for organizing SERs (Annex 2 to the Resolution). For objects of categories I and II (of high and medium risk), the SER is carried out by the republican specially authorized body; for objects of categories III and IV it is carried out at the regional level. Annex 3 to this Resolution contains "Procedures for Public Hearings on Environmental Impact Assessment Projects".

According to Annex I of the Resolution, the following water supply and sewage facilities are subject to EIA and SER:

- Types of activities of category I of environmental impact (highly hazardous for the environment):
    - Water pipelines of republican and interregional significance
    - Sewage treatment plants with a daily capacity of more than 280 thousand cubic meters
- Types of activities of category II of environmental impact (moderately hazardous for the environment):
    - Groundwater intake facilities of interregional importance
    - Sewage treatment plants with a daily capacity of 50 thousand up to 280 thousand cubic meters
- Types of activities of category III of environmental impact (of low risk for the environment):
    - Groundwater abstraction facilities of the Republic of Karakalpakstan, regions and the city of Tashkent
    - Water conduits of importance in the Republic of Karakalpakstan, regions and Tashkent city and district
    - Sewage treatment plants with a daily capacity of less than 50 thousand cubic meters
    - Chlorinators.

Note: water supply lines, sewer lines and collectors, as well as sewage pumping stations (SPSs) are not on the above screening lists of facilities.

Similarly, power supply lines and motor roads may be classified as category I, category II or category III facilities – depending of their importance. Such facilities of city/district importance are category III activities.

[16] Law of the RoU on Water and Water Use (6 May 1993 No. 837-XII). https://lex.uz/docs/93202

[17] https://kun.uz/en/news/2024/07/30/proposed-water-code-in-uzbekistan-to-boost-resource-management-and-efficiency#:~:text=The%20Code%20is%20intended%20to,bodies%20in%20regulating%20water%20relations.

[18] Law of the RoU on Environmental Review (25 May 2000, No. 73-II). https://www.lex.uz/acts/9760

[19] RCM of the RoU of 7 September 2020 No. 541 "On Further Improvement of the Mechanism for Environmental Impact Assessment". https://lex.uz/docs/4984499

The **Law on Waste**[20] addresses the issues of waste management, excluding emissions and pollution of air and water. The main purpose of this law is to prevent the negative impact of solid waste on human life and health, as well as on the environment, reduce waste and encourage the use of sustainable methods for reducing household waste. Waste management issues, including disposal, are also regulated by the relevant by-laws and a number of Sanitary Rules and Regulations applicable to existing and proposed waste disposal facilities.

The **Law on the Protected Natural Areas**[21] regulates relations in the field of organisation, protection and use of protected natural areas. The main objectives of this Law are the conservation of typical, unique, valuable natural objects and complexes, the genetic fund of plants and animals, prevention of the negative impact of human activities on nature, the study of natural processes, monitoring of natural environment, improvement of environmental education and upbringing.

The **Law on the Protection and Use of Fauna**[22] regulates relations in the field of protection, use, restoration, and reproduction of the animal world to ensure the conditions for its existence, conservation of species diversity, integrity of natural communities and habitat. A similar law was adopted to manage the protection and use of flora, that us the Law **on the Protection and Use of the Flora**[23].

The **Law on Environmental Control**[24] regulates relations in the field of environmental control. The main tasks of environmental control are: prevention, detection, and suppression of violations of the requirements of the legislation in the field of environmental protection and sustainable use of natural resources; monitoring the state of the environment, identifying situations that can lead to environmental pollution, irrational use of natural resources, pose a threat to the life and health of citizens; determination of compliance with the environmental requirements of the planned or ongoing economic and other activities; and ensuring the observance of the rights and legitimate interests of legal entities and individuals, their fulfilment of obligations in the field of environmental protection and rational use of natural resources.

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 981 of 11.12.2019 "**On Approval of the Regulation on the Procedure for Establishing Water Protection Zones and Protected Sanitary Zones of Water Bodies in the Territory of the Republic of Uzbekistan**"[25] sets specific zones to protect rivers, drinking water intakes, reservoirs and other water bodies, facilities and all water sources from the harmful effects of industries, construction, transport, agriculture activities etc[26].

2.1.2 Social Legislation

Labour relations in the RoU are regulated by the **Labour Code**[27] and a number of laws and by-laws. Labour legislation, considering interests of workers, employers, the state, ensures the effective functioning of the labour market, fair and safe working conditions, protection of labour rights and health of workers, contributes to the growth of labour productivity, improving the quality of work, and raising on this basis the material and cultural standard of living of the country's population. In Uzbekistan, significant efforts are being made to eliminate child and forced labour. National legislation (Article 7 of the Labour Code, **Code of Administrative Responsibility**[28] and other laws) prohibit the use of child and forced labour, and fines are imposed on those who violate these laws.

[20] Law of the RoU on Waste (5 April 2002, No. 362-II). https://www.lex.uz/acts/44872

[21] Law of the RoU on the Protected Natural Areas of 3 December 2004 No. 710-II. https://www.lex.uz/acts/415228

[22] Law of the RoU on the Protection and Use of Wildlife of 26 December 1997 No. 545-I. https://www.lex.uz/acts/29246

[23] https://www.lex.uz/acts/25259

[24] Law of the RoU on Environmental Control of 27 December 2013 No. ZRU-363. https://www.lex.uz/acts/2304949

[25] https://lex.uz/ru/docs/4640437

[26] For water intakes, three zones are envisioned: the first is with a 'strict regime' (with prohibition of residential areas, construction, grazing, fishing, using pesticides and fertilizers, etc.), and the second zone with a less strict regime (no cemeteries, cattle burial grounds, sewage fields, fields filtration, manure storages, livestock /poultry enterprises, etc.), and third one is the 'observation zone' with sanitary measures. Land under the first strict-regime zone is withdrawn from economic use via a decision of local executive authorities and transferred to water facility operators.

[27] Labour Code of the RoU of 21 December 1995. https://lex.uz/docs/145261

[28] Code of Administrative Responsibility of the RoU of 22 September 1994. https://lex.uz/docs/97661

Important laws and regulations that relate to public health and safety issues include:

- Constitutional Law of the RoU No ЗРУ-737 “On the State of Emergency”[29], 15.12.2021
- Law No 265-I “On the Protection of the Health of Citizens”[30], 29.08.1996
- Law No ЗРУ-393 “On Sanitary-epidemiological Welfare of Population”[31], 26.08.2015.
- Law No 221-I “On Protection of Customers Rights”[32], 26.04.1996.
- Law No ЗРУ-790 “On the Protection of Population and Territories from Natural and Man-made Emergencies” [33], 17.08.2022.
- Law No. ЗРУ-57 “On Industrial Safety of Hazardous Production Facilities”[34], 25.08.2006.
- RCM No. 273 “On measures to improve procedure on recording state property objects”, 08.05.2020.[35]
- RCM No. 649 “On approval of fire safety rules”[36], 21.10.2020.

The **Land Code**[37] regulates land relations in order to ensure, in the interests of the present and future generations, scientifically grounded, sustainable use and protection of lands, reproduction and increase of soil fertility, conservation and improvement of the natural environment, creation of conditions for the equal development of all forms of management, protection of the rights of legal entities and individuals for land, as well as strengthening the rule of law in this area, including through the prevention of corruption offenses. Numerous laws and by-laws operationalise the Land Code, including *inter alia* the following:

- Law No. 152-XII "On Property"[38], 31.10.1990;
- Law No. 781 “On Land Acquisition for Public Purpose and Compensation Procedures[39]”, 29.06.2022;
- Law No. 728 “On Privatization of Non-agricultural Land”[40], 15.11.2021;
- Presidential Decree No. 15 "On additional measures to improve the procedure for leasing agricultural land plots"[41], 18.01.2024;
- Presidential Decree No. UP-198 “On measures to reliably protect the inviolability of property rights, prevent unjustified interference in property relations, and increase the level of capitalization of private property”[42], 24.08.2022;
- Presidential Decree No. 6243 "On measures to ensure equality and transparency in land relations, reliable protection of land rights and their transformation into a marketable asset"[43], 08.06.2021;
- RCM No. 146 “On the Measures for Improving the Order of Provision of Land Plots for the Implementation of Urban Development Activity and for Other Non-Agricultural Needs” [44], 25.05.2011;

[29] https://lex.uz/docs/5774847
[30] https://lex.uz/docs/41329
[31] https://lex.uz/docs/2732584
[32] https://lex.uz/docs/14643
[33] https://lex.uz/acts/6161251
[34] https://lex.uz/docs/4608500
[35] https://lex.uz/ru/docs/4807558
[36] https://lex.uz/ru/docs/5056473
[37] Land Code of the RoU of 1 July 1998 https://lex.uz/docs/149947
[38] https://www.lex.uz/acts/111455
[39] https://lex.uz/uz/docs/6087438
[40] https://lex.uz/ru/docs/5729969
[41] https://lex.uz/ru/docs/6764197
[42] https://lex.uz/docs/6171346
[43] https://lex.uz/ru/docs/5450181
[44] https://lex.uz/docs/1804031

- RCM No. 911 “On Additional Measures to Guarantee Property Rights of Individuals and Legal Entities and Improve the Procedure for Withdrawal and Compensation of land plots” [45], 16.11.2019;
- RCM No. 71 “On measures to implement the Law of the RoU "On the privatization of non-agricultural land plots"[46] , 14.02.2022;
- RCM No. 501 "On approval of the Regulation on the procedure for calculation and reimbursement of costs for the land areas, allocated to the liquidated or optimized farm or other entities producing agricultural products"[47], 24.08.2020;
- RCM No. 235 "On improving the system of determining the standard cost of agricultural land"48 (18.08.2014);
- RCM No. 301 "On approval of the Regulations on the use of land in rural settlements[49] (30.10.2014).

The **Law on guarantees with respect to equal rights and opportunities for women and men**[50] aims at eliminating gender inequality, achieving specific goals of ensuring of actual or fundamental equality of women and men and equal opportunities for them.

The **Laws on the Protection and Use of Cultural Heritage Sites**[51] and **on the Protection and Use of Archaeological Heritage Sites**[52] regulate the protection and preservation of tangible and intangible cultural heritage objects, issuance of permits for earth, land management, construction and other works in the locations of tangible cultural heritage objects and adjacent territories, as well as for conducting research on objects of tangible cultural heritage. Research (excavation and exploration) of archaeological monuments is allowed only with permits issued by the Ministry of Culture of the RoU.

2.1.3 National Environmental and Social guidelines and Standards

The RoU has extensive technical regulations (Construction Rules and Norms or ‘KMK’ / SNiP), sanitary and epidemiological rules and norms (‘SanPiN’) and sectoral standards. Some that are relevant to the Project are:

- SanPiN № 0350-17 "Sanitary Regulations and Rules for Atmospheric Air Protection of Populated Areas of Uzbekistan"[53], 25.10.2017.
- SanPiN No. 0293-11[54] “Hygienic standards. Register of maximum allowable concentrations (MAC) of pollutants in the atmospheric air of populated areas on the territory of the RoU”.
- SanPiN No. 0267-09 “Hygienic standards for ensuring permissible noise levels in the premises of residential and public buildings and within the territory of residential developments[55]”, 19.06.2009

[45] https://lex.uz/docs/4597638

[46] https://lex.uz/ru/docs/5858017 https://lex.uz/ru/docs/4656891

[47] https://lex.uz/docs/4966486

[48] https://lex.uz/docs/2448662

[49] https://lex.uz/docs/2491014

[50] 02.09.2019 № LRU-562 https://lex.uz/docs/5167654

[51] 30.08.2001 No. 269-II. https://lex.uz/acts/10375.

[52] 13.10.2009 No. LRU-229. https://lex.uz/acts/1526179

[53] https://nrm.uz/contentf?doc=538254_sanitarnye_normy_i_pravila_po_ohrane_atmosfernogo_vozduha_naselennyh_mest_respubliki_uzbekistan_(sanpin_ruz_n_0350-17)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_25_10_2017_g_)&products=1_vse_zakonodatelstvo_uzbekistana

[54] https://nrm.uz/contentf?doc=368639_perechen_predelno_dopustimyh_koncentraciy_(pdk)_zagryaznyayushchih_veshchestv_v_atmosfernom_vozduhe_naselennyh_mest_na_territorii_respubliki_uzbekistan_(gigienicheskie_normativy_sanpin_ruz_n_0293-11)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_ruz_16_05_2011_g_)&products=1_vse_zakonodatelstvo_uzbekistana

[55] https://lex.uz/docs/1765725

- SanPiN No. 0022-22 “On approval of sanitary rules, norms and hygienic standards for the organization of construction work” [56], 17.05.2022.
- SanPiN No. 0325-16 “Sanitary Standards of Permissible Noise Levels at Workplaces”[57], 01.02.2016.
- SanPiN No. 0122-01 “Sanitary Standards of General and Local Vibration at Workplaces”[58], 29.10.2001.
- SanPiN No. 0331-16 “Sanitary Rules and Norms of Design, Construction, Maintenance of Residential Buildings in Climatic Conditions of Uzbekistan”[59], 16.06.2016.
- State Standard O'z DSt 951:2011 [60]"Sources of centralized potable water supply. Hygienic, technical requirements and selection rules" defines the quality of drinking water, including limit values of water quality parameters.
- State Standard O’zDSt 950:2011[61] "Drinking Water: Hygienic Requirements and Quality Control" defines the hygienic requirements for drinking water and outlines the permissible levels of chemical, physical, and biological contaminants.
- KMK No 2.01.08-96 “Noise protection”[62], 21.08,1996.
- KMK 2.04.02-19 "Water supply. External networks and structures”[63], 21.11.2022;
- KMK 2.04.03-2019 “Sewage. External networks and structures”[64].

Both SanPiN № 0350-17 and KMK 2.04.03-20 set **the Sanitary-Protection Zones (SPZs)** or buffer zones for the sewage facilities (WWTPs and SPSs), as distances from sewerage facilities (depending on the design capacity) to the boundaries of residential areas, sites of public buildings and food industry enterprises. For instance, for SPSs with capacity of 0.2 to 5 thousand m3/day, the buffer zone is 20 m, for WWTPs with the capacity of 0.2-5 thousand m3/day and 5-50 thousand m3/day, buffer zones are 150-200m and 300-400m depending on sludge treatment technologies applied (see e.g. Table 1).

2.2 International Treaties and Conventions Ratified by Uzbekistan

The RoU is a party to a number of international agreements related to the protection of the natural and man-made environment. The list of environmental conventions and protocols related to the Project and signed or ratified by the RoU is presented in Table 1. Uzbekistan supports the principles of the Rio Declaration and the Global Agenda 21 and has adopted 16 SDGs, having defined providing its population with good quality drinking water as one of its main goals.[65]

[56] https://lex.uz/ru/docs/6050896

[57] https://nrm.uz/contentf?doc=480664_sanitarnye_normy_dopustimyh_urovney_shuma_na_rabochih_mestah_(sanpin_ruz_n_0325-16)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_01_02_2016_g_)&products=1_vse_zakonodatelstvo_uzbekistana

[58] https://nrm.uz/contentf?doc=185089_sanitarnye_normy_obshchey_i_lokalnoy_vibracii_na_rabochih_mestah_(sanpin_ruz_n_0122-01)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_29_10_2001_g_)&products=3_prakticheskaya_buhgalteriya

[59] https://med.uz/spid/en/inuz/detail.php?IB_ID=20&ID=52469&IBTYPE=public

[60] https://www.lex.uz/docs/4979421

[61] https://www.lex.uz/docs/4979438

[62] https://f.eruditor.link/file/2131481/

[63] https://lex.uz/uz/docs/6321094

[64] https://nrm.uz/contentf?doc=410604_sanitarnye_trebovaniya_k_sistemam_kanalizacii_v_osobyh_prirodnyh_i_klimaticheskih_usloviyah_respubliki_uzbekistan_(sanpin_ruz_n_0129-02)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_29_07_2002_g_)&products=1_vse_zakonodatelstvo_uzbekistana https://mc.uz/uploads/mcuz_91974688657649.pdf

[65] https://unece.org/sites/default/files/2024-02/uzbekistan-state-of-the-environment-en.pdf, pp.6-7.

Table 1: E&S Conventions and Protocols Signed and Ratified by the RoU that are Relevant to the Project[66]

Title	Status
UN Framework Convention on Climate Change (UNFCCC) (1992)	Ratified in 1993
Kyoto Protocol to the UNFCCC (1998)	Ratified in 1999
Paris Agreement on climate change related to the UNFCCC (2016)	Ratified in 2018
Vienna Convention on the Protection of the Ozone Layer (1988)	Ratified in 2000
Montreal Protocol on Substances that Deplete the Ozone Layer (and its London, Copenhagen, Montreal and Beijing Amendments)	Ratified in 2006 (last amendment)
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)	Entered into force in 1995, accession in 1996
Stockholm Convention on Persistent Organic Pollutants (2001)	Ratified in 2019
Convention on Biological Diversity (Rio de Janeiro, 1992)	Ratified in 1995
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971) (Ramsar Convention)	Ratified in 2002
Convention on the Protection and Use of Transboundary Watercourses and International Lakes	Ratified in 1993
CITES Convention on International Trade of Endangered Species of Flora and Fauna	Ratified in 1997
Paris Convention concerning the Protection of the World Cultural and Natural Heritage (1972)	Ratified in 1993
Convention for the Safeguarding of the Intangible Cultural Heritage (2003)	Ratified in 2006
Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (Aarhus Convention) (1998)[67]	*Not ratified, but under consideration*

As of November 2024, the RoU ratified 22 conventions of the International Labour Organization (ILO)[68] including all ten Fundamental Conventions and the others:

- C029 Forced Labour Convention (1930) (No. 29),
- C047 Forty Hours Week Convention (1935) (No. 47),
- C052 Holidays with Pay Convention (1936) (No. 52),
- C098 Right to Organise and Collective Bargaining Convention (1949) (No. 98),
- C100 Equal Remuneration Convention (1951) (No. 100),
- C103 Maternity Protection Convention (1952) (No. 103),
- C105 Abolition of Forced Labour Convention (1957) (No. 105),
- C111 Discrimination (Employment and Occupation) Convention (1958) (No. 111),
- C122 Employment Policy Convention (1964) (No. 122),
- C135 Workers' Representatives Convention (1971) (No. 135),
- C138 Minimum Age Convention (1973) (No. 138),
- C154 Collective Bargaining Convention (1981) (No. 154),
- C182 Worst Forms of Child Labour Convention (1999) (No. 182),
- C148 Working Environment (Air Pollution, Noise and Vibration) Convention (1977) (No. 148)
- C187 Promotional Framework for Occupational Safety and Health Convention (2006) (No. 187).

[66] Uzbekistan's legislation base. https://nrm.uz/

[67] https://lex.uz/ru/docs/4574010

[68] ILO. 2024. Ratifications for Uzbekistan.
https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103538

2.3 KfW Requirements and International Best Practice Guidelines

2.3.1 KfW Sustainability Guidelines

KfW requires that all projects supported by it should comply with the environmental, social and climate performance provisions of the KfW's Sustainability Guideline (2024)[69] and the applicable international standards, in addition to the relevant host country laws and regulations. KfW classifies a project (Financial Cooperation measure) according to its potential negative environmental and social impacts in one of the following four categories: "A" (high risk), "B+" (substantial risk), "B" (moderate risk) or "C" (low risk).

The Project is currently classified as "B+" since it may cause adverse environment or social impacts and risks that usually can be mitigated through available mitigation approaches, however single potential adverse environmental or social impacts and risks might be significant. To this end, an Environmental and Social Impact Assessment (ESIA) study including an Environmental and Social Management Plan (ESMP) should be prepared for the Project, as well as an Environmental and Social Management System (ESMS) adapted to potential impacts and risks. A Stakeholder Engagement Plan is also required for the Project.

The Sustainability Guidelines of KfW refer to the following E&S guidelines that will be considered in the ESIA:

- World Bank's Environmental and Social Standards (ESS) 1-8 and 10[70].
- BMZ's Guidelines on Incorporating Human Rights Standards and Principles, Including Gender, in Program Proposals for Bilateral German Technical and Financial Cooperation[71].
- World Bank Group's General Environmental and Health and Safety Guidelines[72] and sector-specific ones.
- ILO Fundamental Conventions and guidelines.
- For the involuntary resettlement aspects:
    - UN Basic Principles and Guidelines on Development-based Evictions and Displacement, namely §§ 42, 49, 52, 54 and 60)[73];
    - World Bank Involuntary Resettlement Sourcebook (2004)[74];
    - FAO (2022): Voluntary guidelines on the responsible governance of tenure of land, of fisheries and forests in the context of national food security[75].

In addition, KfW Development Bank endorsed the "Principles for Digital Development", and the ESIA is structured to respect them, especially the Privacy & Security aspects[76].

2.3.2 World Bank ESSs and Guidelines

The following 2017 World Bank's standards with regards to environmental, social, and health aspects are considered applicable to the Project:

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS2: Labour and Working Conditions
- ESS3: Resource Efficiency and Pollution Prevention and Management

[69] Sustainability Guideline. Assessment and management of Environmental, Social, and Climate Aspects: Principles and Procedures. 31 July 2024. https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Richtlinien/Nachhaltigkeitsrichtlinie_EN.pdf

[70] http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards

[71] BMZ (Federal Ministry for Economic Co-operation and Development) https://www.giz.de/de/downloads/bmz2013-en-guidelines-human-rights.pdf

[72] https://documents1.worldbank.org/curated/zh/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf

[73] https://www.ohchr.org/sites/default/files/Documents/Issues/Housing/Guidelines_en.pdf

[74] http://documents.worldbank.org/curated/en/206671468782373680/pdf/301180v110PAPE1ettlement0sourcebook.pdf

[75] http://www.fao.org/docrep/016/i2801e/i2801e.pdf

[76] https://digitalprinciples.org/principles/

- ESS4: Community Health and Safety
- ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS8: Cultural Heritage
- ESS10: Stakeholder Engagement and Information Disclosure

In addition to the above-mentioned General EHS Guidelines, the World Bank Group developed sectoral guidelines that are considered relevant to the Project and will inform the ESIA process:

- International Finance Corporation's (IFC) 'Good Practice Handbook: Land Acquisition and Involuntary Resettlement' (2023)[77];
- IFC Environmental, Health, and Safety Guidelines for Water and Sanitation[78]
- Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (IFC, 2007).
- Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Human Development Operations (WB, 2022)[79].
- Environment & Social Framework for IPF Operations - Gender[80] (WB, 2019)
- Projects and People: A Handbook for Addressing Project-Induced In-Migration (World Bank/IFC, 2009).
- Introduction to Health Impact Assessment (IFC, 2009)[81].
- Addressing the Social Dimensions of Private Sector Projects: Good Practice Note (IFC, 2003)[82].
- Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (IFC, 2013)[83].

2.4 Comparative Review and Gap Analysis

A detailed comparative analysis of the RoU legislation and KfW / World Bank's ESSs was completed in 2021-2022[84]. Its update is presented in Table 2 outlining both the gaps and possible measures to address them.

It should be noted that a significant legal breakthrough has been achieved by Uzbekistan through **Presidential Decree No. 3857 "On Measures to Improve the Effectiveness of Preparing and Implementing Projects with Participation of International Financial Institutions and Foreign Government Financial Organizations**" (16.07.2018)[85], which allows the government to seek compliance with requirements of international lenders even where these go beyond the national legalisation. In other words, in case of inconsistency between for instance, the environmental, social or resettlement policies of the Uzbek regulations and International Financial Institutions (such as the EBRD, KfW, ADB and others), the policies of the latter will be followed by Executing Agencies, if it is agreed so in the project agreements. The practice of applying this decree to the E&S area is gradually progressing.

[77] https://www.ifc.org/content/dam/ifc/doc/2023/ifc-handbook-for-land-acquisition-and-involuntary-resettlement.pdf

[78] https://www.ifc.org/content/dam/ifc/doc/2000/2007-water-and-sanitation-ehs-guidelines-en.pdf

[79] https://thedocs.worldbank.org/en/doc/0e0825d39c28f61080380c6be9c40811-0290032022/original/SEA-SH-GPN-for-HD-Operations-CESSO-Issue-Version-September-26-2022.pdf

[80] https://thedocs.worldbank.org/en/doc/158041571230608289-0290022019/original/GoodPracticeNoteGender.pdf

[81] https://www.ifc.org/en/insights-reports/2000/publications-handbook-healthimpactassessment--wci--1319578475704

[82] https://www.ifc.org/en/insights-reports/2000/publications-gpn-socialdimensions--wci--1319578072859

[83] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_cumulativeimpactassessment

[84] Ecoline International Ltd. 2022. Uzbekistan Environmental and Social Gap Analysis Final Report.

[85] https://lex.uz/docs/3823562

Table 2: Gaps between the E&S legislation of Uzbekistan and KfW's requirements, and proposed measures to address them

Gaps between the environmental and social legislation of Uzbekistan and KfW's requirements & legal enforcement gaps ⇨ ***Risks arising from the gaps***	**Recommendations to avoid or minimize the risks**
Assessment and Management of Environmental and Social Risks 1. No requirements to consider or, if required, no or weak consideration of: • social baseline analysis (incl. gender aspects and vulnerable people) • socio-economic and land-related assessment • mitigation hierarchy principle • natural resource ownership • analysis of alternatives • responsibilities and costs of mitigation and monitoring in an action plan / post-project assessment program • Associated Facilities • impact on and from climate change • primary suppliers • transboundary impacts • ecosystem services ⇨ *missed opportunities to avoid impacts via consideration of alternatives* ⇨ *inefficient social impact assessment* ⇨ *non-systematically proposed mitigation measures and unclear responsibilities for and costs of monitoring and mitigation measures* ⇨ *omitted risks to disadvantaged/vulnerable people, including women* ⇨ *missed opportunities to adapt to climate change and mitigate impact to it* ⇨ *tension with neighbouring countries over projects with transboundary impacts*	Include the determined gaps in the Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan, and project implementation
2. No requirement to operate an Environmental and Social Management System or Framework ⇨ *unsystematically managed environmental and social risks,* ⇨ *no feedback to and correction of the initial management plans* ⇨ *no timely assessment and adjustment in response to ad-hoc design, construction or operation changes*	Establish a commensurate ESMF/ESMS and maintain it during the project life cycle
Labour and Working Conditions No requirements to extend the labour management procedures to employees of the primary contractors and suppliers and to establish a worker grievance mechanism accessing to direct and contracted employees ⇨ *low awareness about labour problems within contractors that may result in delays in project implementation or other risks to the project (e.g., allegations of using forced labour)* ⇨ *engagement of illegitimate, unreliable or inappropriate labour-force in projects*	Establish and implement procedures for managing and monitoring the performance of own staff and the project's contractors and suppliers in terms of labour conditions during the project life cycle and include those in the ESMP.
Resource Efficiency and Pollution Prevention • No requirement for a systematic analysis of efficient consumption of raw materials, energy efficiency and cost reduction opportunities • Limited risk analysis of operations with hazardous materials and largely absent management programmes and controls • Limited enforcement of legally required Sanitary Protection Zones (SPZs) ⇨ *excessive consumption of raw materials and energy* ⇨ *potential for leakages and additional costs, fines, environmental damage* ⇨ *complaints from businesses and communities located around project facilities about air, noise, vibration and other impacts and related damage to property or health*	During the ESIA, undertake a systematic analysis of energy efficiency improvements, if relevant, and cost reduction opportunities and implement the due measures as technically and financially feasible. Develop and implement procedures for routine handling and management of chemical and hazardous substances and wastes. Enforce SPZ, where applicable.

Gaps between the environmental and social legislation of Uzbekistan and KfW's requirements & legal enforcement gaps ⇨ *Risks arising from the gaps*	Recommendations to avoid or minimize the risks
Community Health and Safety • Limited requirements to assess the risks on community health and safety during the project life cycle, including those related to project traffic and air / soil / water pollution, labour influx, and security personnel, to establish quality management systems when providing services to communities, to monitor incidents and accidents • Weak enforcement of a requirement to assess and map community safety risks and impacts for various emergency scenarios ⇨ *potential for social conflicts/unrest* ⇨ *missed out risk to human health and safety / no due mitigation* ⇨ *non-consideration of communities in the legally required Emergency Prevention and Management Plans.*	Assess in the ESIA/address in the ESMP the risks to / impacts on community health and safety during the project life-cycle related to the project traffic and project-induced air, water and soil pollution, labour influx, security personnel and emergency situations; Establish and implement appropriate quality management systems to avoid and minimize risks/impacts that project services may have on community health and safety
Physical and Economic Displacement and Restrictions on Land Use • Compensations paid to legal/legalizable asset owners, not to informal users (in practice in-kind approaches are preferred) • No concept of compensation at "replacement cost" • No requirements to: ○ develop and implement resettlement or livelihood restoration plans ○ set a compensation eligibility cut-off date, ○ develop (gender sensitive) livelihood restoration activities ○ conduct inclusive consultations and run a dedicated grievance mechanism ○ monitor the physical displacement and livelihood restoration process ⇨ *disproportional impacts on the affected persons* ⇨ *displaced people may remain homeless* ⇨ *deteriorated livelihoods*	In projects where risks of physical and economic displacement have been identified: • Prepare a Livelihood Restoration Plan (LRP)/ Resettlement Action Plan (RAP) to cover all the identified gaps • Conduct meaningful (gender sensitive) consultations • Monitor and evaluate the implementation of the LRP/RAP
Biodiversity / Living Natural Resources • No requirement to identify types of habitats and apply differentiated risk management approach and to consider risks related to invasive species • No definition of *biodiversity offsets* resulting in 'no net loss' and 'a net gain of biodiversity' ⇨ *failure to identify the areas of high biodiversity importance or value and to develop relevant mitigation* ⇨ *missed out impacts on modified or critical habitat*	In projects that may affect biodiversity: • identify all types of potentially affected habitats and categorize them • consider potential impacts on their ecological function and concerns of stakeholders, as well as risk related to invasive species • propose measures as per the biodiversity mitigation hierarchy
Cultural Heritage • No provisions to avoid or mitigate restricted/prevented access (due to the project) to the cultural sites used by the population and to consult local communities to identify locally valued heritage; • No requirement to develop a "chance find procedure" for a specific project ⇨ *risks of social unrest/conflicts* ⇨ *risk of destroying locally valued cultural heritage sites/items*	• Ensure that access to cultural heritage sites is not interrupted by the project or provide an alternative access route • Consult the affected communities to identify cultural heritage sites/items or sacred / religious places/items of importance and the local value attached to it, and consider the results in the ESIA
Stakeholder Engagement and Information Disclosure • Limited requirements on stakeholder identification, analysis and engagement planning • No stakeholder engagement after the project approval process • Absence of a project grievance mechanism for external stakeholders, however presence of due regulations for state/public organisations	• Develop a Stakeholder Engagement Plan and implement it during the project cycle • Define clear responsibilities and designate specific personnel to implement and monitor stakeholder

Gaps between the environmental and social legislation of Uzbekistan and KfW's requirements & legal enforcement gaps ⇨ *Risks arising from the gaps*	Recommendations to avoid or minimize the risks
• No provision on organizational capacity for implementing stakeholder engagement and managing grievances ⇨ *failure to recognize complex stakeholder issues, maintain a social license, timely manage local concerns*	engagement and handle grievances (including anonymous)

3 Description of the Project

3.1 Proposed Project Components

No investments in water supply systems are planned under the Project in Surkhandarya Region; only wastewater systems will be developed.

3.1.1 Termez

According to the 2022 pre-feasibility and fact-finding studies, the sewerage system of Termez City has performed extremely poor over the past 8-10 years which creates problems for the population and negatively affects the environment. Its current capacity (25,000 m3/day)is below the designed capacity. The current efficiency of wastewater treatment at treatment facilities was only 10-15%, which is critically low and does not meet any standard. In addition, specific energy consumption of wastewater treatment is very high due to the energy-intensive operation of blowers and other power equipment which are very old. Further, due to the poor quality of wastewater treatment, unpleasant odours spread to the adjacent neighbourhoods causing complaints of the inhabitants. With about 61 % of the residents being connected to the centralised sewage system (as of January 2024[86]), its coverage is seen as insufficient (also given that almost 99% of the city residents are connected to the centralised water supply system). Consequently, the extension and reconstruction of the wastewater system in Termez was identified as a priority for the local authorities and Uzsuvtaminot JSC. The Project is anticipated to significantly improve Termez wastewater infrastructure, enhancing environmental sustainability, public health, and service reliability for the city's residents.

The list the preliminary planned Project components in Termez is as follows (**NB: the list will be verified as the FS progresses**):

1. Reconstruction and Extension of Main Sewer Collectors

Approximately 8.6 km of main sewer collectors will be reconstructed and extended, with pipe dimensions ranging from DN 800 to DN 1,000. This will enhance the main sewage transport capacity.

2. Extension of Secondary Sewer Network

An additional 80 km of secondary sewer lines, with pipe sizes between DN 160 and DN 300, will be laid to expand the network's reach. This extension will improve sewage collection and coverage across Termez, benefiting more residents and businesses.

3. Reconstruction and Construction of Sewage Pumping Stations (SPS)

Four existing sewage pumping stations (SPS) will be reconstructed and upgraded with modern electro-mechanical (E&M) equipment to ensure consistent performance.

Four new SPS will be constructed, equipped with state-of-the-art electrical and mechanical (E&M) equipment, to further enhance sewage transport and support the expanded network.

[86] Information from Surkhandarya Suvtaminot JCS.

4. Reliable Power Supply to Pumping Stations

Overhead power line from the GKTP-630 kV substations will be constructed to supply reliable electricity to the proposed new sewage pumping stations in Termez and, where necessary, in Project districts, reducing the risk of operational interruptions due to power outages.

5. Procurement of Specialized Machinery and Equipment

Special machinery and equipment will be acquired to support the operation and maintenance of the sewerage system, ensuring efficient and effective service delivery.

6. (Re-) Construction of the Wastewater Treatment Plant (WWTP)

The WWTP will be newly constructed or reconstructed to achieve a daily treatment capacity of approximately 45,000 m^3, ensuring adequate treatment for the projected wastewater load.

7. Establishment of a Modern Laboratory

A new laboratory will be equipped with advanced testing equipment to monitor and ensure the quality of treated wastewater, meeting environmental standards.

Figure 1 below shows Project facilities in Termez City.

Figure 1: Project facilities in Termez

3.1.2 Five District Centres

The Project encompasses a series of construction and installation works aimed at enhancing the sewerage infrastructure servicing five district centres of Boysun, Angor, Oltinsoy, Kizirik, and Muzrabad districts. As per the

Project Concept Note covering wastewater facilities in five districts of Surkhandarya Region[87] the key construction activities planned include the following (**NB: the list will be verified as the FS progresses):**

- Boysun Town in Boysun District
  - Sewerage Network: Construction of 52 km of sewerage network.
  - Sewage Pumping Stations: Installation of two sewage pumping stations.
  - Treatment Facilities: a WWTP with a capacity of 3,000 m³/day to be tentatively located in Mustakillik Mahalla citizens assembly(MFY), Boysun District.
- Angor Urban Settlement in Angor District
  - Sewerage Network: Construction of a 37.4 km sewerage network.
  - Sewage Pumping Stations: Installation of two sewage pumping stations.
  - Treatment Facilities: Establishment of treatment facilities with a capacity of 4,000 m³/day to be tentatively located in Navruz MFY, Angor District
- Qarluq Urban Settlement in Oltinsoy District
  - Sewerage Network: Development of a 55 km sewerage network.
  - Sewage Pumping Stations: Construction of two sewage pumping stations.
  - Treatment Facilities: Installation of treatment facilities with a capacity of 3,000 m³/day to be tentatively located in Koratepa MFY, Oltinsoy District.
- Sariq Urban Settlement in Kizirik District
  - Sewerage Network: Extension of the sewerage network by 59 km.
  - Sewage Pumping Stations: Installation of three sewage pumping stations.
  - Treatment Facilities: Development of treatment facilities with a capacity of 4,000 m³/day to be tentatively located in Yangi kent MFY, Kizirik District.
- Khalkobod Urban Settlement in Muzrabad District
  - Sewerage Network: Construction of 18 km of sewerage network.
  - Sewage Pumping Stations: Installation of two sewage pumping stations.
  - Treatment Facilities: Establishment of treatment facilities with a capacity of 2,000 m³/day to be tentatively located in Yangi diyor MFY, Kizirik District.

Note: the proposed sewerage networks include collecting sewer networks covering parts of the settlements and sewage collectors to the proposed WWTPs.

The proposed WWTPs are assumed to service only district centres; the Project does not envision connecting rural communities (communities nearby the proposed WWTP sites and/or along the proposed collectors) to the centralised wastewater systems.

To further support sustainable water and sewerage management, the Project also includes the following components:

- Hydraulic Modelling: Development of hydraulic models for both drinking water supply and sewerage systems to optimize operational efficiency.
- Data Management System: Implementation of a system for the collection, storage, analysis, and graphical visualization of data related to drinking water supply and sewerage facilities.
- Remote Process Control: Deployment of a remote process control system for real-time monitoring and management of water and sewerage infrastructure.
- Specialized Equipment Procurement: Acquisition of specialized equipment necessary for the effective maintenance and operation of water supply and sewerage systems.

This Project will significantly enhance the infrastructure and operational capabilities of the sewerage systems across the targeted settlements, contributing to improved public health, environmental quality, and efficient resource

[87] Project Concept Note. Construction of New Wastewater Systems in Boysun Town, and centers of Angor, Oltinsoy, Kizirik and Muzrabad districts. October 2024.

management. All plans are tentative and subject to adjustment based on further Project assessments and requirements.

3.2 Locations of the WWTPs

3.2.1 Termez

Termez WWTP is located the southwestern part of the city, within Jomiy MFY, close to Amudarya floodplain. The plant was commissioned for 10.000 m^3/day in 1984 and extended for another 25.000 m^3/d by 1989. The latest large-scale rehabilitation works were conducted in 2013-2015[88].

The WWTP site has a buffer zone (sanitary protection zone) 400 m wide reflected in the City Master Plan (see Figure 3). As per the law, no residential properties are allowed within the SPZ. It is also prohibited to cultivate food crops at agricultural land within SPZs of industrial facilities[89]. However, there are private houses are currently within the SPZ. As noted by local authorities, land within the SPZ was officially allocated for residential development in 1990s and early 2000s, and owners of the residential properties are not squatters. There are agricultural lands to northeast and east of the site. At present, agricultural land plots within the SPZ are allocated to young families of nearby communities (Jomiy MFY, Pattaresar-2 MFY) for subsistence crop raising.

Nevertheless, at the time of writing the option of closing the existing Termez WWTP and replacing it with two greenfield WWTPs at the suitable sites within or close to the city area is considered as unfeasible and rejected by Surkhandaryo Suvtaminot. The current objective set for the designers is to put all the necessary facilities into the existing WWTP site and avoid site expansion.

[88] Uzbekistan : Surkhandarya Water Supply & Sanitation Project (2009-2015). https://www.adb.org/projects/40007-013/main

[89] SanPiN № 0350-17 "Sanitary Regulations and Rules for Atmospheric Air Protection of Populated Areas of Uzbekistan", 25.10.2017. https://nrm.uz/contentf?doc=538254_sanitarnye_normy_i_pravila_po_ohrane_atmosfernogo_vozduha_naselennyh_mest_respubliki_uzbekistan_(sanpin_ruz_n_0350-17)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_25_10_2017_g_)&products=1_vse_zakonodatelstvo_uzbekistana

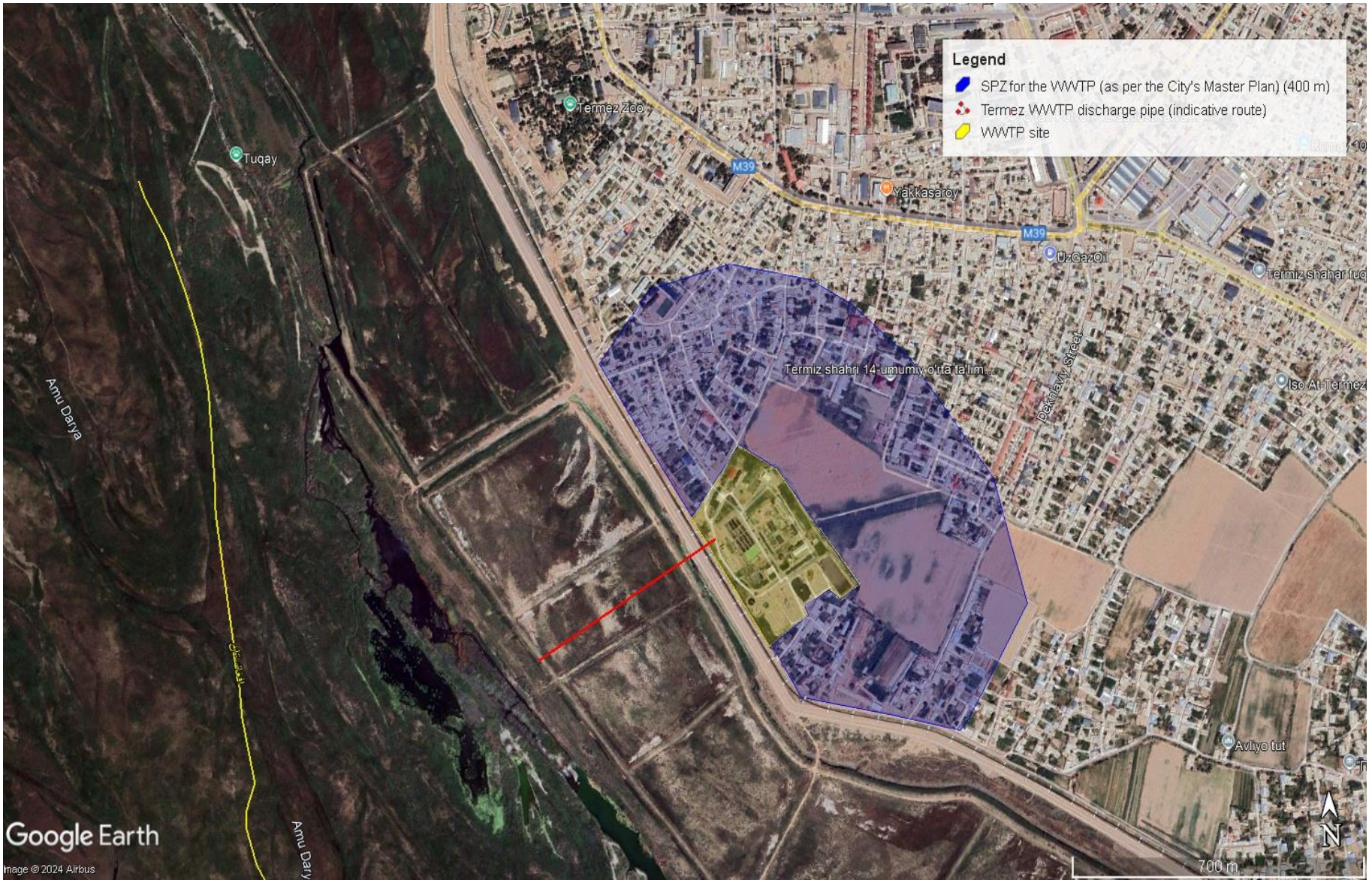


Figure 2: Site location map for WWTP in Termez


a)


b)


c)

Agricultural field and residential area to the east of the WWTP site (a). The distance from the WWTP site to the residential properties in Jomiy MFY (b) and Pattakesar-2 MFY (c)

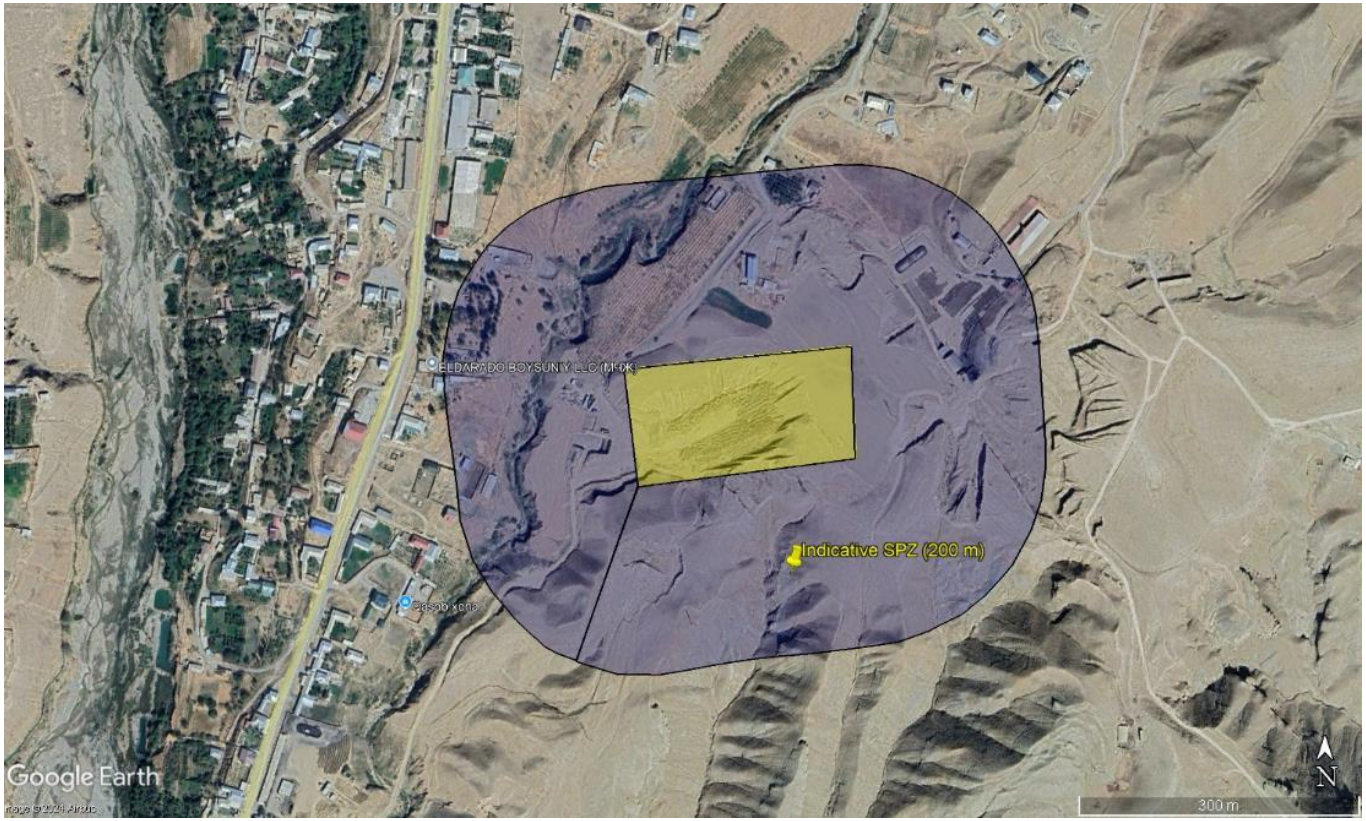
Figure 3: Vicinity of the Termez WWTP site

3.2.2 Five District Centres

The sites of the WWTPs were preliminary identified by Surkhandaryo Suvtaminot (the Company). In early November 2024 the Company representatives together with technical and ESIA team members visited the Project regions and discussed proposed WWTP locations with representatives of district authorities responsible for land management and construction. The regional specialists proposed other possible sites for WWTP construction. In each district a group of local specialists, representatives Surkhandaryo Suvtaminot and its district branch visited candidate sites and based on the review of cadastre documents and field observations collectively agreed on the most suitable option for siting the WWTP. The proposed sites were then informally approved by district Khokims who assured the Company and the Project team to commence the formal land allocation procedure for the pre-selected sites shortly.

The site selection criteria included: proximity to the roads and connection points to the power supply system, risk of flooding and fertility (value) of acquired agricultural land, existence of the state reserve land, avoidance of impacts on many land users /owners / houses.

Figures below (Figure 4, Figure 5, Figure 6, Figure 7, and Figure 8) show proposed locations for WWTPs in five Project districts. Reportedly most of the pre-selected sites are currently allocated to farmers or agricultural enterprises (‘agroclusters’) but only site of the WWTP in Angor District is currently used for crop raising. The detailed information on the ownership and current use of the pre-selected sites and other land use issues is provided in Table 23, **Section 7.4.4**. It is noted the open-source Google Earth’s imagery for Surkhandarya Region is of September 2023. Therefore, recent construction developments are not seen on the satellite maps, and the map analysis findings should be verified by field observations / key informant interviews.



Location: Mustakillik MFY, Boysun District
Site area: 3 ha
Distance to the service area (Boysun Town): approx. 200 m
Notes:
1. The proposed WWTP site is adjacent to the existing LWTF (1,000 m3/day), which serves a group of multi-apartment houses (located in 4 km to the north. The LWTF has been recently built and commissioned but is not present on the open source Google Earth's imagery used for this map preparation (of September 2023).
The Google Earth also does not show other several recently built buildings and/or structures to the west of the proposed WWTP site. Therefore, there are several residential / non-residential houses within the normative (indicative) 200 m SPZ for the proposed WWTP.

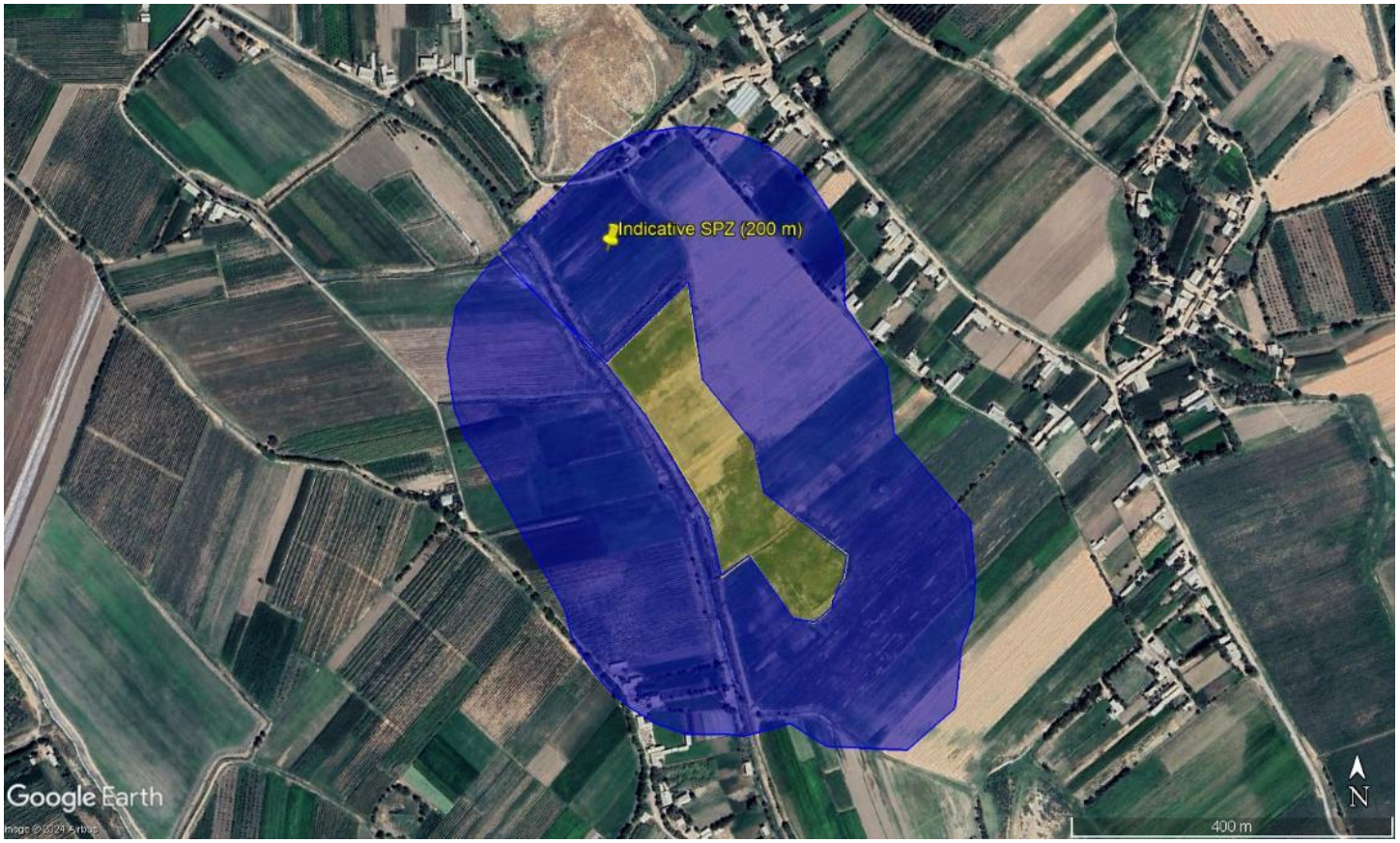
Figure 4: Site location map for WWTP in the Boysun District

A view on the proposed WWTP site (a), a view on the existing 1,000 LWTF in the site vicinity (below)

View of the proposed site

Location: Navruz MFY, Angor District
Site area: 3 ha (the area of the preliminary allocated land plot is 4.4 ha)
Distance to the service area (Angor Urban Settlement): approx. 250 m
Notes:
1. The proposed site is an agricultural land used for crop raising and surrounded by other cultivated farmlands.
2. There is a stand alone residential building in just 7-8 m to the north of the site boundary, non-residential structures in ca. 50m to the north-east, and a residential area across the road in ca. 250 m. Therefore, one residential house is within the normative (indicative) 200m SPZ for the proposed WWTP.

Figure 5: Site location map for WWTP in the Angor District

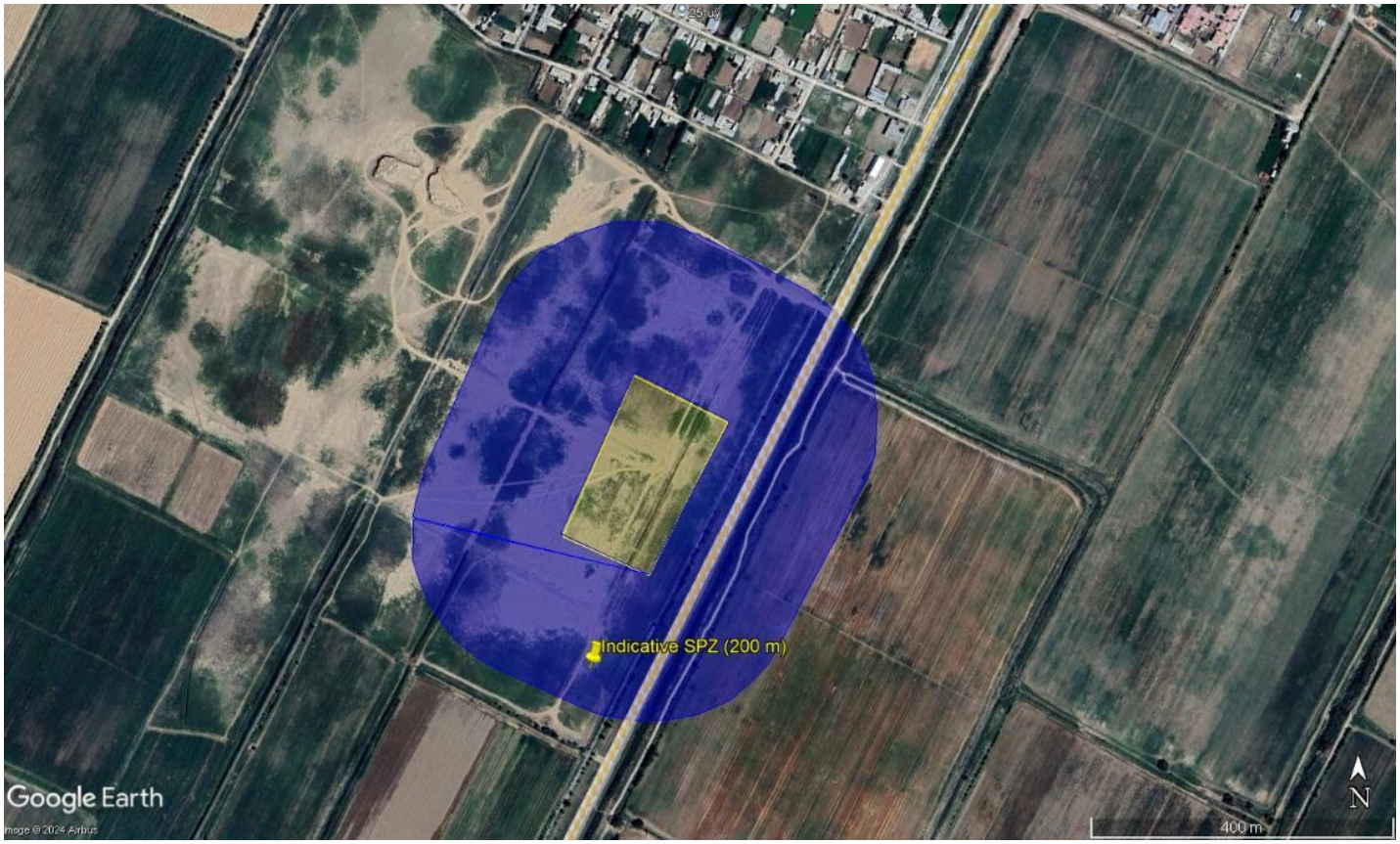


A view of the proposed site (a), houses nearby the site (b)

Location: Koratepa MFY, Oltinsoy District
Site area: 3 ha (the area of the preliminary allocated land plot is 4 ha)
Distance to the service area (Qarluq Urban Settlement): approx. 9 km
Notes:
1. The allocated land is classifed as agricultural state reserve land; according to interview with the Mahalla authority it is currently used by a local farm.

2. There are several houses and structures within the normative (indicative) 200 m SPZ for the proposed WWTP (they are some 130-160 m from the site boundary).

Figure 6: Site location map for WWTP in the Oltinsoy District

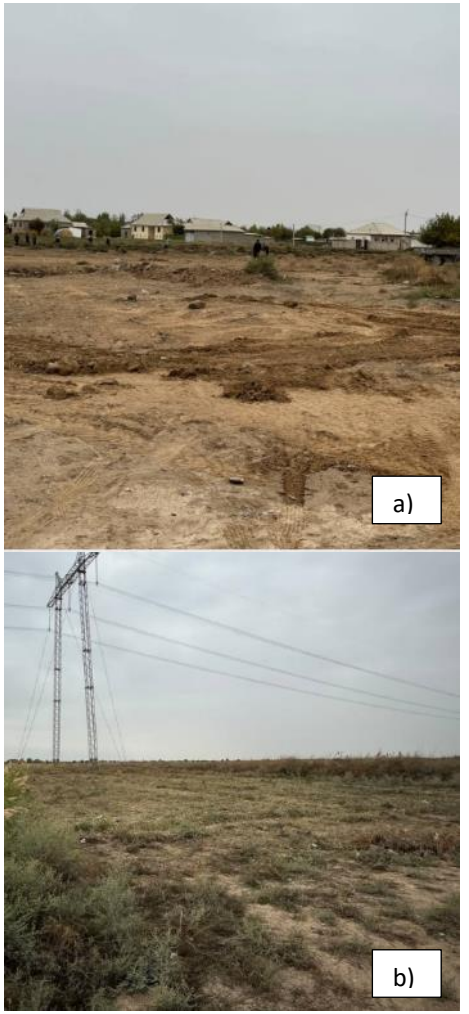


Location: Yangi kent MFY, Kizirik District
Site area: 3 ha
Distance to the service area (Sariq Urban Settlement): 270 m
Notes:
1. The allocated land is classifed as agricultural state reserve land. At present.

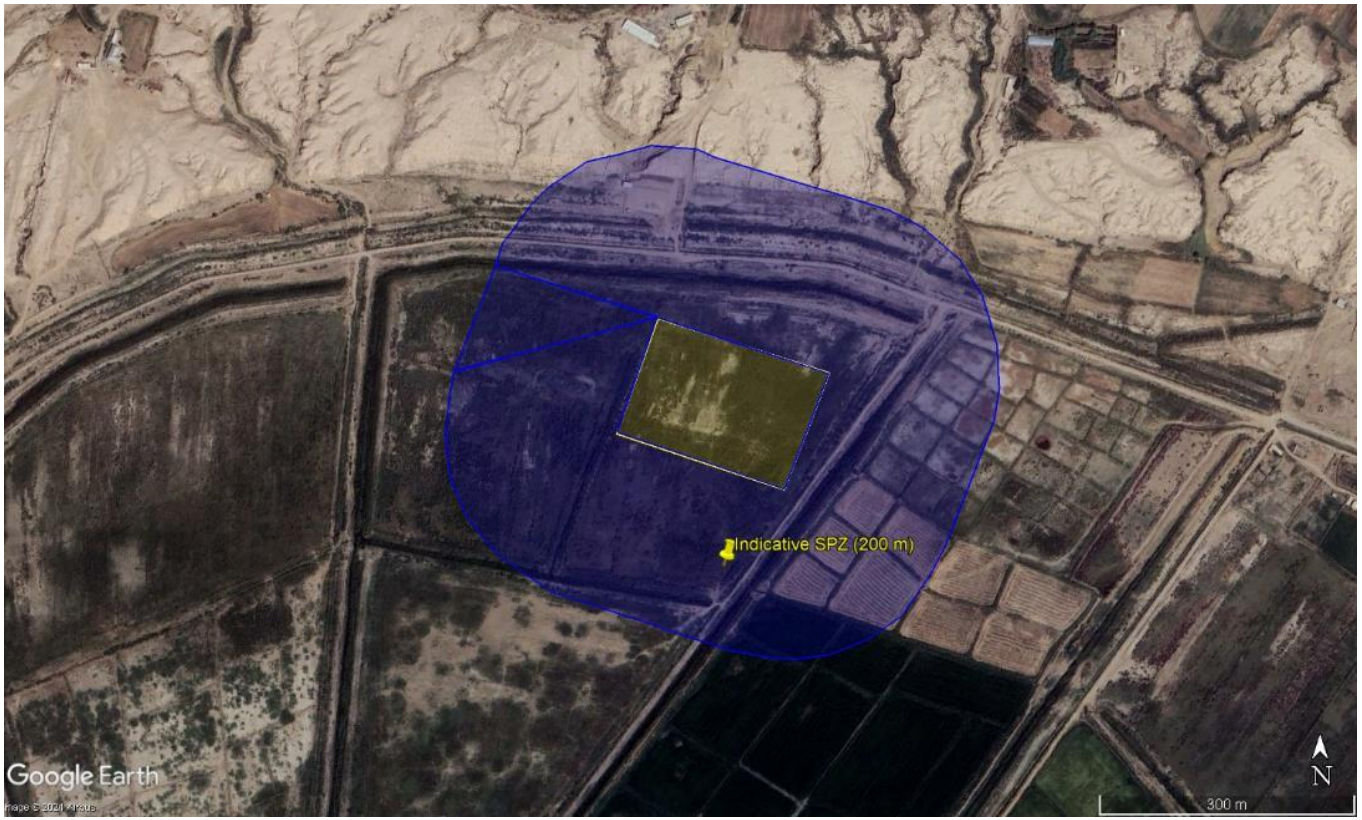
The allocated land plot is currently not cultivated. Land plots around the site leased to/belong to 4-5 farms/farmers.

2. There no houses / structure within the normative (indicative) 200m SPZ for the proposed WWTP

Figure 7: Site location map for WWTP in the Kizirik District



Proposed WWTP site and houses to the north of it (a), entrance to the proposed site and an OHL (b)



Location: Yangi diyor MFY, Muzrabad District
Site area: 3 ha (part of a 4ha land plot that was preliminary proposed by the authorities)
Distance to the service area (Khalkobod Urban Settlement): 820 m
Notes:
1. The allocated land is classifed as agricultural state reserve land; it is currently leased to a farmer.
2. In ca. 40 m from the site of the built but not commissioned WWTP facility (400 m³/day) (not present on the open source Google Earth's imagery used for this map preparation (of September 2023).

The proposed WWTP site (a) and nearby built but not commissioned WWTP (b)

Figure 8: Site location map for WWTP in the Muzrabad District

For only one **SPS** in five Project districts the site is preliminary selected – for an SPS within the Angor District wastewater system. Is located app. 3 km north from the proposed WWTP site, on the way to Angor. There is a sports playground close to the proposed location, and SPS is sited so that normative 20m SPZ for the SPSs of this capacity is respected.

Figure 9: Site location map for an SPS in Angor District (a) and a view on the site and nearby sports playground (b)

Discharge points. The proposed WWTPs in five Project districts are assumed to discharge treated effluent into existing drainage collectors, which are numerous within the agricultural lands in the Project area. Such collectors are created to accept washing waters from arable lands affected by salinisation and stay dry for a considerable part of the year. The proposed locations of the discharge points have been provided for four locations by the Irrigation Authority, routes of the discharge pipelines not determined yet.

The routes for the **sewer collectors** connecting the service areas to the WWTP sites have been selected and will be shown in the detailed maps presented with the concept analysis report. It is assumed they would go along the access roads to the WWTP sites.

3.3 Wastewater Treatment Technology

It is planned to apply the **activated sludge process** for wastewater treatment at all six proposed WWTPs in Surkhandarya Region. The process envisions creating a biological system where favourable conditions are created to bacteria and other microorganisms of activated sludge, which decompose biodegradable organic matter present in raw wastewater. Oxygen required to sustain the aerobic biological process is provided by aeration. Then the active sludge is mixed by aeration or mechanical means to maintain the microbial organisms in contact with the dissolved organics.

Activated sludge can be configured to be Conventional Activated Sludge (CAS) which segregates the aeration/reaction part from the sedimentation/settling part in different and subsequent process structures or it can be configured as Sequencing Batch Reactors (SBRs) with timewise separation of subsequent dedicated processing and separation times.

In **Termez** the Project envisions reconstruction of the existing WWTP, and technical team considers possible re-using of some existing on-site buildings and structures. It is planned to design **an extended aeration plant**, which would comprise the following key production facilities:

- Mechanical treatment facilities:
  - coarse screen and fine screens to remove large solids that may damage the downstream equipment'
  - Sand and grit removal chambers;
- Biological treatment facilities – aeration tanks and settling tanks:
  After mechanical treatment wastewater enters the aeration tank, where it is mixed and oxygen is provided to the microorganisms. The mixed liquor then flows to a clarifier or settling tank where most microorganisms settle to the bottom of the clarifier and a portion are pumped back to the incoming wastewater. This returned material is the return activated sludge (RAS). The material that is not returned, the waste activated sludge (WAS), is removed for treatment and disposal. The clarified wastewater then flows into a collection channel before being diverted to the disinfection (see Figure 10). Effluent needs to be disinfected to reduce microbial content before the discharge into the environment.
- Gravity thickeners where sludge is settled and thickened (see Figure 11);
- Sludge treatment facilities: it is planned to design the aeration system for extended aeration so that no further/separated aerobic sludge stabilization tanks are needed.

  Note: some of the existing settling tanks and aeration tanks may be used at the modernised plant – potentially by placing new aeration tanks into the old tanks. Design solution on possible re-use of existing tanks need to be further investigated.

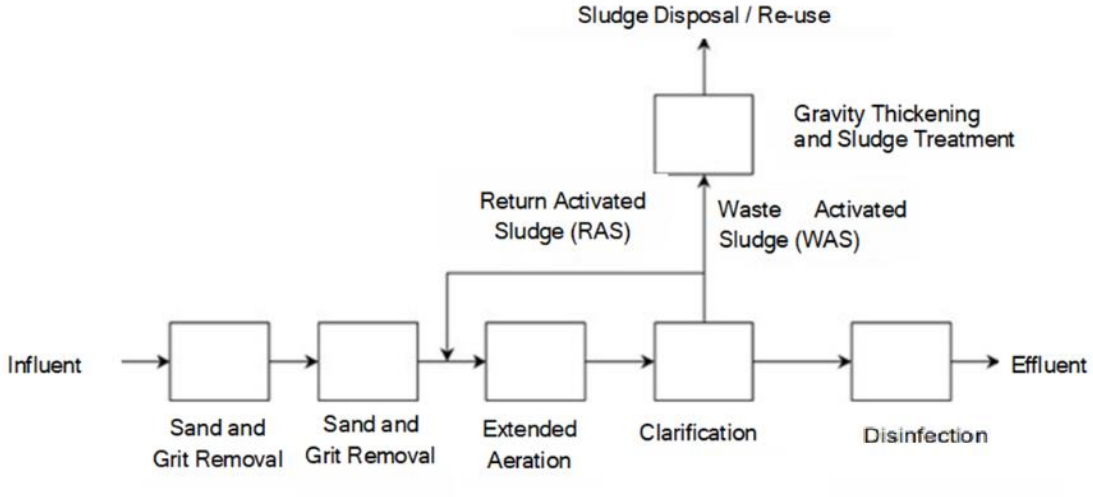
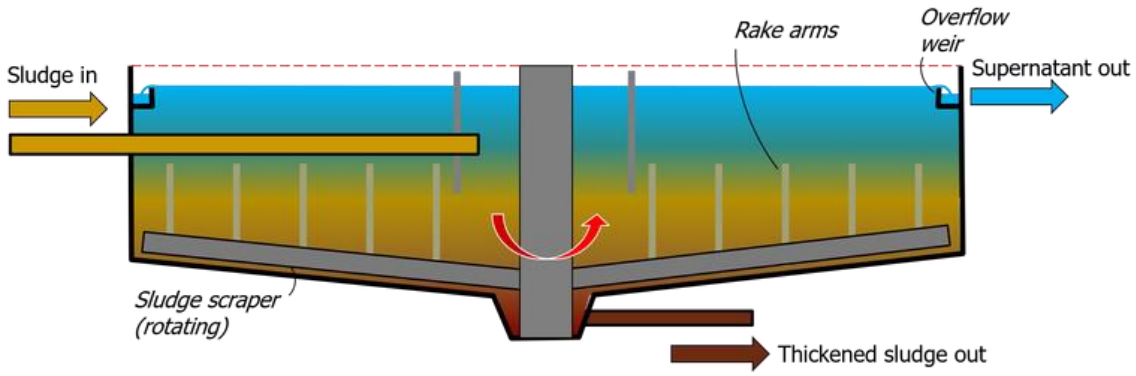


Figure 10: Process flow diagram for the reconstructed WWTP in Termez



Source: https://www.sludgeprocessing.com/sludge-thickening/gravity-thickening/ .

Figure 11: Scheme for gravity thickener

The extended aeration systems are easy to install and operate in addition to being odour free and producing relatively low quantities of sludge. This is a robust and well understood technology and is often the preferred choice for medium -scale municipal projects.

At present it is a state of the art to design the extended aeration systems as CAS or SBR and also include process functions of nitrogen and phosphorus removal within the same structures.

The extended aeration plants can be easily designed in a way that allows for integration of primary settling tanks and a unit for anaerobic sludge digestion.

The anaerobic digestion process envisions biogas production on site, which can be burnt used for heating on-site facilities and/or electricity production. As of today, such technology seems not to be suitable for Termez WWTP yet but it could be introduced in future after the Company's institutional capacity is enhanced.

For **WWTPs five Project district districts** another variation of the activated sludge process is considered – sequencing batch reactors (SBRs). The key difference with the activated sludge plant is that SBRs do not require separate tanks for aeration and sedimentation; the whole biological treatment occur in a single tank. The SBR systems contain either two or more reactor tanks that are operated in parallel[90].

The proposed key production facilities at the district WWTPs are as follows:

- Mechanical treatment facilities (as above)
- Biological treatment facilities: SBRs designed for extended aeration
- Gravity thickeners
- Sludge treatment facilities: it is planned to apply drying beds or sludge humification units (to be decided)).

3.4 Project Resource Requirements

At this stage of the Project development limited information available on Project resource requirements.

It is assumed the average size of a proposed greenfield WWTP in the Project districts would be about 3ha. The site of a proposed SPS would be about 0.02 ha. The WWTP reconstruction should not require site expansion.

Energy (electricity and natural gas) and manpower requirements for specific Project facilities during their operations are currently being elaborated by the technical team.

[90] https://www3.epa.gov/npdes/pubs/package_plant.pdf

3.5 Associated Facilities

The following associated facilities / activities are preliminary identified:

- Construction of the Project off-site engineering infrastructure not financed from the Project; such proposed associated facilities may include (to be confirmed):
    - Construction of power supply lines (possibly OHLs) to the greenfield WWTPs;
    - Gas supply lines to the greenfield WWTPs
    - Small road sections to connect greenfield WWTPs in the Project districts with the existing motor roads (entry roads)
      Note: construction of power supply lines to new SPSs are considered as part of the Project (see 'Reliable Power Supply to Pumping Stations' component)

- Rehabilitation of access roads to the greenfield WWTPs in five Project districts (where necessary, to be confirmed): if an access road is unpaved or paved but in poor condition, it needs to be upgraded to ensure they sustain Project-related heavy-vehicle traffic during construction phase.

Within the scoping the E&S impacts and areas of influence for the associated facilities are indicative as locations and the alignments of the linear infrastructure have not been defined.

3.6 Project Alternatives

The ESIA shall include the identification and analysis of feasible Project alternatives in terms of locations of proposed facilities, technologies, specific design solutions and impact mitigations.

During the ESIA Scoping Project alternatives are formulated to be analyses in detail within the ESIA process. The E&S impacts for each option will be identified and rapidly assessed and assessment findings will be used in the option evaluation process.

The following Project alternatives have been identified:

- 'No-go' alternative:

- Siting alternatives: alternative sites of the proposed new WWTPs and alternative routes for sewer lines, and collectors and proposed SPSs.

- Technological alternatives (all related to WWTPs):

    - Use/not use primary settling tanks
    - Alternative sludge treatment methods
    - Alternative sludge disposal solutions
    - Effluent disinfection solutions

A high-level review of identified options is provided below.

3.6.1 No-go alternative

The **'no go' alternative** implies the WWTP in Termez, selected four SPSs and main sewer collectors are not reconstructed, their operational performance will worsen over time, and E&S issues associated with these facilities will aggravate. For example, the frequency of SPS malfunctions which may result in sewage spills will increase, and odour from the WWTP wand possibly the discharge area causing nuisance for the four communities in the site vicinity. In five Project districts the majority of residents district centres will not have access to wastewater removal services and have to proceed with unsustainable wastewater management practices compromising both sanitation standards and environmental quality (e.g. use of dry pit latrines lead to groundwater contamination; and faecal sludge removal by vacuum trucks is associated with occupational and community health risks and results in additional vehicle emissions including GHG emissions).

The 'no-go' alterative should not be considered as a viable option because the existing wastewater system needs rehabilitation for technical reason and new WWTPs in five Project districts are already planned. For the regional government the improvement of the wastewater systems in the regional capital and district centres is a priority, and they anyway seek for financing to resolve it. Bank's financing would ensure the new development in the wastewater sector would comply with the up-to-date sectoral standards in terms of the technology, resource efficiency including energy efficiency, occupational health, and safety and emergency preparedness and response.

3.6.2 Siting alternatives

The **siting alternatives** can be currently considered for WWTPs servicing five district centres, in Termez the option to substitute one outdated WWTP with two new modern ones built in other locations was considered as unfeasible by Surkhandaryo Suvtaminot and rejected.

The sites for proposed WWTPs in five Project districts were pre-selected after the review of potential two-three sites using a set of technical and E&S criteria (see **Section 3.2.2** for details). The pre-selected sites are considered as the most suitable options, and it is hardly possible to find more suitable sites. In case of any problems with allocation of the pre-selected land plots, the district authority is expected to propose different WWTP locations very close to the currently proposed ones.

The proposed sewer collectors are highly likely to be laid along the access roads to the proposed WWTPs, and other routes for such facilities are unlikely to be feasible.

Construction of new sewer lines and pumping stations in Termez and in five Project districts may have alternative options in the sense of different pipe layouts potentially optimising the required demand for lifting energy, which can be looked into only in the concept design phase.

3.6.3 Technological Alternatives

The alternative technological and design solutions are to be elaborated in detail at a later stage of the FS development. Table 3 below provides an overview of Project technological alternatives identified to date and discussed with the technical team. All of them are related to WWTPs.

At present, the technical team considers the following technological alternatives as technically and economically feasible:

- Chlorination for effluent treatment
- Outdoor sludge drying beds for sludge dewatering and stabilisation and final on-site treatment; for WWTPs in five Project districts humification units are also considered;
- Provide treated sludge to local farmers as fertilizer.

The E&S implications for the alternatives identified to date and other options will be analysed in the ESIA.

Table 3: Key technological alternatives for the Project WWTPs

Process/ facility	Technological Alternatives	Advantages	Disadvantages	Preliminary selected option
Effluent disinfection	1. Chlorination	Low OPEX, possibility to use existing civil structures and operational skills Used country-wide in water and sanitation (several service partners in the country)	OHS risks related to handling of hazardous chemicals (chlorine gas or on-site If chlorine gas is applied - community health risks (related to accidental chlorine release)	Chlorination

Process/ facility	Technological Alternatives	Advantages	Disadvantages	Preliminary selected option
	2. UV-treatment	More advanced technology Does not require handling of a hazardous chemical on site	No use of existing civil structures and existing operational skills Additional effluent treatment phase – sand filtration – may be required No service partners in Uzbekistan	
Sludge dewatering	1. Outdoor drying beds	Space available, low OPEX, low operational skills required, and already known	Odour issue, space requirements are higher than in case of Option 2 and 3	Outdoor drying beds
	2. Covered solar drying	No odour issue	CAPEX is five times more than in case of Option 1	
	3. Mechanical dewatering (belt press)	Sludge cake produced in smaller volumes that dried sludge; Sludge cake can be used as fuel for cement plants Space requirements are less than in case of Option 1 and 2	High OPEX and high operational skills required, polymers needed	
Sludge stabilisation	1. Outdoor sludge drying beds	Space available, low OPEX, low skills required, and already known	Odour issue Space requirements are higher than in case of Option 2 The size of the SPZ around the reconstructed WWTP should more than in case of Option 2	Outdoor sludge drying beds
	2. Indoor installations for thermo-mechanical treatment	No odour issue The size of the SPZ around the reconstructed WWTP should be 30% less than in case Option 1 Space requirements are less than in case of Option 1	High OPEX and operational skills required	
Final on-site sludge treatment	1. Placing into drying beds	Low OPEX, low operational skills required, and already known	Odour issue	For Termez WWTP -sludge drying beds, For WWTPs in five Project districts – to be decided
	2. Humification at reed beds	More advanced technology	Additional land requirements (extra 1-2 ha compared to Option 1)	
Treated sludge disposal	Provide for free as fertiliser (to be used in agriculture, landscaping)	No/low cost method to support to local agricultural producers, i.e. support to and local communities	Additional OPEX (for monitoring of sludge quality)	Promote use of stabilised sludge in agriculture (provide it for free to local farmers)
	Send for disposal at the landfills as solid waste	Treated sludge may be potentially used for biological reclamation of landfill cells – if landfill operators decide to	Additional load of the existing MSW landfills (if sludge is	

Process/ facility	Technological Alternatives	Advantages	Disadvantages	Preliminary selected option
		stockpile it separately and use as needed	disposed together with other mixed solid waste) Agricultural producers will not get free fertiliser	

Note: The alternative solutions on organizing the discharge point will be elaborated at a later FS stage

3.7 Project Phases

The duration of the design stage of the Project (development of the FS and design documents) is one to three years. The aggregated construction phase would last for three years as a maximum.

The estimated lifetime of the Project facilities is as follows: 25 years for civil works, 50 years for sewer lines, and 15 years for pumps and other electromechanical equipment.

3.8 Concurrent Water Supply/Wastewater System Projects

As mentioned in **Section 1.3**, Khalkobod Urban Settlement (Muzrabad District) lacks any operational wastewater system. At the moment, a project on creation of the centralised wastewater system is under implementation. The proposed wastewater system comprises a collecting sewer network covering the settlement area, a proposed WWTP with a capacity of 400 m3/day, and a sewage collector connecting the serviced area and a WWTP location. The wastewater facilities have been designed. As observed during the site visit, the WWTP has been built but not commissioned, possibly due to problems with financing.

The ESIA team plans to request information on the other concurrent wastewater system projects in Termez and five Project districts from the city and district khokimiyats to use in the Cumulative Impact Assessment within the ESIA.

3.9 Summary of Project Information Gaps

The key gaps in Project information critical for the detailed impact assessment within the ESIA includes:

- The most recent data on annual rates of electricity, natural gas and fuel consumption for Termez department of Surkhandaryo Suvtaminot and Termez WWTP to estimate baseline greenhouse gas GHG emissions;
- Design document for SPZ of the existing Termez WWTP
- Inventory of emission sources for Termez WWTP
- Estimated electricity, natural gas and fuel (whatever applicable) consumption rates for the reconstructed Termez WWTP and proposed WWTP in five Project districts,
- Estimated electricity consumption rates for proposed SPSs for wastewater systems of Termez and centres of Project districts;
- Estimated waste generation disaggregated by the key types of waste materials, at least for non-hazardous and hazardous waste for the reconstructed Termez WWTP and proposed WWTP in five Project districts , for construction and operations;
- Estimated treated effluent discharges (m^3/day) for the reconstructed Termez WWTP and proposed WWTP in five Project districts;
- Verified data on land needs for the Project facilities
- Estimated manpower requirements for each of the six Project wastewater systems for construction and operation phases.

4 ESIA Methodology

The chapter bellow provides description of the methodology for the Project-related ESIA. It refers to the methods and approaches to impact identification, analysis and mitigation which are to be applied during the ESIA scoping the full-scale ESIA.

4.1 ESIA Process

4.1.1 Bankable ESIA procedure

The ESIA aims to identify and assess any adverse environmental and social effects of the planned activity to be financed by an international lender, developing appropriate measures to avoid, mitigate and compensate such impacts and prepare management plans to address impacts during Project implementation.

The ESIA is conducted within the bankable feasibility study of the Project. The ESIA process includes the following key elements: screening, scoping, baseline analysis, impact assessment, impact mitigation and enhancement planning, E&S management and monitoring. The ESIA process for the Project comprises two phases: i) ESIA Scoping focused on the identification of the key E&S Project-related impacts and the scope of the necessary additional studies to be conducted during the next assessment stage, and ii) the (full-scale) ESIA including the detailed impact assessment, developing mitigation/enhancement measures and impact management and monitoring planning.

It is noted that both phases of the ESIA process includes baseline analysis, i.e. collection and analysis of data on current state biophysical, socio-economic, cultural environment which may change a result of the Project. The stakeholder engagement and disclosure of information on the Project and its E&S impacts will be also scheduled for both of the two ESIA phases and shall continue during the Project construction and operation phases.

The package of Project's FS documents includes the following ESIA deliverables:

- ESIA Scoping report presenting on findings of the scoping study,
- ESIA report including the Environmental and Social Management Plan (ESMP) with findings of detailed impact analysis and proposed impact mitigations, management and monitoring provisions,
- Non-technical summary (NTS) of the ESIA report,
- Stakeholder Engagement Plan (SEP), the first draft prepared at the scoping stage and the updated version as part of the ESIA package,
- Land Acquisition and Livelihood Restoration Framework (LALRF) to clarify resettlement and compensation principles, organizational arrangements, and design criteria to be applied to the Project components.

4.1.2 National EIA procedure

The purpose of an EIA per the national legislation is to identify, study and describe the direct and indirect impacts of proposed activities on human health and safety, biodiversity, water, air, soil, land, climate and landscape, cultural heritage and physical assets.

Judging by their daily capacity (see **Section 4.1**), the WWTPs to be constructed and reconstructed in the Surkhandarya Region are classified as category III activities by environmental impact[91]. As explained in **Section 2.1.1**, they are subject to SER procedure and therefore require preparing the EIA. Other wastewater facilities in to be designed or to be reconstructed in the region (sewer collectors and secondary sewer networks and the sewage pumping stations) are not mentioned in the lists of facilities for which SER (and EIA) is explicitly required[92].

[91] See Annex I to RCM of the RoU of 7 September 2020 No. 541 "On Further Improvement of the Mechanism for Environmental Impact Assessment". https://lex.uz/docs/4984499

[92] See Annex I to RCM of the RoU of 7 September 2020 No. 541 "On Further Improvement of the Mechanism for Environmental Impact Assessment". https://lex.uz/docs/4984499

Nevertheless, it is assumed the environmental authorities will require considering E&S impacts of the associated sewerage networks in EIAs for WWTPs. Therefore, the E&S experts recommend planning EIAs not for WWTPs but for proposed clusters of wastewater facilities in each settlement (proposed wastewater systems).

Therefore, it is suggested to conduct six EIAs in Surkhandarya Region– for proposed wastewater systems servicing Termez, Boysun (Boysun District), Angor (Angor District), Qarluk (Oltinsoy District), Sariq (Kizirik District), and Khalkobod (Muzrabad District).

Each of the six wastewater systems is viewed as an aggregate category III activity by environmental impact, for which the EIA and SER are required.

The EIA materials for these wastewater systems may be required to be prepared in three stages:

- **Stage I: Draft Environmental Impact Statement** (Draft EIS / PZVOS[93]), to be carried out before the decision on implementation of planned activity is made. The Draft EIS is subject to the SER procedure which results in the SER Conclusion.
- **Stage II: Environmental Impact Statement (EIS)** is prepared only if it is required so in the SER Conclusion received during EIA Stage I. The reason for EIA Stage II could be the need for additional studies, surveys or laboratory analyses. If the EIS is required, it must be completed within the time period specified in the Stage I SER Conclusion.
- **Stage III: Statement of Environmental Consequences (SEC)** is the final stage of the SER/EIA process and must be undertaken prior to commissioning the facility. The SEC report details the changes to the project made as a result of the SER conclusions issued during the EIA Stages I and II; presents comments received during public consultations; sets out the environmental standards applicable to the project and the related environmental monitoring requirements and summarizes key findings and conclusions of SER experts.

Thus, preparation of the Draft EISs is required for the proposed wastewater systems in Surkhandarya Region. The Draft EIS shall present information on planned activities including the analysis of alternatives, current environmental conditions, impact analysis and mitigations. The requirements to the content of the EIA materials (in case of this Project – a Draft EIS) as per Resolution No. 541 are provided in **Annex 2**.

As Project's wastewater systems in Surkhandarya Region are classified as category III activities by environmental impact, their EIA materials including Draft EISs are subject to SER at the regional level[94], i.e. the SER will be arranged by the Centre for SER at the Surkhandarya Region Department for Environmental Protection, Ecology and Climate Change.

The duration of the SER procedure for such planned activities[95] would be 10 calendar days. It can be extended up to two months of the planned activity is considered as complex by the environmental authorities.

The positive SER Conclusion is mandatory for providing financing by banking and other lending institutions and further implementation of the corresponding project / activity[96].

The SER Conclusion on the EIA Materials is valid for three years.

[93] PZVOS – Russian abbreviation for DEIS (Draft Environmental Impact Statement)

[94] See Annex II to RCM of the RoU of 7 September 2020 No. 541 "On Further Improvement of the Mechanism for Environmental Impact Assessment". https://lex.uz/docs/4984499

[95] This applies to every type of EIA materials listed above.

[96] This relates to both pre-project stages.

The EIA legislation is not linked to the feasibility study process.

In practice, the Stage I EIA is often to be carried out at the concept design development stage (so practically, this is the pre-feasibility stage). Then, the SER authorities may announce that the Stage II EIA is expected by a certain milestone – e.g., before the feasibility study is approved.

4.2 Screening

Screening serves to establish the likely degree of difficulty and/or risks, based on which the need for an ESIA is determined.

As per the KfW Sustainability Guideline (2024), the planned activities in Surkhandarya Region are among 'FC-measures which may have potential significant adverse environmental and social impacts and can be assigned to Category A and B+ or B' because they target wastewater management and removal facilities (sewerage systems and wastewater treatment plants) (see Annex to the Guidelines). Therefore, the Project activities in the region are subject to an ESIA.

As per the ToR, KfW has assigned Category B+ to the Project as a whole; the justification of the E&S categorisation is provided in **Section 7.1.**

As noted in **Section 4.1.2** the national EIA is required for the proposed WWTPs.

4.3 Scoping

The results of the ESIA scoping are described in this report. Scoping is one of the major parts of the ESIA process.

Scoping is one of the key elements of the ESIA process. It involves the preliminary identification of Project's **aspects** and related **E&S impacts**[97]. Specific components of the biophysical, socio-economic, and cultural environment that might be affected by the Project are referred to as **environmental or social receptors**[98].

During scoping potential interactions between the Project activities and specific E&S receptors are predicted and E&S impacts as Project-driven changes in the state these receptors are formulated.

The interactions between the Project activities and the environment were identified using scoping matrices, impact trees and review of similar facilities/projects. Then potential E&S impacts were scoped into or out of the subsequent full-scale ESIA process as follows:

- No identified (or discernibly important) interaction, so no (discernible) impact - scoped out of the ESIA process.
- Identified interaction and potentially significant negative impact - scoped into the ESIA process.
- Identified interaction and potentially significant positive impact - scoped into the ESIA process.

During impact identification, the following types of potential impacts / risks are considered:

- **Direct impacts:** impacts of the Project that occur in the same space and time. Also known as primary impacts, they are the direct consequences on the natural or social environment;
- **Indirect impacts:** impacts of a chain of activities associated or induced by the Project that often occur later in time, affecting a broader area, but that are nevertheless reasonably foreseeable.
- **Cumulative impacts:** these impacts can result from the interaction amongst impacts of the Project, or from the interactions amongst impacts of several other development projects within a same area. The other projects considered should include concurrent water supply and wastewater projects in the study area and associated facilities.

4.4 Baseline Analysis and Baseline Study Areas

Within the ESIA for the Project the baseline data collection methods include:

[97] The term 'aspect' is defined as any element an organization's activities, products or services that may impact, or does impact, the environment. In turn, impact is viewed as any change in the environment attributed to the Project. (ISO 14001:2015. Environmental management systems — Requirements with guidance for use https://www.iso.org/standard/60857.html)

[98] Example environmental receptors are habitats disturbed as a result of earthworks / construction activities; example social receptors are residents of houses located next to the existing roads to be rehabilitated or connecting roads to be constructed (extended).

- review of open-source publications,
- preparation and submission of a series of information requests to competent stage agencies and regional and local authorities, and review of the provided data,
- visits to selected Project sites, key informant interviews and focus group discussions conducted during several field trips to the Project region,
- field surveys (to be conducted for data collection within the full-scale EIA).

Data collection methods applied and activities conducted during the current ESIA scoping exercise are described in **Section 4.7** below.

Chapter 6 provides an overview of current environmental and socio-economic conditions in the Project area based on information gathered till present.

For the ESIA for the Project environmental and social baseline study areas were determined.

The **environmental baseline study area** includes:

- Sites of Project facilities and their vicinities (for air quality (including odour), noise, historical soil contamination, landscape and visual amenity, tangible cultural heritage);
- Water courses receiving treated effluents from the Project WWTPs (for hydrological parameters and water quality);
- Surkhandarya Region with focus on Termez area and areas of five Project districts (for meteorology and climate, geology and soil, landscape, surface and groundwater resources, vegetation cover, biodiversity (protected areas, sensitive habitats, and endangered species), and natural hazards).

The **social baseline study area** comprises:

- Termez, and centres of five Project districts (for demography, ethnicity, religion, and language use, employment, household incomes and expenditures, less socially protected and vulnerable groups, public health profile, households' engagement in the tourism sector, existing municipal and social infrastructure, and gender profile);
- Urban mahallas (communities) within the Project settlements and rural mahallas outside them where the Project facilities are located (for demography, ethnicity, religion, and language use, employment, less socially protected and vulnerable groups, household incomes and expenditures, existing municipal and social infrastructure, and gender profile);
- Termez as a district-like city and five Project districts as a whole (for structure of the local economy, budget revenues, existing solid waste management and transport infrastructure, tourism development, cultural heritage, and gender profile);
- Surkhandarya Region (for demography, ethnicity, religion, and language, structure of the regional economy, employment, household incomes and expenditures, cultural heritage, tourism development, cultural heritage, and gender profile).

4.5 Assessment of E&S Impacts

At the impact assessment stage, the potentially significant beneficial and adverse impacts of the Project will be assessed with reference to the current state of the environment. In general, the assessment of impacts will proceed through an iterative process considering four key elements:

- Assessing the impact magnitude (to the 'size' or 'amount' of an impact);
- Evaluating sensitivity of an affected E&S receptors to Project-related impacts;
- Defining impact significance as a function of impact magnitude and receptor sensitivity;
- Development of mitigation measures to avoid, reduce or compensate adverse impacts and enhance positive outcomes – first of all for impacts of high and medium significance; and
- Assessment of residual impacts after the application of mitigation and enhancement measures.

Where residual impacts are of medium of high significance, further options for mitigation may be considered and impacts re-assessed until they are as low as reasonably practicable for the Project.

Besides Project-driven E&S impacts, the ESIA will also assess potential risks to the Project facilities from the environment including risks from natural and man-made hazards and propose measures to improve Project's resilience to them.

Section 7.3 provides descriptions of impact methodologies for environmental and social impacts.

The ESIA for the Project identifies and assess the likely significant impacts to manifest at the Project construction, operation and maintenance and decommissioning phases.

The environmental impacts will be predicted with reference to definitive environmental quality standards and legislative requirements where these are available. Where it is not possible to quantify impacts, qualitative assessments will be carried out based on available knowledge and professional judgements. Social impacts will be assessed using qualitative methods (with quantification where possible). Where uncertainties, limitations or assumptions exist, they will be noted.

4.6 E&S Management and Monitoring

The mitigations/enhancement proposals related to address specific E&S impacts will be translated into clear, practical measures applicable to the local conditions and will be based on the good industry practice.

The mitigation/enhancement measures as identified into the impact assessment will be compiled in an **E&S Management Plan** (**ESMP).** The ESMP will also include monitoring measures aimed to ensure that the identified mitigation/enhancement measures are implemented and any unforeseen impact is identified and handled during the Project implementation. It will point to Management plans that need to be developed after the ESIA is completed to trace and control impacts requiring special attention (e.g. Construction Traffic Management Plan).

The ESMP will be split into the construction and operation and maintenance phases (if needed, the pre-construction/design stage will be included as well).

4.7 Data Collection and Analysis during the ESIA Scoping

During the ESIA Scoping the ESIA team:

- Collected and reviewed information on
    - environmental and social baseline conditions available in open source publications including scientific articles, database of statistical information main spatial data including satellite maps, spatial planning documents.
    - current operations of the existing wastewater facilities in the areas of concern provided by Surkhandaryo Suvtaminot,
- Prepared and submitted focused information requests to competent authorities at the regional, city, and district levels;
- Undertaken data collection campaigns during two field trips to the Surkhandarya Region; the first trip took place on 21-23 October 2024 and was focused on Termez, the second trip took place on 4-8 November 2024 and covered five Project districts. During the field trips the team members:
    - Conducted interviews with management, technical and EHS staff of Surkhandaryo Suvtaminot;
    - Visited selected the existing WWTP in Termez, an existing SPS and a site for the proposed SPS in Termez and sites of the proposed WWTPs in Boysun, Angor, Oltinsoy, Kizirik and Muzrabad Districts and proposed SPS in Angor District to observe environmental conditions on sites and nearest vicinities;
    - Attended consultation meetings and interviews with specialists of city/district khokimiyats where the Project facilities are located,
    - Conducted key informant interviews with:
        - stage agencies responsible for environmental protection, land resource management, public health and hygiene to submit the data requests and/or follow up on the submitted ones;

- representatives of the communities which would benefit from the Project and/or be exposed to adverse impacts resulting from its implementation; the interviewees were heads / deputy heads of MFYs committees where selected existing and proposed Project facilities are located;

- Conducted focus group discussions with users of water supply and wastewater supply infrastructure in Termez; four focus groups (for men of working age, women of working age, pensioners and small and medium businesses) where arranged.

In total, the team members visited nine Project sites and attended 40 meetings with various Project stakeholders engaging with 63 persons (see **Annex 1**).

The meetings aimed at both collecting data on baseline social and environmental conditions and understanding the stakeholders' expectations and concerns on the Project.

Assumptions and limitations

The key limitations for the current scoping study are as follows:

- At the time of the report preparation, part of the information requests submitted by the ESIA team have not been responded to by the competent authorities'
- High-level uncertainty on the Project composition and location of Project activities and extreme time constraints for development of Project solutions;
- Very limited time for the ESIA team to review technical information and accommodate discussions with the technical team to clarify technical details.

The identified baseline data gaps are assumed to be closed during the full-scale ESIA and data collection for the national EIA (see **Section 10.1** for details).

5 Identification of Potentially Significant Environmental and Socio-Economic Impacts

The potentially significant positive and negative Project-related impacts on biophysical environment, socio-economic conditions, communities and cultural heritage in the Project area are presented in the form of impact matrices (seethree Tables below). The Project aspects and impacts are identified and differentiated by the facility type sand Project phase.

5.1 Potential Significant Impacts on the Environment

For the identification of environmental impacts three phases are distinguished within the Project cycle: preconstruction and construction phase (1), the actual physical structure (2) and the operation and maintenance phase (3).

In Surkhandarya Region the Project envisions the following facilities for wastewater collection, transportation and treatment:

Sub-projects	Termez
Sanitation	Construction and reconstruction of sewer collectors, and secondary networks (linear sewage facilities)
	Construction and commissioning of WWTPs in five Project districts Reconstruction of the WWTP in Termez
	Construction and reconstruction of sewage pumping stations

Table 4: Scoping matrix for environmental impacts/risks: linear sewage facilities and SPSs

Examples of anticipated Project-related Environmental Aspects and their Impacts: sewage collectors, pumping stations, water pipelines		
Environmental Aspects	**Potential Environmental Impacts**	**Phases**
Land acquisition	Temporary or permanent • deterioration of habitats for flora and fauna, • loss of soil • loss of residential areas, recreation zones, sites of cultural heritage • fragmentation of habitats for flora and fauna • loss of Agricultural land • impairment of areas of natural beauty deterioration of landscape typical elements	1 - 2
Generation of noise, dust, waste, odour	• rare nuisance caused by odour in residential areas and recreation zones through construction activities • Impairment of sites of cultural heritage • Impairment of soils • Impairment of biodiversity, groundwater and surface water	1, 3
Soil sealing, soil compaction; and excavation of soft sediments	• Temporary or permanent impairment and deterioration of natural soil functions	1, 2
Deforestation/Clearance	• Loss or partial spatial loss of structuring and defining landscape features • Loss or impairment of visual relationships typical of the landscape	
Lowering of the groundwater level, discharge of untreated but diluted water into surface waters	• Impairment of groundwater level, • Impairment of Bio-cenoses, and riverbed of surface waters	1 - 3
Reduction of pollutant emissions	• Improvement of the biological water quality of the waters that have received previously untreated wastewater • Improving people's living conditions, particularly health • Environmental discharge effect with regard to flora, fauna and habitats. • Improvement of the conditions for local and regional economy development • Risk of flood in the urban areas is minimized that such will improve the living condition • Living conditions are improved due to improved collection of wastewater and stormwater in urban areas (no smell) • Risk of flood is minimized which will have a positive impact on reduction of damages caused by this	3
Reduction of losses of drinking-water during transport	• Reduction of the amount of water to be provided for drinking water supply • Conservation of the groundwater reservoirs	3

1 = Pre-Construction and Construction phase, 2 = Structure (Collector, Shafts, Combined Sewer Overflows), 3 = Operation & Maintenance

Table 5: Scoping matrix for environmental impacts/risks: WWTPs

Examples of anticipated project-related Environmental Aspects and their Impacts: wastewater treatment plant		
Environmental Aspects	**Potential Environmental Impacts**	**Phases**

Area requirement/Land acquisition	Temporary or permanent • deterioration of habitats for flora and fauna, • loss of soil • loss of residential areas, recreation zones, sites of cultural heritage • fragmentation of habitats for flora and fauna • loss of Agricultural land • resettlement of human population	1-3
Generation of dust, waste, odour, faecal bacteria	• rare nuisance caused by odour in residential areas and recreation zones • Impairment of sites of cultural heritage • Impairment of soils • Impairment of flora, and fauna, groundwater and surface water	1-3
Soil sealing, soil compaction; and excavation of soft sediments	• Impairment and deterioration of natural soil functions • Impairment of groundwater generation	1, 2
Generation and reuse of sludge and effluent	• Danger of soil and water contamination • Risks to human health	3
Landscape Transformation	• Loss or partial spatial loss of structuring and defining landscape features • Loss or impairment of visual relationships typical of the landscape	1, 2
Construction and water cleaning process	• Risk to groundwater and surface water pollution	3

5.2 Key Potential Socio-Economic Risks and Impacts

The socio-economic, including occupational and community health and safety, risks and impacts are considered for two phases: i) pre-construction and construction ('C'), including re-construction, and ii) operations and maintenance ('O&M'). The scoping exercise demonstrates that, based on the available information, the Project may trigger a variety of socio-economic impacts and risks, both positive and negative.

Table 6 Scoping matrix for socio-economic impacts and risks: WWTPs, linear sewage facilities and SPSs

Environmental/Socio-economic Aspects	Potential risks/impacts	Phases
Land acquisition for Project footprint (permanent) (land withdrawal for five WWTPs in district centres (ca. 3 ha per each); presumably no need for the WWTP in Termez; limited for new SPSs (0.02 ha per each); servitude/no land take for linear facilities - to be confirmed)	• Physical displacement risk (though such risk is not anticipated in relation to five new WWTPs as they will be selected conspiring the sanitary protection zones). • Loss of land and related land-based livelihoods of land users/owned/leaseholders (loss of grass-land, crops, plants, land plots; surface structures) in five districts where five WWTPs will be sited.	Prior to C
Land lease – temporary for construction needs	• Typically selected so to avoid impacts or settlements via negotiations, so limited impact on land use	C
Establishment / enforcement of sanitary protection zones; their normative areas are as follows: • 300-400 m for the WWTP in Termez (depending on the technology selected), • 150-200 m for proposed WWTPs in five Project districts (depending on the technology selected), if their capacity is below 5,000 m3 / day,	• Land use restrictions and livelihood impacts given that SPZs must not host food industry enterprises, water supply facilities, food raw materials and food products warehouses, residential houses, educational institutions, collective or individual summer cottage and garden / orchard plots, sports facilities, parks, medical-preventive and health institutions. • A risk of physical displacement of residents of houses located within the sanitary protection zone of the Termez WWTP in Pattakesar-2 and Jomiy mahallas – a design document ('project/) of a sanitary protection zone will need to be designed to establish the Zone that	Established prior to O and maintained afterwards

Environmental/Socio-economic Aspects	Potential risks/impacts	Phases
• 20 m for proposed SPSs in all wastewater systems, • Buffers for linear facilities – to be clarified	could be less than the normative size if justified by calculations.	
Construction activities / procurement	• Increased regional and local procurement opportunities for goods and services / supply chain mobilisation and the associated tax payments. • Increased local employment opportunities and the related social tax payments	C
Creation of jobs	• Improvement of the local employment and income situation • Increase in living standards locally	C, O&M
Construction activities including earth works, air emissions, noise, vibration, traffic	Community health, safety and security risks: • Risk of traffic accidents due to movement of construction vehicles; • Risk of accidents due to open pits or trenches, • Restricted access to social infrastructure facilities for pedestrians/vehicles • Possible nuisance related to noise pollution and vibration, light pollution, air / dust emissions	C
Operational activities - air emission / odour generation /	Community health, safety and security risks: • Nuisance to local communities due to unpleasant odours from wastewater treatment facilities • Increased safety risk during maintenance	O&M
Construction and operational activities	OHS risks / impacts: • Risk of traffic accidents due to movement of construction vehicles; • Risk of injuries, falls, slips, working in confined spaces • Exposure to respiratory/ air emission impact, electric shock risks, high noise levels at pumping stations and treatment facilities, hazardous chemicals / vapours, pathogens and vectors etc.	C, O&M
Operational activities - treated wastewater	• Improved living conditions of the population; • Improved sanitary and epidemiological situation; • Improved community health conditions; • Improved environmental safety /reduced contamination risks of water / soil	O&M
Additionally for linear facilities: • Sewer system overflows / leakages / flooding due to backwater in the system; • Missing cast-iron manhole covers	• Reduced / avoided socio-economic damages caused by flooding/ overflows • Risk for community of falling if manholes are absent	O&M

5.3 Areas of Influence for Project and Associated Facilities

For the purpose of this scoping exercise the following areas of influence were identified:

- **Areas of direct impacts of the specific Project facilities**, which are areas where material changes in the environmental or social conditions resulting from the Project activities will or may potentially occur. The

area of the direct impact of a facility can be limited to the site, extend to the boundaries of its **buffer zone/stripe** around/along the facility, or extends beyond it. The size of the buffer zones around Facilities is defined based on national regulations, and/or applicable IFIs' guidelines. Such areas include:

For Project facilities

- Land plots allocated for the proposed WWTPs and SPSs (for impacts on soil and vegetation cover, wildlife and land use) (prior to construction).
- Areas of impact on air quality and noise levels around the Project sites:
  - During construction – 100-250m area around the WWTP sites[99,100] and 10-20 m for SPSs (for construction);
  - During operations - coincides with the sanitary protection zones around of the proposed WWTPs and SPSs; their size is as follows[101]:
    - 300-400 m for the WWTP in Termez (depending on the technology selected),
    - 150-200 m for proposed WWTPs in 5 districts (depending on the technology selected),
    - 20 m for proposed SPSs in all wastewater systems.
- Areas of vibration impact (during construction) – to be clarified, most likely the Project site only.
- Area of impact of on-site artificial lighting around the Project sites (at night time):
  - During construction - up to 400 m for WWTP sites; the sensitive receptors – local residents (in Termez) and wildlife (in five Project districts);
  - During operation - to be defined.
- Watercourses receiving treated WWTP effluents (for impacts on surface water quality):
  - During construction – non-applicable
  - During operations - river sections within 500 m downstream the discharge points.
- Corridors along the proposed sewer lines and collectors:
  - During construction – 10-20 m to either side of the proposed route (for air quality and vibration impacts; NB: noise may extend at a large distance);
  - During operations – not applicable;
- Areas of visual impact around proposed WWTPs and SPS in five districts:
  - During construction – up to 500 m from the WWTP and SPS sites;
  - During operation – to be defined.
- Communities where land will be acquired for the Project (prior to construction) and where SPZs will be established around the Project facilities (during operations) (for impacts on land use);
- Termez, five district centres benefitting from the Project and rural communities nearby the proposed WWTPs in respective districts (for impacts on employment) (during construction and operations);
- Existing roads connecting the proposed WWTPs and five district centres benefitting from the Project (for impacts on local road infrastructure and traffic safety) (during construction and operations);

[99] According to IAQM Guidelines for the Assessment of Dust from Demolition and Construction (2014), at distances above 250 m from fugitive dust emission sources, negative impacts associated with such emissions are rare; the area of significant dust impacts is limited to 100 m. In case of large scale construction works the site is taken as a source of impact on air quality. https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf

[100] According to the generalized data of measurements of noise levels from construction work, at a distance of 15 m from the source the noise level from the noisiest construction work (pile driving) is 85–90 dBA (see Minina N.N. Noise of construction sites // Vestnik MGSU. 2011 (3). p. 128-134. https://cyberleninka.ru/article/n/shum-stroyploschadok-1/viewer). The use of noise reduction factors for construction equipment for areas with soft cover surface cover shows that at a distance of about 240 m from the piling equipment, the calculated noise level should be 55-60 dBA (see the data on noise reduction factors in the Commission's construction noise assessment manual on US nuclear regulation (US NRC. 2012. Construction Noise Impact Assessment // Biological Assessment Preparation. Advanced Training Manual. https://www.nrc.gov/docs/ML1225/ML12250A723.pdf). 60 dBA is the normative noise level for residential buildings in the daytime as per Mongolian standards, 55 dBA- as per the IFC General EHS Guidelines. Therefore, it is assumed that the noise impact zone of the construction site should not exceed 250 m.

[101] Sewerage. External Networks and Structures. KMK. 2.04.03-19. https://mc.uz/uploads/mcuz_91974688657649.pdf

- Corridors along the existing roads connecting the proposed WWTPs and five district centres benefitting from the Project – 10-15 m to either site of the road (for impacts on air quality, noise, and vibration from Project-related traffic) (during construction and operations)
- The areas serviced by the proposed or improved / extended wastewater systems (for impacts on community health and well-being) (during operations).

For associated facilities

- In case of constructing new access roads to WWTPs sites in five Project districts:
  - Land plots allocated for the roads (prior to construction);
  - Corridors along the proposed roads:
    - During construction - 10-20 m to either side of the proposed route (for air quality and noise and vibration impacts; noise may extend at a large distance).
    - During operation – 10-15 m to either site of the road (for air quality and noise and vibration impacts from the Project-related traffic).

- **Areas of indirect impacts of the Project as a whole**, where its indirect and cumulative impacts manifest, mainly those of a socio-economic nature though some risks might be related to emergencies.
  - Termez City and five district centres benefitting from the Project (for socio-economic impacts) (during construction and operations),
  - Five Project districts (for socio-economic impacts) (during construction and operations),
  - Surkhandarya Region as a whole (for socio-economic impacts and Project's impact on climate change) (during construction and operations).

5.4 Key E&S Issues Identified

5.4.1 Environmental Issues

The following list is a preliminary and thus incomplete compilation of possible Project-related environmental risks

- Permanent area needs and associated loss of all soil functions caused by permanent facilities such as WWTP's, SPS
- Temporary soil impairment during construction of WWTPs, SPS, sewer
- Temporary and permanent impairment of the beauty of the landscape through clearing, introduction of technical structures such as sewage treatment plants, SPSs into the landscape
- Loss and/or Fragmentation of habitats for animals and plants
- Impairment of water ecological functions due to insufficient wastewater quality in the event of an accident, and leaking or overloaded sewers
- Temporary impacts caused by noise and vibration during the Project construction within the residential areas;
- Possible occasional nuisance due to odour, noise and/or vibration caused by the WWTPs, SPSs, and sewage collectors within the residential areas and areas for recreation during the Project operation phase.

5.4.2 Social Issues

The following list is a preliminary and thus incomplete compilation of possible Project-related social risks / issues:

- **Presence of residential properties in Termez WWTP's SPZ:**
  As per the national legislation, SPZ must not host residential houses and summer houses while at present there are residential houses with subsistence land plots within the SPZ as defined by the Termez Master Plan (see Figure 2). The residential houses are very close to the WWTP site boundary in both nearby

communities: the minimum distance between the nearest individual land plots and the WWTP site is 20-30 m in Jomiy MFY (to the north of the site) and 5-10 m in Pattakesar-2 MFY (to the south of the site).

- **Presence of agricultural land with the Termez WWTP's SPZ:**
  As per the national legislation, the SPZ should not host garden / orchard and other subsistence plots; agricultural land within the SPZ should not be used for food production (e.g. crop and vegetable raising). At present, there are garden/orchards related to the private residential houses and ca 14.5 ha of agricultural land within the SPZ of the existing WWTP as defined in the City's Master Plan, part of these agricultural land is officially allocated to some local residents for subsistence agriculture.
  Note: the presence of residential houses and agriculture production in the SPZ does not comply with land use restrictions imposed on such territories by current national legislation. This may trigger the risk of physical and/or economic displacement unless there is a SPZ Design Document, which confirms the reduced SPZ for this WWTP and excludes these sensitive receptors from the SPZ. According to the available information, there is no such a document at the Company's files.
- **Potential for opposition to the WWTP reconstruction component from the local communities:**
  During the meeting with Pattakesar-2 MFY, a local activist articulated several concerns related to the Project including 1) potential site expansion, which may trigger either loss of arable land provided to young families for subsistence agriculture or physical resettlement of houses located close to the site boundary, 2) some unexpected E&S impacts related to the WWTP operations – the situation is bad now and may get worse to the Project. He thinks any resettlement may trigger protests and opposition to the Project by local residents. Note: this was the only case of active voicing concerns and opposing to the Project. The head of Jomiy MFY did not report on potential protect but stressed on the general expectation the Project to resolve the issue of strong odour from the WWTP, which would be welcomed by the mahalla residents.
- **Land acquisition for proposed WWTPs in five Project districts:**
  The Project triggers loss of land and related land-based livelihoods of land users/owned/leaseholders (loss of grass-land, crops, plants, land plots, and potentially surface structures loss). To ensure compliance with the national SPZ regulations the facilities should be carefully sited to ensure required distance from the existing residential properties.
- **Presence of residential properties within the indicative 200m SPZs for Boysun, Angor, and Oltinsoy districts:**
  These facilities should be carefully sited and their layouts for their sites should be carefully design to respect the required distance from the existing residential properties. Otherwise, specials measures are required to justify a reduced SPZ for these three WWTPs.

6 Current Environmental and Social Situation in the Project Area

6.1 Brief Regional Geographical Description

Surkhandarya Region, located in the southern part of Uzbekistan, is one of the most historically and geographically significant regions in the country. It borders Afghanistan in the south, Tajikistan in the northeast, Turkmenistan in the southwest with, and Kashkadarya Region of Uzbekistan in the northwest. Its area totals 20,100 km^2 comprising 4.5% of the total country's territory. The population of region is 2.88 million people. The central and southern parts of the region are the plain (the Surkhandarya Valley) surrounded by the mountainous areas (the Gissar Ridge and its spurs (the Baysuntau and Kugitangtau) and the Babatag Ridge) from north, west and east. The Amudarya floodplain borders the valley from the south.

Termez, the largest and most southern city of the region, is located on the right bank of the Amy Darya River, at the confluence of the Surkhandarya River. This is a district-level city surrounded by Termez District. Angor, Muzrabad and Kizirik districts are in the southern part of the region, Oltinsoy and Boysun districts – in its central part.

The Boysun district has been part of UNESCO's Intangible Cultural Heritage since 2001. An intangible cultural heritage is a practice, representation, expression, knowledge, or skill considered by UNESCO to be part of a place's cultural heritage.

6.2 Planning Requirements

The planned Project must be compatible with the objectives and measures at regional and local level. Therefore, the existing and planned spatial and land use planning along the pipeline corridors, as well as at and in the vicinity of the planned sewage treatment plants and pumping stations must be taken into account. In order to be able to rule out possible conflicting goals with these plans, they are to be analysed. Since only locations of the Project WWTPs and some SPSs are known, and sewage pipeline routes have not defined yet, this analysis will be carried out in the course of the ESIA report development.

6.2.1 State and Regional Planning Requirements

At the regional level, no information on spatial planning is available so far.

6.2.2 Municipal planning requirement

The currently valid urban development plan of Termez presents the site of the existing wastewater treatment plant as an industrial area, which is surrounded to the north and east by a so-called sanitary protection zone.

6.3 Protected Areas

There are several Specially Protected Natural Areas (SPNAs) established by the national law in the Surkhandarya Region, including Surkhan State Reserve, Aral-Paygambar Nature Reserve. In addition, there are five sites classified as Important Bird Areas (IBAs), four of which are as well classified as Key Biodiversity Areas (KBAs), and two additional KBAs. The summary description of SPNAs and other sites of biodiversity importance located in the region is presented below.

IBA UZ047 (Amu Darya floodplain near Termez) was included in the Network of areas for the Siberian crane[102]. There are no Ramsar sites, 'natural' World Heritage site or biosphere reserves located within the region.

There are no PNAs or wildlife habitats of international or national importance within and in the nearest vicinity of Termez City, and centres of four Project districts (Muzrabad, Oltinsoy, Angor and Kizirik districts). Only Boysun Town, capital of Boysun District, is located at the border an area of high biodiversity value (KBA 46957 Kugitang and Baysuntay Mountains).

Table 7: Specially Protected Natural Areas, IBAs and KBAs in Surkhandarya Region

PNAs	Location		Distance to Termez and centres of the Project districts
	Administrative	Geographical	
State Reserves			
Surkhan State Reserve, IUCN category Ia	Sherabad District	Southwestern spurs of the Gissar Range. The upper western edge runs along the border with Turkmenistan.	approx. 100 km NW from Termez
Nature Reserves (Note: protection status is not known)			
Aral-Paygambar	Termez District	The nature reserve occupies an island on the Amudarya river. Its area totals 3,009 ha. The nature reserve was	approx. 15 km NW from Termez

[102] Convention on Migratory Species/Siberian Crane: https://www.cms.int/siberian-crane/en/page/site-network

PNAs	Location		Distance to Termez and centres of the Project districts
	Administrative	Geographical	
		established on 1960s for conservation of riparian forests and the unique population of Bukhara deer. Many rare and endangered species, including large and small Amu Darya shovelnose, golden eagles, black storks, jungle cat, dressing, Asian otters, etc. reportedly occurred there[103]. *Note:* the island lies within the transnational border zone, and is therefore not accessible. Its current biodiversity value (e.g. occurrence of rare/endangered plant and animal species) is not known[104].	
IBAs[105]			
Amudarya floodplain near Termez *UZ047* *Note: KBA 20662*	Muzrabad District	Located in the floodplain terrace of the Amudarya river, between the villages of Kaptarhona and Sholiker (on the border with Afghanistan)	approx. 8 km from Khalkobod Urban Settlement and 23 km NW from Termez
Aktepe Reservoir and Three Lakes *UZ048* *Note: KBA 20644*	Dzharkurgan District	Located in the Surkhandarya river valley, within a sandy desert bordering a developed land.	22-25 km to the NE of Termez
South Surkhan (Yuzhno-Surkhan) Reservoir *UZ046* *Note: KBA 20663*	Kumkurgan District	Located on the Surkhandarya river	approx. 80 km NE from Termez,
Middle reaches of the Sherabad river *UZ044* *Note: KBA 22158*	Sherabad District	Located in the valley of the Sherabad river	25 km north of the city of Sherabad, 40 km SW of Boysun Town, 35 km NW of Sariq Urban Settlement
Darasay Gorge *UZ045*	Boysun District	It is a limestone-gypsum gorge, part of the Baysuntau range with a mountain river of the same name	25 km south of Boysun Town
KBAs[106]			
Kugitang and Baysuntay Mountains *KBA 46957*	Sherabad, Boysun, Sariasiya districts	Assigned as part of the Mountains of Central Asia Biodiversity Hotspot. Occupies region's north-eastern part along the border with Tajikistan	Boysun Town is located on the border of the KBA

[103] https://dic.academic.ru/dic.nsf/enc_geo/565/%D0%90%D1%80%D0%B0%D0%BB

[104] https://www.adb.org/sites/default/files/project-documents//40007-08-uzb-tacr.pdf

[105] BirdLife International: https://datazone.birdlife.org/site/mapsearch

[106] World Database of KBAs: https://www.keybiodiversityareas.org/sites/search

PNAs	Location		Distance to Termez and centres of the Project districts
	Administrative	Geographical	
Uzbek Babatag *KBA 46839*	Uzun District	Assigned as part of the Mountains of Central Asia Biodiversity Hotspot. Stretches along the region's western border with Qashqadaryo Region.	Located in high altitudes, nearest settlements – Yangibazar, Indaly

As the above table shows, there could only be possible impairments in the area of the district centre Boysun. As mentioned in Section 3.2.2, the site for the Boysun WWTP is preliminary selected while the route for the sewage collector and locations of proposed SPSs have not defined yet. The pre-selected WWTP site is outside the Kugitang and Baysuntay Mountains (KBA 46957) area. The KBA is located north of the main road that crosses Boysun, while the planned WWTP is 800 m south of this road.

The issue of potential overlap of the Project facilities (WWTP, collector with potential SPSs) and KBA 46957 will be analysed in detail during the ESIA report preparation, and, if necessary, appropriate measures will be taken.

The reason for the designation as a KBA Kugitang and Baysuntay Mountains (KBA 46957) is the occurrence of the endangered mouflon (*Ovis orientalis*) and the endangered Egyptian vulture (*Neophron percnopterus*).

6.4 Current Environmental Situation

6.4.1 Meteorology and Climate

The climate of the Surkhandarya Region is diverse: there are areas with desert climate in the south and sub-tropical in the north, the prevailing climate is continental. Summers are very hot and dry, maximum air temperatures in the summer months (July-August) reach +48-50°C, and on the soil surface – 60-70°C. The region is characterized by mild and short winters. Average monthly temperatures in January, the coolest month, range from 2.1 to 3.3°C. Average absolute minimum recorded temperature in the region is between -23 and -25°C. The duration of the frost-free period is 240-270 day (sometimes 300-320 days) [107] (by alternative source - from 226 to 266 days[108]).

Total annual precipitation is low on the lowlands (130 to 360 mm) and distributed unevenly during the year: relatively much of it falls in February, March and April, and there is almost none in June, July, August and September. Due to high temperature and low humidity, evaporation exceeds precipitation more than ten times at some locations. In Termez and ajacent areas more than 40 days with atmospheric droughts per year occur.

The prevailing winds are of western and southern directions. The average monthly wind speed is ca. 3 m/s. Heavy southwest winds occurring in spring and summer cause dust storms called 'Afghans', which reach great speed in open areas. After the wind speed decreases, the air temperature drops by 2-3°C[109].

6.4.2 Climate Change Trends and Vulnerability to Climate Change

Based on review of the open-source data, historical climate change trends for the Surkhandarya Region are assumed to be mainly similar to the nationwide trends and include the following[110]:

- Increase in the annual average temperature;
- Increase in the number of days with extremely high temperatures (above 39 C) per year;
- Increase in the number of tropical nights (with the night temperature above 22 C) per year;
- Increase in duration of the heat wave and atmospheric drought periods;

[107] https://www.adb.org/sites/default/files/project-documents/51034/51034-002-iee-en.pdf

[108] https://7universum.com/ru/nature/archive/item/5948

[109] https://7universum.com/ru/nature/archive/item/5948

[110] https://unfccc.int/sites/default/files/resource/TNC%20of%20Uzbekistan%20under%20UNFCCC_english_n.pdf

- Decrease in the number of frost days;
- Very low or no trend toward the decrease in the total annual precipitation;
- Shrinkage of glaciers: in the Surkhandarya River basin the total area of glaciers reduced by 32% from 1957 to 2010.

The climate change projections for Uzbekistan assume exacerbation of the identified trends during the coming 60 years. The increase the average annual temperature will persist. Seasonally, the strongest increase in temperature is expected to occur during the summer months with more frequent and more intense heatwaves, and atmospheric droughts. The frequency of extremely high air temperatures is expected to increase 1.5-2 time in comparison to the base data by 2050s even for soft climate change scenario. Glaciers will continue melting and their area will further reduce. The expected changes in precipitation regime are contradictory: the total annual precipitation is expected to decrease by 50-100 mm in some central and eastern regions, also decrease in plains of the southern part of the country, and increase moderately in the Aral Sea region. The maximum increase in precipitation would be observed in spring and winter months, while precipitation in dry and hot summer months will remain unchanged or slightly decrease. In all parts of the country, the increase in frequency of heavy rains and intensity of such rainfall events is expected.

Uzbekistan as a whole is considered to be highly vulnerable to climate change due to its high sensitivity explained by natural conditions and low adaptation capacity[111]. At the same time, based on calculations of the aggregated vulnerability factor[112], Surkhandarya Region was classified as a region of medium vulnerability to climate change.

Meanwhile, the expected future climate change trends (see above) are likely to make the region more vulnerable to hydrometeorological hazards and require developing climate change additional measures to ensure Project's resilience to climate change.

6.4.3 Air Quality

In 2023 minimum two air quality monitoring stations operated in Surkhandarya Region – Sariasiya and Denau fixed stations[113, 114]. No data is available on the location of such stations in the Project settlements. Data on monthly average and/or annual average concentrations of the key air pollutants (e.g. for the last five years) for the Project settlements from other sources are also not available at the time of writing.

It should be noted that the total amount of pollutants released into the atmosphere in the region has reportedly grown from 3,700 tonnes in 2013 to 7,400 tonnes in 2023 and demonstrates a steady increase in 2020-2023[115]. This trend is attributed to the increase in industrial production and resulting increase in emissions from stationary sources[116].

6.4.4 Noise

As many of the Project facilities are located within the residential areas, (re)construction works at their sites may be significant sources of noise and resulting nuisance for the nearby human receptors.

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[111] World Bank. 2009. Adapting to Climate Change in Europe and Central Asia. Washington DC.

[112] The aggregated vulnerability indicator was calculated based on the analysis of socio-economic and demographic indicators, land, agriculture, and water management information (see Third National Communication of the Republic of Uzbekistan to the UN Framework Convention on Climate Change. Tashkent. 2016. https://unfccc.int/sites/default/files/resource/TNC%20of%20Uzbekistan%20under%20UNFCCC_english_n.pdf) .

[113] As of 2023 ambient air conditions were monitored in 26 cities of Uzbekistan at 66 fixed and eight automatic stations. In addition, procurement of eight additional stations were finalised to have 16 automatic stations to provide air quality data (Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan (2023). National State of the Environment Report: Uzbekistan. International Institute for Sustainable Development. https://www.iisd.org/system/files/2024-02/uzbekistan-state-of-the-environment-en.pdf).

[114] https://unece.org/sites/default/files/2021-05/ECE.CEP_.188.Eng_.pdf

[115] https://api.siat.stat.uz/media/uploads/sdmx/sdmx_data_1569.xlsx

[116] Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan (2023). National State of the Environment Report: Uzbekistan. International Institute for Sustainable Development. https://www.iisd.org/system/files/2024-02/uzbekistan-state-of-the-environment-en.pdf

In turn, the Project's SPSs may be significant sources of noise and noise-related impacts during operations provided they are at a short distance (presumably less than 15-30 m)[117] from the nearby residential houses.

No data on the baseline noise levels in the vicinities of the Project sites are available from open sources.

6.4.5 Geology and Soil

The analysis of the geological structure of the Project area and specific Project sites has not been conducted at this stage. The soil cover of the Surkhandarya Region is quite diverse. Soils of the plain area soils of the desert zone with gray-brown soils and takyr-like soils being most widely spread. In addition, sandy desert soils, takyr-meadow soils, meadow and marsh-meadow soils and salt marches also occur. In the foothill area different types of gray soils (serozems) prevail; light-brown meadow and steppe soils, brown soils and meadow and marsh-meadow soils also occur[118].

No information on soil types within the Project sites and their pollution status is available.

6.4.6 Water (Surface and Groundwater)

Surkhandarya Region is rather rich in **surface water resources**. The hydrographical network includes numerous rivers including 35 rivers more than 20km long (Surkhandarya, Sherobod, Tupalang, and Sangardak rivers), glaciers, and artificial reservoirs and irrigation and drainage canals.

The southern boundary of the region is the Amudarya river floodplain. The Amudarya is the main water supply source for the regional irrigation system. The runoff of the Amudarya varies from 3,050 m³ /sec to 1,410 m³/sec reportedly; such strong inter- annual variability might be further exacerbated by climate change with changes in precipitation patterns. The water salinity level is 0.5-0.7 g/l. Total suspended solids are approximately 5 g/l, of which 40% are sand particles (1.0 to 0.05 mm). Average sediment transport is 2 to 4 kg/m³, with summer peaks up to 10 kg/m³[119]. The run-off of the Amudarya is characterized by strong inter- annual variability, which might be further exacerbated by climate change with changes in precipitation patterns.

Groundwater resources comprise several deposits across the region. Within the plain area the flat relief creates conditions for enclosed groundwater and high mineralization due to restricted groundwater outflow. The inefficient irrigation and drainage networks cause high infiltration from canals and irrigated fields and lead to secondary salinization and groundwater salinity. The groundwater salinity varies across the Project area: it is 0.4 g/l for South Surkhandarya deposit used for water supply of Termez and Termez Region, 1.0–1.5 g/l for Yangiobod deposit used for water supply in Muzrabad District, and exceed 1.0-1.5 g/l for the deposits of the Angor and Kizirik districts. The Boysun and Oltinsoy districts located in the foothills are expected to have groundwater deposits with lower salinity, e.g. in the neighbouring Kumkurgan and Shurchi districts the mineral contents of groundwater is 0.2-0.6 and 0.2-0.7 g/l respectively[120]. Where mineralization exceeds 1-1.5 g/l and total hardness is above 10-16 mg-eq/l, groundwater deposits are not determined since such water is considered as not suitable for water supply.

Uzbekistan is characterized by high water scarcity. Over a 10-year period, there has been a decrease in the volume of water abstraction in almost every region. The main reason is the natural-climatic factor expressed in the increase of low-water years. This problem is expected to be further exacerbated by climate change (e.g. glacier melting would affect river replenishment) and increased water demand due to the growing population[121].

No data on groundwater tables and hydrochemical parameters of groundwater within the Project sites and their vicinities are currently available.

[118] https://7universum.com/ru/nature/archive/item/5948

[119] https://www.adb.org/sites/default/files/project-documents/51034/51034-002-iee-en.pdf

[120] https://www.adb.org/sites/default/files/project-documents//40007-08-uzb-tacr.pdf

[121] https://www.iisd.org/system/files/2024-02/uzbekistan-state-of-the-environment-en.pdf

6.4.7 Landscape

The landscape of the region is diverse and includes the plain area (the Surkhandarya Valley), foothills, and mountain areas. The Surkhandarya Valley stretches from northeast to southwest (approximately 170 km), gradually descending. There are sand massifs in its southern part, with the largest of them Kattakum. The valley has a triangular shape with a wide southwestern part (110-115 km) and narrow northeastern (15-20 km).

The majority of the Project facilities, except for the proposed Boysun wastewater system, are located within the lowland part of the region, the Surkhandarya Valley. In the Project locations the elevations above the sea level (a.s.l.) range as follows: on Termez City – between 293 and 312 m, in Angor (Angor District) – between 333 and 335 m, in Khalkobod (Muzrabad District) – between 304 and 317 m, in Sarik (Kizirik District) – between 381 and 388 m.

Boysun Town (Boysun District) and Qarluq Urban Settlement (Oltinsoy District) lie in the foothills with elevations between 1,237 and 1,142 m a.s.l. and between 601 and 627 m respectively.

6.4.8 Natural Hazards

The Surkhandarya Region is prone to several climate hazards and hazardous geological processes (geohazards). The levels for some of the key natural hazards were preliminary evaluated based on hazard level modelling via a ThinkHazard tool[122]. Then some of the assigned hazard levels were verified by expert judgement of Senior Specialist of the Hydrometeorology Department for Surkhandarya Region. The outcomes of the natural hazard evaluation are provided below.

Earthquakes

About 55% of Uzbekistan is in the zone of high seismic activity. As per the maps of the general seismic zoning in microseismic scale MSK-64[123], Termez City, and Muzrabad and Angor districts belongs to the 7-point zone and the other Project districts to the 8-point zone with a probability of 95%[124]. With a probability of 99%, Termez City would be within the 7-point zone while other facilities fall into 8-point and 9-point zones.

According to ThinkHazard tool, the earthquake hazard is classified as medium for all the Project locations[125]. This means that there is more than a 10% probability of a potentially-damaging earthquake occurring within the Project area within the next 50 years.

Hydrometeorological hazards / Extreme weather events

Uzbekistan is and will increasingly (due to climate change) be vulnerable to the following key hydrometeorological hazards[126]:

- Floods: seasonal (river) floods and flashfloods caused by heavy rains;
- Extreme heat periods (with the maximum air temperature above 39°C) and heatwaves;
- Droughts[127];
- Dust storms.

[122] A tool established by the Word Bank Group and the Global Facility for Disaster Reduction and Recovery to screen the territories for natural hazards.

[123] 12-step scale, called the Medvedev-Sponheuer-Karnik (MSK) scale; it is similar to the Modified Mercalli Intensity scale used in the United States and Europe. From: N. Mavlyanova et al. Seismic Code of Uzbekistan // 13thWorld Conference on Earthquake Engineering. Vancouver, B.C., Canada, August 1-6, 2004, Paper No.1611

[124] This means with a probability of 95% the intensity of earthquakes should not exceed 7 points within a 50-year period.

[125] https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/EQ

[126] https://unfccc.int/sites/default/files/resource/TNC%20of%20Uzbekistan%20under%20UNFCCC_english_n.pdf

[127] Two types pf droughts are distinguished: a) hydrological droughts (decreased water flow in water bodies due to low precipitation and high temperatures in the upper watershed of the affected river with snow or glacier feeding); and b) atmospheric droughts (shortage of precipitation compared with normal or increased air temperatures and air humidity deficit).

According to both ThinkHazard tool modelling and expert judgment, Surkhandarya Region as a whole is at high risk of **floods** (both river floods and flash-floods)[128]. However, the level of these hazards varies for specific locations. The river flood hazard is considered as high for Termez City and Muzrabad District, low for Angor and Oltinsoy districts and very low for Boysun and Kizirik districts. The flashfloods hazard is viewed as high for Boysun District, medium for Termez City, and low for the other Project districts. Expected increase in frequency and intensity of the heavy rainfall events due to climate change would exacerbate the food hazard.

Extreme heat hazard is considered as high for all the Project districts except for Boysun District assigned with a medium level of hazard. No grade is assigned to Termez City due to lack of input data in the tool's database. This hazard is assumed to be high as it is ranked for the surrounding areas[129]. Climate change would lead to increased frequency of extreme heat days and duration of heat wave periods.

Drought hazard is viewed as medium for the whole region[130]. This means that there is up to a 20% chance droughts will occur in the coming 10 years. Droughts may become more frequent due to river runoff decrease (as a result of changes in the feeding due to glacier shrinkage in the upper parts of the rivers' catchment).

Dust storms called 'Afghans' periodically occur in spring and summer due to strong southwestern winds which reach great speed in open areas. As per key informant interviews held in the region, such winds occur on a regular basis, two to three times, sometimes four times per months.

Geohazards

Landslides, mudflows, and avalanches are also considered as important natural hazards particularly for southern and eastern areas Uzbekistan.

In Surkhandarya Region, the foothills of the ridges and low mountains are prone to a high risk of **landslides** including Boysun District[131]. Other Project locations have medium (Oltinsoy District) and low (Kizirik and Angor districts, Termez City), and very low (Muzrabad district) levels of this hazard,

Mudflows mostly occur at the lowest slopes of the valleys (river canals, plains and terraces) and also at the foothills and low mountain areas. According to the representative of the regional Hydrometeorology Department, the indicative hazard levels for mudflows in the Project area are as follows: medium for Boysun and Oltinsoy districts and low for Kizirik, Angor and Muzrabad districts. This geohazard is viewed as non-applicable to Termez City.. Climate change will increase mudflow hazards primarily because of more intense rainfall events and warming in winter, resulting in rainfall occurring instead of snow, which will extend the seasons of flashfloods.

Snow avalanches have been reportedly registered the mountainous areas of the region (Sariasiya and Uzun districts) in March and April; the Project area is not within the high-risk area for avalanches in the region.

6.4.9 Biodiversity and Living Natural Resources

The Project-related effects on flora, fauna and habitats (biodiversity) can only be properly determined and assessed if at least the biotope structures of the affected areas are mapped and analysed with regard to their function as habitats for a particular flora and fauna. In order to be able to determine and evaluate the project-related impact on fauna, so-called indicator species groups, e.g. birds, reptiles, macro-zoobenthos, should be investigated in addition to biotope mapping.

On this basis, it is important to consider which types of habitats will be affected and/or lost by the implementation of the project and whether the project and its sub-projects will lead to fragmentation of habitats or severe habitat impairment, e.g. through groundwater lowering or substance inputs.

[128] https://thinkhazard.org/en/report/261-uzbekistan/FL , https://thinkhazard.org/en/report/261-uzbekistan/UF

[129] https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/EH

[130] https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/DG

[131] https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/LS

Since there is no data on the flora, fauna and habitat structure in the planning area, higher-level information such as the red books for animals and plants of Uzbekistan and the Uzbek biodiversity strategy are first used and evaluated with regard to the project area. An inspection of the areas likely to be affected by the project is planned for December 2024, as it is expected that the individual sub-projects of the planned project can be located by this date.

As can be inferred from **Chapters 6.1** and **6.3**, the planned project will be carried out predominantly in areas that are intensively used for agriculture or are settlement areas. As a rule, these areas do not represent high-quality habitats for protected and/or endangered animal and plant species. Nevertheless, the occurrence of protected species and habitats cannot be completely ruled out and project-related impacts on widespread habitats, animal and plant species must also be investigated and assessed in the ESIA. An exception is the district capital Boysun, which is located on the outskirts of a KBA (Kugitang and Baysuntay Mountains, KBA 46957). Here it must be researched in detail whether the project conflicts with the protection goals of the area. It may therefore be the case that detailed research or investigations must be carried out on the two species protected there in order to be able to describe and evaluate possible project effects on these species.

Flora

The flora of Uzbekistan contains more than 4,500 vascular plants in 650 genera, in 115 families. This applies to a wide range of natural environments, from the hot sand and gypsum deserts from Kyzylkum to the eternal snow and glaciers of the Pamiro-Alai Mountains and the associated high proportion of endemic plant species have declined.

The Project area, located in the Surkhandarya Region, belongs to the geo-botanical province of the Central Asian Mountains, in the subunit I-6-c Boysun, I-6-d Kuhitang, and I-6-e Surkhan-Sherabad), Within the four main ecosystem types of Uzbekistan, the districts of Termez, Angor, Oltinsoy, Kizirik, and Muzrabad can be assigned to the chul zone, especially due to its altitude between 300 and 400 m above sea level. Therefore, the main cause of ecosystem zoning in Uzbekistan is the change in the hydrothermal conditions. The Chul zone, which mainly includes the flat areas of Uzbekistan up to an altitude of 500–600 m, is characterized by a dry period of 3–6 months and low precipitation of 70–208 mm. On the one hand, the vegetation in the project area has been greatly altered and largely converted into fields. On the other hand, azonal vegetation units occur due to the location in the vicinity of the Surkhan Darya/Amur Darya and the associated increased humidity. These mesophytic plant communities called "Tugai" have the following common species, among others: *Alhagi persarum , Apocynum scabrum , Asparagus persicus , Clematis orientalis , Elaeagnus orientalis , Erianthus purpurascens , Glycyrrhiza glabra , Halimodendron halodendron , Hippophae rhamnoides , Karelinia caspia , Limonium otolepis , Lycium ruthenicum , Phragmites communis , Populus diversifolia and P. pruinosa , and Tamarix spp*. As the evaluation of the red book shows, these plant species are not mentioned as endangered there.

Boysun District is located in the Adyr zone (lowlands and foothills), which is a wide belt in Central Asia for altitudes between and 500–1,500 m. It represents a transitional formation between two contrasting ecological zones, the xerothermic Chul (desert) and the mesothermal zone Tau (mountainous region). Typical soils of the Adyr Zone are classified as sierozem. They regularly contain less salt and more humus than the soils in the Chul zone. The bedrock is often exposed on the surface and the soils are prevailing shallow. Characteristic plant species of the lower areas of the Adyr Zone are: *Amygdalus spinosissima, Artemisia sogdiana , Carex pachystylis , Mediasia macrophylla , Phlomis thapsoides , Pistacia vera and Psoralea drupacea.* While the following species are typical for the upper Adyr Zone at altitudes between 1,200 and 1,500 m *Acanthophyllum gypsophiloides, Agropyron trichophorum , Astragalus eximius , Bunium persicum, Centaurea squarrosa, Cousinia pulchella, Onobrychis spp., Phlomis salicifolia and P. olgae , Potentilla soongarica, Scabiosa songarica and Ziziphora pamiroalaica.* As the evaluation of the red book shows, these plant species are not mentioned as endangered there.

However, as can be seen from the red book, rare plants, e.g. of the genus Cousinia, could occur in the area of the northern project areas.

Fauna

Due to the intensive agricultural use and dense settlement, with the exception of the district of Boysun the project area, is not a suitable habitat for rare and endangered animal species. This is also evident from the red book of Uzbekistan, which shows no recent evidence of endangered animal species there. The endangered beetle Surkhandarya Lethrus (*Lethrus bispinus*) is found in the southern Surkhandarya Valley. There it inhabits foothill plains

and mountains. The butterfly species Surkhandarya Smoky Moth (*Zygaena Surkhandaryae*) is already extinct. The occurrence of this endemic species of the Surkhandarya Valley was limited to the Tugai-Formation in the lower reaches of the Isfara River. The Turkestan lynx (Lynx lynx) occurs north of the project area. It inhabits medium and high mountain belt (deciduous and juniper forests up to lower limit of alpine meadows), often near rocks. As a species sensitive to disturbance, it is not to be expected in intensively used landscapes and in settlement areas such as the present one.

Insects

The Kirichenko's Club-tailed Dragonfly (*Anormogomphus kiritshenkoi*) is found in the lower reaches of the Surkhandarya River near the town of Termez. This vulnerable species is reported from the valleys of flatland and mountain rivers with swift flow in low altitudes.

The vulnerable Butterfly-species Tugay Blue (*Glaucopsyche charibdis*), Tugay Prominent Moth (*Paragluphisia oxiana*), Turanga Sphinx (*Laothoe phileremа*), and Turanga Lappet Moth (*Streblote fainae*) are distributed in flood-lands of the Surkhandarya River and/or the Amur Darya River north and west of Termez. Kohl's Digger Wasp (*Laphyragogus kohliilt*) is reported from sandy deserts, especially from the river valleys of the Southern Uzbekistan.

Fishes

The critically endangered fish-species Small and Largr Amudarya Shovelnose Sturgeon (*Pseudoscaphirhynchus Hermanni, P. kaufmanni*), and Ship Sturgeon *(Acipenser nudiventrises)* nd the endangered Pike Asp (*Aspiolucius esocinus*) are spread at lower and mid-stream of the River Amu Darya.

Reptiles

Tartar Sand Boa (*Eryx tataricus*) is a near threatened species which is typical for the piedmont plain of the Surkhandarya region where it inhabits the clay and loess deserts, semi-deserts and foothills, sand ridges and barchan hillsides with ephemeral vegetation, rocky and gravelly foothills with shrubs, open wormwood-halophytic steppe space. Other snakes listed in the red book which occur in the project area are for example the Indian Gamma Snake (*Boiga trigonata ssp. Melanocephala*), the Cobra (*Naja oxiana*), and the Northern (Barred) Wolf Snake (*Lycodon striatus ssp. bicolor*).

Birds

The Asian White Stork (*Ciconia ciconia*) is near threatened and inhabits nesting and wintering the foothills of the Turkestan Range in the south of the project area. The vulnerable Black Stork (*Ciconia nigra*) inhabits mountain valleys at 700-2000 m above sea level, while the also vulnerable White Spoonbill (*Platalea leucorodia*) which is a characteristic species shallow plain water reservoirs west of Termez. The Bearded Vulture (*Gypaetus barbatus ssp. hemahalanus*) is a threatened species which inhabits mid- and high belts of the mountains, and during roaming also plains. Egyptian Vulture (*Neophron percnopterus ssp. percnopterus*) is widespread in the project area and a protected species in the KBA 46957 Kugitang and Baysuntay Mountains. Other examples are the Black Vulture (*Aegypius monachus*), the Griffon Vulture (*Gyps fulvus Hablizl ssp. fulvus*), Red-capped Falcon (*Falco pelegrinoides ssp. babylonicus*), Lesser Kestrel (*Falco naumann*i), the Short-toed (Snake) Eagle (*Circaetus gallicus ssp. heptneri*), and Turtle Dove (*Streptopelia turtur*).

Mammals

Beside the two suspecies of Brandt's Hedgehog (*Hemiechinus hypomelas ssp.hypomelas; ssp. Eversmanni*) inhabits clay deserts, foothills and oases in the project area, some bats occur within the project area such as Lesser Horseshoe Bat (*Rhinolophus hipposideros ssp. Midas*). Tien-Shan Brown Bear (*Ursus arctos ssp. Isabellinus*), Marbled Polecat (*Vormela peregusna*), Centralasian Otter (*Lutra lutra ssp. seistanica*), Striped Hyaena (*Hyaena hyaena ssp. hyaena*). Manul Pallas's Cat Felis (*Otocolobus manul ssp. ferrugineus*), Turkestan Lynx (*Lynx lynx ssp. isabellinus*), Persian Leopard (*Panthera pardus ssp. saxicolor*). Bactrian (Bukhara) Red Deer (*Cervus hanglu Wagner, ssp. bactrianus*), Tadjik Markhor (*Capra falconeri ssp. heptneri*), Goitered Gazelle (*Gazella subgutturosa ssp. subgutturosa*) are further examples for threatened animals which could occur in the project areas.

Habitats

Based on the evaluation of the Uzbek red books on plants and animals, the distribution of nature reserves, the evaluation of aerial photographs, and the prevailing intensive agricultural use and the widespread settlements, it can be assumed that with the exception of Boysun no natural habitats and no to few critical habitats are to be expected in the project area, while modified habitats with a subordinate importance for biodiversity will dominate.

Ecosystem services

Due to World Bank's ESS6 *"Biodiversity Conservation and Sustainable Management of Living Natural Resources"* Ecosystem services are the benefits that people derive from ecosystems. ESS6 distinguishes between four categories as follows:

1. Provisioning services which are the products people obtain from ecosystems and which may include food, freshwater, timbers, fibers, and medicinal plants;
2. Regulating services, which are the benefits people obtain from the regulation of ecosystem processes and which may include surface water purification, carbon storage and sequestration, climate regulation, and protection from natural hazards;
3. Cultural services, which are the nonmaterial benefits people obtain from ecosystems and which may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment; and
4. Supporting services, which are the natural processes that maintain the other services and which may include soil formation, nutrient cycling, and primary production.

Since no detailed knowledge can yet be made about the occurrence of animals, plants and habitats as well as about their Project-related impact, it is not possible to make statements about the ecological services found in the project, currently.

However, due to the predominant intensive agricultural use and the high degree of settlement, it can be assumed that provisioning services such as food production, fibers (cotton), regulating services such as carbon storage, supporting services such as soil formation, nutrient cycle and primary production, as well as cultural services, such as recreational areas, are of general but not of particular significance. For example, based on the knowledge available so far about animals, plants and habitats, it is not to be expected that medicinal plants will occur or that forests for timber production and climate regulation or peatlands and wetlands as carbon sinks will occur in the project area. If the habitats, animal and plant species affected in the planning area and by the project are known, the respective ecosystem service will be also described and evaluated.

6.5 Socio-economic Situation

6.5.1 Administrative Structure and Governance

As of 2024, Surkhandarya Region includes 14 districts, 8 cities including the capital and district-level city of Termez, 112 urban settlements and 859 rural settlements.

The regional administration (khokimiyat) is located in Termez, headed by the Khokim. He is the head of the representative and executive power in the region and the official representative of the President of the Republic of Uzbekistan (RoU) in the region. The organisational structure of each city and district khokimiyat has a Khokim, three deputy khokims, their chief specialists, an organisational and control group, and administrative branches. City and district khokimiyats have departments of economics, health care, public education, finance, labour and social welfare, culture and sports. The structure and composition of the executive authorities of the city and district are determined and changed by the Khokim of the region in agreement with the Cabinet of Ministers of the RoU.

In Uzbekistan the territory of a district or city is divided into mahallas. A mahalla is either a separate settlement or a part of a larger settlement comprising a certain of households with its own local self-government body – a mahalla citizens assembly (MFY) headed by the chairman.

As of 1st January 2023[132], there were 37 mahallas in Termez City. The data on the number of mahallas in the Project districts and their centres is not available.

6.5.2 Demography (Population and Population Development)

The review of the demographic situation in Surkhandarya Region was prepared mainly based on open-source database statistical information by Statistics Agency under the President of the Republic of Uzbekistan (UzStat)[133].

The total permanent population of Surkhandarya Region as of 1st January 2024 was 2,877.1 thousand people. It has been steadily growing within the 10-year period (by around 2.1-2.5 times per year). A similar trend is observed for Termez City and most of the Project districts; only in Kizirik District's permanent population, after the steady growth in 2014-2019, has been significantly decreasing in 2020-2024 (see Table 8 below). The permanent population growth is significant: 24,6% to the 2014 level (by 568,8 thousand people) for the region as a whole, and 48,0% (by 65,4 thousand people) for Termez City. As to the Project districts, the surplus was most prominent in the Oltinsoy District (25.2% to the 2014 level, the smallest – in Boysun District (17.3% to the 2024 level). In Kizirik District the permanent population reduced by 16.4% comparing to the 2024 data.

As of 1 st January 2024, the average population density in Surkhandarya Region was 143.1 people per km^2, while in Termez it was significantly higher – 5,040 people per km^2.

At present, 64.4% of the total population of the region live in rural areas[134].

Table 8: Total Permanent Population in Uzbekistan, Surkhandarya Region, Termez, and Project Districts for 2014-2024 and District Centres for January 2024, thousand people

Administrative unit	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Uzbekistan	30,492.8	31,022.5	31,575.3	32,120.5	32,656.7	33,255.5	33,905.2	34,558.9	35,271.3	36,024.9	36,799.8
Surkhandarya Region	2,3083	2,358.3	2,411.5	2,462.3	2,514.2	2,569.9	2,629.1	2,680.8	2.743,2	2,806.5	2,877.1
Termez City	136.2	137.9	140.1	142.1	143.8	145.1	179.6	182.8	189.5	195.7	201.6
Angor District	116.5	119	121.7	124.2	126.9	129.3	132.1	134.7	137.4	140.4	143.8
Angor											28.6
Boysun District	106.2	108.5	110.8	113.1	115.3	117.7	115.4	117.5	119.7	122	124.6
Boysun											37.8
Kizirik District	148.3	152.2	156.3	160.3	164.4	169.4	114.1	116.3	118.8	121.3	124
Sariq											21.3
Oltinsoy District	153.8	157.2	160.9	164.6	168.2	172.1	176.4	180.2	184	187.9	192.6
Qarluq											20.0
Muzrabad district	124.2	127.1	130.2	132.8	135.6	138.4	141.4	144.2	147.1	150.4	153.6
Khalkobod											17.6

The gender composition and age groups of the population of Surkhandarya Region as of 1st January 2024 is shown in Figure 12**.** The male to female ratio in the region is 51% to 49%, while in Termez City it is 49% to 51%. In all Project districts the numbers men exceed the numbers of women.

15% of the region's population is 8-15 years old, the second largest age group 40-49 years – 11%.

[132] https://demografiya.uz/

[133] https://stat.uz/en/official-statistics/demography

[134] https://www.undp.org/sites/g/files/zskgke326/files/migration/uz/un_doc_uzb_Invest_in_Surxandarya_eng.pdf

In Surkhandarya Region the permanent population of working age comprised 61.0% of the total permanent population in 2014. In 2024 the share of this group in the population structure reduced to 55.4%.

No information on the age structure of Termez City, as well as Project districts and their centres was available at the time of writing.

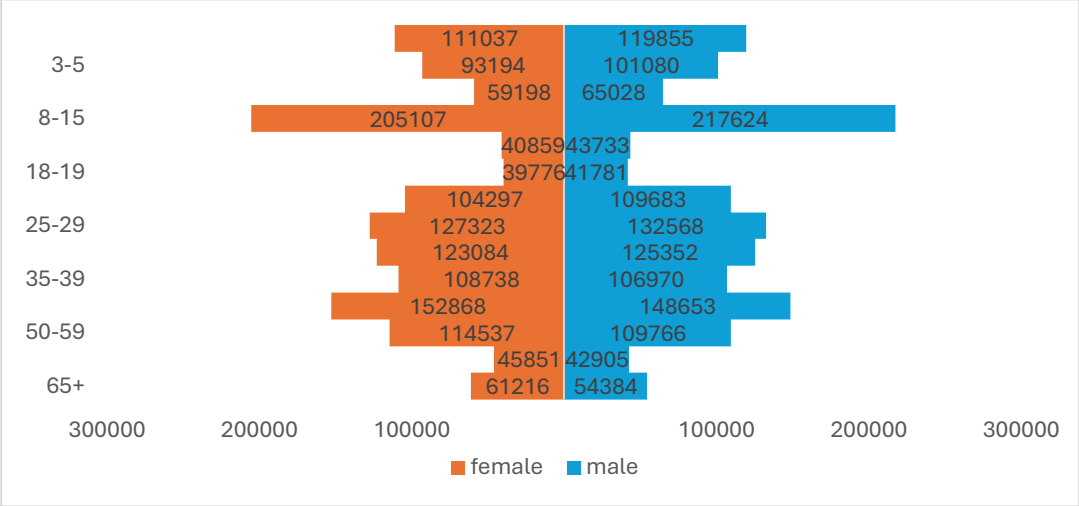

Figure 12: Population by age groups in Surkhandarya Region, 2024

The average household size in Surkhandarya Region has decreased during the last decade (from 5.8 in 2013 to 5.5 in 2023[135]). As of 1st January 2023[136] the number of households in Termez City totalled 52,974, and the estimated average household size for the city was 3.7 people. Data on the number of households in the Project districts and their centres and estimates of the average household size are not available.

No data on annual migration data for Surkhandarya Region are available at the time of writing. Reportedly, approximately 40,000 students of colleges and universities move to Termez for 10-month study period (September – June). In addition, about 10,000 people are migrant workers from the rural areas either commuting to the city every day or working in shifts and staying there on workdays (five to six days a week). These visitors / migrants generate additional demand for water and additional amount of wastewater. No data on visitors / migrants to the Project districts and specifically to their centres are available.

6.5.3 Ethnicity, Religion and Languages

The vast majority of the Surkhandarya Region's population are Uzbeks. The region population also has a large share of Tajiks.

Islam is the religion commonly practiced among locals.

Local residents speak mostly Uzbek, this is the primary language of communication in the community.

Quantitative data on the ethnic composition and language use for the population of Termez, Project district and their centres are not available at the time of writing.

6.5.4 Regional Economy

Surkhandarya Region is one of the regions with a low contribution to the gross domestic product (GDP) of Uzbekistan, which was 3.3% as of January – March 2023. The gross regional product (GRP) of the region has been growing in 2013-2023 (Table 9), with the annual growth varying from 6.0% in 2021 to 31.5% in 2017 (17.8% in average). GRP per capita has been also growing within this period, although the growth rate has been decreasing (Table 9).

[135] https://stat.uz/en/?preview=1&option=com_dropfiles&format=&task=frontfile.download&catid=414&id=2855&Itemid=1000000000000

[136] https://demografiya.uz/

Table 9: The Amount and Growth Rate of GRP per capita in Uzbekistan and Surkhandarya Region, 2013-2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total GRP per capita in Surkhandarya Region (annual), thousand Uzbek soums (UZS)	3,255.2	3,948.6	4,660.3	4,997.8	6,572.5	8,351.1	9,799.2	10,384.8	12,386.1	14,127.8	16,482.4
Growth rates for GRP per capita (annual) in Surkhandarya Region, as a percentage of the previous year	105.7	105.6	104.9	103.3	101.2	103.7	102.1	100.6	107	101.8	102.3
GRP per capita in Uzbekistan (annual), thousand UZS	5,069.3	6,074.2	7,072.2	8,020.1	11,005.5	14,372.2	17,708.5	19,515	23,500.9	27,927.8	33,079
Growth rates of GRP per capita in Uzbekistan (annual), as a percentage of the previous year	105.6	105.1	105.4	104.1	102.7	103.7	104.8	99.6	105.9	103.8	104.1

The sectoral composition of the region's GRP is shown in Figure 13. The key sector is the services and trade – its share exceeds 50% of the total GRP value during the last five years. This can be explained by the fact that Termez is an important logistical centre for transboundary trade and rich in cultural heritage attractive for tourists. Agriculture, forestry and fisheries ranked second with 30.2% of the GRP value as of 2023. The Industry's contribution was as low as 8.3% of the GRP in 2023. There is a trend for a slight increase of the shares of the Agriculture, forestry and fisheries and Industry sectors over this time period. In turn, the share of services has decreased. Construction sector 's share has fluctuated between 10 and 11%.

Figure 13: Sectoral structure of Surkhandarya Region's GRP for January-March 2019-2023 (in % of gross added value (GVA))

The key sub-sectors of agriculture are cotton growing (Surkhandarya Region is the only region where fine-fibre cotton is raised), crop raising, horticulture and viticulture, sheep breeding, and sericulture. The key industries are light and food industries, power generation (hydropower plants), oil and gas extraction[137].

6.5.5 Employment, Population Income and Expenditures, and Poverty Level[138]

The labour indicators for Surkhandarya Region show the increase in the number of employed population and economically active population, which correlates with the population growth.

The employment rate grew in 2013-2019 and decreased in 2020-2023 to reach 63.8% in 2023. Between 2013 and 2023, the unemployment rate of the region was the highest in 2020 (11.1%) and has been decreasing in 2021-2023 to reach 7.4% in 2023. Unemployment rates of Termez and Project districts show the similar trend (Table 10). The unemployment rates for the districts provided by the official statistics are very close to the one of Termez City, as the rural population engaged in subsistence agriculture are deemed self-employed. The available employment opportunities in rural areas are limited, and many people of working age have to become labour migrants and go to regional capital or outside the region for work.

The majority of Surkhandarya Region's employed persons has been employed in the non-state sector of economy (the percentage was between 80 and 83 during the 2013-2023 period).

[137] https://www.adb.org/sites/default/files/project-documents/51034/51034-002-iee-en.pdf

[138] (https://stat.uz/en/?preview=1&option=com_dropfiles&format=&task=frontfile.download&catid=414&id=2855&Itemid=1000000000000

Table 10: Unemployment Rates in Uzbekistan, Surkhandarya Region, Termez and Five Project Districts 2013-2023, in %

Administrative unit	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Uzbekistan	4.86	5.09	5.15	5.16	5.83	5.39	4.94	5.29	5.34	4.54	4.53
Surkhandarya Region	5.2	5.5	5.5	5.6	6.7	9.7	9.3	11.1	10.2	9.3	7.4
Termez City	4.1	4.4	4.3	4.5	5.3	8.7	8.7	10.5	9.2	8.1	6.1
Angor District	5.1	5.6	5.6	5.6	6.8	9.6	9.4	11.2	10.2	9.3	7.2
Oltinsoy District	5.1	5.4	5.4	5.5	6.5	9.4	9.6	11.3	10.6	9.6	7.6
Muzrabad District	5.3	5.5	5.5	5.7	6.9	10.1	9.5	11.3	10.5	9.5	7.6
Boysun District	6.5	6.7	6.7	6.9	8.3	10	9.3	11.1	10.3	9.6	8.0
Kizirik District	5.2	5.5	5.5	5.6	6.7	10.6	9.6	11	10.4	9.1	7.7

In Surkhandarya Region the average nominal wages have been growing annually in 2017-2023 (Table 11).

Table 11: Average Monthly Nominal Wages (Annual Data) in Uzbekistan, Surkhandarya Region, Termez and Five Project Districts, UZS

Administrative unit	2017	2018	2019	2020	2021	2022	2023
Uzbekistan	1,251,538	1,542,598.3	1,946,778.3	2,227,141.2	2,662,002.8	3,204,301.4	3,799,613.5
Surkhandarya region	1,062,995	1,301,262	1,609,691	1,825,793	2,082,977	2,530,159	2,958,415
Termez City	1,288,960	1,621,110	2,025,826	2,290,815	2,800,377	3,408,290	4,115,268
Angor District	924,011	1,118,855	1,545,508	1,659,673	1,924,692	2,215,264	2,396,434
Oltinsoy District	873,466	978,607.8	1,409,343	1,568,278	1,747,507	2,110,437	2,329,233
Muzrabad District	923,345	1,148,744	1,487,369	1,620,941	1,836,903	2,268,317	2,466,218
Boysun District	960,792	1,212,343	1,489,291	1,668,393	1,826,526	2,231,871	2,637,802
Kizirik district	1,067,726	1,334,128	1,489,574	1,594,445	1,430,786	2,210,988	2,335,743

The total income per capita was also steadily growing from 3,530.9 thousand UZS in 2013 to 15,811.6 thousand UZS in 2023.

During the last five years the real aggregate income has been showing a positive growth at the average rate of 7.8% annually[139].

As for January-March 2023, in Surkhandarya Region, 57.9% of the total income of population came from work, 36.2% - from transfers, and 5.9% - from subsistence production and services and property income.

The poverty rate (percentage of people with income below the minimum subsistence level) in the region was 13.3% in 2021, 13.7% in 2022 and 10.6% in 2023140.

No information is available on the structure of expenditures of the regional population.

[139] https://www.undp.org/sites/g/files/zskgke326/files/migration/uz/un_doc_uzb_Invest_in_Surxandarya_eng.pdf

[140] https://www.undp.org/sites/g/files/zskgke326/files/migration/uz/un_doc_uzb_Invest_in_Surxandarya_eng.pdf

6.5.6 Vulnerable Groups

As per the UzStat data, the share of low-income persons (that is, people below a poverty line[141]) has decreased in the region during the last years: from 25% in 2010 to 14.7% in 2020[142]. The trend was in line with the national one, where the poverty level also decreased from 17.7% in 2010 and 11.5% in 2020. Currently, the poverty level is established based on the minimum consumer expenditure set by UzStat; it is 648 thousand UZS (ca. 50 USD) per person per month as of May 2024.

But the number of people receiving pensions and social benefits[143] in the region has increased from 208.8 thousand people in 2013 to 341.9 thousand people in 2023. This trend mirrors the national tendency, where the number of social payment receivers also increased by around 50% since 2013. The growth of social transfers is mainly influenced by the amount of pensions, the share of which form above 70 % of the total social transfers. This occurs against the overall natural increase in the population, increase in life expectancy (by several years, for both men and women), and a gap in retirement age established for men (60+) and women (55+). Surkhandarya Region is the tenth among all regions in the country by the social transfer indicator which places it in the middle-group of regions.

Other vulnerable groups typically embrace women-headed households, single-parent households, households with member(s) having a disability or chronic illness, elderly households with no working members, war veterans, households with no working adult members, households that lost bread-earners, and other households facing hardships.

Persons belonging to the above-mentioned groups, including low-income and requiring special care, are included in the Iron Notebooks and are entitled to state financial support, various social benefits, special loans for start a small business, unsecured loans to construct housing and else[144]. Women are separately included in the Women's Notebooks.

6.5.7 Existing Utilities and Housing

Power supply and distribution

Surkhandarya Region is serviced by the Southern power node of the united power system of Uzbekistan. The main source of power generation in the country are 11 thermal power plants (TPPs), which generated 89.6% of the total power in 2019[145]. In addition, there are over 60 operational hydropower plants including 12 large HPPs with the total capacity of 1.68 GW (90.8% of the total hydropower industry's capacity) and several solar power plants.

The key problem for the power supply system in the RoU, and for Surkhandarya Region sub-system as well, is the high level of deterioration of electric networks and transformer substations, which affects the delivery of reliable power supply to domestic customers, especially in the southern regions. There is a high level of electricity losses.

[141] For 2010-2020, calculations of poverty were done on the basis of 2100 kilocalories per day per the recommendation of World Bank. It was 440 thousand soums per person per month. In 2021, minimum consumer expenditure became 498 thousand soums per person per month. In May 2024, the Statistics Agency established the minimum consumer expenditure in the amount of 648 thousand soums per person per month (https://stat.uz/en/press-center/news-of-committee/53293-on-the-cost-of-minimum-consumer-spending).

[142] https://stat.uz/en/official-statistics/living-standards

[143] Pensions are regular social security cash payments provided by law for reaching a certain age, disability and loss of a breadwinner, as well as pensions that are not part of statutory systems (for example, established by the employer). Benefits are cash payments, regular or one-time, provided for by law in cases of partial or complete disability, difficult financial situation, support for families with children, death of relatives, unemployment benefits, etc.

[144] "Iron Notebook" is a state-run database of families with difficult social situations and living conditions that is put together for registration, identification, elimination and control of problems / provision of targeted support. Women's Notebook is a similar database of women. Governmental Portal of Uzbekistan. 2025. https://gov.uz/ru/advice/64/document/2393

[145] The Concept of electricity supply in the Republic of Uzbekistan in 2020-2030: http://minenergy.uz/uploads/1a28427c-cf47-415e-da5c-47d2c7564095_media_.pdf

Transmission system losses were 18% and distribution losses were 14% [146] in 2019. As per another 2020 source, the average loss electric power is about 20% which is significantly higher than the world's average[147].

In March 2022 the construction of a large thermal power plant (TPP) with a design capacity of 1560MW in Angor District commenced[148]. This TPP will produce electricity to ensure electricity supply to 500,000 households in the region. The construction was planned to be completed by the end of 2024.

Gas supply

Natural gas is supplied to Surkhandarya Region by pipelines and distributed via the existing gas distribution system. There are own oil and gas fields in the region including those in the Boysun District.

The share of housing connected to the centralised gas supply has considerably decreased during the last decade (Table 12). The majority of Termez City residents have access to natural gas in their apartments / houses whereas the share of rural residents with such access is low. This can be explained by intensive construction of residential houses and a lag in construction of gas supply and distribution infrastructure.

Table 12: Provision of natural gas to apartments/houses, in % of the total number of apartments / houses

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Uzbekistan	83.1	78.5	68.7	64.8	59.2	55.5	54.9	55.5	55.4	55.5	55.3
Surkhandarya Region	61.7	62.0	32.5	28	25.6	24.0	24.0	24.7	25.6	25.5	26.6
Termez City	98.4	98.6	66.6	58.5	94.6	91.4	84.9	94.8	81.6	86.6	81.7
Oltinsoy District	37.9	38.1	31.1	28.6	4.5	4.5	0.8	0.3	0.3	0.6	3.8
Angor District	65.3	65.5	32.5	29.2	12.6	11.1	11.7	10.9	11.1	11.2	11.7
Boysun District	73.4	73.6	23.6	21.1	23.6	16.2	19.1	17	29.4	28.7	32.1
Muzrabad District	52.7	52.9	22.9	20.4	0	0	0	6.3	3.1	7.0	8.3
Kizirik District	44.2	44.1	24.1	21.6	12.1	12.1	12.1	11.7	12.7	11.7	12.6

Heating

There are no centralised heating systems in the region. Social infrastructure facilities and enterprises are connected to gas or coal-fired boiler houses. Apartment buildings are equipped with individual electric heaters air conditioners orconnected to small boiler houses The private houses are heated mainly with gas or coal.

Water supply systems

There is a centralised water supply system in **Termez**, and 98.8% of city's population live within the coverage area. The drinking water supplied to Termez is sourced from 53 operational wells. There are main wellfields ('water intakes) (Manguzar and Northern water intake), four medium-size size water intakes comprising several wells (Uzbekistan, Farovon, 4th micro-district and 5th micro-districts) and 31 individual wells spotted across the city areas. The network stores its potable water in 13 reservoirs with a combined capacity of 18,000 m³. According to the Suvtaminot, they are of good quality and do not require reconstruction.

Only four mahallas in the city have a 24-hour water supply. In the remaining mahallas, water is supplied intermittently for 12-14 hours a day. The quality of water in large reservoirs is good, for some of individual well high hardness is recorded.

[146] https://unece.org/sites/default/files/datastore/fileadmin/DAM/env/epr/epr_studies/ECE.CEP.188/ECE.CEP.188.ENG.04.Part_III.ENG.pdf

[147] Uzbekistan. Voluntary national review 2020 on implementation of the 2030 Agenda for Sustainable Development. https://sustainabledevelopment.un.org/content/documents/26381VNR_2020_Uzbekistan_Report_Russian.pdf

[148] https://uznews.uz/posts/54423

To date, the flow rate of wells at the Termez well fields has fallen by 30-50% over the past 2 years. The reason is unknown but is presumably due to falling groundwater levels and the need to develop the wells further.

The access to drinking water for residents of the apartments / houses varies across the **Project districts**. In 2023 the share of serviced housing was the highest in Termez (93.3%). In the Project districts this indicator was lower comparing to Termez: the smallest share was in Kizirik District (12.6%) (Table 13).

Table 13: Provision of drinking water to apartments/houses, number of serviced apartments / houses in % to the total number of apartments / houses

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Uzbekistan	82.6	82.3	81.4	76.4	75.6	75.3	76.6	67.4	68.3	71.6	75
Surkhandarya Region	80.2	80.7	80.5	80.6	75.4	74.1	74.3	72.5	78.4	80.2	82.5
Termez City	90.1	94.1	94.4	95.6	100	100	92	84.3	92.6	88.0	93.3
Oltinsoy District	76.8	80.7	80.5	80.8	76.7	76.4	76.2	74.5	75.5	80.0	82.8
Angor District	72.3	76.3	76.5	76.9	53.5	53.7	53.2	52.0	52.4	52.7	52.9
Boysun District	56.8	60.8	59.7	61.2	74.9	61.0	60.7	64.0	64.1	45.7	47.0
Muzrabad District	63.3	67.8	66.3	69.3	87.3	87.9	86.6	86.7	87.8	88.0	89.7
Kizirik District	44.2	44.1	24.1	21.6	12.1	12.1	12.1	11.7	12.7	11.7	12.6

The centres of five Project districts are home to approximately 111,400 residents in total and host 1,593 registered legal organizations. Owning to the water supply development projects completed in the district centres, currently the water supply coverage therein has increased and, according to Suvtaminots's information from November 2024, ranges between 44% (in Khalkobod – the smallest service area) to 94.9% (in Sariq – the largest service area).

Wastewater systems

61 % of Termez population and 53% of the city territory are connected to the centralised wastewater system. The apartment blocks are mainly connected to a centralised sewerage system, while private houses use dry pit latrines in the backyard or, possibly, septic tanks. The city's healthcare and education facilities are mainly connected to centralised water supply and sewage systems.

The sewage collection services are available for mostly for apartments / houses in Termez City, while the share of serviced housing in the rural areas is less than 40% (Table 14).

Table 14: Provision of sewage collection services to apartments/houses, number of serviced apartments/ houses in % to the total number of apartments / houses

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Surkhandarya Region	22.6	22.7	23.0	23.1	26.2	26.0	25.3	23.6	35.4	35.7	36.4
Termez City	0	0	0	68.6	66.6	71.9	63.0	63.0	76.7	77.2	77.8
Oltinsoy District	0	0	0	12.7	43	42.7	42.3	13.7	35.3	35.4	35.7
Angor District	0	0	0	18.4	18.1	18.1	17.7	17.7	20.4	20.7	21.5
Boysun District	0	0	0	13.6	13.3	10.7	10.6	10.6	28.5	28.5	29.5
Muzrabad District	0	0	0	14.9	14.8	14.8	14.4	14.4	33.1	33.3	33.7
Kizirik District	0	0	0	29.2	29.2	29.3	29.0	29.1	32.5	32.6	33.0

There are only small-scale wastewater treatment facilities in Angor, Boyson, Qarluq and Sariq servicing several multi-story apartment buildings and several social buildings in each of these settlements. The Khalkobod WWTP and the associated sewer network has been under construction. The majority of private houses and offices in five Project districts do not have access to the centralised sewerage systems. Section 1.3 provides more details on this issue.

Solid waste management

Termez City is served by a 55ha landfill located in Kattakum MFY, Angor District, which also accepts waste produced at the Termez and Angor districts. This landfill has been operating since July 2018. The MSW landfills serving Boysun, Oltinsoy, Kizirik and Muzrabad are designed to serve their districts only and smaller size (from 2ha landfill in Kizirik District to 16ha land fill in Muzrabad District. As per information available, all of them were commissioned in 2017, and are owned by Directorate for Landfill Management State Enterprise. None of them is equipped with impermeable bottom lining to prevent groundwater contamination.

In addition, there is a 15ha specialized construction waste landfill in Kattakum MFY, Angor District, designed to accept construction / demolition waste from Termez and potentially from the other parts of the region. The facility was commissioned in 2020. The Project districts do not host specialised construction landfills.

According to available data, there are no designated landfills for construction waste and no industrial waste landfills in the region.

Housing

Both in Termez City and district centres (towns and urban settlements) there are multi-storey apartment blocks and two-story houses, and areas with private houses with attached subsistence land plots. People use them to grow gardens and/or vegetable gardens and raise livestock (mainly cattle and sheep).

6.5.8 Public Health Profile

According to the World Health Organization (WHO)[149], contaminated water and poor sanitation are linked to transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid and polio.

Uzbekistan has not recorded cases of polio since 1996. However, in 2021 cases of paralytic polio were reported across the border in Tajikistan. Consequently, over 150,000 children under the age of five in Surkhandarya region bordering Tajikistan, were additionally vaccinated with IPV (Inactivated polio vaccine), which has not been used in the country previously. Overall, 99.7% of children under one year age were vaccinated with 3 dozes of OPV (Oral poliomyelitis vaccine) in the region in 2023[150].

No cases of cholera were registered in the country in the last decade. Uzbekistan had increased monitoring in the region due to proximity to Afghanistan, where the disease was registered in 2022.

The number of cases of bacterial dysentery in Surkhandarya region reduced from 2.9 to 0.4 per 100,000 population between 2014 and 2022. The overall number of cases of acute intestinal infections in the region and Termez in 2014-2023 remained lower that the national average (apart from in 2022), that is in 2023 for the region and Termez 26.6 and 52.6 versus 134.1 for Uzbekistan (see the Figure 14 below). The level of acute intestinal infections in the city is typically higher than in the region.

[149] WHO Factsheets: Drinking water (2023), available at: https://www.who.int/

[150] Official website of the Statistics Agency under the President of the Republic of Uzbekistan: https://stat.uz/ru/ofitsialnaya-statistika/social-protection

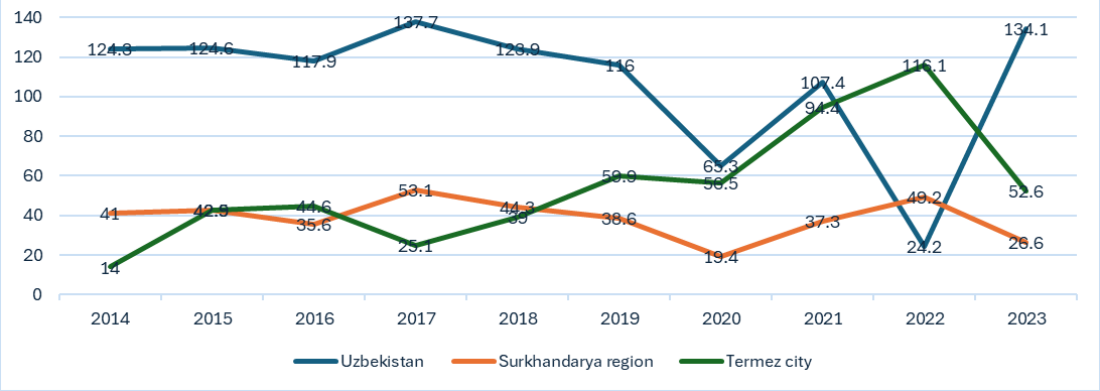

Figure 14: Number of cases of acute intestinal infections in Uzbekistan, Surkhandarya region and Termez, per 100,000 population (2014-2023)

The numbers of reported cases of acute intestinal infections[151] for five Project districts are shown in Figure 15. In 2023 the smallest incidence of such diseases was in Angor District, the highest – in Kizirik District (1.5 cases vs. 31.8 cases per 100,000 people). The figures for all districts are lower than for Termez City.

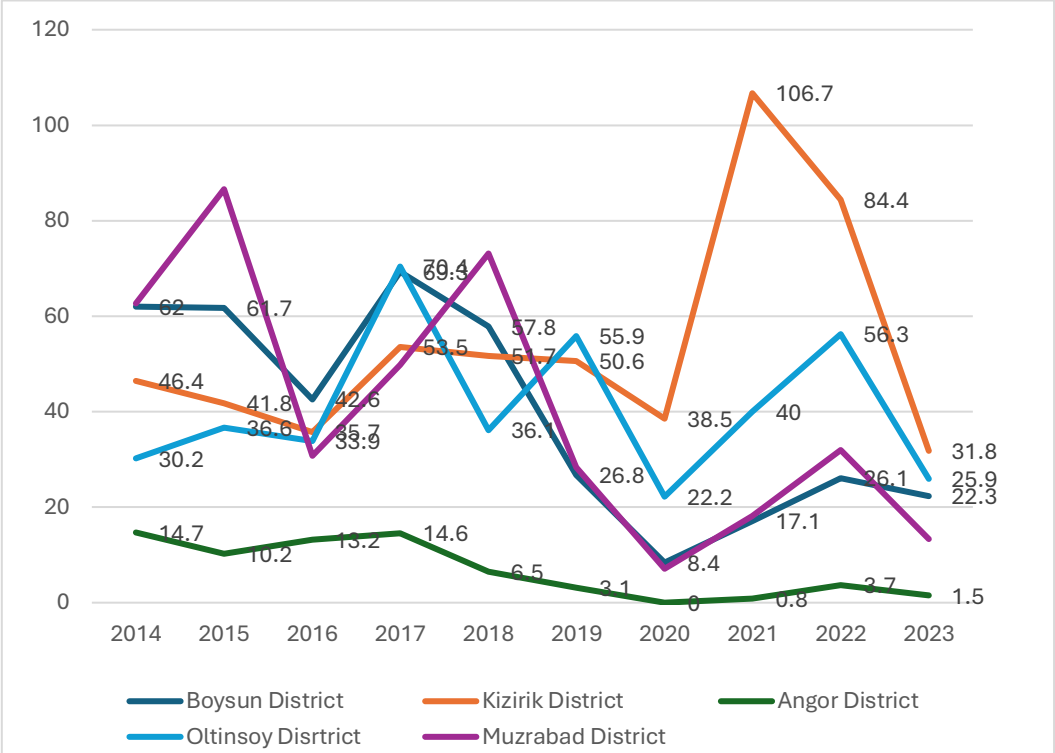

Figure 15: Number of cases of acute intestinal infections in five Project districts, per 100,000 population (2014-2023)

The region is one of the few in the country where typhoid remains to be registered. The number of cases reduced from 0.4 to 0.04 per 100,000 population between 2014 and 2022. No cases were recorded in 2020 and 2021, however the infection reoccurred in 2022.

The number of cases of viral hepatitis (hepatitis A) in the region and Termez were a bit higher than the national average (27.4 and 36.9 versus 22.6 per 100,000 population). The dynamics changed, as shown in the Figure 16, it demonstrates an increasing trend over the last two years across the country, and mostly among children[152]. Reasons could be the lack of vaccination, low awareness about the personal hygiene, lack of clean water and poor sanitation.

[151] Official website of the Statistics Agency under the President of the Republic of Uzbekistan: https://stat.uz/ru/ofitsialnaya-statistika/social-protection

[152] https://www.gavi.org/vaccineswork/rising-incidence-hepatitis-uzbekistan-prompts-vaccination-push

The incidence of this water borne disease in the region and Termez is currently high, that is almost double the national average, and much higher than EU notification rates [153].

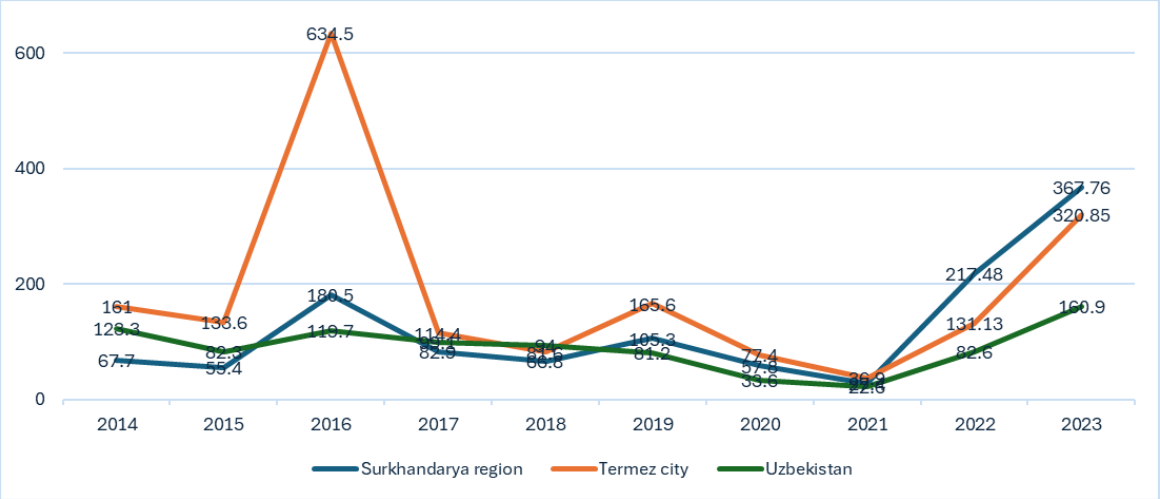

Figure 16: Number of cases of viral hepatitis in Uzbekistan, Surkhandarya region and Termez, per 100,000 population (2014-2023)

The historical data on the five Project districts for 2014-2023 demonstrate similar trend: an increase in 2022 as compared to 2021 after a decline in 2016-2021 (see Figure 17). The highest numbers of hepatitis A cases was reported for Boysun and Kizirik District (693 and 651 cases per 100,000 population respectively), the lowest – for Oltinsoy District (53.3 cases per 100,000 people).

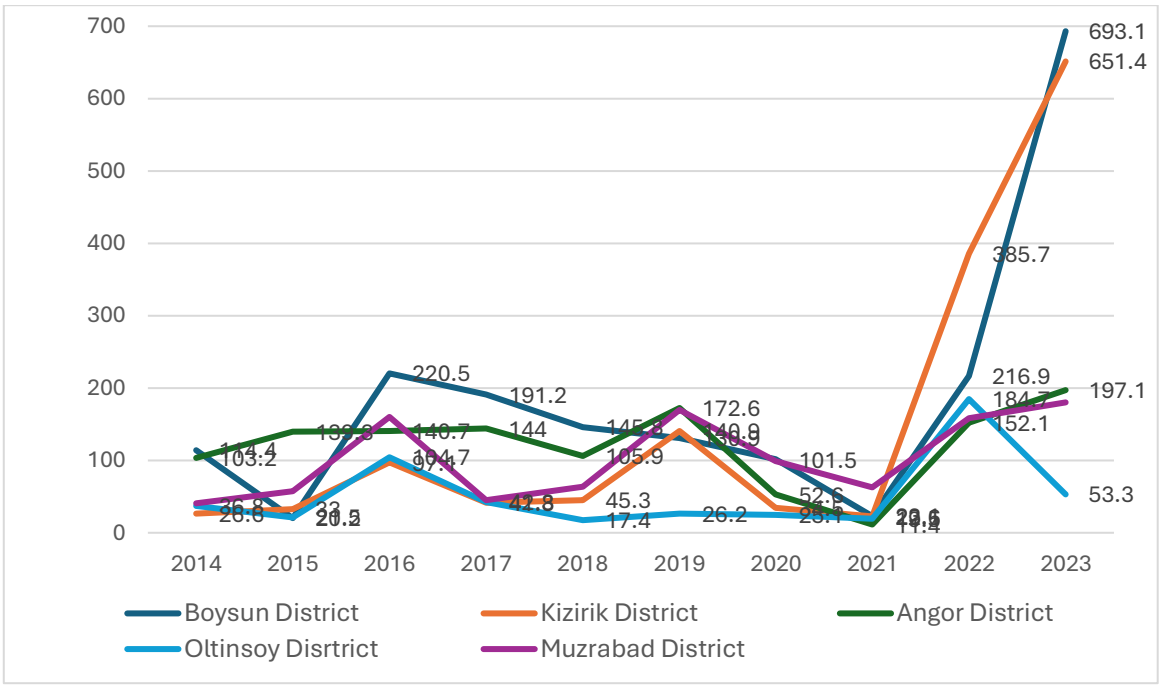

Figure 17: Number of cases of hepatitis A in five Project districts, per 100,000 population (2014-2023)

It was found out that the Project area includes only district centres. Therefore, within the ESIA data on incidence of water-borne infections among residents of Project districts will be collected and analysed.

[153] In 2022, the average number of reported cases in 30 EU/EEA countries reported to be 1 case per 100,000. The countries with the highest notification rates were Hungary (5.5), Croatia (5.3) Romania (4.8), and Bulgaria (4.4)". These are new cases reported per 100,000 population (see - https://www.ecdc.europa.eu/sites/default/files/documents/HEPA_AER_2022_Report.pdf)

6.5.9 Social Infrastructure

Healthcare Facilities and Availability of Medical Staff

The number of hospitals in Surkhandarya Region increased significantly in 2014-2023 - from 44 to 77, including increase by 10 hospitals in 2023. Consequently, the number of beds in hospitals increased from 7.5 to 9.9 thousand overall, or from³2 to 34.7 beds per 100,000 population. At the city level, the statistical data is only available as of 2022 - Termez City operated 17 hospitals with an overall capacity of 2.9 thousand beds (an increase from 3 hospitals and 0.3 thousand beds in 2014).

Surkhandarya Region had 9,907 doctors in 2023 including 2,854 doctors (29%) working in Termez City. At the region level, this amounted to 17.9 doctors per 100,000 population. Notably, the number of doctors in the region almost doubled within one year – from 5,026 doctors (15.5 per 100,000) in 2022. However, this ratio remained the lowest among all other regions of Uzbekistan.

Education Facilities

There were 642 pre-school education organizations in Surkhandarya Region in 2023, with considerable increase in the number of such facilities comparing to 2014 level (294). Among these, 324 operated in rural areas in 2023, increase from 123 units in 2014.

As for the general secondary education, available statistical data shows that majority of pupils complete nine grades, and around 85% of pupils continue education to complete eleven grades. At the same time, some pupils join specialized secondary schools after the ninth grade, such as colleges and lyceums. Furthermore, Termez City hosts five higher education institutions.

Culture Facilities

There are 1,179 libraries and information centres in Surkhandarya Region, a 20% increase compared to 2014. Such facilities may potentially host public meetings on the Project.

6.5.10 Media and Telecommunications

The number of newspapers has been decreasing annually at the national level – from 609 to 218 in the period 2014-2023, with the most significant closure rate in the last few years. The number of magazines and other periodicals has also decreased – from 202 to 139 in the last 10 years. It is not clear whether the official statistics include cases of transition of periodicals into digital format.

No data on the number of newspapers and other periodicals are available at the regional level.

The number of subscribers with Internet access in the region in 2023 was 59.9 people per 100 population – the lowest ratio in the country among all other regions.

6.5.11 Transport Infrastructure

National highway M-39 passes through Surkhandarya Region connecting Termez with Samarkand and Tashkent. The distance between Termez and Tashkent, the national capital, is ca. 650 km by road. The international highway M-41, known as the Pamir Highway, connecting Kyrgyzstan, Tajikistan, Uzbekistan, and Afghanistan passes through the region. The aggregated distance of motor roads in the region totals 2,844 km[154]. A new road section is under construction in the region to connect M-39 and M-41 highways.

The length of railways crossing the region is 372.5 km. There are more than 10 railway stations in the region.

The region has a 816m rail and motor bridge across the Amudarya river, connecting Uzbekistan and Afghanistan.

[154] https://www.undp.org/sites/g/files/zskgke326/files/migration/uz/un_doc_uzb_Invest_in_Surxandarya_eng.pdf

There is a railway connection between Termez, Samarkand, and Tashkent.

Termez International River Port located on the Amudarya river, is one of the major national ports and the only international river port in Central Asia.

Termez Airport serves domestic and international flights.

6.5.12 Cultural Heritage (Tangible and Intangible)

Five cultural heritage sites of Uzbekistan are inscribed on the UNESCO World Heritage list (i.e., Historic Centre of Bukhara, Historic Centre of Shakhrisyabz, Itchan Kala (Khiva), Samarkand - Crossroads of Cultures, and Western Tien-Shan)[155]. None of these is in the Project region of Surkhandarya.

In addition, Uzbekistan has 32 sites that are contained in the UNESCO Tentative List[156], including **Ancient Termez**[157], a 500ha site consisting of a citadel - Qala, two shakhristans (city) and rabad - the suburb, divided by the fortifications. This site is located 5 km to the northwest from Termez, on the right branch of the Amudarya River (Surkhandarya Region).

Surkhandarya region is rich in cultural heritage sites and monuments of national, regional and local importance. For instance, in Surkhandarya Region, there are the monuments of the Kushan Empire (1st-4th centuries AD) and the ancient settlement of Dalverzin-tepa that are in Shurchi District, 60 km from Termez. Further, there are the ruins of the ancient city of Kampyr-tepa located along the banks of the Amu Darya, 30 km from Termez.

Intangible cultural heritage (ICH) in Uzbekistan is a unique artistic phenomenon of the nation, which has ancient roots of traditional culture (including rituals, customs, and folklore works) related to the art of words, music, spectacular performance, choreography, folk games, handicrafts, and applied arts. There are 14 ICH elements inscribed on the UNESCO Intangible Cultural Heritage list[158]. To name several in the region and across the country:

- The cultural space of **Boysun** is Surkhandarya Region was the one through which trade caravans of the Great Silk Road passed to India. Boysun District is home to unique archaeological monuments: the Teshik-Tash cave, Kushan fortress of Payonkurghan, Kurganzol fortress from the era of Alexander the Great, rock paintings in the Kugitang Mountains, the Surhi gorge, dinosaur footprints, and others.
- **Navruz** is a holiday celebrated in many countries throughout the region, from East Asia to Asia Minor. It is celebrated by all Turkic and Persian Muslim nations;
- The culture and traditions of **pilaf** preparation, which is the beloved dish of Uzbeks. No feast occurs without pilaf. It is served at weddings and funerals, family celebrations, and large public festivities. During religious holidays, pilaf is offered to those in need and the less fortunate.
- **The art of miniature** painting is a distinctive form of Uzbek art that is expressed through the creation of small paintings. Miniatures typically depict people as well as national ornaments on textiles, books, ceramics, papier-mâché, walls, and carpets.
- **The art of Bakhshi** is an epic poetry tradition performed with the accompaniment of traditional Uzbek musical instruments, such as the dombra and the kobuz.
- **Silk production and traditional sericulture for weaving** is an element of cultural heritage that Uzbekistan shares with Afghanistan, Azerbaijan, Iran, Turkey, Tajikistan, and Turkmenistan. Silk has been cultivated in Central Asia since the 5th-6th centuries. In Uzbekistan, the entire cycle of silk production is carried out, from growing mulberry trees to dyeing silk threads and producing fabrics, carpets, and curtains.

[155] https://whc.unesco.org/en/statesparties/uz
[156] The Tentative List is an inventory of those properties which each State Party (in the given case Uzbekistan) intends to consider for nomination. For the Tentative List submitted by Uzbekistan see: https://whc.unesco.org/en/tentativelists/?action=listtentative&state=uz&order=states.
[157] https://whc.unesco.org/en/tentativelists/5298/
[158] https://ich.unesco.org/en/state/uzbekistan-UZ?info=elements-on-the-lists

6.5.13 Tourism

Volumes of inbound tourism in Uzbekistan are increasing. At the national level, the 2023 official data was close to the pre-Covid 19 pandemic figures – 6,626.3 thousand foreign tourists compared to 6,748.5 in 2019. The official data on the number of tourists visiting Surkhandarya Region is not available.

At the national level, the number of entities providing accommodation and food services is steadily increasing, from 12,004 in 2014 to 28,364 in 2023 (136% increase within 10 years). Notably, 99.4% of business entities in the sector (28,183) in 2023 were classified as small businesses. Furthermore, the growth in the number of newly created entities in the sector is among the largest, following wholesale and retail trade, manufacturing, and agriculture, forestry and fisheries. As of 01 January 2021, there were 1,156 hotels with total capacity of 50.4 thousand beds operating in Uzbekistan[159]. According to media sources, the number increased to 5,526 hotels by the end of 2023[160].

The national strategy "Uzbekistan-2030"[161] envisions a number of activities and targets in the tourist sector. Namely, increase the number of foreign tourists to 15 million, domestic tourists – to 25 million. The strategy includes creation of 30 tourism clusters and aims at doubling the number of beds for accommodation of tourists. Lastly, the strategy envisions development of eco-tourism, hiking, hunting and safari tourism within the territories of state nature parks and protected nature areas.

Consequently, volumes of accommodation and food services in Surkhandarya Region are rapidly increasing, from 16.5 bln UZS in 2014 to 527 bln UZS in 2023. The region has a number of tourist attractions, including natural, historical and cultural sites. In 2020 the State Committee for Tourism Development issued a tourist guide for the region.

6.5.14 Gender Profile

According to UNDP (2023/2024), the **human development index** of Uzbekistan was 0.727 in 2022, ranking 106th out of 193 countries, which puts the country in the 'high human development' category[162]. Since 2018, Uzbekistan has improved its human development ranking from 108th to 106th, while the number of countries assessed have increased. In terms of the **gender inequality index**, Uzbekistan improved its ranking from 64th in 2018 to 61st out of 193 countries, and its **gender development index** was 0.924[163], placing the country in the group with medium to low equality in human development index achievements between women and men.

In Uzbekistan, the regulatory and legal framework is constantly being developed to improve the status of women, realize their rights, and develop gender equality. In particular, in 2019, the Law on **the Protection of Women from Harassment and Abuse**[164] and **Law on Guarantees with Respect to Equal Rights and Opportunities for Women and Men**[165].were adopted to regulate relations in the area of the protection of women from all forms of harassment and abuse. Advances are observed at a policy level as well: in 2021, Uzbekistan adopted its **Strategy for Achieving Gender Equality in Uzbekistan** by 2030[166]. Several laws and by-laws were adopted during the last decade in Uzbekistan to promote gender equality and these will be summarised in the ESIA scoping report. Regardless the efforts, the country remains to be a society with a patriarchal way of life with its own persistent stereotypes and further improvements are needed to promote gender equality therein.

[159] Uzbek Statistics Agency: https://stat.uz/ru/press-tsentr/novosti-goskomstata/11869-o-zbekistonda-qancha-mehmonxona-va-shunga-o-xshash-joylashtirish-vositalari-mavjud-2

[160] https://upl.uz/economy/40819-news.html

[161] National Strategy "Uzbekistan-2030": https://lex.uz/docs/6600404

[162] UNDP. 2023/3024. Human Development Report. Breaking the gridlock. https://hdr.undp.org/system/files/documents/global-report-document/hdr2023-24reporten.pdf

[163] Ibid.

[164] https://www.lex.uz/docs/4494712

[165] 02.09.2019, No. 562 https://lex.uz/docs/5167654

[166] Resolution of the Senate of the Oliy Majlis of the RoU No. PS-297-IV, 28.05.2021. https://lex.uz/ru/docs/5466725

The population of Surkhandarya Region is 2,877,100 persons, with the male to female ratio being 51% to 49%[167]. A reverse ratio is observed at the Termez City level: the population of Termez is 201,600 people, of whom 99,000 are men and 102,600 are women (that is the ratio of 51% to 49%). In all Project districts the numbers of men exceed the numbers of women (similarly to the regional level).

The gender composition and age groups of the population of Surkhandarya Region as of 1st January 2024 are presented in **Section 7.5.2.** Demography above.

In 2022, women's employment in Surkhandarya Region was 38.8%, and men's employment was 62.2%.

Similar information is to be obtained for Termez and Project districts.

The share of women in business management was 20%, and among judges women made up 6%[168] (2021). The share of women registered as individual entrepreneurs in Surkhandarya Region in 2022 was 44%[169]. Wage gender gaps are significant in the country, with women earning 34% less than men[170]. Similar information is to be obtained for Termez and Project districts.

The unemployment rate among women in Surkhandarya Region in 2021 was 15%, and among men – 7%[171]. Similar information for Termez and Project districts is to be obtained.

6.6 Conclusion: Summary of the Baseline Data Gaps

Tables below summarises the key gaps in the baseline data collected to date: Table 15 deals with gaps in data on physical and biological components of the Project environment, Table 16– with gaps in descriptions of socio-economic and cultural conditions. Both tables also propose actions to be taken to close the identified gaps; details are provided in **Section 7.4**.

Table 15: Key gaps in environmental baseline data

#	Issue	Information gap	Future actions
1	Meteorology and climate	No meteorological data (temperatures, precipitation, windspeed and wind directions) specific for the Project sites are available	Estimate site-specific meteorological data based on data on long-term meteorological observations (to be requested from Uzhydromet (national office or its regional branch)
2	Future climate change trends	Historical climate change trends have been identified for the region but it is uncertain if they apply to specific Project sites.	Verify historical climate change trends by analysing the data of long-term observations at the regional meteorological stations (to be requested from Uzhydromet (national office or its regional branch)
		Data on the future climate trends for the region and the Project area (Termez City and five Project districts)	Determine climate indicator projections using data from the World Bank Climate Knowledge Portal [172]
3	Air pollution	No quantitative baseline air quality data are available for the Project settlements. It is not known if there are air quality monitoring stations in the Project area and how far they are from the Project sites	Consult Uzhydromet (national office or its regional branch) on the location of air quality monitoring stations in the Surkhandarya Region. If there are such stations in the Region and they are close enough to the Project site, five-year data series for the pollutants monitored will be requested from

[167] https://gender.stat.uz/ru/

[168] https://gender.stat.uz/ru/

[169] https://documents1.worldbank.org/curated/en/099052824010093257/pdf/P1756961bcc2a50811a9d21c373fd390418.pdf

[170] bid.

[171] https://documents1.worldbank.org/curated/en/099052824010026891/pdf/P17569610bdbb50041b2eb1a4078058d3f0.pdf

[172] https://climateknowledgeportal.worldbank.org/country/uzbekistan

#	Issue	Information gap	Future actions
			Uzhydromet to collect baseline air quality data and use them in planning field air quality investigations at the Project sites
4	Noise	No data on the baseline noise levels in the vicinities of the Project sites are available from open sources	Conduct measurements at the nearest residential houses/social infrastructure facilities nearby the Project sites in residential areas
5	Geology and soil	No data are available on 1) geological structure of the Project area and geological conditions of the specific Project sites, and 2) soil types within the Project sites and their pollution status	Collect geological data on from open-source reports on geological / geotechnical studies and, if no open- source data available, from paid geological archives Plan soil sampling as part of field investigations at the Project sites
6	Water resources - surface water - groundwater	There are data on hydrology and water quality for water bodies where greenfield WWTPs in five Project districts will discharge effluents their effluents Note: presumably the receiving water bodies for new WWTPs would be drainage collectors No data are available on hydrogeological conditions of the Project area and Project sites	Request information on the hydrological network within the Project area including natural and artificial water bodies (canals, drainage collectors) and hydrological parameters of water courses nearby the WWTP sites Arrange water samplings for receiving water bodies (where applicable) Collect on hydrogeological data from open-source reports on hydrogeological studies; if no open source data available, from paid hydrogeological archives
7	Landscape	Detailed description of the local landscape around the Project sites	Conduct a detailed evaluation of landscape units surrounding the Project sites and including their visual amenity.
8	Natural hazards	No data on evaluation of hydrometeorological hazards for specific Project locations	Initiate additional information requests to regional Uzhydromet branch to obtain data on severity of hydrometeorological risks for Project locations in areas of medium and high-level hazards (e.g. additional data will be requested on the risk of landslides and mudflows for the pre-selected site of WWTP in Boysun District)
9	Biodiversity and living natural resources	No data on the flora, fauna and habitat structure for the Project sites and their vicinities	Arrange vegetation and wildlife surveys at the greenfield sites of proposed WWTPs in five Project districts

Table 16: Key gaps in socio-economic and cultural baseline data

#	Issue	Information gap	Future actions
1	Demography (Population and Population Development)	The demographic information collected to date lacks the following data: - number of households and average household size for Project districts and district centres, and affected mahallas hosting WWTPs, SPSs, and collectors - population dynamics for centres of the Project districts, - population structure for Termez and centres of five Project districts - annual number of visitors Termez and centres of five Project districts - population projections for 50-year Project lifetime for serviced settlements.	Submit additional information requests to city/district khokimiyats (requests submitted, responses awaited)

#	Issue	Information gap	Future actions
2	Religion, ethnical composition, and language use	No quantitative data on the ethnic composition and language use for the population of Termez and Project district centres	Submit additional information requests to city/district khokimiyats (requests submitted, responses awaited)
3	Economy	Data on the regional economy and economy of Termez and their development are sufficient. The data on economy of five Project districts and centres of the districts is very limited / absent	Submit additional information requests to the city/district khokimiyats (requests submitted, responses awaited)
4	Employment, incomes and expenditures	Both for Termez City and centres of the Project districts the following data are not available: - employment and unemployment rates, - employment structure disaggregated by gender. - income structure, - structure of expenditures	Submit additional information requests to the city/district khokimiyats (requests submitted, responses awaited)
5	Vulnerable groups	Both for Termez City and centres of the Project districts the following data are not available: - quantitative data on less socially protected and vulnerable population disaggregated by gender. be collected and analysed	Submit additional information requests to the city/district khokimiyats (requests submitted, responses awaited)
6	Existing utilities	Data on coverage rates for gas supply, drinking water supply and sewage collection services in the centres of the Project districts have not been collected to date. Data on existing wastewater infrastructure including spare capacities for district landfills Historical data on drinking water quality at water supply sources in five Project districts	Submit additional information requests to district khokimiyats Submit an additional information request and Surkhandarya Region Department for Ecology, Environmental Protection Request water quality data at water supply sources in five Project districts to Surkhandaryo Suvtaminot
7	Public health	For centres of the Project districts the following data is not available: - historical data on incidence (the number of reported cases) of water-borne infectious diseases including acute intestinal diseases and hepatitis A.	Submit additional information requests to Surkhandarya Region Public Health Department
8	Social infrastructure	No information is available on the number and location of healthcare in the Project districts which may potentially serve the Project staff. No information is available on the number and location of libraries in Termez and capitals of the Project districts (potential venues for stakeholder engagement events)	Submit additional information requests to Surkhandarya Region Public Health Department Submit information requests to Surkhandarya Region Public Health Department

#	Issue	Information gap	Future actions
9	Media and tele-communications	To date information on regional and local newspapers, TV channels and/or news portals for Project districts that may be used for information dissemination have not been collected	Search for relevant data in open sources Consultations with district branches of Surkhandaryo Suvtaminot
10	Transport infrastructure	Information of the current state of the road pavement for the access roads to the Project sites in five Project districts	Consultations with the technical team (on potential routes for the access roads to the WWTP sites, on the current state of the road pavement)
11	Cultural heritage	No data has been collected on the presence of cultural heritage monuments, archaeological sites, sacred places, and sites of local importance within the Project sites in five Project districts and their vicinities	Submit information an information request to the authorized national and regional cultural heritage bodies Consultations with heads of Mahalla bodies
12	Tourism	No information is available on the number of tourists visiting Termez and centres of the Project districts, and current number of touristic businesses in these settlements	Submit additional information requests to city/district khokimiyats
13	Gender profile	The missing gender-specific data (on population, and employment, unemployment and employment structure) are considered in **item 2.1** and **2.4** above.	See actions for **item 2.1** and **2.4** above

7 Environmental and Social Analysis and Investigations proposed

Based on the findings gained in the previous chapters on the current environmental and socio-economic situation in the Project area, as described in Chapter 7, as well as the current status of the technical planning proposed so far, including alternatives, proposals for further analyses and investigations on ESIA are submitted. This is done differentiated according to the individual topics to be investigated.

As a basis for this, Chapter 8.1 sets out in a differentiated manner which type of ESIA should be created from a technical point of view taking into account the KfW Sustainability Guideline (2024). The area and methods of investigation to be considered are described below.

7.1 Justification for the KfW ESIA Classification

Based on the knowledge gained and the project characteristics, the proposed measures can be classified in category B+ of the KfW classification. This means that the proposed FC measures have significant adverse environmental and social impacts and risks in at least one case and otherwise meet the category B criteria. Therefore, the establishment and implementation of a comprehensive environmental and social management system, consisting of ESIA, ESMP and SEP, must be developed and implemented.

Due to the currently incomplete knowledge of the local and regional environmental situation and socio-economic conditions, as well as the fact that all parts of the planning are not yet available, it is currently not possible to make a final classification into one of the four KfW categories, as requested in the ToR. However, from the environmental and social point of view it can be assumed that either the project will be classified in either category B+ or A.

In the course of the further development of the Project and the accompanying ESIA report, this classification will be critically examined and reviewed. If necessary, a classification in a different category of the KfW Sustainability Guideline will be recommended and discussed with competent stakeholders.

7.2 Demarcation of the Investigation Area

Taking into account all conceivable technical variants such as open trench excavation, inline rehabilitation and micro tunnelling, well drilling, etc. as well as the space required for manoeuvrable construction and the operational process, the investigation area will be defined in such a way that all potential project-related environmental and social impacts on people and the environment can be assessed.

The following is proposed:

- In the case of linear measures such as collectors, and secondary sewage, the demarcation of the investigation area depends on the construction site required for the laying plus a buffer of 10 to 20 m.
- When constructing new wastewater treatment plants and expanding existing wastewater treatment plants, the study area is chosen in such a way that it not only meets the specifications of the SPC, but also covers at least 100 to 200 m in addition, depending on the spatial sensitivity and size of the planned wastewater treatment plants.
- In the area of bio-ecologically potentially sensitive areas such as critical habitats, the study area will be expanded in order to be able to record all possible project effects (fragmentation, etc.).
- If socio-economically sensitive areas are located near the construction site, such as hospitals, schools, nursing homes, mosques, etc., the study area is adapted in such a way that all relevant environmental aspects can be described and evaluated, in particular the aspects of noise, odour, fragmentation of paths and accessibility of buildings.

7.3 Impact Assessment Methods

7.3.1 Environmental Impacts

The recording, description and evaluation of the current environmental situation as well as the socio-economic conditions is carried out on the basis of the evaluation of existing data, the implementation of surveys by local experts, representatives of the authorities and the authorities.

The assessment of the expected environmental impacts is differentiated for each natural asset and differentiated according to the project phases mentioned **Section 5.1** using the assessment method of ecological risk analysis.

The environmental impacts associated with the pre-construction, construction phase, structure, operation and maintenance of *the Project are assessed by identifying, describing and then assessing their environmental* risk as follows:

Environmental Risk = Intensity of Impairment x Sensitivity

The intensity of impairment indicates how strongly an environmental aspect (e.g. generation of noise) is pronounced. Sensitivity shows how sensitive a natural asset is to the relevant environmental aspect (e.g. hospitals highly sensitive, industrial areas lowly sensitive against noise).

Furthermore, parameters are included in the evaluation of the impairment intensity as shown in the table below.

Parameter	Criteria /Values
Duration	short term – long term - permanent
Spatial influence	local – regional – national – international
Discharge effect	low - high

Table 17: Consequence Level Explanations

Intensity	Environmental/ Impact (Positive or Negative)
5 (Severe)	• Severe environmental damage or severe nuisance extending over a large area and continuous emission or permanent change over more than five years. • Likely major breach in compliance resulting in prosecution. • Stakeholder concern is triggered on an international level.
4 (High)	• Continuous emission or permanent change over less than five years resulting in negative medium-to-high impact to environmental, ecological, health, socio-economic, and/or cultural heritage receptors. • Possible major regulatory noncompliance. • Stakeholder concern is triggered on a national level.
3 (Medium)	• Regular over short-term (less than three years) or intermittent over long-term (more than three years) leading to repeated breaches of statuary limit. Spontaneous recovery of limited damage within one year. • Possible regulatory noncompliance. • Stakeholder concern is triggered on a regional level.
2 (Low)	• Minor magnitude effect on the environment but no permanent effect. • Regulatory terms or corporate policy set defined conditions. • Stakeholder concern is triggered on a local level.
1 (Negligible)	• Local environmental damage within the fence and within systems with negligible severity. • No regulatory noncompliance. • Stakeholder concern is triggered on an individual level.
0 (None)	No impact
+ (Positive)	Beneficial impact that enhances the environment.

Table 18: Matrix on Environmental Risk

Environmental Risk = Intensity x Sensitivity							
	Sensitivity						
	5	4	3	2	1	0	
Intensity	Certain	Possible	Likely	Unlikely	Extremely Remote	Will Not Occur	Ecological Risk
5 (Severe)	25	20	15	10	5	0	Severe
4 (High)	20	16	12	8	4	0	Major
3 (Medium)	15	12	9	6	3	0	Moderate
2 (Low)	10	8	6	4	2	0	Minor
1 (Negligible)	5	4	3	2	1	0	Negligible
0 (None)	0	0	0	0	0	0	No Impact
+ (Positive)							Positive Impact

7.3.2 Social Impacts

The Project is focused on improving wastewater systems and provide benefits to local communities. However, it is expected to result in not only positive but also adverse social impacts (see **Section 6.2** for details).

In the full-scale ESIA for the Project the potentially significant social impacts identified during the Scoping will be subject to in-depth impact analysis aimed to assess their significance. Depending on the significance grade the Assessor will decide on the need for specific mitigation/enhancement measures.

As explained in **Section 4.5**, the impact significance is viewed as a function of receptor's **sensitivity** and the impact **magnitude**.

The proposed definitions for the **sensitivity** of a social receptor are given in Table 19.

Table 19: Definitions for Sensitivity of Social Receptors

Sensitivity Category	Definitions
High	High or very high importance and rarity, international or national scale and very limited to no potential for substitution
Medium	Medium importance and rarity, regional scale, limited potential for substitution
Low	Low importance and rarity, local scale
Very low	Very low importance and rarity, local scale

Magnitude refers to the 'size' or 'amount' of an impact. It is viewed as a function of three criteria: a) impact's extent (i.e., the spatial dimension), b) duration (i.e., the temporal dimension), and reversibility (i.e., whether the impact is temporary (within a reasonable timescale) or permanent). The impact magnitude definitions are provided in Table 20.

Table 20: Definitions for Magnitude of Impacts on Social Receptors

Magnitude Category	Definitions
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, permanent / irreversible change, features or elements (Adverse)
	Large-scale or major improvement of resource; extensive restoration or enhancement, permanent change and major improvement of attribute quality (Beneficial)
Medium	Loss of resource, but not affecting integrity, partial loss of/damage to key characteristics, features or elements (Adverse)
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial)
Low	Some measurable change in attributes, quality or vulnerability, minor loss of or alteration to one (possibly more) key characteristics, features or elements (Adverse)
	Minor benefit to, or addition of, one (possibly more) key characteristics, features or elements, some beneficial impact on attribute or a reduced risk of a negative impact occurring (Beneficial)
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse)
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial)
No change	No loss or alteration of characteristics, features or elements, no observable impact in either direction.

When assigning the impact significance grades the Assessor will rely on professional judgement and consideration of views and advice of Project stakeholders. The assessment of social impacts' significance are mainly qualitative with application of quantitative methods where data are available. The description of four significance categories are given in Table 21. Classifying each social impact to one of the significance categories enables different issues to be placed within the same scale to allow a direct comparison.

Table 21: Definitions for Impact Significance for Social Impacts

Significance Category	Definitions
Major	Very large or large magnitude of change in socio-economic conditions. Impacts, both adverse and beneficial, which are likely to be important considerations at a national and regional level.
Moderate	Intermediate magnitude of change in socio-economic conditions. Impacts that are likely to be important considerations at a regional and local level.
Minor	Small magnitude of change in socio-economic conditions. Impacts may be raised as local issues but are unlikely to be of importance in the project's permitting process.
Negligible	No discernible change in socio-economic conditions. Impacts that are likely to have a negligible or neutral influence, irrespective of other impacts.

It is important to note that significance categories are required to be determined for both positive (beneficial) and negative (adverse) impacts. The ESIA envisions developing enhancement measures to maximise Project benefits.

The greater the receptor sensitivity and the greater the impact magnitude, the more significant the impact. The consequence of a highly sensitive receptor suffering a major detrimental impact would be a very large significant adverse impact. The determination of impact significance is shown below in the impact significance matrix (Table 22).

Table 22: Impact Significance Matrix for Social Impacts

	Receptor Sensitivity / Value			
Impact Magnitude	**High**	**Medium**	**Low**	**Very Low**
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Moderate	Minor	Negligible
Negligible	Moderate	Minor	Negligible	Negligible

Significance of **residual impacts** will be assessed using the same approach as described above. Negative residual social impacts assessed as being either of minor or negligible significance are considered to be acceptable. Negative residual social impacts of high and moderate significance are considered as non-acceptable unless they can be offset by other positive impacts of the Project or controlled through the imposition of permitting conditions and/or specific actions to be included into the Project's ESMP.

7.3.3 Assessment of Cumulative Impacts

Cumulative effects will be assessed where they can be identified both within the Project (e.g. between the Project components and Project components and associated facilities) and between the Project and other planned existing or foreseen future activities in the Project area.

Cumulative impact assessment will be based on the stepped process described in the IFC's Good Practice Handbook[173]. Any additional mitigation and/or management measures required for cumulative impacts will be included in the ESMP for the Project.

[173] IFC. Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets" (2013). https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_cumulativeimpactassessment.

7.4 Additional Studies within the ESIA

This section outlines additional studies to be conducted within the full-scale ESIA to meet the requirements of KfW's and WB's standards and the national EIA legislation on the scope and depth of the detailed impact assessment, mitigation and monitoring.

7.4.1 Planning Requirements

Within the ESIA it should be checked if the Project complies with the statements of the spatial and regional plans, the communal land-use plans and/ or urban development plans of the affected municipalities. Hence, the above mentioned plans particularly the land-use-plan/urban development plans will be interpreted and, if deemed required and useful, also discussed with the relevant authorities of these municipalities.

7.4.2 Environmental Studies

The questions to be answered within the framework of the ESIA and the data sources available for this purpose are listed below for the individual ESIA protected assets to be investigated.

7.4.2.1 Meteorology and Air Quality

Project-related impacts on air quality including odour will be analysed based on the evaluation of existing data and the climate projections under specific consideration of the land-use and the biotope structure in the Project area.

However, as the project is not associated with any significant impact on air quality, there is no need for a more in-depth consideration of other air pollution parameters or concentrations.

At the same time, the national EIA requires the analysis of the baseline air quality for all the proposed WWYPs, and may require conducting pollutant dispersion modelling for WWTPs. For this purpose, site-specific meteorological input data (temperatures, precipitation, windspeed and wind directions) shall be collected. The WWTP in Termez City is close to the Termez meteorological station, WWTPs in Muzrabad and Kizirik districts – relatively close the Sherabad meteorological station, and those in the Oltinsoy and Boysun districts - to the Denau meteorological station. Angor WWTP is at almost equal distances from Termez and Sherabad stations.

The meteorological parameters required for dispersion modelling will be requested from the National Agency on Hydrometeorology Service (UzHydromet); the list of specific data to be collected will be formulated by an air dispersion modelling specialist of the national EIA Company[174].

Note: A national environmental consultancy having licenses for and experience in conducting EIAs preferably for IFI-funded projects will be contracted to conduce the national EIAs for the Project.

The ESIA will specifically consider odour nuisance from the existing wastewater facilities in Termez. The assessment will use data collected during site visit observations and key informant interviews with members of the affected communities.

7.4.2.2 Climate Change Trends and Vulnerability to Climate Change

It is clear that the project can only make a small contribution to mitigating climate change (to be verified). At the same time, suitable measures are being developed for the climate adaptation of the technical infrastructure. This topic will be further considered, and possible impacts estimated in the ESIA.

[174] A national environmental consultancy having licenses for and experience in conducting EIAs preferably for IFI-funded projects will be contracted to conduce the national EIAs for the Project.

Here it must be noted that this topic and potential specific investments (i.e. green measures/ climate change adaptation measures) are still under discussions. However, any updated and developments will be considered in the ESIA.

The ESIA will consider both climate risks for the Project facilities and Project's contribution to climate change (via GHG emissions related to facility operations (Scope 1) and energy consumption (Scope 2)).

The climate risk assessments include analysis of historical and future climate change trends.

The analysis of historical climate change trends during the scoping stage (see **Section 6.4.2**) will be verified by the review data of long-term observations at the regional meteorological stations. The data for such verification will be purchased from Uzhydromet.

The ESIA team will identify and, where possible, quantify, climate indicator projections for the Surkhandarya Region and for Termez City and five Project districts using data from the World Bank Climate Knowledge Portal[175].

7.4.2.3 Noise

Data collection for the national EIA / ESIA will include measurements of baseline ambient noise levels for the site sites of the proposed WWTPs and SPSs in Termez and five project districts. Noise levels will be measured at the site boundaries and at the nearest residential houses and/or social infrastructure facilities (where applicable) to establish baseline noise levels. Noise level measurements will be part of the ToR for the national EIA Company.

7.4.2.4 Geology and Soil

It should be checked which kinds of soil will be probably impaired by soil sealing, soil-compacting and if rare and fertile soils are affected by project related impacts. Therefore, thematic maps and results of the drilling campaign) with regard to geology and soil will be evaluated.

Data on geological condition of the Project area and Project sites are to be collected by the review of the open-source reports on geological / geotechnical studies conducted earlier in the Project region. If no relevant data are available in open-sources, they will be requested and purchased from the geological archives.

The scope of work for the national EIA Consultant will include sampling of soils at the sites of the existing and proposed WWTPs to establish the baseline soil quality and identify any historical pollution.

7.4.2.5 Water (Surface and Groundwater)

Based on the review and evaluation of existing data (thematic maps on hydrogeology, hydrography) and existing studies/situation as well as a Flood Risk Assessment, which is being prepared as part of the detailed design for Collectors, the project-related impacts on the discharge conditions and water quality of the affected rivers, including theirs floodplains and theirs tributaries, will be described and evaluated.

In addition, the groundwater level should be analysed by geotechnical investigations in areas where a high groundwater is to be expected.

The scope of work for the national EIA Consultant should include sampling of water from water bodies to be used for discharge of treated effluents. Such samplings are needed to establish the baseline conditions for the receiving water body. Samplings are to be conducted at the proposed discharge points. The sampled water needs to be analysed for a number of hydrochemical and microbiological parameters per the national regulations of the quality of water in the water bodies. The thresholds and parameters depend on the use category for these water bodies (water for fishery, irrigation, recreation, or potable water supply.

[175] https://climateknowledgeportal.worldbank.org/country/uzbekistan

Data on hydrogeological conditions including water table levels of the Project area and Project sites are to be collected by the review of the open-source reports on geological and geomorphological studies conducted earlier in the Project region. If no relevant data are available in open-sources, they will be requested and purchased from the geological archives.

7.4.2.6 Landscape

The Project-related impairment of the landscape will be analysed in detail, with special consideration of the expected effects on visual amenity of the modified viewshed due to construction of WWTPs in rural areas of Project districts as well as on local recreation and tourism and with regard to its function as a historic landscape "Surkhandarya Valley". As a technical basis, a detailed description and evaluation of landscape units in the planning area will be carried out.

7.4.2.7 Natural Hazards

Consultations with the regional Department for Emergencies and Hydrometeorology Department for Surkhandarya Region showed there are no maps depicting levels of natural hazards for the Region and Project districts. However, if ESIA team provides specific location of the of the Project facilities with coordinates, the State Agency for Hydrometeorology (Uzhydromet) or its regional department could provide historical data on occurrence of the selected natural hazards in Surkhandarya region, Termez City and Project districts and their centres including extreme rainfall periods, extreme heat period, extreme winds, floods and flashfloods, dust storms, drought periods and mudflows. In addition, the Agency specialist could predict level of risks to Project facilities associated with these hazards – if they are placed at the preliminary selected locations. Both sets of data are to be purchased (cannot be provided for free in response to request).

For data on earthquakes and landslides the consultees advised to approach a) UzbekHydrogeology SE specialized on geological and geotechnical research and field studies for development projects and b) Ministry for Mining and Geology, which would include a service/department responsible for monitoring of the hazardous geological processes.

The ESIA team will prepare and submit additional data requests to get site-specific data on severity of natural hazards for locations prone to medium and high-level hazards. The additional data obtained will inform in-depth assessment of current and future climate risks for the Project facilities with the ESIA and help to develop appropriate adaptation measures.

The data on expected frequency of extreme weather events during the Project lifetime will be obtained from World Bank Climate Data Portal.

7.4.2.8 Biodiversity and Living Natural Resources

The scope of work for the national EIA Consultant should include vegetation and wildlife surveys of the sites of the proposed WWTPs and other greenfield elements of the Project to explore the presence of the protected species within the sites of the existing and proposed WWTPs.

Based on the evaluation of biodiversity in the Project area that has been carried out so far, it can already be stated that no faunistic investigations can be carried out due to the planned duration of the feasibility study, which extends over the winter half-year.

From a technical point of view, it also makes no sense to carry out detailed faunistic investigations at the level of the feasibility study, as these are only valid for a few years and planning changes such as relocations of locations or route corridors can occur.

Therefore, the ESIA report will provide a detailed description of the scope of the bio-ecological investigations to be carried out in the course of the subsequent detailed design.

On the other hand, it is also to be clarified whether the preparation of a Biodiversity Action Plan is necessary at all or whether the other planning and expert instruments such as ESIA, ESMMP are sufficient to deal with the topic of biodiversity completely and correctly.

According to WB ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources a Biodiversity Action (Monitoring) Plan and the ToR (4.3.9) must be prepared if the project concerns so-called critical habitats and/or protected area. No detailed statement can be made on this at this time.

However, as can be seen from **Section 6.3** there are, with the exception of the KBA 46957 Kugitang and Baysuntay Mountains, no nature reserves or state natural monuments or other nature protected area within the project area. In addition, due to the biotope and land use structure in the urban and suburban sub-areas of the project area, it is not to be expected that natural or critical habitats will occur on a large scale or at most on a small scale. Rather, it can be assumed that modified habitats dominate, which have been strongly influenced by anthropogenic factors. These are usually of low to medium importance for biodiversity. However, as the evaluation of the red book shows, several highly endangered animal and plant species occur in the project area. However, as the evaluation of the red book shows, several highly endangered animal and plant species occur in the project area. For example, most of the mammal species mentioned above, as well as some bird species, are very sensitive to disturbance and avoid human settlements and/or are bound to very specific habitats such as floodplain habitats and rocky terrain.

In order to be able to correctly classify the importance of the project area for biodiversity, inspections of the areas affected by the project will be carried out in the course of the preparation of the ESIA-Report, with a special focus on the biotope and habitat structure in the project's area of impact.

It is suggested, that differentiated bio-ecological investigations of flora, fauna and habitats only make sense at the level of detailed design. In the present case, it is the task of the ESIA to precisely outline this scope.

In the ToR relevant to this project, chapter 4.3.9 (among others) describes the conditions under which the preparation of a Biodiversity Action Plan is necessary and states that the topic of biodiversity is an essential component of the ESIA to be created.

Of course, the anticipated project-related impacts on flora, fauna, and habitats (bio-diversity) can only be made in a proper way if at least the biotope-structures (habitats, including flora) of the project affected areas are mapped and analysed with regard to their function as habitats for a specific flora and fauna.

In order to be able to determine and evaluate the actual impact on fauna, so-called indicator species groups, e.g. birds, reptiles, macro-zoobenthos, should be investigated in addition to biotope mapping.

Therefore, it is important to analyse which types of habitats will be affected and/or lost by the implementation of the project, whether the project will lead to a fragmentation of habitats or whether there will be changes in site conditions (e.g. in the vicinity of wells due to groundwater lowering), which will also lead to an impairment or even loss of habitats. For example, bats do not have to be examined if there is no project-related loss or impairment of trees, hedges or forests that have a significance as a maternity colony.

In order to be able to develop a goal-oriented, technical and financial appropriate investigation programme to record biodiversity, several prerequisites are required such as:

- Locations of e.g. Water treatment plants, wells, pumps, etc.
- Corridors for drinking water and sewage pipes and supplementary facilities
- Existing data on flora and fauna, habitats, protected areas
- Overview of the current biotope and land use structure in the project area

This means that in order to be able to develop a goal-oriented approach to biodiversity, the main project characteristics and their potential impacts on flora, fauna, habitats and the likely project-related sensitivity of the affected area must be known.

This is not yet the case. This gap was to be filled in the course of the preparation of the ESIA report by evaluating further existing local and regional data on the distribution of habitats, animals and plants, conducting expert interviews and an on-site visit.

Nevertheless, we try to answer the questions below and mentioned in the ToR as well as possible. If necessary, the answers to some questions must be shifted to the subsequent ESIA on detailed design. These questions are:

- How does the country's sector policy perform in terms of IWRM principles (meeting water demand, fair distribution of resources and preservation of important ecosystems and the environment)?
- How does the country's sector policy rate in terms of cross-sectoral planning, decision making and activities for balanced use, and the protection of water resources for drinking water, energy production and food production (implementation of the Nexus approach, see Strategy for Interlinkages between Water, Energy and Agriculture)?
- Which natural and structural constraints determine the future development of the water sector? e.g.:
- Availability of surface and groundwater resources and their regenerative capacity considering ongoing climate change (i.e., seasonality of precipitation, decrease or increase in precipitation, increase in evapotranspiration, etc.)
- Fossil ground water resources exhausted or lacking?
- Ratio between demand for drinking water, production capacities and consumption
- Domestic or cross-border conflicts over the use of water
- Performance capacity of sector institutions and opportunities/incentives for participation and initiatives undertaken by the population.
- Does the existing wastewater and waste disposal system (and industrial wastewater and hazardous waste specifically) contribute to risks and concrete threats to the quality of the water resources and thereby also to human health?
- Is specific data on water resource quality collected (baseline)?
- Is there a legal/regulatory framework that requires the protection of biodiversity to be taken into account when authorising the use of water resources?
- Are there any Ramsar-classified wetlands or Key Biodiversity Areas in the project regions? (A project-related impact on these protected areas with the exception of the KBA 46957 Kugitang and Baysuntay Mountains close to Boysun can already be ruled out, see chapter 7.5).

7.4.3 Socio-economic Studies

During the Scoping stage, the ESIA team has undertaken two data collection campaigns linked to the two field trips to the Surkhandarya Region (in October and November 2024) (see **Section 4.7** for details). They included submission of the primary information request to responsible state agencies, and city/district and local authorities and key informant interviews with the representatives of these state bodies.

The authorities have responded only to part of the submitted information request, and some portion of the requested data is awaited. The social data collection plan for the ESIA envisions following up on the submitted information requests and analysis of the collected data to expand / amend the initial baseline analysis (see **Section 6.5**) and conduct in-depth assessment of impacts on the socio-economic conditions, community health and well-being and cultural heritage. Below the data to be collected and/or analysed within the ESIA are outlined.

7.4.3.1 Demography (Population and Population Development)

The demographic data collected to date are not sufficient for social impact assessment within the ESIA. The following additional data will be collected:

- The current number of households and average household size for Project districts and district centres, and rural mahallas where the Project facilities are supposed to be located;
- The total permanent population for the centres of the Project districts (for 2010-2024 period);
- The latest data on the total permanent population disaggregated by gender and age for centres of the Project districts;

- The latest data on the total permanent population disaggregated gender and age for Termez City;
- The annual number of visitors / migrants for 2010-2024 for Termez City and centres of the Project districts;
- Total permanent population projections for the Project lifetime (50 years) for Termez City and centres of the Project districts.

After the preliminary search in UzStat databases, the historical population data have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The expected additional demographic data will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.2 Ethnicity and Language Use

For the ESIA purposes it is necessary to understand the ethnic composition of communities which would benefit from and get affected by the Project. Quantitative data on the ethnic composition and language use for the population of Termez, and Project district centres have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The expected additional data will be analysed at the next assessment stage and presented in the ESIA report. The initial consultation show that there Uzbek language shall be use for consultations, though a lot of people can understand and talk Russian.

7.4.3.3 Local Economies

Within the ESIA data on the structure of the economy, number and types of resident enterprises and budgets for the Termez City and Project districts have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The expected additional data will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.4 Employment, Population Income and Expenditures, and Poverty Level

Within the ESIA it is planned to better understand the employment and unemployment rates disaggregated by gender, employment structure, income structure and structure of expenditures for the residents of Termez City and centres of the Project districts. Pertinent data have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The qualitative data on employment, income sources and structure of household expenditures have been collected during the key informant interviews and focus group discussions in Termez and key informant interviews held in five Project districts. The collected additional data will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.5 Vulnerable Groups

Within the ESIA, the quantitative data on less socially protected and vulnerable population of Termez and centres of the Project districts disaggregated by gender will be collected and analysed. Pertinent data have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The expected additional data will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.6 Existing Utilities and Housing

The data on share of houses provided with natural gas supply, drinking water supply and sewage collection services in the centres of the Project districts have been requested from the khokimiyats of the Project districts. The responses to the submitted information requests are awaited. The qualitative data on availability of essential municipal services have been collected during the key informant interviews and focus group discussions in Termez and key informant interviews held in five Project districts. The collected additional data will be analysed at the next assessment stage and presented in the ESIA report.

In addition, it is necessary to explore spare capacities for gas and electricity supply, and for the existing waste collection and disposal infrastructure to serve the Project needs.

7.4.3.7 Public Health Profile

One of the ESIA objectives is to understand the Project's impact on community health, first of all, on the incidence of infectious diseases. In order to understand baseline historical data on reported cases of the key water-born infectious diseases for Termez and Project districts have been requested and collected from the regional Public health department. The historical data on drinking water quality across water supply sources in Termez have been collected from sanitary and hygiene authorities and Surkhandarya Suvtaminot.

It is planned to collect data on incidence of infectious diseases and drinking water quality data for centres of the Project districts. Then ESIA team will analyse the available and expected data on drinking water quality and infectious diseases for centres of the Project regions to investigate if there are any adverse health effects related to the lack of or insufficient quality of water and wastewater services. For such an assessment historical population data (requested and awaited at the moment) are needed to calculate the reported cases of diseases per 100,000 people. The historical data on drinking water quality will be requested from Surkhandarya Suvtaminot. The findings of the analysis will be presented in the ESIA report.

7.4.3.8 Social Infrastructure

The data on numbers and types of medical, education and culture facilities, on stuffing such facilities and sufficiency of such facilities for given communities have been requested from the khokimiyats of Termez City and Project districts. The responses to the submitted information requests are awaited. The expected additional data will be analysed at the next assessment stage and presented in the ESIA report.

The reconnaissance drives along the access roads to the Project sites have been undertaken during the field trips to identify the presence of sensitive social infrastructure facilities (on hospitals, outpatient clinics, and schools) along these roads to be used for transportation of construction workers, goods and equipment during construction. The data of field observations will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.9 Media and Telecommunications

Within the ESIA information on regional and local newspapers, TV channels and/or news portals, which may be used for wide dissemination of information on the Project will be collected and analysed to plan future Project information dissemination / public awareness campaigns.

7.4.3.10 Transport Infrastructure

The ESIA studies will include consultations with the technical team on potential routes for Project-related transportation during construction phase.

The information of the current state of the road pavement for the access roads to the Project sites will be observed and documented in the ESIA report.

7.4.3.11 Cultural Heritage

The ESIA team will request information from authorized national and regional cultural heritage bodies about the presence of cultural heritage sites (included in the lists maintained by these bodies) at the greenfield Project sites (proposed WWTPs, SPSs, collectors) in five Project districts. Similar investigations for the proposed facilities in Termez are considered as not necessary – the proposed sites are within the developed area).

In addition, local (mahals) authorities will be consulted on a presence of sacred places and sites of local importance within and in the vicinity of the Project sites.

7.4.3.12 Tourism

In the ESIA data on the number of tourists visiting Termez and centres of the Project districts, and current number of touristic businesses will be requested from khokimiyats of Termez City and Project districts. Qualitative data on impact of availability of water and wastewater services on the development of the tourism sector in the Project areas have already been collected during the key informant interviews with the local tourist businesses. The collected additional data will be analysed at the next assessment stage and presented in the ESIA report.

7.4.3.13 Gender Issues

In parallel with the current ESIA scoping a gender study for the Project is being undertaken and its results will be integrated into the ESIA report.

The gender study requires the following additional information:

- Employment and unemployment rates of men and women and pay gaps, for Termez and centres of the Project districts.
- Gender-specific population information as listed in the Demography sections of this report.

7.4.4 Land Ownership and Land Use-related Studies

Table 23 below summarises land use information collected to date on the sites of six WWTPs to be reconstructed and constructed within the Project. It describes the location and current use of the sites, identifies what information is missing and what activities are planned to collect the additional data to close these gaps within the ESIA. A Land Acquisition and Livelihood Restoration Framework will be prepared for the Project, and the findings of this Framework (including impact avoidance actions, impact assessment and mitigation, etc.) will be considered in the ESIA.

Table 23: Land Ownership and Land Use data for the Project sites in Surkhandarya Region

NB: While the routes of the collectors and discharge pipelines for proposed WWTPs in five Project Districts are yet under determination, possible routes were discussed during the meetings with the Khokimyats, Suvtaminots, affected local Mahallas authorities and a technical expert, and the results are integrated in the below table in order to understand the types of displacement impacts.

Facility	Location	Serviced area	Total area (ha)	Distance to the service area, km, by roads	Current owner / leaseholder /tenant	Current land use	Important notes, data gaps and necessary future studies
WWTP in Termez	Jomiy MFY, Termez City	Termez City	8.6467	The site borders the residential area of Termez	As per cadastre passport of 01.07.2024[176], Surkhandarya Suvtaminot JSC is owner of land, ownership type – permanent use	The whole land plot is occupied by facilities and structures of the existing Termez WWTP Termez. The land category is land intended for industrial, transport, communications, defence and other purposes, specifically land for engineering infrastructure facilities The previous land owner was Termez City Water and Wastewater Comply Production and Technical Enterprise (as per cadastre documents of 2013)	The cadastre passport prepared as a result of the cadastre inventory process, states the land plot area by documents and the actual area coincides, and no pieces of this pant plot was illegally acquired. As per the Termez Master Plan (approved 27.07.2015), the SPZ for the WWTP is adjacent to the WWTP site to the north, east and south (see Figure 2). As observed during the site visit, there are residential properties and agricultural land plots within the SPZ. The minimum distance between the nearest individual land plots and the WWTP site is 20-30 m in Jomiy MFY (to the north of the site) and 5-10 m in Pattakesar-2 MFY (to the south of the site. Agricultural land borders the site. The presence of residential houses and agriculture production in the SPZ does not comply with land use restrictions imposed on such territories by current national legislation. This may trigger the risk of physical and/or economic displacement unless the SPZ Design Document confirms the reduced SPZ for this WWTP and excludes these sensitive receptors from the SPZ. According to the available information, there is no SPZ design document at Surkhandarya Suvtaminot. The ESIA team will initiate information requests to Uzsuvtaminot and local sanitary and hygiene authorities to obtain and explore the SPZ-related documentation and propose appropriate mitigations to potential displacement impacts within the ESIA.

[176] Immovable Property Cadaster Passport, issued by the Surkhandarya Region Department of the State Agency for Cadaster, Termez City Branch on 01.07.2024.

Facility	Location	Serviced area	Total area (ha)	Distance to the service area, km, by roads	Current owner / leaseholder /tenant	Current land use	Important notes, data gaps and necessary future studies
WWTP in Boysun District	Mustakillik MFY, Boysun District	Boysun Town	3	0.2	According to the PowerPoint Presentation file provided by Boysun Khokimiyat, the land is agricultural. According to Head of Mustakillik MFY (where the WWTP will be located), the WWTP site is on the state reserve land. No cadastral confirmation is yet available.	As per the site visit and satellite/ aerial review, the land is not used for agricultural and residential purposes. According to Head of Mustakillik MFY (where the WWTP will be located): no agricultural activity is carried out on the land plots potentially allocated for the WWTP and SPS, as well as along the possible route of the collector. Some parts of the potentially allocated land plots are used for grazing. The land within a radius of 500 m around the potential WWTP site belongs to a farm.	1. The proposed WWTP site is adjacent to the existing LWTF (1,000 m3/day), which serves a group of multi-apartment houses (located in 4 km to the north). **Thus, a cumulative impact is possible due to the overlap of two SPZs. Potentially, a single SPZ can be developed for two facilities.** 2. The limitation of the aerial / satellite review of the area is that the latest Google Earth's imagery for this region dates to September 2023. **Therefore, the Google Earth does not show the existing LWTFs and other recently built buildings and/or structures to the west of the proposed WWTP site.** 3. There are several residential / non-residential houses within the 200 m maximum normative SPZ. **Thus, it is needed to measure the distance between the houses and the site and if needed to make micro-siting adjustments to avoid a risk of physical relocation. Otherwise, it is needed to consider options to justify a reduced SPZ.** 4. It is needed to check if alternative common pasture areas are available (for the construction period). 5. The proposed WWTP site and its indicative SPZ does not overlap with KBA 46957 (Bugitang and Baysuntay Mountains) area (see Section 6.3 for details).
WWTP in Angor District	Navruz MFY, Angor District	Angor Urban Settlement	3 (4.4)	0.25	Agricultural land. The land for the proposed WWTP is leased by the state to the farm. The ownership of the land proposed for the SPS is unclear.	The leaseholder farmer mainly use the land of the proposed WWTP site for cultivating such crops as cotton, grains, or melons. The lands around the site are also agricultural and are used. The land for the SPS is not used.	1. According to the cadastral map, the total area of proposed site is about 4.4 ha. Thus, it is necessary to reduce the territory to the designed area of 3 ha. 2. Considering that there is a residential building with a land plot to the north of the proposed WWTP site, **it is recommended to site the WWTP in the southern part of the allocated land plot and exclude the northern territory (ca. 1 ha) from consideration**. Thus, the distance from the boundary of the WWTP site to the residential estate in the south will be increased from 7-8 m to ca. 45-50 m, however this is also within the SPZ. There are some buildings in the north-east, their purpose is to be verified (potentially, non-residential).

Facility	Location	Serviced area	Total area (ha)	Distance to the service area, km, by roads	Current owner / leaseholder /tenant	Current land use	Important notes, data gaps and necessary future studies
					Better quality and additional cadastral data are required.		**Thus, it is needed to confirm the distance between the norther house and the site and if needed to make further micro-siting adjustments to avoid a risk of physical relocation (the SPZ is 200 m). It is needed to clarify the purpose and use of the building in the north-east and see if such can be allowed within the SPZ. Otherwise, it is needed to consider options to justify a reduced SPZ. If not possible to reduce the SPZ, a house in the north is to be relocated.** 3. In around 20 m from the proposed SPS, there is a sports ground that is used by the kids. The SPS's SZP is 20 m and it is not allowed to have sport facilities within SPZs. **Thus, it is needed to confirm the distance between the sports ground and the site and if needed to make micro-siting adjustments to avoid a risk of relocation of the ground (outside of a 20 m buffer). Otherwise, it is needed to consider options to justify a reduced SPZ.**
WWTP in Oltinsoy District	Koratepa MFY, Oltinsoy District	Qarluq Urban Settlement	3 (4)	~9 km	Agricultural state reserve land. According to Head of Koratepa MFY (where the WWTP will be located), "the land is used by Mustakillik farm" (unclear if it is leased or just used).	Currently, nothing is cultivated by Mustakillik farm on the site proposed for the WWTP. The lands around the site are agricultural, leased to four farms/farmers and cultivated. Some parts of the land along the possible route of the collector are used for grazing by local residents.	1. Type of use of the site (formal via lease or informal) to be clarified. 2. It is needed to check if alternative common pasture areas are available (for the construction period). 3. Several houses and structures fall within the normative 200m SPZ (they are some 130-16m from the site boundary). **The site on the Khokimyat's map is 4 ha; if only 3 ha are required for the site, its micro-siting can help avoid these housed in the SPZ. It is needed to clarify the purpose and use of the building in the north-east and south-west and see if such can be allowed within the SPZ. Otherwise, it is needed to consider options to justify a reduced SPZ.**

Facility	Location	Serviced area	Total area (ha)	Distance to the service area, km, by roads	Current owner / leaseholder /tenant	Current land use	Important notes, data gaps and necessary future studies
WWTP in Kizirik District	Yangi kent MFY, Kizirik District	Sariq Urban Settlement	3	0.27	Agricultural state reserve land.	Nothing is currently grown on the proposed WWTP site. Land plots around the site leased to/belong to 4-5 farms/farmers. Some land pots along the route of the collector can be allocated to / used by local households (as subsistence farming).	here are no informal users on this state land. It is necessary to explore what kind of crops are grown on the bordering sites and food crops are not allowed within the SPZ.
WWTP in Muzrabad District	Yangi diyor MFY, Muzrabad District	Khalkobod Urban Settlement	3	0.82	Agricultural state reserve land, which is leased to a farmer.	The lands around the potential WWTP site are agricultural, leased to three farms/farmers and cultivated. The land plots along the potential sewage collector are not used and are not allocated for agriculture (as per the interview with Head of Shaffof MFY which will be potentially crossed by the collector).	1. In ca. 40 m from the site of the built but not commissioned WWTP facility (400 m3/day). **Thus, a cumulative impact is possible due to the overlap of two SPZs. Potentially, a single SPZ can be developed for two facilities.**

8 Potential Measures

In order to be able to plan and implement a sustainable water management project, a whole range of measures is required that avoid, minimise or compensate for project-related impacts on people and the environment. The measures begin with the planning phase, in which an attempt is made in an interactive process to find the best solution from an economic, ecological and socio-economic point of view, and extend to the operation and dismantling phase of the project.

It is advisable to proceed in several steps and first to check to what extent there are suitable measures to prevent project-related effects from occurring in the first place, i.e. to avoid them. The possibilities here range from, for example, the search for an environmentally and socially compatible location for a sewage treatment plant, the optimisation of the route routes of collectors to simple protective measures.

In the next step, measures will be developed to mitigate project-related impacts. This includes, among other things, compliance with various guideline or limit values, such as limit values for noise, limit values for treated wastewater or for sewage sludge, as well as the use of state-of-the-art technology, for example in dealing with soil.

If, despite the implementation of avoidance and mitigation measures, significant impacts on people and the environment arise, these are compensated for by suitable compensatory measures. Typical measures for this would be, for example, the restoration or socio-ecologically oriented redesign of the landscape on the construction site or the payment of compensation payments, e.g. to compensate for loss of income due to the project. In addition, ecological enhancement measures such as renaturation measures are also possible, where high-quality habitats for flora and fauna are created on currently ecologically low-value areas.

In the reports and plans following the scoping report (ESIA, ESMP, LALRF), these measures and the effects associated with their implementation are described separately by receptor (soil, air, habitats, people) and by project phases 1-3. In addition, the respective coordination process is described and those responsible are named. For example, detailed plans for clearing measures and vegetation protection fences to be erected or for planting new trees in suitable scales.

Monitoring measures are another type of measure. It is examined whether the measures required from a technical, ecological or socio-economic point of view, such as compliance with certain limit values for noise and wastewater, also have their desired effect. A comprehensive monitoring programme is being drawn up for this purpose.

Another important aspect is that all these measures take into account the relevant national and international guidelines as well as the national laws, ordinances and specialist conventions during the planning process.

In this chapter, as the specific measures envisaged by the project have not yet been concretely determined, outlined possible measures by way of example and provisionally assigned to a type of measure.

8.1 Environmental Measures

8.1.1 Avoidance

In the following, some typical Project-relevant avoidance measures are mentioned as examples and thus incomplete.

- Development of an environmentally friendly route/location, e.g. if possible, by maintaining minimum distances of at least 10 m between the construction site and bodies of water and to other bio- and geo-ecologically high-quality structures
- Determination of the alignment of pipelines/collectors and construction site boundaries (Right of Way corridor) to what is structurally necessary and following a clear and comprehensible approach under consideration of social and environmental factors.
- Protection of high-quality structures or individual elements during construction by erecting protective fences.

- Sewer pipes can lead to a lowering of the groundwater, especially in wetlands or floodplains. This is to be prevented in the above-mentioned areas by installing e.g. a geotextile as barrier.
- The use of private areas should largely be avoided by using public space (including public roads). In the case of unavoidable use, this must be limited to the bare minimum, both spatially and temporally.
- The construction time is to be chosen so that it is associated with the least impairment of urban life, nature, landscape, touristic high season and the current use.
- Setting up the contractor's storage areas and camps (site facilities) in an ecologically and socially unproblematic area.
- Identification of potentially affected persons and institutions as well as development of a suitable communication system (e.g. timely information on construction times, road closures, etc.) to ensure that daily life is maintained even during construction.
- Protection of potentially endangered habitats especially trees and hedges, by setting up protective fences

8.1.2 Mitigation / enhancement

- Narrowing of the construction area to protect natural structures of high ecological value or urban public and private green spaces or other sensitive structures, for example through head-on construction
- Minimization of the crossing under waters, technical and traffic infrastructure, necessary underpasses may be carried out by means of flush drilling / micro-tunnelling in compliance with minimum distances to the riverbed of affected waters.
- Development of a concept for precautionary soil protection that contains precise instructions on how to deal with the soil that accumulates during construction before, during and after the construction period, taking into account national and international requirements.
- Overrun of soil must be properly disposed of or, if possible, reused, e.g. as topsoil in agriculture or for renaturation of dug-up areas.
- The development of an appropriate waste management plan.
- Regular monitoring, maintenance and cleaning of the WWTP pumping stations, pressure pipes, trunk mains, sewers and rainwater systems.
- Development and implementation of a grievance mechanism that is explained in a simple manner and presented to the affected population.
- Preparation, adoption, and implementation of a stand-alone Security Personnel Management Plan consistent with the requirements of the World Bank's ESS4, in a manner acceptable to KfW.
- Establishment of diversions during the construction period as well as early information about the affected population and institutions; here mainly hospitals, administrations, schools.
- Securing the construction site, especially the excavation pits in the populated area, by fencing and setting up warning signs.
- Compliance with the legal limit values for noise, air pollution and the legal working hours.
- Identification of potentially affected persons and institutions as well as development of a suitable communication system (e.g. timely information on construction times, road closures, etc.) to ensure that daily life is maintained even during construction.
- Creation of secure passageways to ensure accessibility for households and commercial businesses, kindergarten, children's playgrounds.

8.1.3 Compensation Measures

- Restoration of the construction site in an environmentally sound manner
- Planting trees to compensate for trees to be felled, depending on the size of the removed tree in a ration 1:2 (small/young trees and shrubs) to 1:4 (old/big trees). Removal and storage of topsoil and soft sediments in separate piles and re-laid layer by layer wherever feasible, residues should be reused or disposed in an environmentally sound manner (reuse on other projects).
- Carrying out of soil loosening in the area of the construction site directly after termination of the construction phase, development of a vegetation-capable topsoil layer and restoration of the original biotope-structures or of another biotope-structure with minimum the same ecological value.
- Relocation of animals or implementation of specific protection measures such as the development of Implementation of early compensatory measures to safeguard ecological functions in the spatial context.

8.1.4 Monitoring

In order to be able to guarantee the desired project effects in the long term, an adapted and targeted maintenance and monitoring program is developed in coordination with the technical engineers, the responsible authorities and the client. In doing so, reference is also made to the technical equipment required for this and the technical requirements and experience and, if necessary, a training program is developed for the personnel to be deployed.

8.2 Social Measures

This section proposes indicative Project-relevant measures to avoid, prevent, compensate and monitor potential negative social impacts of the Project and maximise Pro. Such measures mentioned as examples and thus incomplete.

8.2.1 Avoidance

Design development phase:

Land Use and Physical Displacement:

- In the process of site selection for the for greenfield Project facilities prioritize locations that minimize land acquisition and avoid physical displacement.
  The sites for the proposed WWTPs and SPSs in Project districts will be finally selected considering land use constraints associated with the SPZ regime and its indicative sites per KMK 2.04.02-2019 (see **Section 2.1.3**) to avoid impact on residential areas. In addition, productive agricultural land and/of structures requiring significant relocation will be also avoided.

Construction phase:

- Plan open trenching and excavation activities so that to ensure continuous access to social infrastructure and minimize community disruption.
- Plan traffic movement during construction to avoid peak hours to reduce accident risks; This mitigation should be part pf the Construction Traffic Management Plan.
- Avoid noise-generating transport activities and on-site operations at night time.
- Avoid construction site lighting at night time.
- Ensure proper maintenance of construction machinery, drilling equipment, trucks and other vehicles to reduce exceeding noise, emissions, vibration and risks to Project personnel.

8.2.2 Mitigation / Enhancement

Design development phase:

- Develop design solutions that would allow for reducing the SPZ for the proposed WWTPs:
    - Indoor technology for sludge stabilisation (with the installations for thermomechanical sludge treatment) as this would allow to reduce the size of the normative SPZ by 30%.
      For Termez WWTP this can allow to reduce the normative SPZ from 400 m to 300 m, for WWTPs in five Project districts - from 200 m to 150 m.
- Develop a Design Document for the Sanitary Protection Zone for Termez WWTP that would allow to further reduce the SPZ size[177]; the reduced size needs to be justified by calculations; the SPZ Design Document is subject to approval by sanitary and hygiene authorities;
- Consider technological and technical solutions to minimise odour from on-site operations and related nuisance for the communities nearby Termez WWTP:
    - Place an inlet, coarse screen and fine screen into a building
    - Consider equipping such a building with appropriate ventilation and filters to minimise VOCs emissions
    - If the indoor sludge treatment technology with thermomechanical treatment is seen as unfeasible - consider using covered solar drying technology instead of outdoor sludge drying beds
- Identify and map sensitive public infrastructure (primarily schools, polyclinics, mosques) along the access road to the Project sites as part of the commensurate ESIA works;

Pre-construction and construction phase:

Note: The measures listed below to be implemented by the Construction Contractor.

Community health, safety and security impacts/risks related to trenching and excavation works for sewage pipelines construction:

- Implement dust suppression measures at the Project construction sites and on the access roads to these sites;
- Schedule noisy activities during less intrusive times to reduce disturbances to nearby communities.
- Use clearly marked detours and barriers to safeguard public access and avoid hazards from open pits and trenches.

Community health, safety and security impacts/risks related to construction-related traffic and on-site construction works (for nearby communities):

- Implement dust suppression measures at the Project construction sites and on the access roads to these sites;
- Schedule on-site noisy activities during less intrusive times to reduce disturbances to nearby communities.
- Implement regular vehicle maintenance and repair programs;
- Instruct drivers on driving practices allowing to reduce risk of accidents (primarily driving within speed limits);
- Use a relatively modern (not obsolete) fleet for the Project needs;
- Install emission control devices;
- Use high quality diesel for the Project transport;
- Ensure proper coverage of the vehicles transporting dusty materials
- Develop (prior to construction) and implement Construction Traffic Management Plans taking into account information on peak and off-peak hours and presence of sensitive receptors along the access roads to the Project sites;

OHS impacts/risks

- Implement dust suppression measures at the Project construction sites

[177] If the SPZ Design Document has not been developed to authorise the reduced SPZ coinciding with the site boundaries for this WWTP. At the moment it is know if such a document exists. This issue will be explored within the ESIA.

- Train workers on occupational health and safety (OHS) protocols, especially regarding confined spaces, exposure to chemicals, and heavy machinery use.
- Equip construction sites with adequate signage, lighting, and safety barriers.
- Develop a safety instruction for drivers for safe driving within the contraction sites and train them accordingly
- Provide personnel with appropriate PPE;
- Make firefighting equipment available on site, conduct its regular maintenance;
- Develop an Emergency preparedness and response plan;
- Engage in welding/hot grinding works only staff passed appropriate training to perform such works;
- Ensure the authorized staff passed medical check prior the works;
- Ensure area where equipment dismantling works are carried out is tagged and access to it is restricted;
- Obey the maximum permissible weight per person;
- Use appropriate lifting gear, certified for the load, and conduct its regular visual inspections;
- Implement LOTO (lock out-tag out) procedure during dismantling and installing the electrical equipment;

Cultural heritage

- Develop and implement a Chance finds procedure and deliver special training for the contractor workers on its implementation.

Employment and procurement

- Maximise and prioritise local procurement where possible subject to service/product requirements
- Prioritise employment of members of the nearby communities at the positions for unskilled, semi-skilled, and skilled workers at the construction sites

Operational phase:

Note: The measures listed below to be implemented by the Company.

Community health, safety and security impacts/risks related to operational traffic including transportation of faecal sludge by vacuum tracks (for nearby communities):

- For impacts from the Company's vehicles – as the ones recommended for Construction Contractor's vehicles
- Develop and implement Operations Traffic Management Plan taking into account information on peak and off-peak hours and presence of sensitive receptors along the access roads to the Project sites;

OHS impacts/risks and community health, safety and security issues

- Conduct hazard identification and risk assessment for routine operations; develop and implement appropriate mitigations.
- Measures to control of injuries, falls, slips, working in confined spaces – the same as for constriction phase
- Measures to control risks related to on-site handling of hazardous chemicals (e.g. chlorine):
    - Train workers on occupational health and safety (OHS) protocols, especially regarding confined spaces, exposure to chemicals, and heavy machinery use.
    - Provide appropriate PPE to the staff;

Employment and procurement

- Maximise and prioritise local procurement where possible subject to service/product requirements
- Prioritise employment of members of the nearby communities at the WWTPs subject to necessary qualifications

8.2.3 Compensation

Design development:

Land Acquisition:

- Identify all entities/persons that may be potentially affected by land-based economic displacement as a result of land acquisition for the Project;
- Develop the Land Acquisition and Resettlement Action Plan for the Project with focus on livelihood restoration component.

Livelihood Restoration:

- Engage with affected communities to develop livelihood restoration programs, including support for transitioning to alternative income sources where agricultural land is lost.
- Support for Displaced Residents:
    - Should any physical displacement occur in Termez due to SPZ adjustments, support will include relocation assistance and access to better or equivalent housing options.

Improved well-being of affected communities

- Connect communities nearby Termez WWTP to centralised wastewater system (as a priority - houses within the SPZ once the SPZ size is clarified).
- Provide treated sewage sludge as a fertiliser to local farmers (for free)

8.2.4 Monitoring

Pre-construction and Construction Phase:

- Regular internal EHS audits will be conducted at the construction sites to ensure compliance with environmental and social management plans, particularly for dust, noise, and waste management practices,
- Monitor traffic safety measures and accident reports,
- Monitor grievances related to construction works

Operation and Maintenance :

- Ensure regular monitoring of final wastewater quality at the discharge point and a certain distance downstream it (where this is technically feasible); monitoring findings records are to be documented, analysed and presented in annual reports,
- Conduct regular sewers integrity tests,
- Monitor grievances from the external stakeholders; ensure grievances are be documented, analysed and presented in annual reports community to promptly address this and prevent conflicts,
- Ensure necessary air quality measurements are conducted in a year after the new WWTPs commissioning to confirm the proposed SPZs.

9 Stakeholder Engagement and Grievance Mechanism

The Project's Stakeholder Engagement Plan (SEP) describes the stakeholder engagement activities undertaken from the start of the Project in September 2024 to date and the planned activities to be undertaken in the future, including public consultations and disclosure of the ESIA and EIA documents, in line with KfW and World Bank requirement and national law.

A grievance mechanism is required by KfW to be established to review and resolve concerns and/or questions raised by potentially affected or any other interested stakeholders in relation to a project, in an efficient, timely, transparent, and non-discriminatory manner. Accordingly, Uzsuvtaminot JSC and Surkhandarya Suvtaminot JSC with the due

branches will establish the Project Grievance Mechanism for external stakeholders[178] building on the communication and engagement channels used at Suvtaminots and supplementing them by actions to meet KfW requirements.

The Uzsuvtaminot contact details and the grievance mechanism are in detail described in the Project's SEP.

10 Proposed ESIA Process and Programme

10.1 Proposed ESIA Process

The ESIA process commenced in September 2024; the completed activities include the ESIA Scoping and partly baseline data analysis for the full-scale ESIA and LALRF.

As mentioned in **Section 4.1.2**, the Project facilities are subject to the EIA per national legislation requirements, and at present, the Consultant consider the scenario for conducting fix EIAs for planned facilities to service Termez, Boysun, Angor, Qarluq, Sariq and Khalkobod.

The national EIA should be commenced as soon as the conceptual design is prepared (presumably in mid-late February 2025). As part of the national EIA studies the following field investigations will be conducted to establish the baseline quality of environmental media:

- Water quality sampling (for receiving water bodies of proposed WWTPs)
- Soil sampling (at the sites of the proposed WWTPs and the existing WWTP)
- Noise measurements at the nearest residential property, more or less close to normative SPZ boundary
- Air quality measurements (at the proposed normative SPZ boundary)
- Biodiversity (vegetation and wildlife) surveys / studies (for the proposed sites in five Project districts (WWTPs, SPSs and collector routes))
- Cultural heritage studies including archaeological assets (for the proposed sites in five Project districts) (to be verified once the information if received from the competent authorities about the absence / presence of cultural heritage items on the sites).

Note: the geotechnical studies to explore site-specific geological and hydrogeological conditions are supposed to be conducted by the pertinent technical specialists.

The national EIA team will also conduct public meetings in the potentially affected mahallas.

The ESIA will use the results of these field investigations including laboratory tests for the impact assessment.

The package of Project's FS documents includes the following ESIA deliverables:

- ESIA Scoping report,
- ESIA report including the Environmental and Social Management Plan (ESMP),
- Non-technical summary (NTS) of the ESIA report
- Stakeholder Engagement Plan (SEP),
- Land Acquisition and Livelihood Restoration Framework (LALRF).

10.2 Proposed ESIA Programme and Timeline

The scope and details of the further ESIA works are outlined in the above sections in relation to potential E&S impacts and risks of the Project.

The preliminary preparation timeline of the ESIA and other package documents is proposed as follows:

[178] A separate mechanism is developed to address worker grievances.

- Draft ESIA Scoping report: late November 2024, and its final version for the 30-day public disclosure: April 2025;
- ESIA Scoping Leaflet: draft in mid-December 2024 and final in March 2025 (for disclosure and distribution).
- Draft SEP: September 2024, then two updates until the scoping disclosure in March 2025;
- 30-day scoping disclosure: mid-April – mid May 2025;
- Analysis of stakeholder comments and update of the SEP: mid-May 2025, and the final draft SEP for the 30-day public disclosure: late June 2025;
- Draft ESIA report, including the ESMP: early June 2025; and its final draft version for the 30-day public disclosure: late June 2025;
- Draft NTS of the ESIA: early June 2025; and its final draft version for the 30-day public disclosure: late June 2025;
- Draft LALRF: early May 2025; and its final draft version for the 30-day public disclosure: late June 2025;
- 30-day ESIA package disclosure: 27 June – 28 July 2025;
- Final NTS, SEP, ESIA, and LALRF: by mid-August 2025, the stakeholder comments received and/or collected during the 30-day disclosure period (late-June – late-July 2025) will be reviewed and, as much as possible, considered in the final reports.

The national EIA reports are aimed to be prepared in April 2025. The SER review can be anticipated to take place in May 2025, so that the SER conclusions are obtained in late May – early June 2025.

Sources

Legal sources:

- Code of Administrative Responsibility of the RoU No. 2015-XII, 22.09.1994. https://lex.uz/docs/97661
- Constitutional Law of the RoU No. ЗРУ-737 On the State of Emergency, 15.12.2021. https://lex.uz/docs/5774847
- Constitution of the RoU of 8.12.1992, as updated on 1 May 2023. https://lex.uz/docs/6451070
- Decree of the President of the RoU No. UP-60, 28.01.2022. Development Strategy of New Uzbekistan for 2022-2026. https://faolex.fao.org/docs/pdf/uzb208604.pdf
- Decree of the President of the RoU No. 15 On additional measures to improve the procedure for leasing agricultural land plots, 18.01.2024. https://lex.uz/ru/docs/6764197
- Decree of the President of the RoU No. UP-198 On measures to reliably protect the inviolability of property rights, prevent unjustified interference in property relations, and increase the level of capitalization of private property, 24.08.2022. https://lex.uz/docs/6171346
- Decree of the President of the RoU No. 6243 On measures to ensure equality and transparency in land relations, reliable protection of land rights and their transformation into a marketable asset, 08.06.2021. https://lex.uz/ru/docs/5450181
- Decree of the President of the RoU No. 3857 On Measures to Improve the Effectiveness of Preparing and Implementing Projects with Participation of International Financial Institutions and Foreign Government Financial Organizations, 16.07.2018. https://lex.uz/docs/3823562
- КМК No 2.01.08-96 Noise protection, 21.08,1996. https://f.eruditor.link/file/2131481/
- КМК 2.04.02-19 Water supply. External networks and structures, 21.11.2022. https://lex.uz/uz/docs/6321094
- КМК 2.04.03-2019 Sewage. External networks and structures, 04.03.2019. https://mc.uz/uploads/mcuz_91974688657649.pdf
- Labour Code of the RoU, 21.12.1995. https://lex.uz/docs/145261
- Land Code of the RoU, 1.07.1998. https://lex.uz/docs/149947
- Law of the RoU No. 445 On appeals of individuals and legal entities, 11.09.2017. https://lex.uz/docs/3336171
- Law of the RoU No. ZRU-363 On Environmental Control, 27.12.2013. https://www.lex.uz/acts/2304949
- Law of the RoU No. 73-II On Environmental Review, 25.05.2000. https://www.lex.uz/acts/9760
- Law of the RoU No. LRU-562 On guarantees with respect to equal rights and opportunities for women and men, 02.09.2019. https://lex.uz/docs/5167654
- Law of the RoU No. ЗРУ-57 On Industrial Safety of Hazardous Production Facilities, 25.08.2006. https://lex.uz/docs/4608500
- Law of the RoU No. 781 On Land Acquisition for Public Purpose and Compensation Procedures, 29.06.2022. https://lex.uz/uz/docs/6087438
- Law of the RoU No. 754-XII On Nature Protection, 9.12.1992. https://www.lex.uz/docs/7065
- Law of the RoU No. 353-I On Protection of Atmospheric Air, 27.12.1996. https://lex.uz/acts/58400
- Law of the RoU No. 221-I On Protection of Customers Rights, 26.04.1996. https://lex.uz/docs/14643
- Law of the RoU No. 265-I On the Protection of the Health of Citizens, 29.08.1996. https://lex.uz/docs/41329
- Law of the RoU No. ЗРУ-790 On the Protection of Population and Territories from Natural and Man-made Emergencies, 17.08.2022. https://lex.uz/acts/6161251
- Law of the RoU No. ЗРУ-561 On the Protection of Women from Harassment and Abuse, 02.09.2019. https://www.lex.uz/docs/4494712
- Law of the RoU No. 728 On Privatization of Non-agricultural Land, 15.11.2021. https://lex.uz/ru/docs/5729969
- Law of the RoU No. 152-XII On Property, 31.10.1990. https://www.lex.uz/acts/111455
- Law of the RoU No. 710-II On Protected Natural Areas, 3.12.2004. https://www.lex.uz/acts/415228
- Law of the RoU No. 269-II On Protection and Use of Cultural Heritage Sites, 30.08.2001. https://lex.uz/acts/10375
- Law of the RoU No. LRU-229 On the Protection and Use of Archaeological Heritage Sites, 13.10.2009. https://lex.uz/acts/1526179
- Law of the RoU No. 543-I On the Protection and Use of the Flora, 26.12.1997. https://www.lex.uz/acts/25259
- Law of the RoU No. 545-I On the Protection and Use of Wildlife, 26.12.1997. https://www.lex.uz/acts/29246
- Law of the RoU No. ЗРУ-393 On Sanitary-epidemiological Welfare of Population, 26.08.2015. https://lex.uz/docs/2732584
- Law of the RoU No. 362-II5 On Waste, 5.04.2002. https://www.lex.uz/acts/44872
- Law of the RoU No. 837-XII on Water and Water Use, 6.05.1993. https://lex.uz/docs/93202

- RCM of the RoU No. 911 On Additional Measures to Guarantee Property Rights of Individuals and Legal Entities and Improve the Procedure for Withdrawal and Compensation of land plots, 16.11.2019. https://lex.uz/docs/4597638
- RCM of the RoU No. 501 On approval of the Regulation on the procedure for calculation and reimbursement of costs for the land areas, allocated to the liquidated or optimized farm or other entities producing agricultural products, 24.08.2020. https://lex.uz/docs/4966486
- RCM of the RoU No. 301 On approval of the Regulations on the use of land in rural settlements, 30.10.2014. https://lex.uz/docs/2491014
- RCM of the RoU No. 341 On approval of standard regulations on the proceedings with the appeals of individuals and legal entities in public authorities and institutions, 07.05.2018. https://lex.uz/docs/3730233#3737243
- RCM of the RoU No. 541 On Further Improvement of the Mechanism for Environmental Impact Assessment, 7.09.2020. https://lex.uz/docs/4984499
- RCM of the RoU No. 146 On the Measures for Improving the Order of Provision of Land Plots for the Implementation of Urban Development Activity and for Other Non-Agricultural Needs, 25.05.2011. https://lex.uz/docs/1804031
- RCM of the RoU No. 71 On measures to implement the Law of the RoU "On the privatization of non-agricultural land plots", 14.02.2022. https://lex.uz/ru/docs/5858017
- RCM of the RoU No. 235 On improving the system of determining the standard cost of agricultural land, 18.08.2014. https://lex.uz/docs/2448662
- RCM of the RoU No. 981 On Approval of the Regulation on the Procedure for Establishing Water Protection Zones and Protected Sanitary Zones of Water Bodies in the Territory of the Republic of Uzbekistan, 11.12.2019. https://lex.uz/ru/docs/4640437
- RCM No. 649 “On approval of fire safety rules, 21.10.2020. https://lex.uz/ru/docs/5056473
- RCM No. 273 On measures to improve procedure on recording state property objects, 08.05.2020. https://lex.uz/ru/docs/4807558
- Resolution of the President of RoU No. УП-6024, 2020. The Water Sector Development Concept for 2020-2030 with its Roadmap. https://lex.uz/ru/docs/4892946
- SanPiN № 0350-17 Sanitary Regulations and Rules for Atmospheric Air Protection of Populated Areas of Uzbekistan, 25.10.2017. https://nrm.uz/contentf?doc=538254_sanitarnye_normy_i_pravila_po_ohrane_atmosfernogo_vozduha_naselennyh_mest_respubliki_uzbekistan_(sanpin_ruz_n_0350-17)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_25_10_2017_g_)&products=1_vse_zakonodatelstvo_uzbekistana
- SanPiN No. 0293-11 Hygienic standards. Register of maximum allowable concentrations (MAC) of pollutants in the atmospheric air of populated areas on the territory of the RoU, 16.05.2011. https://nrm.uz/contentf?doc=368639_perechen_predelno_dopustimyh_koncentraciy_(pdk)_zagryaznyayushchih_veshchestv_v_atmosfernom_vozduhe_naselennyh_mest_na_territorii_respubliki_uzbekistan_(gigienicheskie_normativy_sanpin_ruz_n_0293-11)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_ruz_16_05_2011_g_)&products=1_vse_zakonodatelstvo_uzbekistana
- SanPiN No. 0267-09 Hygienic standards for ensuring permissible noise levels in the premises of residential and public buildings and within the territory of residential developments, 19.06.2009. https://lex.uz/docs/1765725
- SanPiN No. 0022-22 On approval of sanitary rules, norms and hygienic standards for the organization of construction work, 17.05.2022. https://lex.uz/ru/docs/6050896
- SanPiN No. 0325-16 Sanitary Standards of Permissible Noise Levels at Workplaces, 01.02.2016. https://nrm.uz/contentf?doc=480664_sanitarnye_normy_dopustimyh_urovney_shuma_na_rabochih_mestah_(sanpin_ruz_n_0325-16)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_01_02_2016_g_)&products=1_vse_zakonodatelstvo_uzbekistana
- SanPiN No. 0122-01 Sanitary Standards of General and Local Vibration at Workplaces, 29.10.2001. https://nrm.uz/contentf?doc=185089_sanitarnye_normy_obshchey_i_lokalnoy_vibracii_na_rabochih_mestah_(sanpin_ruz_n_0122-01)_(utverjdeny_glavnym_gosudarstvennym_sanitarnym_vrachom_29_10_2001_g_)&products=3_prakticheskaya_buhgalteriya
- SanPiN No. 0331-16 Sanitary Rules and Norms of Design, Construction, Maintenance of Residential Buildings in Climatic Conditions of Uzbekistan, 16.06.2016. https://med.uz/spid/en/inuz/detail.php?IB_ID=20&ID=52469&IBTYPE=public
- State Standard O'z DSt 951:2011 Sources of centralized potable water supply. Hygienic, technical requirements and selection rules, 02.02.2011. https://www.lex.uz/docs/4979421

- State Standard O'zDSt 950:2011 Drinking Water: Hygienic Requirements and Quality Control, 02.02.2011. https://www.lex.uz/docs/4979438

Other sources:

- Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Human Development Operations (WB, 2022). https://thedocs.worldbank.org/en/doc/0e0825d39c28f61080380c6be9c40811-0290032022/original/SEA-SH-GPN-for-HD-Operations-CESSO-Issue-Version-September-26-2022.pdf
- Addressing the Social Dimensions of Private Sector Projects: Good Practice Note (IFC, 2003). https://www.ifc.org/en/insights-reports/2000/publications-gpn-socialdimensions--wci--1319578072859
- Adapting to Climate Change in Europe and Central Asia. World Bank, 2009. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/127181468024643244/adapting-to-climate-change-in-europe-and-central-asia
- BirdLife International: https://datazone.birdlife.org/site/mapsearch
- BMZ's Guidelines on Incorporating Human Rights Standards and Principles, Including Gender, in Program Proposals for Bilateral German Technical and Financial Cooperation. https://www.giz.de/de/downloads/bmz2013-en-guidelines-human-rights.pdf
- Climate Change Knowledge Portal. For Development Practitioners and Policy Makers. Uzbekistan. https://climateknowledgeportal.worldbank.org/country/uzbekistan
- Construction Noise Impact Assessment // Biological Assessment Preparation. Advanced Training Manual, 2012. https://www.nrc.gov/docs/ML1225/ML12250A723.pdf
- Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (Aarhus Convention) (1998). https://lex.uz/ru/docs/4574010
- Convention on Migratory Species. Siberian Crane, 2010. https://www.cms.int/siberian-crane/en/page/site-network
- Country Gender Assessment for Uzbekistan, 2024. The World Bank. UK International Development. https://documents1.worldbank.org/curated/en/099052824010093257/pdf/P1756961bcc2a50811a9d21c373fd390418.pdf
- Ecoline International Ltd. 2022. Uzbekistan Environmental and Social Gap Analysis Final Report.
- Environmental Performance Reviews. Uzbekistan. Third Review. United Nations, Geneva, 2020. https://unece.org/sites/default/files/2021-05/ECE.CEP_.188.Eng_.pdf
- Environment & Social Framework for IPF Operations - Gender (WB, 2019). https://thedocs.worldbank.org/en/doc/158041571230608289-0290022019/original/GoodPracticeNoteGender.pdf
- Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (IFC, 2013). https://thedocs.worldbank.org/en/doc/158041571230608289-0290022019/original/GoodPracticeNoteGender.pdf
- GOPAInfra, December 2024. Draft Problem and Potential Analysis Report, draft Technical Report, and Site Visit Reports.
- IAQM Guidelines for the Assessment of Dust from Demolition and Construction, 2014. https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf
- IFC Environmental, Health, and Safety Guidelines for Water and Sanitation. https://www.ifc.org/content/dam/ifc/doc/2000/2007-water-and-sanitation-ehs-guidelines-en.pdf
- IFC. Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets, 2013. https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_cumulativeimpactassessment
- ILO. 2024. Ratifications for Uzbekistan. https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:103538
- Immovable Property Cadaster Passport, issued by the Surkhandarya Region Department of the State Agency for Cadaster, Termez City Branch on 01.07.2024.
- International Finance Corporation's (IFC) "Good Practice Handbook: Land Acquisition and Involuntary Resettlement" (2023). https://www.ifc.org/content/dam/ifc/doc/2023/ifc-handbook-for-land-acquisition-and-involuntary-resettlement.pdf
- Introduction to Health Impact Assessment (IFC, 2009). https://www.ifc.org/en/insights-reports/2000/publications-handbook-healthimpactassessment--wci--1319578475704

- National State of the Environment Report: Uzbekistan, December 2023. Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan. International Institute for Sustainable Development. https://unece.org/sites/default/files/2024-02/uzbekistan-state-of-the-environment-en.pdf
- National Strategy "Uzbekistan-2030". https://lex.uz/docs/6600404
- N. Mavlyanova et al. Seismic Code of Uzbekistan // 13thWorld Conference on Earthquake Engineering. Vancouver, B.C., Canada, August 1-6, 2004, Paper No. 1611
- Principles for Digital Development. KfW Development Bank, 2024. https://digitalprinciples.org/principles/
- Projects and People: A Handbook for Addressing Project-Induced In-Migration (World Bank/IFC, 2009).
- Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (IFC, 2007).
- Republic of Uzbekistan: Sustainable Solid Waste Management Project, September 2019. https://www.adb.org/sites/default/files/project-documents/51034/51034-002-iee-en.pdf
- Resettlement Due Diligence Document for Water Supply Sub-Project in Surkhandarya Oblast, August 2008. https://www.adb.org/sites/default/files/project-documents//40007-08-uzb-tacr.pdf
- Sherabad Solar Project. Masdar. https://masdar.ae/en/renewables/our-projects/sherabad-solar-project
- Socio-Economic situation of the Republic of Uzbekistan for January-March 2023. Statistics Agency under the President of the Republic of Uzbekistan. https://stat.uz/en/?preview=1&option=com_dropfiles&format=&task=frontfile.download&catid=414&id=2855&Itemid=1000000000000
- Soil and climatic conditions of Surkhandarya. Normuratov O.U. Zakirov Kh.Kh. Chorieva Sh.K. Nurullaev A.K. Abdurakhmonova Yu.M. Bolliev A.T., 05.06.2018. https://7universum.com/ru/nature/archive/item/5948
- Statistics Agency under the President of the Republic of Uzbekistan. https://stat.uz/en/official-statistics/demography
- Statistics Agency under the President of the Republic of Uzbekistan. Demography. https://stat.uz/en/official-statistics/demography
- Statistics Agency under the President of the Republic of Uzbekistan. Gender Indicators in Numbers
- for 2023. https://gender.stat.uz/ru/
- Statistics Agency under the President of the Republic of Uzbekistan. On the cost of minimum consumer spending. https://stat.uz/en/press-center/news-of-committee/53293-on-the-cost-of-minimum-consumer-spending
- Statistics Agency under the President of the Republic of Uzbekistan. Population Living standards. https://stat.uz/en/official-statistics/living-standards
- Surkhandarya region. New Opportunities and Prospects. Investment guide. https://www.undp.org/sites/g/files/zskgke326/files/migration/uz/un_doc_uzb_Invest_in_Surxandarya_eng.pdf
- Sustainability Guideline Assessment and management of Environmental, Social, and Climate Aspects: Principles and Procedures, 31 July 2024. KfW Development Bank. https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Richtlinien/Nachhaltigkeitsrichtlinie_EN.pdf
- ThinkHazard! Uzbekistan. Extreme heat. World Bank Group. https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/EH
- ThinkHazard! Uzbekistan. River flood. World Bank Group. https://thinkhazard.org/en/report/261-uzbekistan/FL
- ThinkHazard! Uzbekistan: Surkhandarya. Earthquakes. World Bank Group. https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/EQ
- ThinkHazard! Uzbekistan: Surkhandarya. Land slide. World Bank Group. https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/LS
- ThinkHazard! Uzbekistan. Urban flood. World Bank Group. https://thinkhazard.org/en/report/261-uzbekistan/UF
- ThinkHazard! Uzbekistan. Water scarcity. World Bank Group. https://thinkhazard.org/en/report/3293-uzbekistan-surkhandarya/DG
- Third National Communication of the Republic of Uzbekistan under the UN Framework Convention on Climate Change. Tashkent, 2016. https://unfccc.int/sites/default/files/resource/TNC%20of%20Uzbekistan%20under%20UNFCCC_english_n.pdf
- UN Basic Principles and Guidelines on Development-based Evictions and Displacement. https://www.ohchr.org/sites/default/files/Documents/Issues/Housing/Guidelines_en.pdf
- UNDP. 2023/3024. Human Development Report. Breaking the gridlock. https://hdr.undp.org/system/files/documents/global-report-document/hdr2023-24reporten.pdf
- UNESCO. Intangible Cultural Heritage. Uzbekistan. https://ich.unesco.org/en/state/uzbekistan-UZ?info=elements-on-the-lists
- UNESCO. World Heritage Convention. Uzbekistan. https://whc.unesco.org/en/statesparties/uz

- UNESCO. World Heritage Convention. Uzbekistan. Tentative lists. https://whc.unesco.org/en/tentativelists/?action=listtentative&state=uz&order=states
- Uzbek Statistics Agency. https://stat.uz/ru/press-tsentr/novosti-goskomstata/11869-o-zbekistonda-qancha-mehmonxona-va-shunga-o-xshash-joylashtirish-vositalari-mavjud-2
- Uzbekistan. Voluntary national review 2020 on implementation of the 2030 Agenda for Sustainable Development. https://sustainabledevelopment.un.org/content/documents/26381VNR_2020_Uzbekistan_Report_Russian.pdf
- Voluntary guidelines on the responsible governance of tenure of land, of fisheries and forests in the context of national food security. Food and Agriculture Organization of the United Nations. Rome, 2022. http://www.fao.org/docrep/016/i2801e/i2801e.pdf
- Wastewater Technology Fact Sheet Package Plants. United States Environmental Protection Agency. September 2000. https://www3.epa.gov/npdes/pubs/package_plant.pdf
- WHO Factsheets: Drinking water (2023). https://www.who.int/
- World Bank's Environmental and Social Standards (ESS). http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards
- World Bank Group's General Environmental and Health and Safety Guidelines. https://documents1.worldbank.org/curated/zh/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf
- World Bank Involuntary Resettlement Sourcebook (2004). http://documents.worldbank.org/curated/en/206671468782373680/pdf/301180v110PAPE1ettlement0sourcebook.pdf
- World Database of KBAs: https://www.keybiodiversityareas.org/sites/search

Annexes

Annex 1: List of Meetings / Interviews

Table A1. List of meetings and interviews conducted by the ESIA team during the 2024 October field trip to Surkhandarya Region

Termez City

No.	Date	Respondents	Number of respondents		Type of interaction
			Men	Women	
1.	21.10.2024	Director/Deputy Director of "Surkhandarya Suvtaminot" LLC	1	0	Introductory meeting
2.	21.10.2024	Employees of the Department of Environmental Protection and Social Protection of Suvtaminot LLC of Surkhandarya region (specialists responsible for environmental protection, personnel and public relations)	3	2	Interview
3.	21.10.2024	Chief Specialist of Surkhandarya Regional Health Department	1	0	Interview
4.	21.10.2024	Environmental monitoring and climate change specialists of Surkhandarya Regional Department of Ecology, Environmental Protection and Climate Change	2	0	Interview
5.	21.10.2024	Chief Doctor/Head of the Infectious Diseases Department of Termez city Hospital	1	0	Interview
6.	21.10.2024	Khokim/Deputy Khokim of Termez	1	0	Introductory meeting
7.	21.10.2024	Consultation meeting - round table with specialists of Termez Khokimiyat (responsible for improvement and water disposal, as well as for socio-economic development, architectural, agricultural, land use, territorial planning and economic development, etc.)	2	0	Consultation meeting
8.	21.10.2024	Meeting with specialists of Termez city Department of Sanitary and Epidemiological Service	2	0	Interview
9.	21.10.2024	Deputy Khokim for Family and Women's Affairs of Termez City Khokimiyat	0	1	Interview
10.	22.10.2024	Meeting with the management of Jomiy MFY, adjacent to the WWTP site	1	0	Interview
11.	22.10.2024	Meeting with the management of the Pattakesar 2 MFY, Meeting with representatives of the MSG Pattakesar 2, adjacent to the territory of the WWTP from the south and east, and presumably, on the territory of which the WWTP site itself is located (see cadastral documents) adjacent to the WWTP site	2	0	Interview
12.	22.10.2024	FG – Women of working age	0	6	Focus group discussion
13.	22.10.2024	FG – Men of working age	5	0	Focus group discussion
14.	22.10.2024	FG - Pensioners	1	5	Focus group discussion
15.	22.10.2024	FG – small and medium entrepreneurs	2	2	Focus group discussion
16.	22.10.2024	Meeting with the management of the Tinchlik MFY, which is not connected to the centralized sewerage system, but which will be connected and where the Sewage Pumping Station (SPS-8) will be built	1	0	Interview
17.	23.10.2024	Meeting with a representative of the Hydrometeorology Department of Surkhandarya Region	1	0	Interview
18.	23.10.2024	Meeting with the management of Nurli Kelajak MFY, partially connected to the centralized sewerage network, on the territory of which the SPS-3 is located, subject to reconstruction	1	0	Interview
18		**Total**	**25**	**16**	**41**

Table A2. List of meetings and interviews conducted by the ESIA team during the 2024 November field trip to Surkhandarya Region

No.	Date	Respondents	Venue	Number of respondents		Type of interaction
				Men	Women	
		Angor				
1	04.11.2024	Introductory meeting and interview with the First Deputy Khokim of Angor district	Angor	1	0	Interview
2	04.11.2024	Deputy Khokim for Family and Women's Affairs of the Khokimiyat of Angor District	Angor	0	1	Interview
3	04.11.2024	Meeting with the chairman of the rural mahalla, on whose territory the proposed site of the future WWTP is located	Angor	1	0	Interview
4	04.11.2024	Meeting with the chairman of one of the rural mahallas, on whose territory the sewer collector route leading to the planned WWTP will pass	Angor	1	0	Interview
5	04.11.2024	Meeting with the chairman of the mahalla of the urban settlement of Angor, which will be connected to the sewerage system	Angor	1	0	Interview
		Boysun				
1	05.11.2024	Introductory meeting and interview with the First Deputy Khokim of Boysun district	Boysun	1	0	Interview
2	05.11.2024	Deputy Khokim for Family and Women's Affairs of Khokimiyat of Boysun District	Boysun	0	1	Interview
3	05.11.2024	Meeting with the chairman of a rural mahalla, on whose territory the proposed site of the future WWTP is located	Boysun	0	1	Interview
		Oltinsoy				
1	06.11.2024	Introductory meeting and interview with the First Deputy Khokim of Oltinsoy district	Oltinsoy	1	0	Interview
2	06.11.2024	Deputy Khokim for Family and Women's Affairs of the Khokimiyat of Oltinsoy District	Oltinsoy	0	1	Interview
3	06.11.2024	Meeting with the chairman of the rural mahalla, on whose territory the proposed site of the future WWTP is located	Oltinsoy	1	0	Interview
4	06.11.2024	Meeting with the chairman of one of the rural mahallas, on whose territory the sewer collector route leading to the planned WWTP will pass	Oltinsoy	1	0	Interview
		Muzrabad				
1	07.11.2024	Introductory meeting and interview with the First Deputy Khokim of Muzrabad district	Muzrabad	1	0	Interview
2	07.11.2024	Deputy Khokim for Family and Women's Affairs of the Khokimiyat of Muzrabad District	Muzrabad	0	1	Interview
3	07.11.2024	Meeting with the chairman of the rural mahalla, on whose territory the proposed site of the future WWTP is located	Muzrabad	1	0	Interview
4	07.11.2024	Meeting with the chairman of one of the rural mahallas, on whose territory the sewer collector route leading to the planned WWTP will pass	Muzrabad	0	1	Interview
5	07.11.2024	Meeting with the chairman of the mahalla of the urban settlement of Muzrabad, which will be connected to the sewerage system	Muzrabad	1	0	Interview
		Kizirik				
1	08.11.2024	Introductory meeting and interview with the First Deputy Khokim of Kizirik district	Kizirik	1	0	Interview
2	08.11.2024	Deputy Khokim for Family and Women's Affairs of the Khokimiyat of Kizirik District	Kizirik	0	1	Interview
3	08.11.2024	Meeting with the chairman of the rural mahalla, on whose territory the proposed site of the future WWTP is located	Kizirik	1	0	Interview
4	08.11.2024	Meeting with the chairman of one of the rural mahallas, on whose territory the sewer collector route leading to the planned WWTP will pass	Kizirik	1	0	Interview
5	08.11.2024	Meeting with the chairman of the mahalla of the urban settlement of Kizirik, which will be connected to the sewerage system	Kizirik	1	0	Interview
		Total, all districts		**15**	**7**	**22**

Annex 2: Requirements on the Content of EIA Materials

Article 24 of Annex 2 to RCM of the RoU of 7 September 2020 No. 541 on Further Improvement of the Mechanism for Assessing Environmental Impact[179] includes requirements on the content of the EIA documentation for Category I, II, and III activities. The EIA report prepared to be submitted for the state review shall contain the following information:

- description of the state of the environment prior to the proposed activity, population density of the area, state of ambient air, surface, ground and waste waters and degree of their pollution, properties and the degree of pollution of lands allocated for permanent or temporary use, disturbance of landscapes, climatic, geological, hydrological, hydrogeological and other natural conditions, information on flora and fauna, recreational areas and protected natural areas, etc.;
- justification of the suitability of the facility location (and the alternative location) in accordance with the economic and social development schemes;
- conclusion of the public hearing on support for the project in Environmental Impact Categories I and II, suggestions and objections from the public received during the public hearing;
- volume of research carried out, the information sources used in the environmental impact assessment (land, climate, air quality, geomorphological, geological, hydrological, hydrogeological conditions, flora and fauna, public health, soils, archaeological, historical and cultural features);
- geographical coordinates of the site, a sketch map showing information on adjacent recreational areas, settlements, irrigation and land reclamation facilities, agricultural cultivation areas, power lines, transport, water, gas and other communications);
- analysis of the main and auxiliary facilities to be built or produced, the machinery, technology, natural resources, construction materials, raw materials, fuels and their environmental impact;
- type of production and annual capacity;
- expected air emissions, discharges, their composition and volume, the morphology and volume of waste generated, their negative impact on the environment and ways to minimize them;
- analysis of alternatives to proposed activity (incl. reconstruction, modernization, reorganization, expansion, etc.) and technological solutions from an environmental protection perspective, taking into account the achievements of science, technology and best practice;
- organizational, technical, technological solutions and measures to avoid negative environmental consequences and reduce the environmental impact of the object of review;
- analysis of emergency situations that may lead to negative environmental impact (with a scenario for prevention of their negative consequences);
- forecast of environmental changes and environmental consequences as a result of implementation of the object of the SER;
- information on sources of environmental impact, their types, limits of impact, intensity and duration;
- safety programs with an indication of the scope of use of manufactured products, established limitations, methods of decontamination or use of materially or morally obsolete products that have lost their consumer properties.

[179] RCM of the RoU of 7 September 2020 No. 541 "On Further Improvement of the Mechanism for Environmental Impact Assessment". https://lex.uz/docs/4984499

GOPA Tech GmbH
Hindenburgring 18
61348 Bad Homburg
Germany

t +49 6172 6817 0
f +49 6172 930 100

e info-tech@gopa.eu
w gopa.eu