Environmental and Social Impact Assessment

PUBLIC

Project Number: 57342-001
Draft
December 2023

Uzbekistan: Kungrad 1 Wind Power BESS Project

PART 4

Prepared by ACWA Power and ECO Consult for the Asian Development Bank (ADB).

14. INFRASTRUCTURE AND UTILITIES

This section first provides an assessment of baseline conditions within the Project site and surrounds in relation to infrastructure and utilities and then assesses the anticipated impacts from the Project throughout its various phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

14.1 Assessment of Baseline Conditions

This section discusses the methodology for the assessment of baseline conditions in relation to infrastructure and utilities and presents the outcomes and results of the assessment.

14.1.1 Methodology of Assessment

Assessment of baseline conditions was based on a site visit by the 'E&S Team' to the Project site and surrounding area from 1 August 2023 until 20 August 2023. The site visit aimed to identify any key visible infrastructure and utility elements within the Project site or surrounding areas (e.g., electricity infrastructure lines, water infrastructure lines, etc.).

Desktop review as well as consultations were undertaken with key governmental entities to better understand and characterize infrastructure and utility element services required for the Project development as discussed further throughout this section. This includes water supply, waste management services, traffic and transport, etc. The consultation activities were previously discussed in "Chapter 6" and are discussed again in the sections below as applicable and relevant.

14.1.2 Telecommunication, Radio and TV

As part of the site survey undertaken, no infrastructure elements in relation to telecommunications, radio or TV were noted within the Project area (e.g. broadcasting towers).

In addition, as noted within "Section 6.3.1", consultation activities were undertaken with the Ministry for Development of Information Technologies and Communication on the following:

- Obtain information on telecommunication broadcasting towers and Line of Sight (LoS) connections;
- Obtain information on TV and radio infrastructure and towers;
- Obtain any requirements on WTG project micro-siting; and
- Obtain any other requirements that should be considered for Project development.

Response has been provided that there are no infrastructure elements related to the above within the Project.

14.1.3 Civil and Military Aviation

As part of the site survey undertaken, no infrastructure elements in relation to civil and military aviation were noted within the Project area (e.g. radar systems).

In addition, as noted within "Section 6.3.1" consultation activities were undertaken with the following entities:

- Civil Aviation Administration
- Uzbekistan Air and Air Defense Forces

Consultation was undertaken through submission of formal letters to the above entities on the following:

- Obtain information on any aviation infrastructure;
- Obtain any requirements on WTG project micro-siting; and
- Obtain any other requirements that should be considered for Project development.

No response has been provided to date by the above entities. Once a response is provided, any baseline information on aviation infrastructure will be updated accordingly.

14.1.4 Waste Management (Solid Waste, Wastewater and Hazardous Waste)

As discussed earlier within "Section 6.3.1" consultations were undertaken with State Unitary Enterprise to obtain information on municipal and construction waste disposal facilities, Wastewater Treatment Plants (WWTPs), and hazardous waste landfills. Results are presented below.

Municipal and Construction Waste Disposal Facilities

It is important to note that currently there are no landfills in Uzbekistan (including Karakalpakstan) that are constructed or operated according to international standards. The first proper solid waste landfill to meet international standards is currently being developed in Tashkent Region and is financed by the Asian Development Bank (ADB). This located around 1,000km from the Project site. This will include the construction of new sanitary landfills that meet EU requirements, waste sorting complexes, waste transfer points, as well as the purchase of specialized equipment and vehicles.

On the other hand, there are 197 landfills in Uzbekistan (as per description earlier none of which are according to international standards). Four (4) are located in Kungrad District and are all under the State Unitary Enterprise, while the fifth is for industrial establishments located near the Project site.

Table 62: Closest Landfill to the Project Site

Name	Distance to Project	Description
Kanli Landfill	170 km	Located in the territory of the Kanli Mahalla with an area of 15 hectares. Landfill is surrounded by corrugated steel and wire fences.
Karakalpakstan Landfill	300 km	Located in Karakalpakstan village with an area of 0.5 hectares and is unfenced.
Kirkkiz Landfill	100 km	Located in Kirkkiz with an area of 0.5 hectares and is unfenced.

Jasliq landfill	200 km	Located in Jasliq with an area of 0.5 hectares and is unfenced.
Uzkorgaz WWTP and Sodium plant landfills	100km	The Uzkorgaz landfill has an area of 50 hectares while the sodium plant has an area of 8 hectares. The EPC Contractor and Project Operator can negotiate with these plants the possibility of disposing wastewater at their facilities.

Wastewater Treatment Plants

The table below provides an overview of the closest Wastewater Treatment Plants (WWTPs) to the Project site. As noted below, it is most likely that the Project will rely on disposal at Nukus WWTP.

Table 63: Closest WWTPs to the Project Site

Name	Distance to Project	Description
Uzkorgaz WWTP and Sodium plant WWTP	100km	Those are WWTPs for the industrial facilities located in Elobod and Kirkkiz. No additional information could be obtained on design capacity and current capacity. The EPC Contractor and Project Operator can negotiate with these plants the possibility of disposing wastewater at their facilities.
Nukus WWTP	200 km	The WWTP includes complete biological treatment facilities with a design capacity of 65, 000 thousand m^3/day with an actual average daily flow of 15,000 m^3/day. The WWTP was put into operation in 1984. There are plans to undertake expansion and renovation for the existing WWTP as well as a complex sludge processing unit. The project will start in 2024 and will be completed by 2026. In case the first option is not available, this is the most likely WWTP to be used by the Project.
Takhiatash WWTP	200km	The WWTP has a design capacity of 7,600 m^3 / day and is not working and it just disposes wastewater without treatment. There are plans to construct a new WWTP within the area.

Hazardous Waste Landfill

There are no hazardous waste landfills in Uzbekistan. In general, disposal depends on the type of hazardous waste generated and for each type there are governmental authorized specialized companies that collect, process, recycle and/or manage such waste streams.

The key hazardous wastes expected to be generated from the Project are summarized below along with the key disposal method/entity for each.

Table 64: Disposal Methods for Hazardous Wastes

Hazardous / Solid	Containers	Plastic containers should be recycled by specialized companies involved in the production of pellets while metal containers can be sold for reuse or recycling at Uzmetkombinat.
	Paints / paint pots	Paints are handed over to specialized companies for recycling.
	Used spill kits and contaminated soils	This waste should be disposed by a specialized company involved in contaminated kits and soils. An example of such as company would be «Ecotibbiyot».

	Clinical	This waste should be disposed by a specialized company involved in clinical waste. An example of such as company would be «Ecotibbiyot».
	Batteries	Batteries are recycled by Uzvtortsvetmet
	Fluorescent tubes / bulbs	Should be passed for demercurization to specialized company – an example of such company is ASP Selta.
Hazardous / Liquid	Spent /excess lube oil	Oily waste can be processed only JV Uz-Prista LLC as per Presidential Decree №-1759 dated 22.05.2012
	Spent /excess hydraulic fluid	Oily waste can be processed only JV Uz-Prista LLC as per Presidential Decree №-1759 dated 22.05.2012
	Spent / excess solvents	This waste should be disposed by a specialized company involved in solvents. An example of such as company would be «Ecotibbiyot».
	Acids / alkalis solutions	This waste should be disposed by a specialized company involved in acids and alkalis solutions. An example of such as company would be «Ecotibbiyot».
	Paints	This waste should be disposed by a specialized company involved in paints waste. An example of such as company would be «Ecotibbiyot».
	Discarded chemicals	This waste should be disposed by a specialized company involved in chemicals. An example of such as company would be «Ecotibbiyot».

14.1.5 Water Resources

It is important to note that the section below is based on secondary data available through a desktop review on water supply and demands within Karakalpakstan in general and Kungrad District in specific.

In addition, as noted within “Section 14.2.5” later, the water requirements for the Project were estimated and provided to Ministry of Water Resources of Karakalpakstan / Kungrad Water Supply Department to confirm that they would be able to provide such requirements without impact existing resources or requirements.

Water Supply

This section provides an assessment of water resources relevant to the Project, drawing from a thorough examination of the "Quantity and Quality of Water for the year 2020" report by the CSO (2021).

Water supply in Uzbekistan, as highlighted in the "Climate Risk Country Profile: Uzbekistan" by the World Bank (2021), heavily relies on external sources. As of 2014, approximately 80% of Uzbekistan's water supply originates from beyond its borders, as it shares major rivers, including the Amu Darya, Syr Darya, and Zarafshan, with neighboring countries. This leaves less than 10% of Uzbekistan's water resources sourced internally.

Karakalpakstan boasts several significant bodies of water, including the Aral Sea and the Sudoche lake group, which connects to the Khodjakul-Karadjar lake group. Additionally, the region features various man-made reservoirs such as the Mezhdurechensk Reservoir, Makpalkol Lake, and the Maypost-Domalak system, along with the Muynak, Ribachiy, and Zhiltirbas bays. These water bodies are primarily located in the central part of the Amu Darya Delta and its right bank. Notably, all water reservoirs in Karakalpakstan are utilized for fisheries, with their water supply sustained by Amu Darya waters and recurrent drainage from irrigated fields.

Within the Lower Amu Darya Basin (LADB), situated in the administrative regions of Karakalpakstan and Khorazm in northern Uzbekistan, the total water supply can be categorized into three components: inflow

from the Amu Darya River, precipitation, and groundwater. It is important to note that data regarding groundwater is currently unavailable and has been estimated as part of the supply-demand balance. The total water supply in this region amounts to approximately **27,188 million cubic meters**, distributed among these various sources.

Table 65: Water Supply from LADB

Supply Source	Quantity (million m^3)	Percentage
Runoff	14,564.61	53.57%
Precipitation	12,623.38	46.43%

The table below presents the water coverage by centralized water supply and water sources in Kungrad Districts.

Table 66: Current Coverage y Centralized Water Supply and Water Sources in Karakalpakstan

District	Population 2017	Domestic connections																	Institutional		Commercial		Industrial	
		Connected to a centralized WS network			In-house connections								Standpipe		Trucked water									
		Customers	Population	%	Metered			Not metered		Total in-house connections									Metered	Not metered	Metered	Not metered	Metered	Not metered
					Connections	Population	in % of total connections	Connections	Population	Customers	Population	%	Customers	Population	Customers	Population	In %							
Amudaryo	**185700**	**7850**	**41729**	**0.225**	**2972**	**17291**	**0.422**	**4064**	**19923**	**7036**	**37214**	**0.2**	**814**	**4515**	**3868**	**21277**	**0.115**	**37**		**136**		**3**	
Urban	35830	4135	22322	0.623	2196	12778	0.539	1877	9201	4073	21979	0.613	62	343				35	0	136	0	3	0
Rural	149870	3715	19407	0.129	776	4513	0.262	2187	10722	2963	15235	0.102	752	4172	3868	21277	0.142	2	0		0		0
Beruniy	**177200**	**9485**	**57828**	**0.326**	**5191**	**33874**	**0.596**	**3522**	**19793**	**8713**	**53667**	**0.303**	**772**	**4161**	**160**	**881**	**0.005**	**38**		**140**		**2**	
Urban	59482	4897	31207	0.525	4085	26659	0.845	749	4211	4834	30870	0.519	63	337				33	0	140	0	2	0
Rural	117718	4588	26621	0.226	1106	7215	0.285	2773	15582	3879	22797	0.194	709	3824	160	881	0.007	5	0		0		0
Nukus	**46100**	**3692**	**19969**	**0.433**	**2427**	**14982**	**0.759**	**770**	**2746**	**3197**	**17728**	**0.385**	**495**	**2241**	**430**	**2367**	**0.051**	**20**		**18**		**2**	
Urban	10123	1951	4815	0.476	1461	3026	0.766	446	1589	1907	4615	0.456	44	199				16	0	18	0	2	0
Rural	35977	1741	15154	0.421	966	11956	0.749	324	1157	1290	13113	0.364	451	2042	430	2367	0.066	4	0		0		0
Karauzyak	**50900**	**3829**	**17818**	**0.35**	**1547**	**9553**	**0.538**	**1326**	**3919**	**2873**	**13472**	**0.265**	**956**	**4346**	**492**	**2707**	**0.053**	**23**		**35**			
Urban	15259	1886	9528	0.624	1185	7318	0.659	614	1815	1799	9133	0.599	87	395				16	0	35	0	0	0
Rural	35641	1943	8290	0.233	362	2235	0.337	712	2104	1074	4339	0.122	869	3951	492	2707	0.076	7	0		0		0
Kungrad	**123600**	**14500**	**76628**	**0.62**	**5751**	**35021**	**0.549**	**4725**	**22155**	**10476**	**57176**	**0.463**	**4024**	**19452**	**71**	**388**	**0.003**	**56**		**184**		**15**	
Urban	66699	10270	55423	0.831	5136	31274	0.527	4603	21582	9739	52856	0.792	531	2568				50	0	183	0	14	0
Rural	56901	4230	21205	0.373	615	3747	0.835	122	573	737	4320	0.076	3493	16884	71	388	0.007	6	0	1	0	1	0
Muynak	**30200**	**2623**	**10491**	**0.347**	**728**	**3606**	**0.35**	**1354**	**4463**	**2082**	**8069**	**0.267**	**541**	**2422**	**1261**	**6935**	**0.23**	**29**		**29**		**3**	
Urban	13237	1967	7615	0.575	652	3227	0.339	1269	4182	1921	7409	0.56	46	206				26	0	0	0	3	0
Rural	16963	656	2876	0.17	76	379	0.473	85	281	161	660	0.039	495	2216	1261	6935	0.409	3	0	0	0		0
Total	**613700**	**41979**	**224463**	**36.6 %**	**18616**	**114327**	**54.2%**	**15761**	**72999**	**34377**	**187326**	**0.305**	**7602**	**37137**	**6282**	**34555**	**0.056**	**203**	**0**	**542**	**0**	**25**	**0**
Urban	200630	25106	130911	65.2 %	14715	84282	0.606	9558	42580	24273	126862	0.632	833	4049				176	0	512	0	24	0
Rural	413070	16873	93552	0.23	3901	30045	38.6%	6203	30419	10104	60464	0.146	6769	33088	6282	34555	0.084	27	0	1	0	1	0

Water Demand

In terms of water demand, the table below presents the general water demand in the Republic of Karakalpakstan including Kungrad District where the Project is located. The general water demand includes agricultural, household and industrial sectors. As seen in the figure below, the agricultural sector accounts for the majority of water demand in Uzbekistan in general. However, it is important to note that Uzbekistan is facing water crisis, specifically, Uzbekistan is currently grappling with a fresh water crisis, attributed to a combination of factors including drought, rapid population growth, and the shrinking of the Aral Sea. One of the region's most severely impacted by this crisis is Karakalpakstan in the northwest.

This predicament has had a significant effect on the region's primary economic sector, agriculture. Numerous rice and cotton plantations are no longer working, and pastures have become desiccated. The devastating drought from the previous year resulted in the abandonment of approximately 300,000 hectares of crops in the area. As a dire consequence, residents were compelled to consume subpar water quality, leading to an upsurge in diseases such as hepatitis and tuberculosis.

Table 67: Water Demand in Karakalpakstan

District	Water Demand (m^3/day)
Amudaryo District	20,044.48
Beruniy District	30,848.24
Karauzyak District	7,958.07
Muynak District	6,041.52
Nukus District	119,524.89
Kungrad District	27,457.45

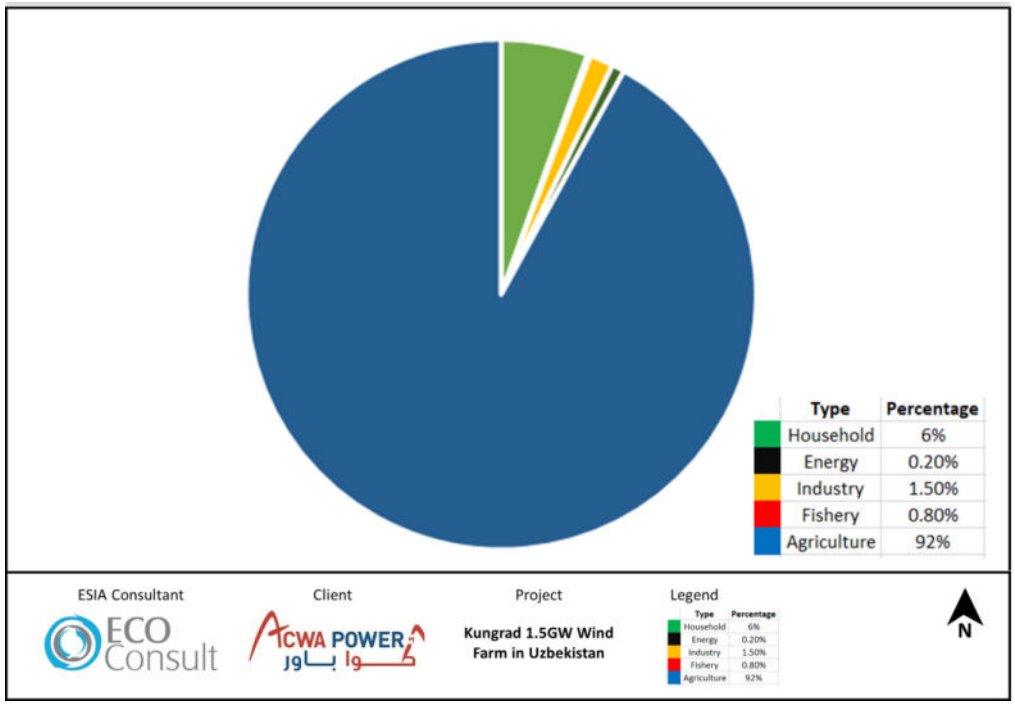

Figure 74: Water Demand Distribution in Uzbekistan

Overview of the Water Situation in Uzbekistan and in specific, in Karakalpakstan

Uzbekistan ranks 25th out of 164 countries on the World Resources Institute's list of the most water-stressed nations. The country faces a severe water shortage, particularly in regions like Karakalpakstan, where it could trigger a social and environmental crisis. The scarcity of water affects not only agriculture but also domestic use.

By 2030, the population of Uzbekistan is projected to approach 40 million people, leading to a 7-8 km^3 reduction in available water resources. This will exacerbate the current water shortage, increasing it from 13-14% to 44–46%, which will hinder the development of both agriculture and industries.

In 2018, Uzbekistan lost 469 million m^3 of freshwater, equivalent to 32% of the total drinking water produced, according to the World Bank. These substantial losses occur amid unfavorable predictions for future water supply in Central Asia, including Uzbekistan. By 2050, key water supply resources (Syr Darya river and Amu Darya River) are expected to be impacted with streamflow in the Syr Darya river basin expected to decrease by 2-5%, and in the Amu Darya river basin, the decline could be 10-15%, resulting in even more acute water shortages.

The Aral Sea crisis (discussed in further detail in “Section 20.9”) is not exclusive to Uzbekistan; it affects neighboring countries as well. Each year, 135-145 million tons of salt flow into the Amu Darya and the Syr Darya, equivalent to 17-20 tons per hectare of irrigated land. Between 1960 and 1990, the Aral Sea's annual river inflow dropped from 55 km^3 to 6-12 km^3, nearing zero in dry years. Currently, the sea's level is decreasing at approximately 0.5 meters per year, with a surface area reduced to 32,000 km^2 and salinity levels exceeding 40 g/l and still rising.

The Aral Sea problem gained political significance in the late 1980s when Central Asian leaders established the International Fund for Saving the Aral Sea (IFAS) as the sole interstate coordination mechanism in Central Asia. However, cooperation has mainly been limited to the signing of general declarations and memoranda, with many initiatives in the 1990s remaining unimplemented.

Efforts to address the Aral Sea crisis face challenges, primarily because the sea spans the territories of Kazakhstan and Uzbekistan, making it an "inland sea" for these countries. Other Central Asian states are more focused on hydropower development and extensive agriculture. In October 2019, Uzbekistan proposed declaring the Aral Sea a zone for environmental innovation and technology, a matter discussed at the UN General Assembly in September 2020. Kazakhstan aims to preserve biodiversity in the northern part of the Aral Sea. Over the past three decades, international organizations have produced numerous policy briefs and recommendations, with UNDP programs addressing environmental issues in the Aral Sea region.

14.1.6 Traffic and Transport

Highway A380 is a major highway in Uzbekistan that starts from G‘uzor District in Qashqadaryo Region and ends in Kungrad District in Karakalpakstan, more specifically in the northwestern corner of Uzbekistan that borders with Kazakhstan. The total length of Highway A380 is around 1,200km as shown in the figure below.

Highway A380, particularly the Guzar-Bukhra-Nukus-Beyneu section, plays a crucial role in enhancing regional trade within the Central Asia Regional Economic Cooperation (CAREC) Corridor 2. Covering a distance of approximately 240 km, this highway connection between the Kungrad district in the Republic of Karakalpakstan and the Kazakh border is a vital trade route in the region. It efficiently links various

western Uzbekistan regions, including Kashkadarya, Bukhara, Khorazm, and Karakalpakstan, to the Caspian Sea port of Aktau in Kazakhstan. As a key transportation artery, the A380 corridor is poised to become increasingly vital for facilitating regional trade between Uzbekistan and Kazakhstan.

The proposed upgrading and widening of A380 highway align with the government's priority to enhance transportation infrastructure and revitalize this important trade route.

This highway will be the key highway that will be used to access the Project site for all of its transportation requirements.

As discussed in "Section 6.3.1", based on consultations with Ministry of Transport of Karakalpakstan / Kungrad District Road Use Unitary Enterprise, the following information was requested on Highway A380 but it was indicated that such information was not available.

- Theoretical road capacity;
- AM/PM traffic counts; and
- Road conditions;

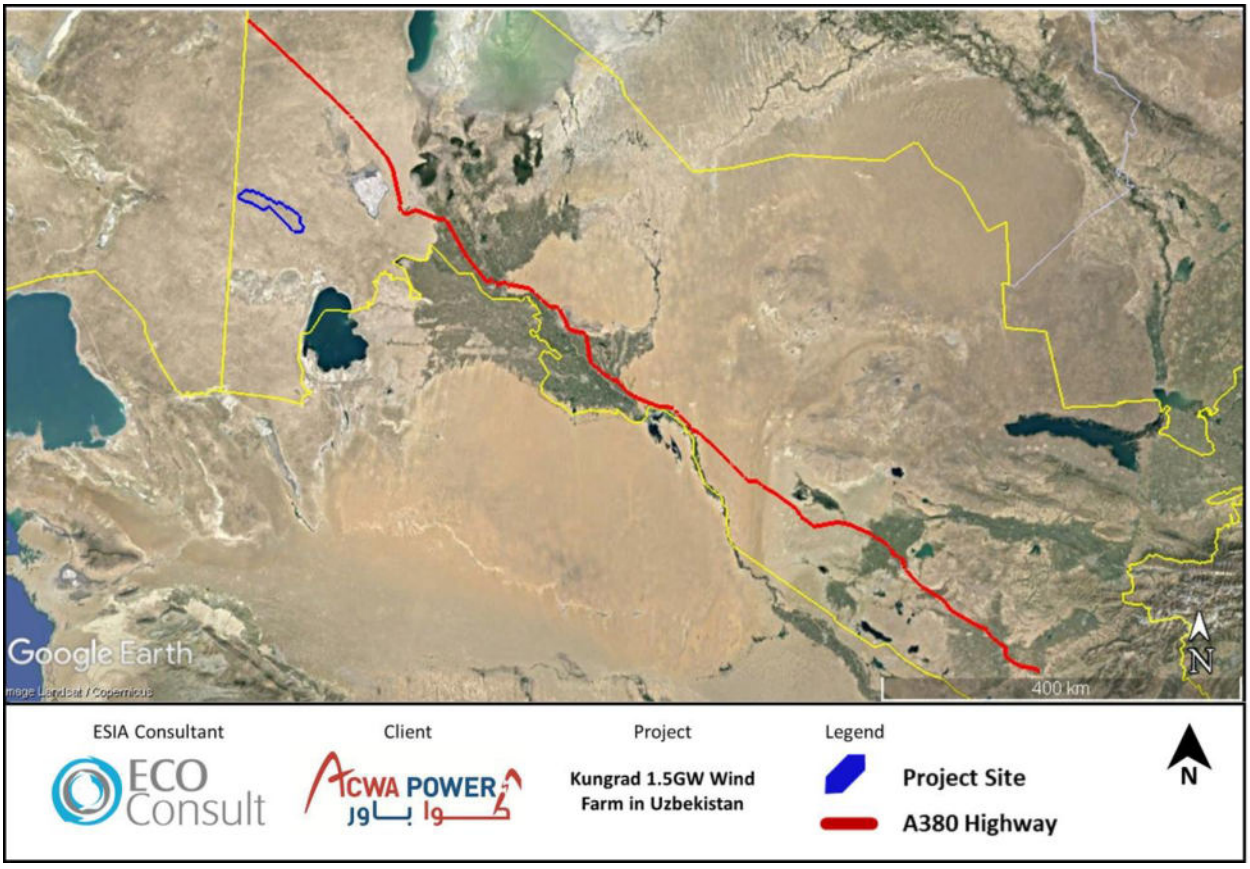

Figure 75: Project Site in Relation to Highway A380

14.1.7 Gas Infrastructure

Based on a site visit undertaken by the 'E&S Team' for the Project site, a gas pipeline (with a total length of 15km within the Project site) along with pumping station was noted as presented in the figure below.

In addition, several electricity towers and lines were noted but they are not in use and are not working. Those were also considered infrastructure elements for the gas pipeline.

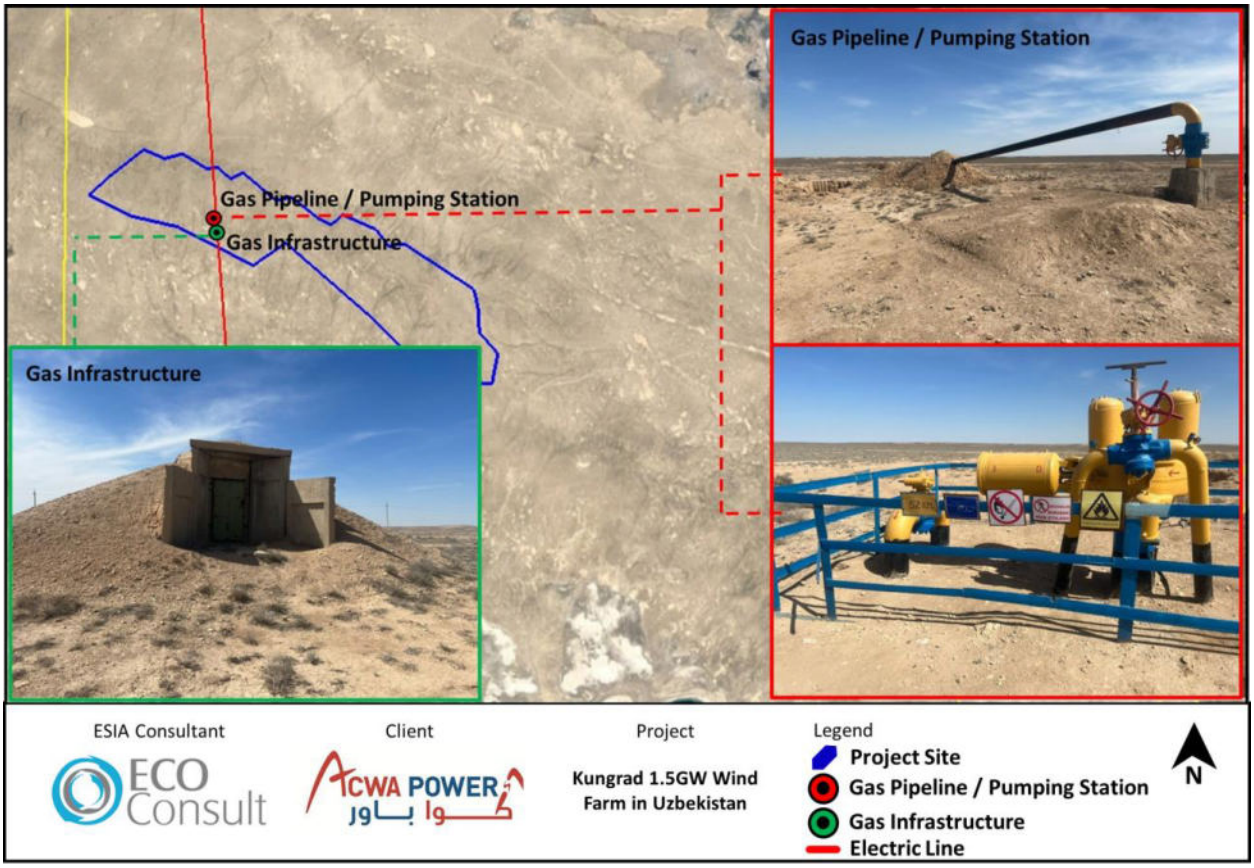

Figure 76: Gas Pipeline and Infrastructure Onsite

As noted earlier, several consultations were undertaken with governmental entities that included the following:

- Based on consultations with the Cadastral Office, the exact location of the pipeline and pumping stations were provided as presented in the figure above.
- Based on consultations with Cadastral Office and Kungrad District Khokimiyat no additional current or planned infrastructure and utility elements are onsite.
- Based on consultation with various entities as noted within “Section 6.3.1” earlier, it was confirmed again that there is a gas pipeline within the Project site that is operated by UrgenchtransGaz. This included: (i) Kungrad District Khokimiyat; (ii) Ustyurt Gas (Branch of Uzbekneftegas JSK); (iii) Gasprom International Limited; and (iv) UrgenchtransGaz.
- Consultations undertaken with UrgenchtransGaz (refer to “Section 6.3.1”) indicated the following:
  - The pipeline extends from the Shakhpakhty field to Karakalpakiya with a total length of 235 km;
  - The gas pipeline crosses the Project site and in particular points 6-7 and 28-29 with a diameter of 820mm;
  - A 250m protection zone in each direction is required to be maintained as part of the Project design; and

- Required official communication through formal letters to document all of the above and identify requirements that should be considered. A formal letter has been sent by the 'E&S Team" but still to date no response has been provided.

- Based on the consultations above it was indicated that the Shakhpakhty field, discovered in 1964, could be located in the southeastern part of the Project site. Further communication with the State Committee for Geology was requested to investigate this further.

- Consultations undertaken with the State Committee on Geology and Mineral Resources indicated that within the area there is an important territory allocated for perspective investment in hydrocarbon resources. For this reason, the Committee provided coordinates within which Project should be developed as presented in the figure below as it is within this area that surveys will not be carried out within next 30 years. As noted, the Project site is located within such an area, however there is a very small area that is located outside of this allowed area which should be taken into account as part of the design of the Project – this is likely to be due to coordinate shifting but anyhow this should be taken into account.

  In addition, during the scoping site visits undertaken by the 'E&S Team' (March 2023) small-scale and limited blasting activities were noted within the Project area in general. It was indicated that this was undertaken by the State Committee on Geology as part of exploration activities (although as noted earlier formal communication from the Committee indicated no activities within the Project area). After that and in May 2023 follow up communication was undertaken and the Committee whom indicated in a formal letter that they are informed about the Project and therefore no further activities will be undertaken. The 'E&S Team' provided a follow up formal letter recently to the Committee to confirm that no further activities and works are to be planned within the Project area. Official response will be confirmed and verified once obtained and updated into the ESIA accordingly.

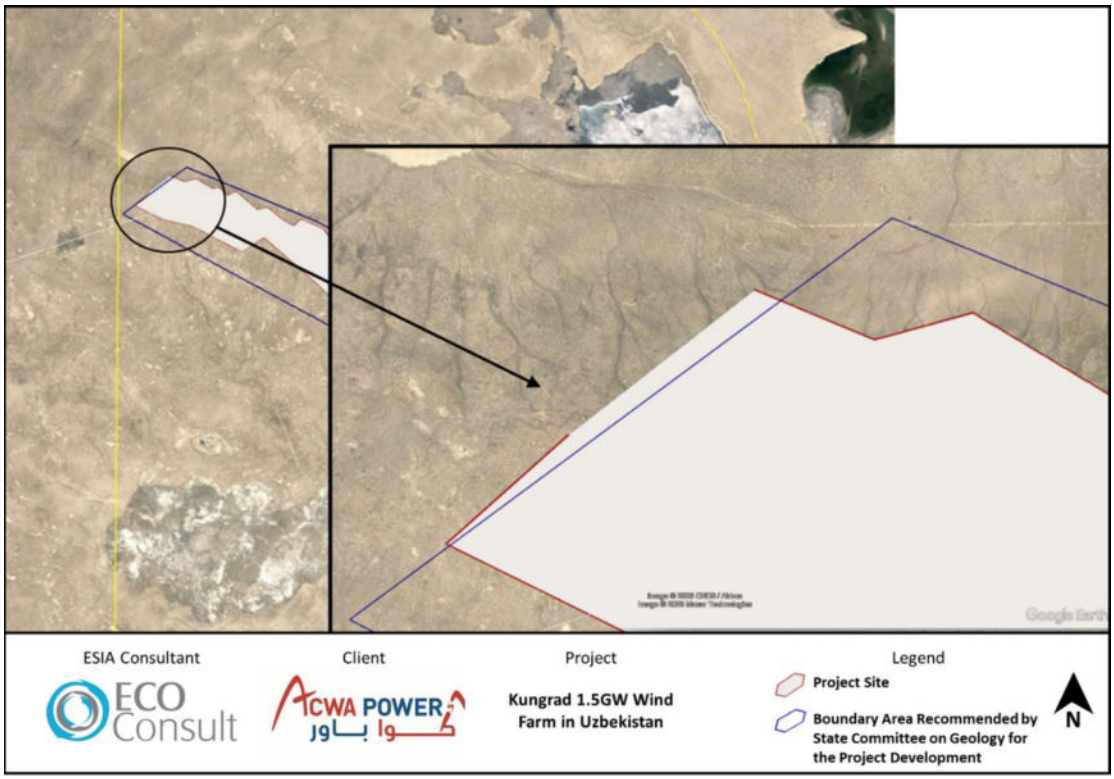

Figure 77: Overlap between Project Area State Committee on Geology Recommendation

14.2 Assessment of Potential Impacts

This section identifies the anticipated impacts on infrastructure and utilities from the Project throughout its various phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

14.2.1 Potential Impacts on Radio, TV and Telecommunication Infrastructure during Planning Phase

Inappropriate siting of Project components (turbines, roads, etc.) as well as overall management of construction activities (e.g. excavation activities) could damage and/or disturb the telecommunication, radio and TV fiber cable as well as the broadcasting towers.

In addition, inappropriate siting of WTGS, could disturb microwave connections between telecommunication, radio and TV broadcasting towers. There is an ellipsoid formed zone around the line of sight between two towers used for signal transmission. The radius of this called “Fresnel Zone” which increases with distance to the towers and has its maximum in the middle of the line of sight. This zone should be kept free of any obstacles to minimize interference of the radio signals. The extent of the zone depends on the following key factors:

- Position of the broadcasting towers
- Distance between sender and receiver
- Frequency of the transmitted signal
- Height of sender and receiver
- Turbine coordinates
- Turbine hub height
- Rotor diameter of the turbine

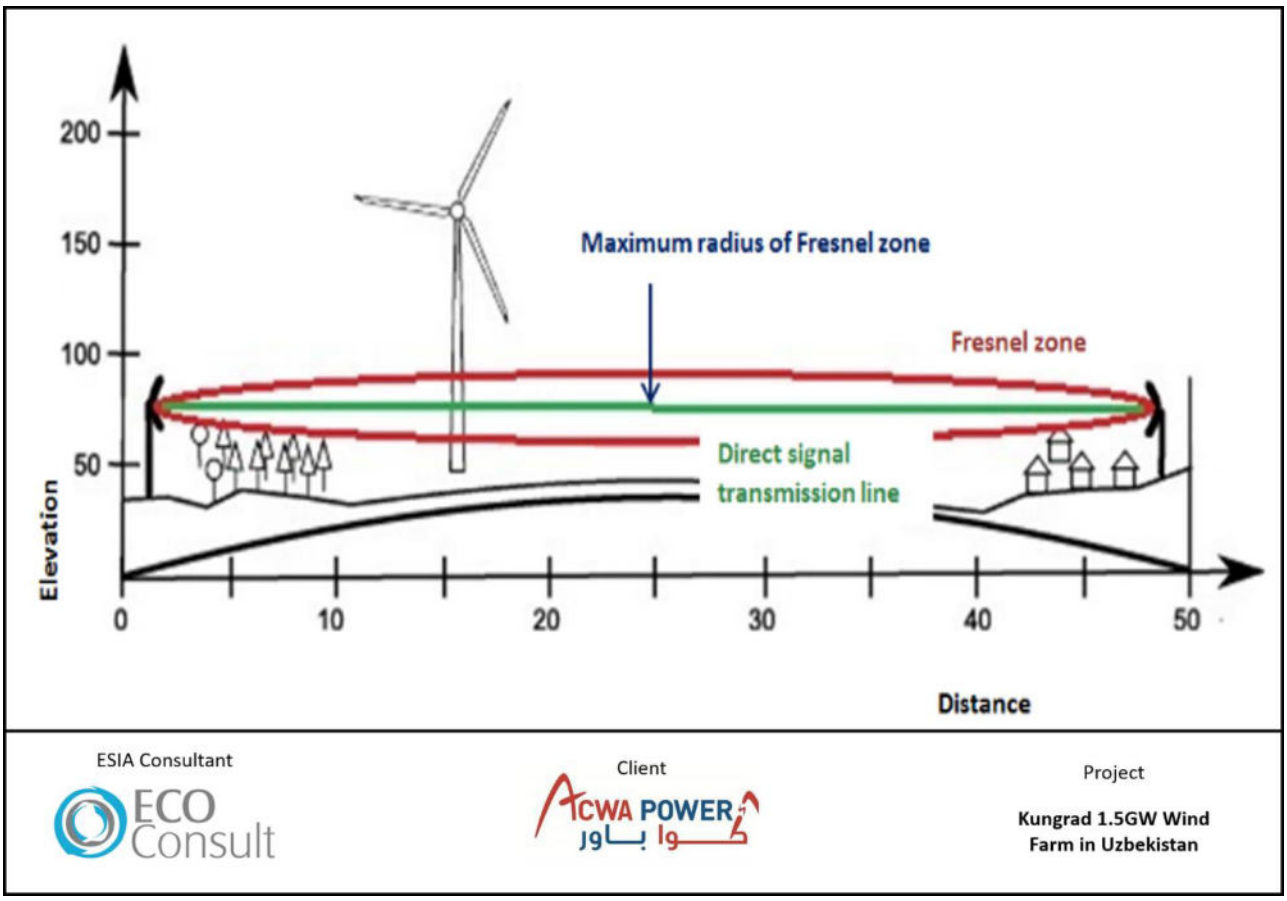

Figure 78: Fresnel Zone of Broadcasting Towers

However, as noted earlier, there are no infrastructure elements related to telecommunication, radio and TV that will be impacted. Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

14.2.2 Potential Impacts on Civil and Military Aviation during the Planning Phase

Any tall structure, such as wind turbines, could impact aircraft safety if located near airports or known flight paths and routes – to include both civil aviation as well as military aviation. In order to safeguard aerodromes and/or airports, and as a standard procedure for all wind farm development projects, formal communications must be established with the official governmental authorities responsible for the development of civil and military aviation safety and security.

However, as noted earlier based on the response from key entities, there are no infrastructure elements related to civil and military aviation that will be impacted. However, there are additional requirements related to visibility that should be considered during the planning phase such as painting of WTG blades, nautical lighting, etc.

Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

14.2.3 Potential Impacts on Waste Utilities during the Construction and Operation Phases

The Project is expected to generate the following waste streams during the construction and operation phases and which are provided in details in the table that follows.

- Wastewater during construction and operation to include black water (sewage water from toilets and sanitation facilities) and grey water (from sinks, showers, etc.). Wastewater generated during operation is expected to be minimal and insignificant. Wastewater will be stored onsite though enclosed collection tanks and collected by licensed tankers from the Project to the closest WWTP.
- Solid waste during construction and operation will include construction waste (mainly during construction to include dirt, rocks, debris, etc.) as well as general municipal waste (such as food, paper, glass, bottles, plastic, etc.). Solid waste quantities generated are not expected to be significant and are likely to be easily handled by closest approved solid waste disposal facility.
- Hazardous waste during construction and operation from the will include routine waste generated from such activities to include spent oil, lubricants, paint cans, solvents, etc. Hazardous waste quantities generated are not expected to be significant and are likely to be easily handled by closest authorized facility.

The quantities of waste in the table below for the construction phase have been estimated from other wind farm developments in Uzbekistan.

Table 68: Type and Quantities of Waste Estimated for Construction Phase

Category	Type	Description	Quantities / Weight
Non-Hazardous / Solid	Plastic glass	Bottle, jars, etc.	15m^3
	Metal cans and tins	Drink and food cans	3m^3
	Ferrous material	Steel, gratings, sheet steel, beams, wire, etc.	10 ton
	Non-ferrous material	Aluminum, copper piping, etc.	3 ton
	Paper/cardboard/card from packaging	Packaging, printer paper, newspapers, magazines, etc.	5 m^3
	Plastic bottles	Drink bottles, cosmetic bottles, etc.	15 m^3
	Plastic packaging	Plastics, Styrofoam, etc.	30 m^3
	Domestic waste	Mixed wastes	1,000 m^3
	Textiles	Unwanted and uncontaminated clothes	12 m^3
	Wood from packaging	Pallets, crates, beams, general packaging, etc.	600 m^3
	Concrete	N/A	30 m^3
	Clinical	Medicines	3 m^3
		Total Non-Hazardous waste	**1,700 m^3 + 13 ton**
Hazardous / Solid	Containers	Container contaminated by original content (e.g. lube oil, hydraulic fluid, paints, solvents, etc.	6 m^3
	Paints / paint pots	N/A	3 m^3
	Used spill kits and contaminated soils	Absorbents, filter materials (including oil filters not otherwise specified), wiping clothes, protective clothing contaminated by dangerous substances and soil from remediation activities	2 m^3

	Clinical	Offensive waste (e.g. outer wound / surgical dressing, pads, swab), sharp needles, drugs, containers used to dispose urine, bodily secretion, etc.	3 m^3
	Batteries	N/A	1 m^3
	Fluorescent tubes / bulbs	N/A	1 m^3
Hazardous / Liquid	Spent /excess lube oil	N/A	15 L
	Spent /excess hydraulic fluid	N/A	15 L
	Spent / excess solvents	Halogenated/non-halogenated	15 L
	Acids / alkalis solutions	From cleaning/maintenance	5 L
	Paints	Waste paint and varnish pots containing organic solvents or other dangerous substances	1 m^3
	Discarded chemicals	Discarded organic/ inorganic chemicals consisting of or containing dangerous substances	1 m^3
		Total Hazardous Waste	**18 m^3 + 50 L**
Wastewater	Black Water	Wastewater generated from sanitary facilities (i.e. toilets) as well as portable toilers	8,000 m^3
	Grey Water	Wastewater generated from sinks, showers, baths, canteens and laundry facilities	70,000 m^3
	Run-off Water	Water generated from impermeable surfaces (e.g. concrete paved areas)	4,500 m^3
	Other wastewater	This could be wastewater generated from equipment/vehicles washing, concrete washout, etc.	3,000 m^3
		Total Wastewater	**85,000 m^3**

However, as noted earlier, based on the response from key entities, they will be able to handle the waste quantities and waste disposal requirements of the Project (*Note this is yet to be confirmed and will be updated into the ESIA accordingly once official responses are provided*). However, there are additional requirements that should be considered as noted below.

Additional Requirements

The following identifies the additional requirements to be applied by the EPC Contractor during the construction phase and Project Operator during the operation phase respectively and which include:

- Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant.
- Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors).
- Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal.

14.2.4 Potential Impacts on Hazardous Waste Disposal Utilities during Decommissioning Phase

Of particular importance is the disposal of the BESS at the end of their lifetime. During the decommissioning phase of the Project, and as a worst-case scenario disposal of the BESS will take place. BESS is classified as hazardous waste/E-waste.

As a worst-case scenario, the BESS will be disposed at a landfill and no recycling will take place. However, the prospects of BESS disposal and management is not clear at this stage, taking into account the Project timeline of 25 years.

Decommissioning Phase		
Type	Negative	Prospects of BESS disposal and management is not clear at this stage, taking into account the Project timeline of 25 years.
Duration	Short-term	
Magnitude	Low	
Reversibility	Reversible	
Sensitivity	Low	
Likelihood	High	
Significance	**Not Significant**	

Additional Requirements

Given that at this stage there are is a great deal of uncertainty at the decommissioning phase of the Project (with regards as to whom is the responsible party, prospects on waste disposal facilities in Uzbekistan, etc.), it is recommended that before any decommissioning activities take place a Disposal Plan for the BESS is prepared by the responsible entity undertaking decommissioning activities. The plan should consider the following options and compare the costs/benefits of each:

- Evaluate recycling options for E-waste, including the identification of appropriate licensed waste processing facilities for this type of waste within the country, if available.
- Cost estimation for recycling and collecting at the end of lifetime at least but not limited the following components:
  - Power Conversion System,
  - Battery System,
  - Electronic components,
  - Electric components,
  - Buildings and enclosures,
  - Hazardous, toxic, ozone depleting and/or greenhouse gases,
  - Hazardous and/or toxic liquids,
  - Hazardous and/or toxic solid materials.
- Provide suitable proof that the recycling concept is in compliance with Basel Convention. In addition, Project Operator should specifically state which materials will be recycled or disposed locally. If exported internationally, Project Operator should specify which materials will be exported and to which location.

- Include a written confirmation by the Original Equipment Manufacturer (OEM) of the BESS that the following works regarding the Battery System are included:
  - Check-up of the Battery System regarding safe transport,
  - Decommissioning and disassembly,
  - Safe packaging and transport to the designated recycling site,
  - Recycling and disposal according to the state of the art of technology.

Monitoring Measures

- Submission of Disposal Plan along with proof of coordination with the authorities discussed above for works required as part of the Study.

14.2.5 Potential Impacts on Water Resources during the Construction and Operation Phase

It is expected that the Project throughout the construction and operation phase will require water for potable usage (drinking, showering, etc.) and non-potable usage (e.g. cleaning of machinery and vehicles).

The tables below provide an estimate of the water requirements during the construction phase of the project. Sources of water consumption during the project execution will include as discussed earlier: (i) potable water; and (ii) non-potable water. The table provides an estimation for potable water requirements which has been based on the total number of work force anticipated per month during the project and a consumption of 150L per worker per day (including accommodation requirements). Non-potable water requirements have been estimated for onsite activities based on previous wind farm development experiences in Uzbekistan.

It is important to note that numbers below are based on estimations – actual generated quantities will be updated in the water management plan throughout the execution of the project.

Table 69: Total Water Requirements Summary

Type of Water	**Quantity**
Total Potable	198,878m^3
Total Non-Potable	92,000m^3
Total for construction phase	**290,878 m3**
Total per month	**~7,000 m^3 / month**

Table 70: Potable Water Requirements

Month	**Number of Workers**	**Estimated Potable Water Quantities (m^3) (150 L per worker per day)**
1	70	315
2	140	630
3	155	698
4	745	3353
5	1070	4815
6	1390	6255
7	1485	6683

8	1675	7538
9	1710	7695
10	1885	8483
11	2040	9180
12	2125	9563
13	2310	10395
14	2280	10260
15	2385	10733
16	2035	9158
17	1735	7808
18	1505	6773
19	1430	6435
20	1415	6368
21	1415	6368
22	1400	6300
23	1325	5963
24	1325	5963
25	1300	5850
26	1300	5850
27	1270	5715
28	1165	5243
29	605	2723
30	490	2205
31	415	1868
32	415	1868
33	395	1778
34	370	1665
35	345	1553
36	345	1553
37	155	698
38	155	698
39	140	630
40	140	630
41	70	315
42	70	315
Total Potable Water = 198,878m^3		

Table 71: Non-Potable Water Requirements

Month	Estimated Non-Potable Water Quantities (m^3)	Uses
1	2000	- Dust control and dust suppression - Equipment and machinery washing
2	2000	

		- Fire protection
3	5000	- Dust control and dust suppression - Cement and concrete batching, masonry, plaster, etc. - Equipment and machinery washing - Fire protection
4	5000	
5	5000	
6	5000	
7	5000	
8	5000	
9	5000	- Dust control and dust suppression - Cement and concrete batching, masonry, plaster, etc. - Equipment and machinery washing - Fire protection
10	5000	
11	5000	
12	5000	
13	3000	
14	3000	
15	3000	
16	3000	- Dust control and dust suppression - Equipment and machinery washing - Fire protection
17	3000	
18	3000	
19	1000	
20	1000	
21	1000	
22	1000	
23	1000	
24	1000	
25	1000	
26	1000	
27	1000	
28	1000	
29	1000	
30	1000	
31	1000	
32	1000	
33	1000	
34	1000	
35	1000	
36	500	
37	500	
38	500	
39	500	
40	500	
41	500	
42	500	
Total Non-Potable = 92,000m^3		

The water requirements throughout the construction phase will be required temporary (for construction period only) and are considered minimal and not significant.

In addition, water will be required during the operation phase and mainly for drinking and other personal use of onsite staff (a maximum of 80 personnel). Water requirements during the operational phase are not expected to be significant at all. This will include potable water requirements of around 8,500 L per day (accounting to 150L per worker per day) Therefore, total water requirements per year are expected to be around 4,000 m^3.

As noted within "Section 6.3.1", consultations were undertaken with Ministry of Water Resources of Karakalpakstan / Kungrad Water Supply Department whom indicted that in general they will be able to supply water requirements of the Project (expected to be from Ama Darya river and through tankers to the site) but required details on water quantities.

However, a water resources assessment was undertaken by the E&S Team as part of the ESIA works. The assessment was undertaken based on the following:

- Site visit the Project site and surrounding areas to investigate potential sources of water supply;
- Stakeholder consultations and engagements with various entities as summarized below. The objective of such meetings was to collect secondary data as applicable, investigate potential sources of supply, verify ability of such sources to provide water requirements during construction and operation (based on expected quantities required), and other.
    - Deputy Minister of Water Resources of Karakalpakstan
    - Head of the Reclamation Expedition under the Ministry of Water Resources
    - Head of the Department of Irrigation System "Suenli"
    - Director of Kungrad Technical Water Supply Department under "UrgenchtransGaz"
    - Chief Hydrogeologist of Public Institution "O'zbekgidrogeologiya"
    - Deputy Head of "UrgenchtransGaz"
    - Head of Water Utility in Kungrad
    - Leading Specialist of Nature Reserves Department of the Ministry of Ecology, Environmental Protection and Climate Change
    - Water Specialist at Ministry of Ecology, Environmental Protection and Climate Change of Karakalpakstan
    - Head of Aral Hydrology Station of Geology Committee
    - Head Northwest Regional inspection of Geology Committee
    - Head of Shakhpakhty Plant

The water resources assessment concludes that there are four (4) potential options / sources for water supply of the Project. Those are discussed in further details below and in no particular order of priority. The final option / source of supply will depend on water quality, treatment requirements (if any) and logistics for supply.

Option 1 – Assake Audan Groundwater Well

This groundwater well is located on the south of the Karakalpak Ustyurt and within the Assake-Audan depression (coordinates: N 42.604617, E 56.280631) – around 53 km from the Project site. In the past the southern parts of the Assake-Audan and Sarykamysh depressions formed a common lake basin through which the Amu Darya flowed and where the Uzboy river began flowing into the Kaspiy. Currently this is a

deep depression with several artesian wells with brackish water. The wells were drilled during Soviet time for geological needs.

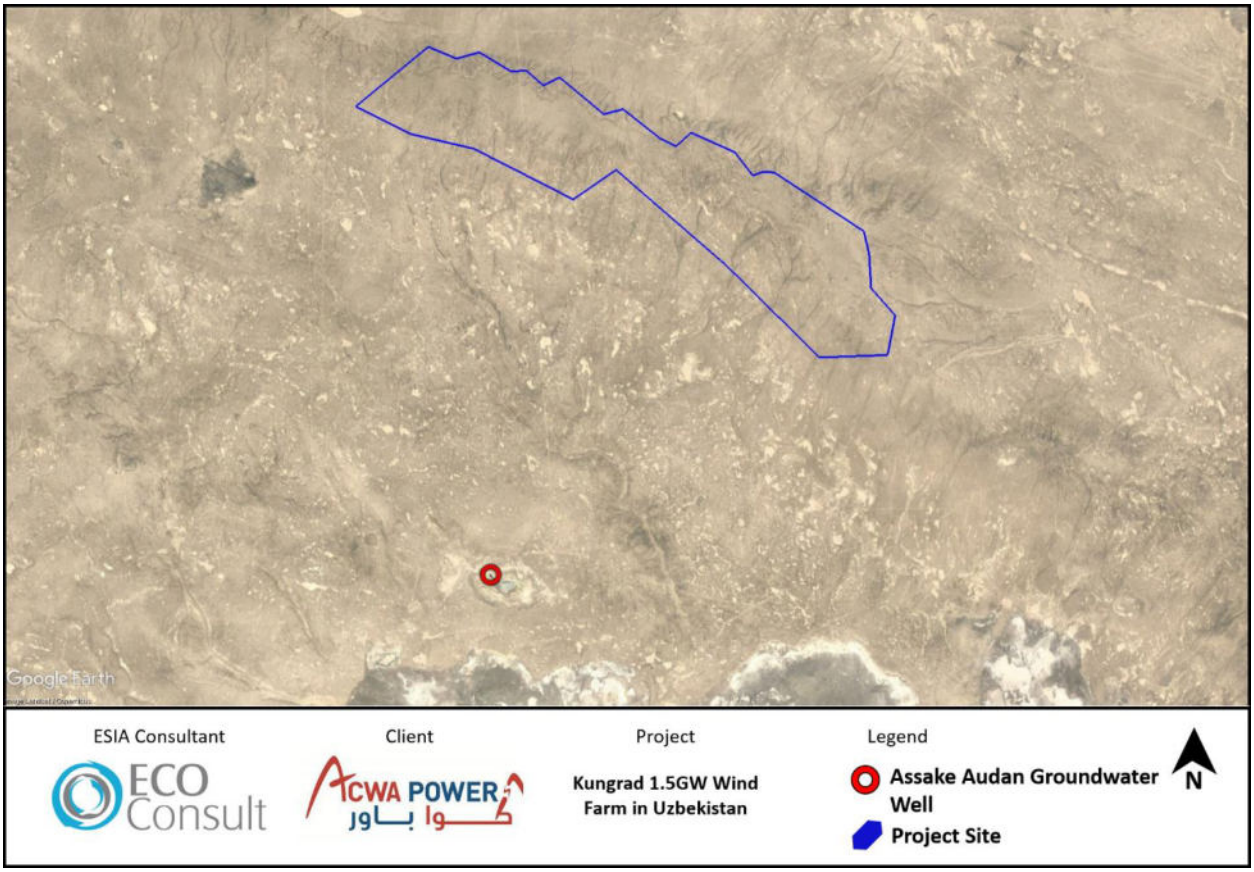

Figure 79: Assake Audan Groundwater Well with the Project Site Location

Nowadays the water is not used for any specific or formal purpose. The water output is about $2m^3$ / minute equivalent to around 80,000 m^3 / month.

However, as the water is not in use there was no information available on the water quality of the Assake Audan groundwater well.

Figure 80: Assake Audan Groundwater Well

Taking into account the water requirements for the construction phase (7,000m^3 / month) and the water supply from this source (80,000 m^3 / month) it is evident that such requirements can be easily met from this source as it represents around 8% only of the total supply of this source, given as explained earlier that this water source is currently under no formal use. Similarly, during the operation phase, the total water requirements (300m^3 / month) represent less than 1% of the total supply of this source.

The following are next steps to be undertaken by the EPC Contractor

- EPC must undertake water quality analysis to determine if water quality is considered suitable for Project requirements and if not determine the treatment requirements.
- EPC Contractor should investigate feasibility of logistical supply of water to the site (e.g., tankers)
- Based on the above and should it be feasible, EPC Contractor should apply for a permit to the Ministry of Mining Industry and Geology (MMIG) to use this water source. MMIG will undertake an analysis to ensure that the quantities are within the sustainable yield of the aquifer (otherwise they would not provide a permit).

Option 2 – Gurkurek Groundwater Well

This groundwater well (coordinates: N 43.36982, E 057.51638) is located around 68 km from the Project site. It is part of Protected Area territory that is managed by the Nature Reserves Department of the Ministry of Ecology, Environmental Protection and Climate Change. Water comes out like a spring from the ground and is considered to be very cold and very salty. The water output is about 10 liters per second / minute equivalent to around 25,000 m^3 / month and there is no formal use currently for this well.

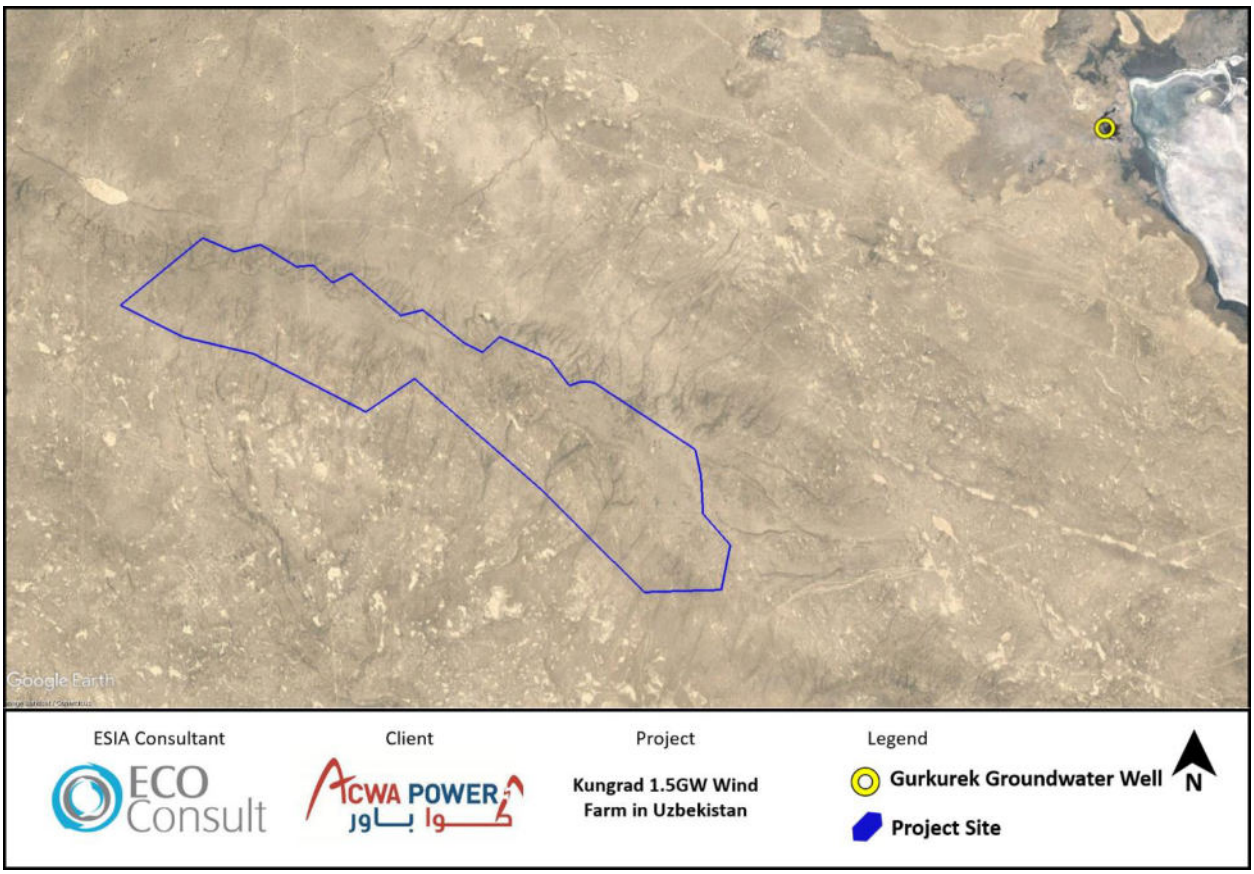

Figure 81: Gurkurek Groundwater Well location within the Project Site

Based on consultations with Nature Reserves representatives as well as Ministry representatives it was indicated that it is possible to allow the Project to use the water from this well – however they required that should this be the case and if a desalination system is installed that it is kept in the Nature Reserve after construction is completed so that they can benefit from it as well. Note: during the consultation, the water requirements as identified earlier were provided.

Figure 82: Gurkurek Groundwater Well

Taking into account the water requirements for the construction phase (7,000m^3 / month) and the water supply from this source (25,000 m^3 / month) it is evident that such requirements can be easily met from this source as it represents around 28% only of the total supply of this source, given as explained earlier that this water source is currently under no formal use. Similarly, during the operation phase, the total water requirements (300m^3 / month) represent 1% of the total supply of this source.

The following are next steps to be undertaken by the EPC Contractor

- EPC undertake water quality analysis to determine if water quality is considered suitable for Project requirement and if not determine the treatment requirements.
- EPC Contractor should investigate feasibility of logistical supply of water to the site (e.g. tankers)
- Based on the above and should it be feasible, EPC Contractor should apply for a permit to the Ministry of Mining Industry and Geology (MMIG) to use this water source. MMIG will undertake a study to ensure that the quantities are within the sustainable yield of the aquifer (otherwise they would not provide a permit).

Option 3 – Department of Technical water supply under Urgench transgaz

Urgench transgaz has a 307-kilometer-long water pipe that runs from Kungrad and which abstracts water from the Amu Darya river via pumps, passing alongside the A380 highway supplying six (6) settlements along the road to include the local communities (as identified in “Section 2.2”) as well as enterprises such

as Uz-Kor Gas Chemical (Ustyurt Gas Chemical Complex) and Kungrad Soda Plant LLC JV. Figure below presents the location of these facilities and highway A380 where the pipeline runs.

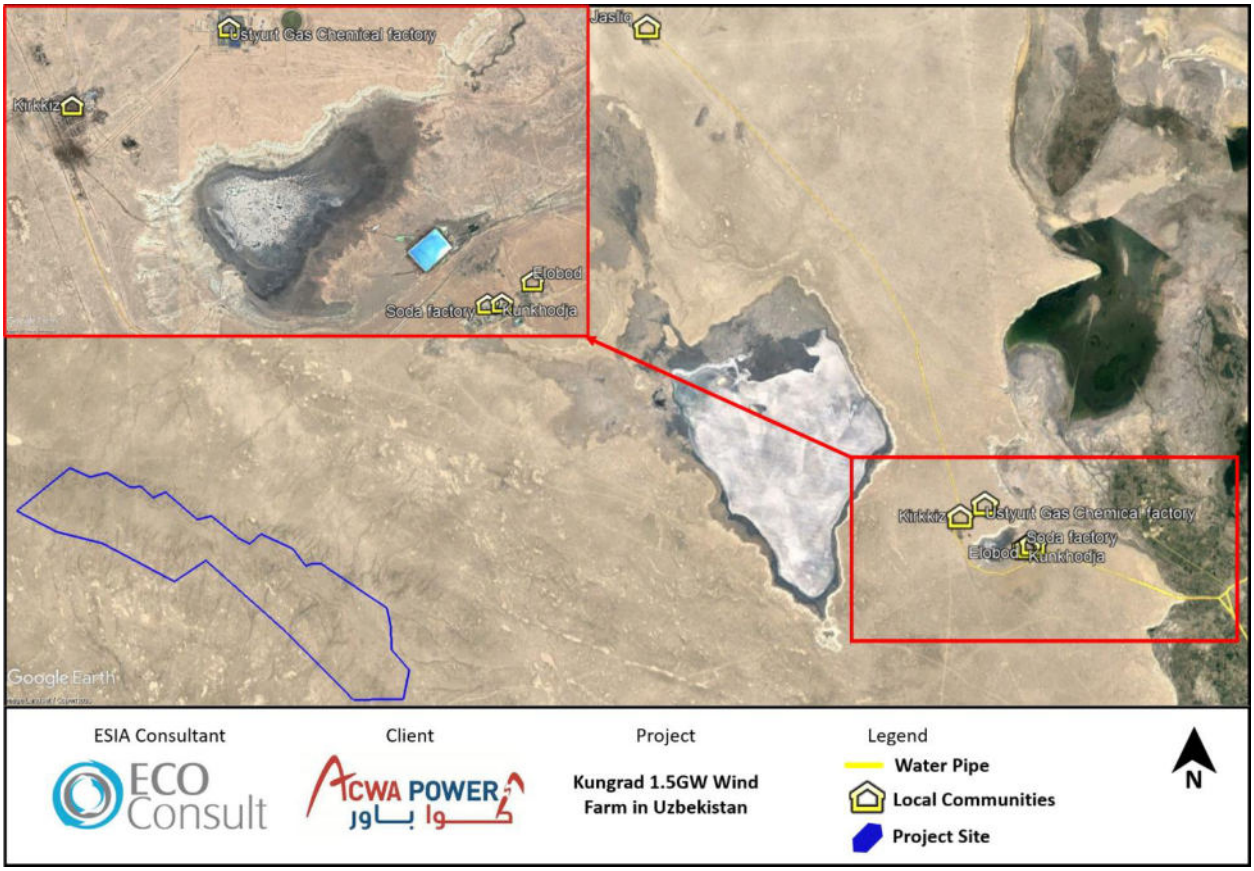

Figure 83: Water Supply under Urgench transgaz along the A380 highway

Based on consultations with representatives from **Urgench transgaz**, it was indicated that the pipeline is allowed to produce up to 90,000 m^3/day while currently it's consumption is around 65-70,000 m^3/day (therefore there is an excess of around 20,000 m^3 / day). Based on such consultations it was also indicated that they will be able to provide the water requirements of the Project given that they are within the excess limits. Note: during the consultation, the water requirements as identified earlier were provided.

As noted earlier, the water requirements for the construction phase is estimated at 7,000m^3 / month while that during the operation phase is estimated at 300m^3 / month.

The following are next steps to be undertaken by the EPC Contractor

- EPC undertake should establish formal communication with UrgenchtransGaz and request to undertake a water quality analysis to determine if water quality is considered suitable for Project requirement and if not determine the treatment requirements.
- EPC Contractor should investigate feasibility of logistical supply of water to the site (e.g. tankers)
- Based on the above and should it be feasible, EPC Contractor should enter into contractual arrangements with UrgenchtransGaz for water supply.

Option 4 – Onsite Groundwater Well

As noted earlier based on consultations with MMIG it was indicated that there are no site-specific studies available but groundwater depth within the site is expected to be between 70-300 m with salinity levels around 3-10 g/ml.

It is expected that if this option is undertaken, this will require the drilling a deep well and the construction of a small desalination system, with pumping equipment, reverse osmosis system, water storage tank, disinfection system and distribution piping.

The following are next steps to be undertaken by the EPC Contractor:

- EPC obtain permit from MMIG to drill an exploratory well to determine groundwater depth and groundwater quality.
- EPC to undertake water quality analysis to determine if water quality is considered suitable for Project requirement and if not determine the treatment requirements.
- EPC Contractor should investigate feasibility compared with other options identified.
- Based on the above and should it be feasible, EPC Contractor should apply for a permit to the Ministry of Mining Industry and Geology (MMIG) to use this water source. MMIG will undertake a study to ensure that the quantities are within the sustainable yield of the aquifer (otherwise they would not provide a permit).

Construction Phase			**Operation Phase**		
Type	Negative		Type	Negative	
Duration	Short-term	Relevant for construction and operation period	Duration	Long-term	Relevant for operation period
Magnitude	Medium	Amounts of water required is considered medium level	Magnitude	Low	Amounts of water required is considered low level
Reversibility	Reversible	N/A	Reversibility	Reversible	N/A
Sensitivity	High	Given water situation in Karakalpakstan	Sensitivity	High	Given water situation in Karakalpakstan
Likelihood	High		Likelihood	High	
Significance	**Moderate**		**Significance**	**Minor**	

Additional Requirements

The following identifies additional requirements to be applied by the EPC Contractor and Project Operator during the construction and operation phase respectively and which include:

- Undertake feasibility assessment to determine the optimal water supply option for the Project based on the options provided earlier. Based on the option selected, ensure all permits and requirements are obtained as applicable.
- Document water consumption of the Project during construction (monthly) and during operation (annually)
- Develop a water management plan for the construction and operation phase. The plan should emphasize on water conservation and efficiency such as the following in particular:
  - Utilizing the dry-cleaning methods wherever applicable;

- Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger guns, etc.);
- Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable.
- Ensure that washing/cleaning activities (e.g. vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible.
- Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate.
- Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.

14.2.6 Potential Impacts on Road Networks during the Construction Phase

1. Sources of Traffic

The principal sources of traffic generated by Project construction are listed as follows:

- ***Delivery of Equipment, Machinery and Materials:*** this will include vehicles that will be utilized for the delivery of equipment, machinery and materials to the Project site and that are required for the construction phase. This will include but not limited to: (i) haulage container trucks (to supply WTG components, inverters, transformers, etc.), (ii) site machinery required (excavators, rollers, etc.); (iii) construction material (e.g. aggregate, gravel, soil, etc.), and (iv) and other as applicable. Such vehicles will be using key national highways and roads from ports and other locations where such materials are sourced.

  As the EPC Contractor has not been assigned yet, no details are available at this stage on the number of vehicles required for delivery of material and equipment, routes, sources of materials, etc. Therefore, for this figure the numbers have been estimated based on requirements/experiences for other wind farms in Uzbekistan.

  Based on the above, the ***maximum at peak*** daily container delivery at peak is estimated at around 600 as noted within the table below (which is expected at peak months only).

WTG Components	20
Site Machinery	50
Construction Material	500
Total at peak per day	**~600**

- ***Transport of project workers***: as discussed earlier, no details are available at this stage on whether there will be onsite or offsite accommodation facilities for workers. However, given the remoteness of the site, it is highly likely that there will be offsite accommodation facilities. Nevertheless, it is expected that Project staff and local workers will be transported to and from the construction site by buses at least once per month. Taking into account the number of workers at peak (2,500 worker), and bus capacity (assuming 50 passengers), the daily transportation requirement would be **~2 buses per day at peak.**

- ***Service Contractors***: contractors assigned to provide regular services for the Project to include water tankers, wastewater haulers, hazardous waste haulers, food/catering suppliers, that will be through trucks and large vans.

  The daily maximum number of trucks at peak in relation to this can be estimated at 10 (assuming they all are onsite on the same day) to include water supply tankers, wastewater hauler, hazardous waste hauler and food supply/catering trucks.

- ***Other***: this will include other minor traffic and transportation requirements such as: (i) construction monitoring visits by entities (e.g. lenders, auditors, etc.); (ii) emergency response vehicles in case of an incident onsite (e.g. fire trucks, ambulance, etc.); (iii) other visitors to the site. Those will not generate additional traffic to the sire and can be considered negligible.

Summary of Peak Vehicle Numbers

The table below provides a summary of the peak maximum daily number of vehicles that could access the site during a single day. *However, it is important to note that the figure is based on peak numbers assuming all peak traffic requirements occur on the same day*. In reality, actual peak numbers are likely to be lower given that peak number of workers and peak delivery of materials is not expected to be on the same day or week.

Table 72: Summary of Peak Vehicles

Traffic Source	Maximum Number of Vehicles
Delivery Vehicles	~600
Buses	2
Service Contractors	10
Total per day at peak	**612**

2. Traffic Route

Wind turbines are manufactured in factories and transported to the installation site where they are assembled. Wind turbine components have big dimensions and weight and their transport poses a challenge to the existing roads and infrastructure. The Project's wind turbine blades have a length of around 100m and are usually transported in one piece. Tower components can have a transport height of up to 5m. Nacelles are also usually transported in one piece and can have a weight of more than 70tons.

Components for wind energy projects are usually transported by sea from the manufacturing country to the nearest seaport and are then loaded in existing ports to trucks which maneuver their way through existing roads to the installation site.

Given the increasing size, weight, and length of components of the wind turbines, proper transportation and logistical solutions could be required for managing the heavy-load long-haul requirements. If improperly planned and managed, the trucks hauling the various heavy Project components may damage the existing roads, highways and bridges, utility lines (e.g. electricity lines), and could also be a public safety concern for other vehicles on the road.

A Traffic and Transport study was undertaken by the Developer to study the proposed routes in order to transport the Project's WTG to the Project site.

The main objective of this study is to analyze and assess the potential opportunities and capabilities within the currently viable transportation routes. This involves conducting a thorough examination of the

terrestrial transportation pathways leading to the designated Project location. It also involves reviewing the existing infrastructure network along these routes, including but not limited to the areas relevant to the Project's scope. This examination seeks to identify the complete range of constraints and dimensional parameters that align with the operational requirements of oversized and overweight equipment. The constraints or obstacles include: (i) sharp turns; (ii) bridges; (iii) overpass bridges; (iv) railway overpass; (v) road signs; (vi) road width; and (vii) others. The figure below presents an example of the constraints that were considered.

To achieve these objectives, a series of systematic tasks were carried out in alignment with the predefined goals established by the Developer as follows:

An exhaustive survey was conducted, encompassing the evaluation of land routes starting from the Khorgos border (Nur Zholy customs) and extending to the Project site.

Subsequently, a detailed analysis was conducted, delving into the intricacies of the infrastructure environment along these designated routes.

A comprehensive review was also undertaken, examining the potential use of the existing public road network for transporting out-of-gauge (OOG) cargo.

The endeavor further included a meticulous examination of the technical documentation related to both the existing and planned facilities provided by the asset owners.

The culmination of these efforts resulted in the development of a highly detailed technical report, which synthesizes the outcomes of these comprehensive endeavors.

Figure 84: Transport and Road's Constraints

The proposed transportation options that will be considered are provided in the figure below and further discussed.

Option 1: Nur Zholy Customs Post to Yallama Customs Post

The route starts from the Nur Zholy Customs Post in the People's Republic of China and passes through the Republic of Kazakhstan, then ends in Yallama Customs Post in Uzbekistan. The route passes through the territory of Almaty, Zhambyl, South Kazakhstan regions with a total distance of 1,430km. Based on the collected and analyzed materials along the surveyed route, the following key findings are deduced:

Under the specified transportation conditions outlined in the technical report, it is possible to safely pass a vehicle with overall dimensions of 85.00m x 5.00m x 5.00m.

When traversing bridge structures with a declared total mass of 124.00 tons, approval and permission from regulatory bodies such as the Transport Control Inspectorate and KazAvtoZhol JSC are mandatory.

The vehicle should travel at a maximum speed of 10 km/h in accordance with Decree No. 228 dated 04/24/2020.

The public roads along the route are currently in satisfactory condition, ensuring safe conditions for transporting oversized and heavy cargo.

To ensure the safe movement of oversized and heavy vehicles along the designated route, it is imperative to have both a PILOT cover car and a traffic police car for temporary traffic control and blocking of oncoming vehicles.

On ascents and descents along the route, careful consideration of suitable vehicles for cargo transport is essential, along with adherence to requirements for transporting oversized and heavy goods.

Safe passage of oversized and heavy transport cargo along the route necessitates strict adherence to measures outlined in the survey report and the following requirements:

- Deployment of two PILOT cover vehicles throughout the entire route.
- Coordination with traffic police for traffic blocking as specified in the technical report.
- Transporting goods only under favorable road and weather conditions (optimal visibility).
- Advance coordination and execution of installation and dismantling operations along the entire specified route.
- The special cargo platform carrying the cargo must be equipped with swing bridges to facilitate maneuvering on certain sections of the route.

Option 2: Yallama Customs Post to the Project Site

The route passes through the Regions of Tashkent, Syrdarya, Jizzakh, Samarkand, Navoiy, Bukhara, Khorazm and the Republic of Karakalpakstan in Uzbekistan with a total distance of 1,112km. Based on the collected and analyzed materials along the surveyed route, the following key findings are deduced:

Artificial Structures: When navigating artificial structures with a gross weight of 124.0 tons and an axial load of 8.7 tons, structural reinforcement or complete overhaul of load-bearing elements is required in accordance with the route survey's specifications.

Public Roads: Public roads along the route are generally in satisfactory condition, provided that cargo adheres to standard axle loads as per the regulations outlined in the Republic of Uzbekistan's RCM No. 342 dated December 26, 2011, and measures introduced for controlling vehicle weight and volume parameters, as per RCM No. 337 dated May 28, 2020.

Above-Ground Utilities and Structures: Above-ground air utilities and structures, Road Traffic Safety Inspectorate posts (DPS), some power lines, and telecommunication lines present obstacles due to their 4.5-meter height. Coordination with relevant ministries and departments, including National Electric Networks of Uzbekistan JSC and Regional Electric Networks JSC, is necessary to facilitate safe passage. Attention should also be given to gas pipelines, overhead signs, traffic lights, and other obstructions, which may require temporary disconnection.

Ascents and Descents: Appropriate vehicle selection and compliance with standards for transporting bulky and heavy goods are imperative for managing ascents and descents along the route.

For the safe transport of oversized and heavy cargo along this route, compliance with the following measures and requirements is essential:

- Selecting a road train with the required number of axles and calculated load distribution as recommended in the technical report.
- Executing necessary actions such as constructing bypasses, reinforcing bridge structures, temporarily suspending overhead power lines, and ensuring favorable road and weather conditions.
- Adhering to the "Rules for ensuring traffic safety during the transportation of oversized and heavy cargo by road" in accordance with the Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 342 dated December 26, 2011, and measures introduced for controlling vehicle weight and volume parameters per RCM No. 337 dated May 28, 2020.
- It is necessary to notify the territorial road maintenance organizations of the Committee for Highways in advance. This notification should include details about the planned route within the regions under their jurisdiction, highlighting the traffic plan for cargo accompaniment, obstacle elimination strategies, and solutions for the safe passage of heavy and oversized road trains.

Option 3: Shymkent to Beyneu

The route passes through the territory of Kyzylorda, Aktobe, South and west of Kazakhstan Regions with a total distance of 2,410km.

Based on the collected and analyzed materials along the surveyed route, the following key findings are deduced:

Under all specified transportation conditions outlined in the technical report, it is both possible and safe for a vehicle with overall dimensions of 85.00m x 5.00m x 5.00m to pass through.

Concerning bridge structures, when traversing these structures with a declared total mass of 124.00 tons, it is imperative that a special cargo platform, carrying the cargo, is equipped with swing bridges. These swing bridges are essential for maneuvering on specific sections of the route.

Option 4: Port Bautino to the Project Site

The route passes through Zhangildy, Shetpe, south and west of Kazakhstan Regions and then enters Uzbekistan through the northwestern border in Karakalpakstan en-route to Kungrad Region and the Project Site. The total distance of the route is 912km.

Based on the comprehensive collection and analysis of materials along the surveyed route, stretching from Port Bautino customs post to Tazhen at the Border of the Republic of Uzbekistan at Davut-Ata customs to the Project site, the following were deduced:

Under the specified transportation conditions outlined in the technical report, it is both possible and safe for a vehicle with overall dimensions of 85.00m x 5.00m x 5.00m to traverse this route.

Regarding bridge structures, when navigating these structures with a declared total mass of 124.00 tons, it is imperative that a special cargo platform carrying the cargo is equipped with swing bridges. These swing bridges are necessary for maneuvering on specific sections of the route.

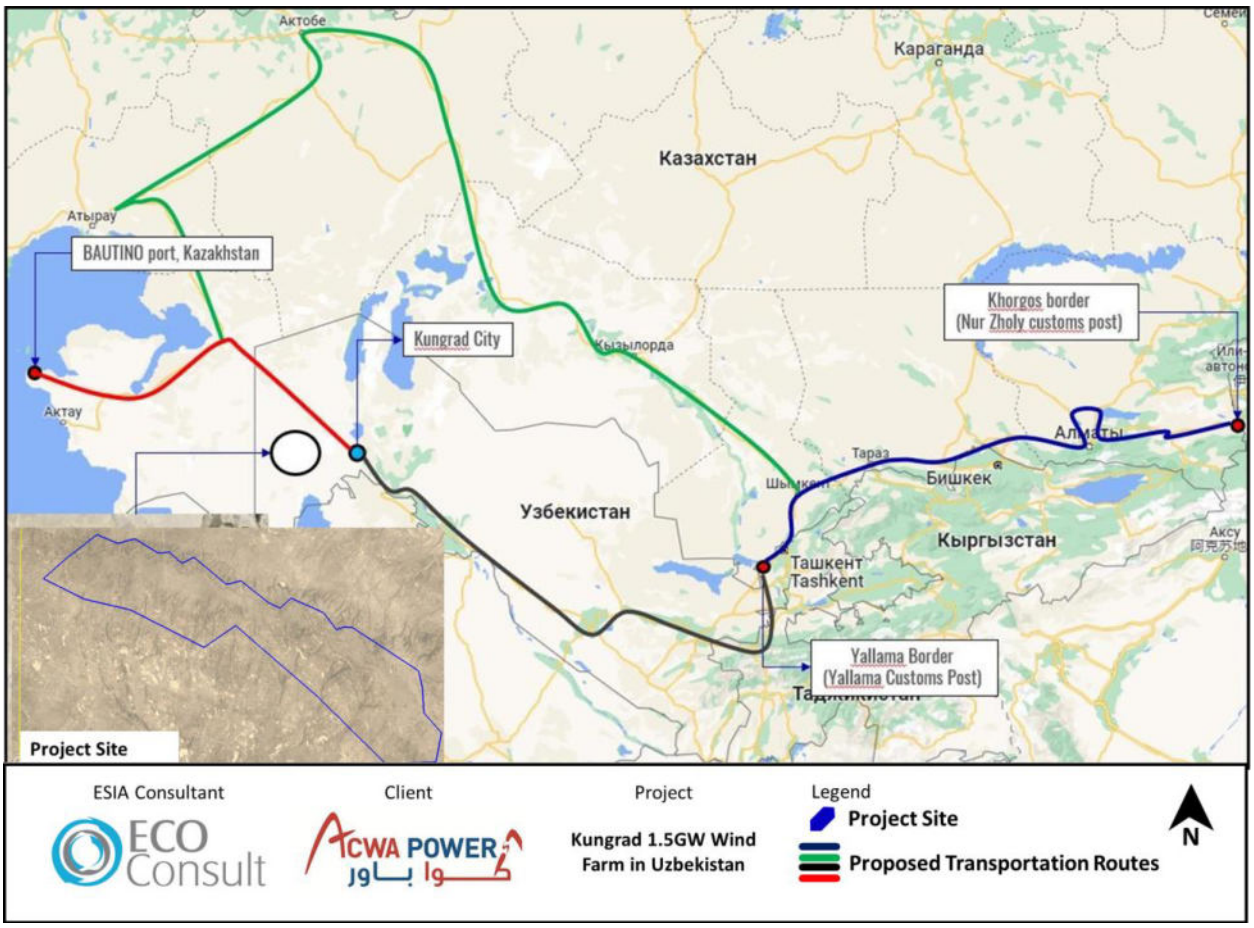

Figure 85: Proposed Transportation Routes

3. Impact Assessment on Traffic and Road Capacity

As discussed in "Section 6.3.1", based on consultations with Ministry of Transport of Karakalpakstan / Kungrad District Road Use Unitary Enterprise aimed to obtain the following information:

- Theoretical road capacity;
- AM/PM traffic counts; and
- Road conditions;

However, it was indicated that such information is not available.

Nevertheless, the Project's traffic requirements are expected to utilize as a worst-case scenario throughout all traffic routes to be utilized 1-lane highways which typically have a capacity of 2,000 equivalent vehicles per hour (as opposed to 2-lane highways which have a capacity of 3,500 equivalent vehicles per hour).

The table below presents the traffic requirement for the Project as established earlier compared to the 1-lane highway capacity. As noted, the entire Project traffic requirement will not result in an additional traffic of around 5%.

Table 73: Project and Existing Traffic

Traffic Source from Project	Maximum Number of Vehicles per day	Equivalent Vehicles*	Equivalent Vehicles per hour	Highway Capacity
Delivery Vehicles	600	3000	125	2,000
Buses	2	2		
Service Contractors	10	30		
Total	**612**	**3,000**		

Assuming half/single/double trucks equal to 2/3/5 equivalent vehicles respectively

Construction Phase		
Type	Negative	
Duration	Short-term	Limited to construction period only
Magnitude	Medium	Given a 5% increase only in traffic
Reversibility	Reversible	Baseline restored after completion of construction works
Sensitivity	Medium	Given a 5% increase only in traffic
Likelihood	High	Limited to construction period only
Significance	**Moderate**	

4. Impact Assessment on Health and Safety

Health and safety in relation to traffic and transport is mainly related to potential for accidents occurring on roads and highways which in turn could affect the health and safety of users on the roads, workers and other. Road accidents can derive from a number of causes, to include but not limited to the following:

- Violating traffic rules such as speed limits
- Bad driving behavior such as overtakes, sudden lane changes, misuse of direction indicators, low level of attention, awareness condition of the driver and other
- Road characteristics and conditions. There could be areas within highways utilized that have sections that are in poor conditions and require repairs repair such as potholes and uneven surfaces which gives rise to 'accident hotspots.
- Vehicle maintenance (brakes, suspensions, etc.)
- Weather conditions to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures
- Project components mainly related to abnormal loads (if applicable) which if inappropriately managed could entail health and safety risks on users on the roads

Construction Phase		
Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are controlled through implementation of general best practice.
Duration	Short-term	
Magnitude	Low	
Reversibility	Reversible	
Sensitivity	High	
Likelihood	High	
Significance	**Minor**	

Mitigation Measures

The EPC Contractor and Project Operator are required to develop a Traffic and Transport Plan before commencement of any transportation activities to ensure that the transportation process is properly and adequately managed. The Plan must take into account the following:

- The plan must adhere to the relevant local legislations related to traffic and transport as discussed under the regulatory review section;
- As required within "Section 6.3.1" undertake consultation and engagement activities as part of preparation of this plan with the Ministry of Transport of Karakalpakstan / Logistics Center under the Road Use Unitary Enterprise and the General Department of Automobiles Roads of the Republic of Karakalpakstan to arrange for the logistics of the transportation requirements.
- Update traffic requirements of the Project as established within the ESIA related to materials, equipment, machinery, project workers, services, etc. where for each the number of vehicles, weight loads, schedule, route/duration and other as appropriate must be identified;
- Update and identify final traffic routes required;
- The Plan must update and identify the final traffic routes required for the Project. The plan must analyze and study the entire route for transportation of the Project components from the port till the Project site. The assessment must take into account worst case scenarios for transportation of Project components for blade lengths, tower sections, etc. The study must investigate any constraints which need to be considered along the highways leading to the Project site such as bridges, overhead utility cables, slants in roads, etc. and identify accommodations which need to be taken into account (bypasses, adjustments to roads, etc.)
- Identification of types of vehicles to be utilized
- Identify in detail procedures for onsite management of traffic. This could include but not limited to: (i) optimization of internal traffic layout so that delivery and other vehicles will be able to access site easily; (ii) identification of requirements for controlling access to the site (e.g. security checkpoint, registration, etc.); (iii) providing appropriate lighting for roads and pedestrian walk and ensure they are segregated; (iv) utilization of appropriate and sufficient traffic signs onsite (e.g. speed limits); (v) barricading of open trenches and excavated pits; (vi) utilization of banksmen and flaggers and other.
- Identify procedures for transportation activities under extreme weather conditions including conditions for suspicion of activities to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures
- Identify requirements to be adhered to and enforced on all haulage suppliers such as licensing, driving instructions and code of conduct, speed limits, accident management, monitoring and reporting, etc.
- Identification of a code of conduct to be adhered to and enforced on all drivers in the Project
- Identification of speed limits onsite and identification of all traffic signage requirement onsite
- Identification of a procedure for management of onsite/offsite traffic accidents
- Reflect the procedural actions for traffic management in: (i) induction training material; and (ii) repeated/refresher Toolbox Talks (TBT)
- Identify Key Performance Indicators (KPI) for implementation of plan
- Identify roles and responsibilities for implementation of plan

- Identify abnormal loads and obtain permits to carry these loads on highways
- Ensure all vehicles are subject to a regular inspection / maintenance program

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator during the construction and operation phase and which include:

- Submission of Traffic and Transport Plan
- Regular (daily) visual monitoring of speeds and density of project traffic onsite and on highway near the site entrance and exit
- Ongoing monitoring of delivery vehicle tracking data from port to site (as applicable)
- Maintaining vehicle inspection / maintenance log
- Recording and documenting of any incidents of non-compliance with plan
- Report all project related onsite/offsite traffic accidents and complaints. Report should identify the cause of accidents or complaints and corrective measures undertaken to ensure such incidents are not repeated again.

14.2.7 Potential Impacts on Gas Infrastructure during the Planning Phase

Improper planning and site selection of the Project components could damage/disturb existing pipeline, and given its characteristics in such cases this could cause serious health and safety risks to workers. In addition, as discussed earlier in "Section 6.3.1" there were previously some geological exploration activities undertaken onsite that included blasting activities.

Planning Phase		
Type	Negative	
Duration	Long-term	Relevant for construction and operation period
Magnitude	Medium	Impacts will be noticeable
Reversibility	Irreversible	As it could entail serious H&S risks
Sensitivity	High	Given that it could entail serious H&S risks to workers
Likelihood	Low	
Significance	**Moderate**	

Mitigation Measures

The following identifies the key mitigation measures that should be undertaken by the EPC Contractor during planning phase of the Project:

- As a first step, preliminary design of the Project should take into account a 250m buffer from all gas infrastructure onsite as required by UrgenchtransGaz.

- It is highly likely that the Project will require several point crossings over the pipeline to connect the various WTG and Project components. This should be incorporated as part of the detailed design. The detailed design must be submitted to UrgenchtransGaz review and approval.
- Obtain final and formal communication from State Committee on Geology and Mineral Resources that there will be no more exploration or blasting activities within the Project area.

As discussed in "Section 14.1.7" there is a small overall area between the Project footprint and the Committee's exploration area. Ensure that final Project boundary (including any Project components) are not placed within this area and ensure that final approval on this is obtained from the State Committee. The following identifies the key mitigation measures that should be undertaken by the EPC Contractor during construction phase of the Project:

- As part of induction training, it must be emphasized to all workers the presence of the gas pipeline within the Project site. It must also be emphasized that all transportation activities should be restricted to destinated roads and that it is strictly prohibited to approach the gas pipeline or its buffer area.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor during the planning phase and which include:

- Submission of formal letter from UrgenchtransGaz with approval of detailed design; and
- Submission of formal letter from State Committee on Geology and Mineral Resources confirming no more exploration or blasting activities within the Project area and approval on final Project boundary.

15. WORKER WELFARE, HEALTH AND SAFETY

This section presents the assessment of potential impacts during the various Project phases on worker welfare, health and safety. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

15.1 Assessment of Baseline Conditions

Assessment of baseline conditions with regards to worker welfare, health, and safety is considered irrelevant. In addition, it is important to note that at this stage the EPC Contractor has not been selected (nor any subcontractors for this project) and therefore no details are available on the worker strategy (e.g., accommodation, composition, etc.)

15.2 Occupational Health and Safety Impacts during Construction and Operation

Throughout the construction and operation phase there will be generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents. The following risks are generally associated with wind farm development projects:

- Slips and falls;
- Working at heights;
- Working with powered and hand-held tools;
- Struck-by objects;
- Moving machineries;
- Working in confined spaces and excavations;
- Exposure to chemicals, hazardous or flammable materials and fire;
- Exposure to electric shocks and burns when touching live components;
- Covid-19 risks; and
- Of particular importance within the Project area are also:
  - Risks related to remoteness of the Project site (e.g. in case of a medical emergency)
  - Risks from sand and salt storms including windy conditions
  - Risks from extreme hot and cold weather and conditions and low/high temperatures

Construction Phase			Operation Phase		
Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are	Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are
Duration	Short-term		Duration	Short-term	
Magnitude	Medium		Magnitude	Medium	
Reversibility	Irreversible		Reversibility	Irreversible	

Sensitivity	Medium	controlled through implementation of general best practice.	Sensitivity	Medium	controlled through implementation of general best practice.
Likelihood	Medium		Likelihood	Medium	
Significance	**Moderate**		**Significance**	**Moderate**	

Mitigation Measures

Occupational Health and Safety Plan (OHSP)

The EPC Contractor has not been selected at this stage for the Project. However, at a later stage once selected, it is expected that an Occupational Health and Safety Plan (OHSP) is prepared and submitted regarding the Project's construction, installation and commissioning works as well as the general construction site operations. In addition, the Project Operator is expected to develop an OHSP tailored to the Project's operation phase.

The objective of the OHSP should be as follows:

- Prevent all occupational incidents to the greatest extent possible for all workers;
- Zero fatal accidents, injuries and lost time accidents;
- Zero occupational disease;
- Zero major incidents;
- Providing a place of work that is safe for workers and communities;
- Full compliance with legal and contractual requirements related to occupational health and safety; and
- Maintain safe working areas and good housekeeping.
- The OHSP for the construction and operation phase should be Project and site specific and must take into account the national OHS legislation. In addition, it must also be compliant with international E&S standards and requirements to include in particular IFC PS2 (Labor and Working Conditions), EBRD PR 2 (Labor and Working Conditions) – all of which recognize the importance of avoiding or mitigating adverse health and safety impacts on workers and require the development of a project-specific health and safety plan that is in accordance with Good International Practice (GIP).

In general, the OHSP should address the following components:

- Risk assessment and job safety planning procedure;
- Permit to Work (PTW) system procedure;
- Lock Out/Tag Out (LOTO) Procedure;
- Site control occupational health and safety procedure to include requirements for: Personal Protective Equipment (PPE), requirements for site risks (fall protection, powered and hand tools, compressed air / gas cylinders, fire prevention, hot works, electrical works, material handling, machinery use and safety, excavation/concrete works/civil works, confined space activity, storage, medical requirements, and communicable disease management);
- Occupational health and safety signage requirements;

- WTG erection OHS procedure (building wind turbine platforms, assembly of anchor cage, loading and unloading material, installation of turbine components, signaling and fencing, material storage, preparation and mounding of tubular tower, nacelle preparation and installation, installation of drive train, preparation of hub, installation of blades, installation of high voltage cables);
- Identify OHS training requirements to include but not limited to induction training, specialized trainings, and other as appliable. Specialized trainings will be required for the following;

  - Safe rigging and lifting
  - Welding and Hot Works
  - Ladders and scaffolding
  - Electrical works
  - Fall protection
  - Lock-out/tag-out
  - Excavation
  - Hot Works
  - Power and Hand Tool Safety
  - Extreme weather conditions (e.g. sand and salt storms, windy conditions, hot and cold weather and conditions and low/high temperatures
  - Heat Stress
  - Permit to work
  - Defensive driving
  - Lifting and rigging safety
  - Banksman
  - Manual handling
  - Confined Spaces
  - Excavations
  - Working at heights

  In addition, all workers that will be involved with the erection activities for the turbines will be required to undertake a third-party certified OHS training.
- Identify monitoring and reporting requirements;
- Identify roles and responsibilities of the personnel involved in implementation of the plan; and
- Exposure and risk of transmission of COVID-19 throughout the workforce and measures to reduce such risks (e.g., awareness session on symptoms, isolation measures for confirmed cases, utilizing masks and sanitizers, social distancing where applicable, etc.).

The EPC Contractor and Project Operator are expected to adopt and implement the provisions of the OHSP throughout the Project construction and operation phase.

Emergency Preparedness and Response Plan (EPRP)

The EPC Contractor and Project Operator must submit a project and site-specific Emergency Preparedness and Response Plan (EPRP). The objective should be as follows:

- Identify emergency response procedure to be implemented with the objective of establishing a series of organization, operational and preventive measures in, which in turn will ensure the safety of workers and property within the specific Project site; and
- Identify emergency control measures for key expected emergency incidents.
- The plan for the construction and operation phase should be Project and site specific. In general, the EPRP should address the following components:
- Identify of a communication and management process with external authorities to include in particular firefighting services and health providers
- Identify an emergency procedure is and onsite notification process
- Identify emergency control measures for key expected emergency incidents to include but not limited to fire, accidents, spillage, traffic accidents, natural disasters and other. Of particular importance within the Project area are also:
  - Risks related to remoteness of the Project site (e.g. in case of a medical emergency)
  - Risks from sand and salt storms including windy conditions
  - Risks from extreme hot and cold weather and conditions and low/high temperatures
- Identify requirement for emergency kits
- Identification of onsite assembly points
- Identification of emergency signs
- Identify training requirements to include but not limited to induction training, emergency responders training, and emergency drills.
- Identify monitoring and reporting requirements;
- Identify roles and responsibilities of the personnel involved in implementation of the plan; and

The EPC Contractor and Project Operator are expected to adopt and implement the provisions of the EPRP throughout the Project construction and operation phase.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator during the construction and operation phase:

Inspection to ensure the implementation of the provisions of the OHSP and assess compliance with its requirements;

- Inspections and audits on OHSP requirements identified earlier; and

- Reporting on the following: (i) number of near misses per month; (ii) number of injuries per month; (iii) number of medical evacuations per month; (iv) number of working condition complaints per month; (v) lost working hours per month; (vi) number of working days since the last accident; (vii) number of HS audit/inspections; (viii) number of HS training/toolbox talks; (ix) number of HS meetings per month; (x) number of unsafe acts/conditions per month.

Inspection to ensure the implementation of the provisions of the EPRP and assess compliance with its requirements;

- Inspections and audits on EPRP requirements identified earlier; and
- Reporting on the following: (i) number of emergency responders assigned with required certification; (ii) number of ambulances; (iii) number of clinics; (iv) number of fire extinguishers; (v) number of fire alarms; (vi) number of doctors / nurses; (vi) number of emergency drills conducted; (vii) number of emergency incidents triggered.

15.3 Worker Accommodation Impacts during Construction and Operation

In relation to worker accommodation, as discussed earlier the EPC Contractor and Project Operator have not been selected yet (nor any other sub-contractor which might be involved in the Project). Therefore, it is not clear at this point whether there will be any onsite accommodation for workers, or whether they will be accommodated at the closest villages/cities.

However, given the remoteness of the Project site and given that it is located 110km from the nearest village /city, it is highly likely that onsite worker accommodation will be developed for the construction and operation phase.

In general, inappropriate accommodation facilities entail impacts on worker welfare that could include but not limited to:

Workers could be provided with accommodation facilities that do not meet basic services. This includes security arrangements, appropriate work temperature, safe food, drinking water, access to safe exit in emergency conditions, segregated toilets, washing facilities and sleeping areas for women and men, and access to means of communication with areas outside the project boundary.

If workers are accommodated within local communities (although unlikely as discussed earlier), then there could be impacts related to inappropriate code of conduct by the workers with such local community members. This in turn could cause conflicts which if improperly managed could result in escalation of events potentially affecting the safety of workers. Such conduct could include:

- Disrespect of local traditions and norms
- Disrespect religious customs
- Disrespect of community goodwill
- Harassment
- Trespassing into nearby private properties and lands

Taking the above into account, the table below presents the overall impact assessment criteria.

Construction Phase			Operation Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.	Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Short-term		Duration	Short-term	
Magnitude	Medium		Magnitude	Medium	
Reversibility	Reversible		Reversibility	Reversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Medium		Likelihood	Medium	
Significance	**Moderate**		**Significance**	**Moderate**	

Mitigation Measures

The EPC Contractor and Project Operator must prepare a Worker Accommodation Plan (WAP). The objective of the plan is to identify the required management standards and specifications for accommodation that shall be met for the workforce.

The Plan must include the following components:

- Identify the workforce requirements including all subcontractor requirements;
- Identify workforce transportation requirements to/from accommodation facilities;
- Identify accommodation procedures to ensure that workers are provided with a decent accommodation which meets the basic worker's needs. In specific, onsite and/or offsite accommodation must be compliant with good international industry practices – mainly the "Workers' accommodation: process and standards" (EBRD/IFC Guidance Note, 2009). The document provides guidance notes on general living facilities, room facilities, medical facilities, management of accommodation units, etc.;
- Accommodation facilities and specifications must take into account site-specific conditions to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures;
- In relation gender requirement the following should be considered:

  - Separate sleeping rooms for men and women will be provided in shared accommodations;

  - Means of securing bedroom doors from inside and out will be provided; and

  - Finally, female sanitary and toilet facilities will be kept separate from men.
- Identify housing rules and regulations including code of conduct;
- Identify training requirements;
- Identify monitoring and reporting requirements; and
- Identify roles and responsibilities of the personnel involved in implementation of the plan.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator during the construction and operation phase:

Inspection on workers accommodation to ensure its compliance with the requirements of "EBRD/IFC's Guidance Note – Workers' accommodation: process and standards" to include the following.

- Inspections and audits on standards of worker accommodation to include but not limited to room/dormitory facilities sanitary and toilet facilities, canteen, cooking and laundry facilities, medical facilities, leisure and social facilities; and
- Inspections and audits on management of worker's accommodation to include management of staff, health and safety, security, etc.
- Reporting on: (i) worker accommodation incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) worker accommodation grievances and complaints.

15.4 Potential Impacts from Blasting Activities

Although not yet confirmed, due to the geological conditions within the Project site, the foundation works for various Project components (such as turbine foundations) might require blasting activities.

If such activities are improperly managed, they could entail serious impacts on worker health and safety which could result in permanent disability, serious injuries or even death.

Construction Phase		
Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are controlled through implementation of general best practice.
Duration	Short-term	
Magnitude	Medium	
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Medium	
Significance	**Moderate**	

Mitigation Measures

The following identifies the mitigation measures that should be implemented by the EPC Contractor during the construction phase of the Project:

- A Blasting Method Statement will be developed prior to conducting the blasting;
- A blasting supervisor will be in place to coordinate with the shot-firer. Sirens will be sounded throughout the duration of the blasting and for 30 minutes after;
- Entrances to the blasting area will be blocked and no unauthorized personnel permitted to enter;
- Public access to construction areas will be restricted using a radial exclusion zone of 300m where blasting works are to take place. Security personnel will be used to ensure that no one except for authorized personnel are present within the exclusion zone to avoid them being hit by flying debris or injured from the inhalation of dust; and
- Warning signs indicating the use of explosives for the purpose of blasting will be installed along access roads in the vicinity of the relevant WTGs where such works are taking place, to inform of the risks posed by such activities.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

- Submission of blasting method statement
- Appointment of a blasting supervisor that will undertake inspections to ensure the above mitigations are implemented

15.5 Worker Human Rights Impacts during Construction and Operation

Inappropriate management of the workforce during both the construction and operation phase could entail several human right risks and violations by employing entities such as the EPC Contractor and Project Operator. This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.

Please note that a standalone gender and human rights risk assessment has been undertaken for the Project which is presented in "Section 18". Please refer to the section for additional details.

Taking the above into account, the table below presents the overall impact assessment criteria.

Construction Phase			**Operation Phase**		
Type	Negative	Such impacts are controlled through implementation of general best practice.	Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Short-term		Duration	Short-term	
Magnitude	Medium		Magnitude	Medium	
Reversibility	Reversible		Reversibility	Reversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Medium		Likelihood	Medium	
Significance	**Moderate**		**Significance**	**Moderate**	

Mitigation Measures

The EPC Contractor and Project Operator are required to develop and implement a Labor and Working Conditions Management Plan (LWCMP). Objective will be as follows:

- Provide an overview of the labor use on the project throughout the construction phase;
- Provide a Human Resources (HR) policy;
- Identify an HR management procedure for the workforce that will ensure decent and humane working conditions, worker rights, and enhance constructive work floor relations. This should be guided by the Local Labor Law as well as the IFC PR 2 and EBRD PR 2 as well as the ILO Fundamental Labor Conventions covering the following in particular:
  - Ensuring all workers onsite are provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager.
  - Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc.

- Recognizing workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference
- Prohibition of child labor within the workforce
- Overall management of young workers within the labor force. The recruitment of children under the age of 18 in illegal and hazardous work should be explicitly prohibited. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction or operation stages, the following should apply: (i) an official letter with the approval of their parents or guardian should be provided; (ii) young workers must provide valid identification that presents proof of age at the recruitment stage; (iii) minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp; (iv) they are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards; and (v) in accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am.
- Prohibition of forced labor and human trafficking including confiscation of employees' passports
- Non-discrimination throughout the entire work cycle in all its forms
- Providing equal opportunities for all throughout procurement and employment opportunities including women groups
- Overall management of daily workers, migrant workers and third-party workers
- Ensure the following on wages: (i) wages to be determined on a case-by-case basis and must be must be fair and should meet the basic needs to maintain a safe and decent standard of living; (ii) must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions; (iii) must be for work of equal value should be provided for female and male workers; and (iv) should not be below the nationally established minimum wage.
- Ensure the following on working hours: (i) in accordance with the Labor law, working hours should be set to a maximum of 40-hours a week over 5 or 6 days including at least one hour break every 4 hours; (ii) overtime is allowed with appropriate need, but in all cases, working hours should not exceed 10 per day; (iii) workers should have a 24-hour period of rest after 6 days of work; and (iv) all workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule.
- Ensure the following on leaves: (i) workers should be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; and (ii) workers should be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract.
- Safe transport will be provided to female and male workers, given the remote area of the Project. The codes of conduct, which prohibit gender-based violence, harassment and abuse, will apply to transportation modes.

- All workers should be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct should prohibit the following and which is subject to disciplinary action: (i) harassment, gender-based violence and abuse of any kind will not be tolerated; (ii) discrimination based on personal characteristics is prohibited to include but not limited to gender, race, nationality, ethnic, social and indigenous origin, religion or belief, disability, age, or sexual orientation. All workers should be provided with a copy of the Gender Based Violence and Harassment (GBVH) Code of Conduct and will be required to sign it.

- Ensure privacy and protection of workers is maintained at all times. This will include limiting access to the below data and information to the EPC Contractor HR Manager only:

- Contracts
- HR files and databases
- Payment register
- Worker grievance forms and registers
- Disciplinary action register
- This information will be properly handled and stored, saved online through password protected files, and in secured cabinets with a fitted lock in case of hardcopies.

- Identify a disciplinary procedure for the workforce to be implemented;

- Identify a worker welfare procedure related to drinking water, rest areas, sanitary facilities, changing rooms and other that should include take into account the following in particular:

- Female sanitary, toilet facilities, and prayer rooms will be kept separate from men.
- All such facilities will have lockable doors with adequate numbers provided.
- Separate changing rooms and cabinets will be provided for men and women both of which have locking mechanisms.

- Identify a worker grievance procedure to manage all worker related complaints and grievances that should consider the following:

- Outlining the measures for escalation of grievances by workers

- Prohibiting gender-based violence and harassment in the workplace and will outline that a suitably trained male and female person is designated to process grievances in which male / female workers might feel uncomfortable discussing with a person of the opposite sex. The grievance mechanism also includes a procedure to deal with Gender Based Violence and Harassment (GBVH) grievances.

- Identify training requirements related to the plan;

- Identify monitoring and reporting requirements related to the plan; and

- Identify roles and responsibilities related to the plan.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator:

- Inspections and audits during construction and quarterly during operation against the plan
- Reporting on: (i) total number of working hours / total overtime; (ii) % of workers receiving salary payment on time; (iii) % of workforce with written contract; (iv) % of workforce with age verification (child labor); (v) % of workforce above minimum wage; (vi) % of forced labor onsite verified; (vii) number of disciplinary actions issued; (viii) number of drinking water units; (ix) number of rest areas provided; and (x) number of sanitary facilities provided; and (xi) number of worker grievances submitted; (xii) number of outstanding grievances.

16. COMMUNITY HEALTH, SAFETY AND SECURITY

This chapter presents the assessment of potential impacts during the various Project phases on community health, safety and security. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

16.1 Assessment of Baseline Conditions

As discussed earlier under "Section 2.2", the local communities relevant to the Project include the following:

- Kirkkiz town located around 110km to the east of the Project site;
- Elobod town located around 120km to the east of the Project site;
- Jasliq town located around 115km to the north of the Project site; and
- Kungrad City Center located around 150km to the east of the Project site.

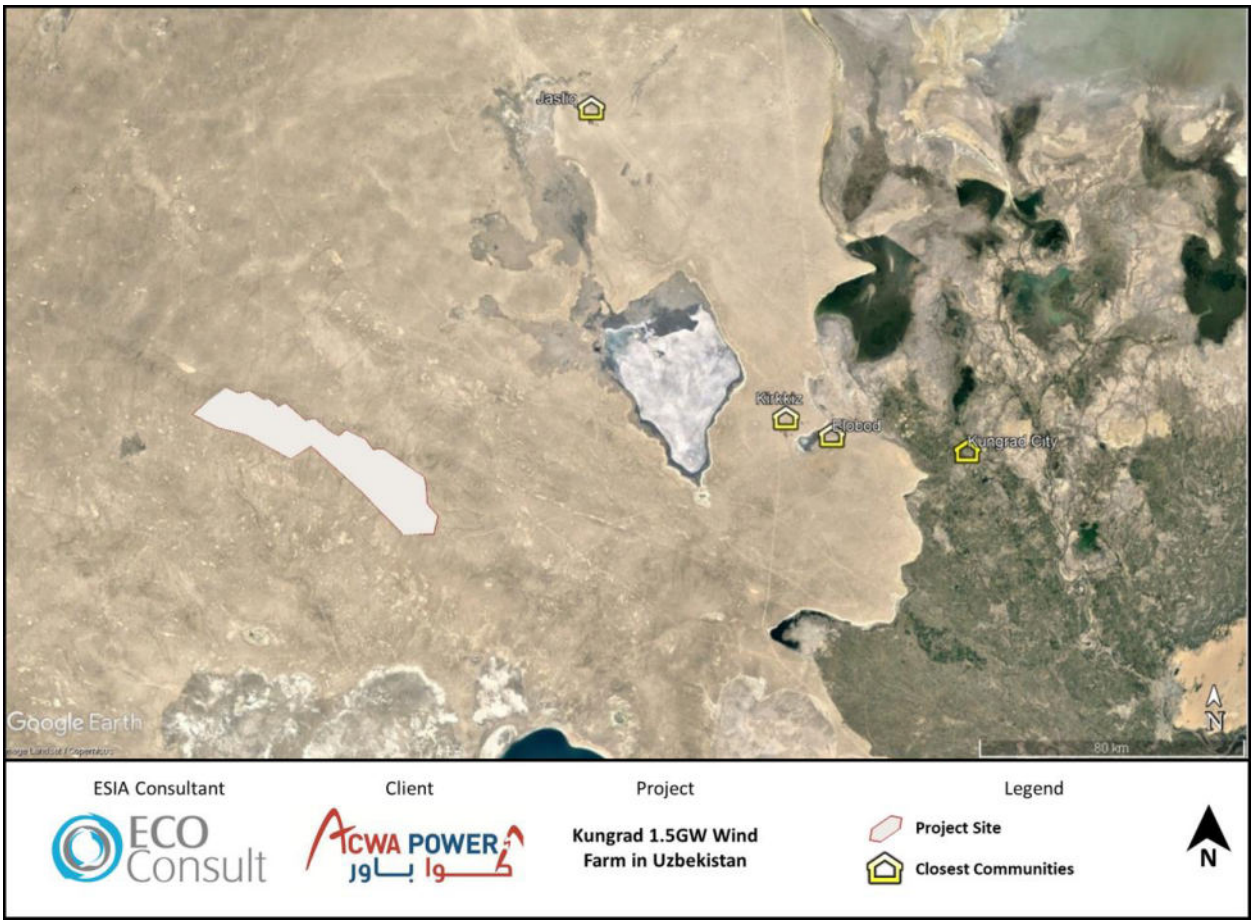

Figure 86: Project Site and Closest Communities

16.2 Assessment of Potential Impacts

This section discusses the potential impacts anticipated from the various Project phases to include the planning and construction phase and the operation phase. For each identified impact, a set of mitigation measures and monitoring requirements have been identified to eliminate the impact or reduce it to acceptable levels.

16.2.1 Impacts from Noise during Operation

Operating wind turbines will produce noise from mechanical and aerodynamic effects. This could be a source of disturbance and nuisance to noise sensitive receptors and could create a disturbing indoor environment.

As noted within "Section 9" there are no receptors within the Project site and surrounding areas that would classify as noise sensitive receptors.

For the purpose of clarity, the definition of receptor was followed as that defined within the "World Bank Group / IFC General EHS Guideline" (IFC, 2007). In accordance with the Guideline a receptor is defined as "*a point of reception or receptor may be defined as any point on the premises occupied by persons where extraneous noise and/or vibration are received. Examples of receptor locations may include: permanent or seasonal residences; hotels / motels; schools and daycares; hospitals and nursing homes; places of worship; and parks and campgrounds.*"

The closest noise sensitive receptor would be the closest community located 110km from the Project site.

Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

16.2.2 Impacts from Shadow Flicker during Operation

Operating wind turbines will produce shadow flicker which could be a source of disturbance and nuisance to the receptors and could create a disturbing indoor environment.

As noted within "Section 9" there are no receptors within the Project site and surrounding areas that would classify as shadow flicker sensitive receptors.

For the purpose of clarity, the definition of receptor was followed as that defined within the "World Bank Group / IFC General EHS Guideline" (IFC, 2007) as defined under section above.

The closest shadow flicker sensitive receptor would be the closest community located 110km from the Project site.

Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

16.2.3 Impacts from Balde and Ice Throws during Operation

Failure in rotor blade can result in the 'throwing' of the blade. In addition, snow idling on a blade can also result in ice throwing when operated. Blade and ice throw impacts from operating turbines entail public health and safety concerns on receptors.

As noted within "Section 9" there are no receptors within the Project site and surrounding areas that would classify as blade and ice throws sensitive receptors.

For the purpose of clarity, the definition of receptor was followed as that defined within the "World Bank Group / IFC EHS Guidelines for Wind Energy" (IFC, 2015) which is defined as "populated locations".

The closest populated location would be the closest community located 110km from the Project site.

Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

16.2.4 Potential Impacts from Trespassing of Unauthorized Personnel during Construction and Operation

Potential impacts during construction and operation phase are mainly limited to trespassing of unauthorized personnel from the local communities into the Project site which could result in potential risks from several hazards.

During construction this could include but not limited to the following:

- Falls within excavation areas;
- Electric shocks and thermal burns from electrical components and equipment;
- Roads and pedestrian accidents and injuries from internal traffic; and
- Exposure to chemicals and hazardous materials.

Similarly, during operation this could include but not limited to:

- Electric shocks and thermal burns from electrical components and equipment;
- Roads and pedestrian accidents and injuries from internal traffic
- Fall from height (from access to WTG);
- Other.

Construction Phase			**Operation Phase**		
Type	Negative		Type	Negative	
Duration	Short-term	Limited to construction	Duration	Long-term	During entire operation period
Magnitude	Medium	Extreme cases they could entail permanent impacts	Magnitude	Medium	Extreme cases they could entail permanent impacts
Reversibility	Irreversible		Reversibility	Irreversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Low	No local community activity in the area	Likelihood	Low	No local community activity in the area
Significance	**Moderate**		**Significance**	**Moderate**	

Mitigation Measures

The EPC Contractor is responsible for preparing the detailed design for the Project. However, as discussed earlier the EPC Contractor has not yet been selected. Nevertheless, it is expected that as part of the detailed design the security measures to prevent unauthorized access to the Project site during both the construction and operation phase will be identified.

Those will be emphasized within a Security Management Plan (SMP) that will be prepared by the EPC Contractor and Project Operator. This is expected to include but not limited to the following measures:

- Security personnel will be used at the access points to control the entry and exit of people and continuous security patrols will be implemented;
- Storage areas and substation will be fenced off and will have signs with warning notices in English, Russian, Uzbek, and Karakalpak language;
- All WTGs will include a locking mechanism and will be locked when no O&M activities are undertaken;
- Warning signs indicating the presence of the Project along access roads to inform local people of the dangers posed by the Project in English, Russian, Uzbek, and Karakalpak language; and
- The Stakeholder Engagement Plan (SEP) that will be implemented will include measures to engage with local communities to inform them about the start of construction works in advance, to educate them on the dangers inside the fenced-off area, and the danger of approaching construction works at other locations.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator:

- Reporting of any trespassing incidents and the measures undertaken in such cases to control the situation and prevent it from occurring again.

16.2.5 Potential Impacts from Security Personnel during Construction and Operation

There could be interactions between security guards and personnel of the Project with local communities. However, this is expected to be minimal given that distance of the Project site from the local communities – as noted earlier, the closest community is located 110km from the Project site.

Nevertheless, inappropriate management of security issues and incidents by security personnel towards local communities (e.g. overreaction, mistreatment, use of excessive force) could result in potential for conflict, resentment, distrust and escalation of events.

Construction Phase			Operation Phase		
Type	Negative		Type	Negative	
Duration	Short-term	Limited to construction	Duration	Long-term	During entire operation period
Magnitude	Medium	Extreme cases they could entail permanent impacts	Magnitude	Medium	Extreme cases they could entail permanent impacts
Reversibility	Irreversible		Reversibility	Irreversible	

Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Low	No local community activity in the area	Likelihood	Low	No local community activity in the area
Significance	**Moderate**		**Significance**	**Moderate**	

Mitigation Measures

The Developer will be undertaking a Security Risk Assessment (SRA) to ensure that all likely threats have been accounted for (to include Project and communities) stemming from the project's presence and activities. This should include the identification of such risks, evaluation of their likelihood to occur, and assess their potential impacts and measures to reduce these risks. In addition, the SRA should identify details regarding relations with public security forces and requirements for private security as well and risks and recommendations for both of these issues.

Based on the SRA, the EPC Contractor and Project Operator is expected to prepare a Security Management Plan (SMP) to be implemented for the construction and operation phase of the Project.

The plan must identify appropriate measures for hiring, rules of conduct, training, equipping, and monitoring of unarmed security personnel to control and manage such issues. The plan must also adhere to IFC PS 4 (Community Health, Safety and Security), EBRD PR 4 (Health, Safety and Security) in relation to the security guards employed. This requires that that the behavior for the security personnel is guided by the Voluntary Principles on Security and Human Rights in terms of hiring, rules of conduct, training, equipping and monitoring of such personnel. It also requires to make reasonable inquiries to satisfy itself that those providing security measures are not implicated in past abuses, will ensure they are trained adequately in the use of force and appropriate conduct towards the workers and the local community. Force should only be used when strictly necessary, and to an extent proportional to the threat.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and the Project Operator:

Inspection to ensure the implementation of the provisions of the Security Management Plan (SMP) and assess compliance with its requirements;

- Documentation of copies of clearance of security guards in past abuses
- Documentation of signed code of conduct by security workers and associated disciplinary measures as applicable
- Documentation of induction training modules and Tool-Box Talks for security personnel to include training on use of force as well as Voluntary Principles on Security and Human Rights
- Visual inspections and investigation on the following: (i) site security arrangements (guards, schedule, uniforms, fencing, etc. (ii) security operating procedures to include access to the site, security force management, etc.

Reporting on the following: (i) security related incidents/accidents; (ii) security related grievances and complaints

16.2.6 Potential Impacts from Worker Influx during Construction

During the construction phase of the Project a maximum of 2,250 worker (at peak) that will be involved for a duration of approximately 42 months. As discussed earlier, at this point it is still unclear how many of these workers will be expatriates, Karakalpak, Uzbek, and/or from local communities and it is still unclear where accommodation of these works will take place (however as discussed earlier it is highly likely that there will be onsite accommodation given the distant location of the Project site).

Nevertheless, the influx of workforce to the area could result in certain community health, safety and security impacts which are discussed below.

Risk of Diseases

Influx of workers may introduce new reservoirs of diseases such as vector-related diseases, water-borne diseases, etc. In addition, there is also a risk of spreading communicable diseases, included sexually transmitted ones. The risk of catching or exchanging communicable diseases (e.g., Virus B, Virus C, and HIV/AIDS) and the lack of awareness on transmission disease can represent a high risk to workers and community health and safety.

Inappropriate Code of Conduct

Other risks from worker influx include inappropriate code of conduct by workers towards local communities which might result in hostilities and resentment. Such inappropriate conduct could include also disrespecting the traditional culture and social norms of the area and local communities.

Increase in Social Vices

Population influx could result in an increase of social vices including alcoholism, drug abuse, and other.

Construction Phase		
Type	Negative	N/A
Duration	Short-term	Limited to construction
Magnitude	Medium	Medium magnitude and sensitivity given that it could entail some impacts on local resources, spread of serious diseases which could impact community H&S, and other.
Reversibility	Reversible	
Sensitivity	Medium	
Likelihood	Low	Accommodation likely to occur onsite due to distant location
Significance	**Moderate**	

Mitigation Measures

As noted earlier in “Section 15.3” and “Section 15.5” the EPC Contractor will be required to prepare and submit a Worker Accommodation Plan (WAP) and a Labor and Working Conditions Management Plan (LWCMP).

The above plans, should include specific sections on worker influx that should include the following measures:

- Medical examination programs. All workers must be subject to a preliminary medical examination before commencement of any job tasks in accordance with local applicable requirements. In addition, routine medical examination for worker (bi-annually) must be undertaken. Such medical examinations must be undertaken at certified centers. Copies of medical examination results of all workers must be

retained onsite. Medical examinations should be consistent amongst all worker to ensure no discriminatory implication;

- Details and procedures for ensuring and maintaining hygienic conditions onsite at all times specifically related to the toilet and washing facilities, eating areas, etc. This should be applicable onsite and within worker accommodation;
- Development of a code of conduct and associated disciplinary procedures for workers which takes into account appropriate behaviors by workers at all times, religious customs, traditional cultures and social norms in the area. In addition, it must include specific requirements for social vices including gender-based violence, sexual harassment, alcoholism, drug abuse, etc.; and
- Induction training and self-awareness raising sessions on risks associated to the most common contagious diseases (e.g. influenza virus), communicable diseases, general measures for hygiene, code of conduct expected to be implemented and other as appropriate.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor:

Inspection to ensure the implementation of the above provisions and assess compliance with its requirements;

- Documentation of copies of medical examination results and approvals for workers
- Visual inspections and investigation on hygienic conditions to include offices, rest areas, sanitary and toilet facilities and other
- Documentation of signed code of conduct by workers and associated disciplinary measures as applicable
- Documentation of induction training modules and Toolbox Talks on hygiene and code of conduct expected to be implemented.

Reporting on the following: (i) worker influx incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) worker influx related grievances and complaints.

17. SOCIOECONOMICS

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to socioeconomics. The section then presents an assessment of potential impacts during the various Project phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

17.1 Assessment of Baseline Conditions

17.1.1 Methodology for Assessment

The methodology was based on the following approach:

- Collection of official socio-economic data for the local communities from the Mahallas – this included Kirkkiz, Elobod, Jasliq, and Kungrad;
- As part of the FGDs undertaken with the local communities some additional socioeconomic data was collected through socioeconomic questionnaires on the following key topics
  - Economic activities and livelihood strategies;
  - Population history
  - Quality of life;
  - Perceptions towards the project;
  - Infrastructure availability;
  - Gender roles, tasks and responsibilities;
  - Education; and
  - Vulnerable groups

17.1.2 Socio-economic

The table below presents the overall socio-economic conditions for the local communities in accordance with the data sources discussed earlier.

Table 74: Socio-Economic Conditions for the Local Communities

Socio-Economic Indicator / Village	Elobod			Jasliq			Ozodlik			Kirkkiz		
Population	**General**	**Male**	**Female**	**General**	**Male**	**Female**	**General**	**Male**	**Female**	**General**	**Male**	**Female**
Age Groups	3455	1832	1623	4198	2130	2068	3498	2081	1417	4231	2752	1479
0-2	226	113	113	907	373	329	108	56	52	345	172	173
3-6	328	179	149	NA	NA	NA	211	115	96	400	205	195
7-13	573	262	311	NA	NA	NA	385	228	157	422	218	204
14-17	243	131	112	NA	NA	NA	287	154	133	132	70	62
18-30	702	373	329	NA	NA	NA	529	287	242	899	545	354
0-30	2072	1058	1014	NA	NA	NA	1520	840	680	2198	1210	988
31-45	979	519	460	NA	NA	NA	942	602	340	1599	1265	334
46-60	337	194	143	NA	NA	NA	871	540	331	343	229	114
61-70	61	38	23	NA	NA	NA	125	74	51	78	38	40
71-80	6	4	2	469	NA	NA	35	22	13	12	9	3
81-90	0	0	0	NA	NA	NA	5	3	2	1	1	0
Disabled People	36			63			72			36		
Population changes over the years	Population is growing due to young families and individuals moving from other regions for employment opportunities at the Kungrad Soda Plant.			The population of the community is growing mainly due to natural high birth rates.			The population of the community is growing with many people moving from other districts (Kirov and Shimonayonay in particular)			The population of the community is growing mainly due to natural high birth rates		

Socio-Economic Indicator / Village	Elobod	Jasliq	Ozodlik	Kirkkiz
Historical Key Events	The neighborhood was established after the "Kungrad Soda Plant" LLC JV was built.	Established in 29 August 1975 by governmental decision No. 564	Established in 1969 when a railway station was built.	Established when a railway station was built and later expanded when the main gas pipelines were developed.
Number of formal, waged employment	1987	489	905	2198
Key employment and Livelihood	Key employment is within the Kungrad Soda Plant and the railway station. Agriculture and pastoralism are considered minor activities within the local communities.	Key employment is within the railway station and compressor station for gas facilities. Agriculture and pastoralism are considered minor activities within local communities.	Key employment is within the railway station. Agriculture and pastoralism are considered minor activities within the local communities.	Key employment is within the railway station and gas facilities. Agriculture and pastoralism are considered minor activities within the local communities.
Unemployment rate	There are no specific unemployment rates for each village. Only statistics available are at the district level. For Kungrad District, latest statistic available is estimated at 9.4%			
Ethnic/tribal groups present in the community	Karakalpak and Uzbek. There are small number of other ethnic composition that are less than 1% that include Russians.	Kazak, Karakalpak, and Uzbek. There are small number of other ethnic composition that are less than 1% that include Russian, Tajik, and Kyrgyz.	Karakalpak, Uzbek and Kazakh. There are small number of other ethnic composition that are less than 1% that include Russians.	Karakalpak, Uzbek and Kazak. There are small number of other ethnic composition that are less than 1% that include Russians, Tajik and Kyrgyz.
Key Religions	Islam	Islam	Islam	Islam
Sacred or cultural heritage sites within Project area	No	No	No	No

Socio-Economic Indicator / Village	Elobod	Jasliq	Ozodlik	Kirkkiz
Key land uses within project area of surrounding (hunting, grazing, etc.)	No	No	No	No
Poverty Rate	There are no specific poverty rates for each village. Only statistics available are at the district level. For Kungrad District, latest statistic available is estimated at 14.1%			
Food or water security problems in the community	No	No	No	Yes (water)
Improvements or deteriorations in the identified problem over the last 5 years if applicable.	Better	Same	Better	Water shortage problem has started to increase
Community gathering place (e.g. public hall)	School No 52	School	City Councils Office Main Hall	School No 31
	Main Hall	Culture Hall		Main Hall
Health Centre	1	NA	NA	NA
Clinic	NA	NA	1	1
Hospital	1	Kungrad District Medical Association Branch	NA	1
Markets	6	1	1	NA

Socio-Economic Indicator / Village	Elobod	Jasliq	Ozodlik	Kirkkiz
Others	Sport Fields: 2 Library:1	NA	Library:3 Children's camp:1 Sports Ground:1	Cemetery: 1
Shop/stand/selling points	6	21	17	12
Bar/tavern selling alcohol	1	1	NA	2
Street food seller	3	3	NA	3
Restaurant	2	0	7	2
Tourism Lodge/Hotel	NA	1	NA	1
Services	Refueling points:1 Barber: 1 Hairdresser:1	Beauty salon: 3 Barbers:1 Bakery:3	Educational centers:4	Refueling points: 1 Hairdressers/Barbers: 2
Others	Pharmacy: 1	NA	Internet Club:1 Pharmacy: 1	After-School Educational Center: 1
Working in formal, waged employment	Men and Women	Men and Women	Men and Women	Men and Women
Running private businesses	Men and Women	Men and Women	Men and Women	Men and Women
Making decisions on household spending	Men and Women	Men and Women	Men and Women	Men and Women

Socio-Economic Indicator / Village		Elobod	Jasliq	Ozodlik	Kirkkiz
Formal, waged employment opportunities equally available to men and women?		Yes	No, there are two main organizations, the plant and the railway, However, opportunities for both genders are limited, with women having fewer chances than men.	Yes, the main workplace for the population in this area is the Kungrad Railway Organization; The nature of work there is considered suitable mostly for men. While educated women work in schools and hospitals, the uneducated ones engage in business and trade.	No, as it is hard for women to find jobs because they have lower education levels. Also, many jobs require prior work experience, which can be a problem for women returning from maternity leave.
Presence of women organizations in the community with names	**Name of the Organization**	Committee of Family and Women	Mahalla Community Union Women's Department	Neighborhood Women's Committee	Women's Committee
	Members of the Organization	1623 (every woman in the area)	2068 (every woman in the area)	1417 (every woman in the area)	1479 (every woman in the area)
Key Methods for Communication		Telegram channels; Word of mouth through Mahalla Community Union.	Telegram channels; Word of mouth through Mahalla Community Union.	Telegram channels; Word of mouth through Mahalla Community Union.	Telegram channels; Word of mouth through Mahalla Community Union.

Socio-Economic Indicator / Village	Elobod	Jasliq	Ozodlik	Kirkkiz
Main Development Challenges	- None reported	- Poor road quality - Severe shortage of medical staff, - Critical shortage of midwives, risking women's health during childbirth. - Inadequate ambulance services. - High youth unemployment. - Lack of essential community infrastructure like a mosque and sports center.	- Reliance on water from external sources and salinity of water resources within village - Airborne dust affecting daily life. - Extreme temperature variations (hot summers and cold winters). - Cost of medicine. - Absence of educational institutions	- Water shortage is a prominent issue in the village.
Key Expectations	- Local community is supportive of the Project. - Employment opportunities are the key expectations from this Project development, especially for women and youth. - Women are willing and want to be involved in job opportunities for the Project.	- Local community is supportive of the Project. - They believe they are considered far from the site and if in this case employment opportunities are relevant and could be available for them. Employment opportunities are the key expectations from this Project development, especially for youth. - They inquired if there will be community	- Local community is supportive of the Project. - Employment opportunities are the key expectations from this Project development. - Women are willing and want to be involved in job opportunities for the Project.	- Local community is supportive of the Project. - Employment opportunities are the key expectations from this Project development, especially for youth

Socio-Economic Indicator / Village	Elobod	Jasliq	Ozodlik	Kirkkiz
		development programs targeted to the local communities by the Developer.		
Key Issues	- Impacts on roads from heavy transportation of turbines to the Project site; - Impacts on dust from construction activities; - Updates on Project including when employment will start and specialties required; - If transportation and facilities will be provided onsite due to remoteness of Project area (including those for women in particular).	- No issues were raised in particular as they believe they are very farm from the Project area for any potential impacts to be realized.	- Updates on Project including when employment will start, and specialties required; - Potential impacts from worker influx as based on another plant in the area this has caused in an increase in Sexually Transmitted Diseases (STDs) amongst females win the community.	- Impacts on road networks from Project related transportation activities -Impacts on soil layers during construction activities; - how can women groups in particular benefit from the Project given that Project area is in a very remote area for women in the community to go work there (females in this community do not work in places far from their living area).

17.1.3 Vulnerable Groups

As discussed in detail in "Section 0" earlier, the table below reiterates the vulnerable groups and their relevant within the Project context. In addition, "Section 0" indicates how such vulnerable groups were consulted as part of the ESIA.

Table 75: List of Vulnerable Groups and Their Relevance

Group	Relevance
Women groups	Could be considered vulnerable as cultural norms could limit their participation in the decision-making process in general that is related to the Project.
Disabled groups	Could be considered vulnerable groups mainly due to physical disability which could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.
Ethnic Minorities	Are defined as groups within a community which has different national or cultural traditions from the main population which could include language, religion, tribe, nationality, race or a combination thereof. Such groups are considered vulnerable as they could have difficulties in accessing social protection benefits as well as social development opportunities (e.g. employment) usually as a result of discrimination, economic and social disadvantage and other. Uzbeks make up the vast majority of the country's population (86.2%), with other communities such Tajiks, Kazakhs, Russians, Karakalpak, and Tatars making up the remaining 16.2%. Approximately 85% of the population is native Uzbek speakers, and the language is recognized as the sole official language. In addition, Russian is widely used in governmental and interethnic communication. Tajik, Kazakh, Tatar, and Kyrgyz are only some of the various ethnic languages spoken there. The majority of the population (about 88%) is Muslim, with the vast majority identifying as Sunni. There are 9% Eastern Orthodox Christians and 3% adherents to other faiths in the country. ▪ Karakalpak are a Turkic ethnic group who live mostly in Karakalpakstan. They bring a distinct cultural identity, including their own language, to Uzbekistan's already varied population. Karakalpak are not the only people who call the Sovereign Republic of Karakalpakstan home; various other ethnic groups also call it their home. Despite being the majority ethnic group in Uzbekistan, Uzbeks are a sizable minority in Karakalpakstan, largely residing in cities. ▪ Kazakhs are a sizable minority among Uzbeks. They have deep cultural and historical ties to Kazakhstan, with whom they share a same language and bordering provinces like Tashkent and Surkhandarya. ▪ Russians are the largest Slavic ethnic group in Uzbekistan and have been present the longest. Tashkent, the country's capital and a major center of Russian influence, is home to a sizable population of Russian speakers. ▪ Tajiks represent Uzbekistan's second largest ethnic group. They are predominantly located around the borders, particularly in the provinces of Surkhandarya and Samarkand. The Tajik people have their own unique language and customs. ▪ Kyrgyz people in Uzbekistan are primarily concentrated in areas bordering Kyrgyzstan, such as the Fergana Valley. They have maintained their Kyrgyz cultural identity and language. Kyrgyz in Uzbekistan engage in various economic activities, including agriculture, livestock breeding, and handicrafts. As noted in "Section (ii)", the majority of the community ethnic composition is Uzbek, Karakalpak and Kazakh. There are other ethnic compositions that represent less than 1% that

	include Russian, Tajik, and Kyrgyz. However, all of these groups are part of the community since the Soviet Union era and are well integrated into the society and are not subject to any discrimination or economic/social disadvantage. As such these will not be considered as vulnerable groups.
People living in poverty / underprivileged communities	Could be considered vulnerable as their status could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.
The Aged	Could be considered vulnerable by limitations of access to participate in the Project related community decision-making process.
The Youth	Could be considered vulnerable due to their young adult, unmarried, non-asset owning status, yet likely to be savvier in 21st century technology than their elders, but may be unable to contribute in Project related community decision-making process, which will affect their generation more than most.
Language	Specific groups within local communities might have difference languages. This could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.

17.1.4 Indigenous Populations

As discussed in detail in "Section 6.2.2" earlier, there are no key land use activities undertaken onsite by any specific local community group.

In addition, based on outcomes of FGD with local communities the ethnic composition was mainly Karakalpak, Uzbek, and Kazakh. There are other populations within the ethnic composition in these villages which represent less than 1% of the population and which include Russians, Tajiks, or Kyrgyz.

Taking the above, there are no indigenous populations within the Project area or local communities that meet the definition of the criteria above and therefore this is considered irrelevant.

17.2 Assessment of Potential Impacts

Given the generic nature of the impacts on socio-economic development for both phases of the Project (construction and operation) those have been identified collectively throughout this section.

During the construction and operation phases, the Project is expected to create the following job opportunities:

- Around 2,250 job opportunities at peak during the construction phase for a duration of approximately 42 months. This will mainly include skilled job opportunities (to include engineers, technicians, consultants, surveyors, etc.) and semi-skilled and unskilled job opportunities (such as laborers, security personnel, housekeeping, etc.).
- Around 80 job opportunities during the operation phase for a duration of 20-25 years. This will include around skilled job opportunities (such as engineers, technicians, administrative employees, etc.) and unskilled job opportunities (such as security personnel, drivers, etc.).

Taking the above into account, the Developer is aiming to hire local community members to the greatest extent possible throughout the construction and operation phase for skilled and unskilled jobs. The

Developer is committed to adhering to transparent recruitment procedures which includes local community members.

However, the EPC Contractor and Project Operator have not been selected at this stage, and therefore there are no details available on the number of job opportunities targeted to local communities, type of jobs, duration, etc. In addition to the above, the local communities could also be engaged in procurements such as local contractors, local supply of equipment and machinery, cleaning services, etc.

Taking the above into account, the Developer is committed to ensuring that priority for job opportunities and procurement activities where relevant are targeted to the local communities.

The above could also entail other indirect positive benefits to the local community from increase in demand for local services, supplies, and businesses. This could include for example possible engagements for supplies and service providers (accommodation services, food, etc.). Such demands could improve the existing local economic activities and impact certain sectors, such as wholesale/retail trade.

Taking all of the above into account, this to some extent could contribute to enhancing the living environment for its inhabitants. The creation of job and procurement opportunities in specific is of crucial importance especially since, as discussed earlier, the local community in general suffers from high unemployment and poverty rates.

However, it is understood that the socio-economic development of the area is not hinged on a single project but rather on implementing collective and coordinated actions, including other development projects and investment within the area.

Nevertheless, proper planning and local community engagement from the start is crucial to understand issues and opportunities which in turn would enable the Project build true sustainable links which will bring maximum benefits to the local communities. Given the above, such impacts are anticipated to be *positive*.

However, it is important to note that if local community engagement is not implemented properly and if expectations are not properly managed and addressed, this could result in genitive impacts on local community members. This could lead to distrust and resentment with the Developer and might eventually lead to other potential escalated events. In such case such impacts are considered negative.

Construction Phase			**Operation Phase**		
Type	Negative		Type	Negative	
Duration	Short-term	Limited to construction	Duration	Long-term	During entire operation period
Magnitude	Medium	They could entail issues related to strikes and in worst-case scenario riots.	Magnitude	Medium	They could entail issues related to strikes and in worst-case scenario riots.
Reversibility	Reversible		Reversibility	Reversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Low	No local community activity in the area	Likelihood	Low	No local community activity in the area
Significance	**Moderate**		**Significance**	**Moderate**	

As the impacts discussed are mainly positive, no mitigation measures have been identified. This section provides recommendations which aim to enhance such positive impacts anticipated from the Project throughout the construction and operation phases to the greatest extent possible.

Therefore, it is recommended that the EPC Contractor and Project Operator undertake the following:

- Project Updates to local communities in accordance with identified measures in the Stakeholder Engagement Plan (SEP) which also includes measures related to management of local stakeholder

expectations on jobs during both construction and operation phase. This should include the following in particular:

- Undertake continuous and ongoing consultations (at least monthly) with local communities to: (i) manage expectations on employment and procurement opportunities for the Project; (ii) emphasize that job opportunities for this Project are huge and will be met throughout various entities that will include local communities, Districts and Regions; (iii) provides updates on Project implementation and overall schedule; and (iv) other as appropriate.
- Provide updates on implementation of the local recruitment and procurement procedure to date (e.g. number of locals employed to date from each village as appropriate)
- As required by the local communities (refer to "Section 6.3.2") all communication / updates to the local communities should be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas (including Mahalla Community Union); (ii) Telegram Channel; (iii) Youth Union of the Republic of Karakalpakstan; and (iv) Family and Women's Committee of the Republic of Karakalpakstan

- Adopt and implement a Local Employment and Recruitment Procedure as part of the Labor and Working Conditions Management Plan (LWCMP) (refer to "Section 15.5"). The procedure must take into account the following:
  - Number of job and procurement opportunities targeted for local communities to include skilled and unskilled workers, (ii) details on how job and procurement opportunities will be announced; (iii) a selection process that is fair and transparent and provides equal opportunities for all including females; and (iv) order of priority with respect to employment and procurement subject to availability of qualifications and skills where the following order of priority can be considered: (i) local communities; (ii) Kungrad District; (iii) Karakalpakstan Region; and (iv) finally Uzbekistan.
  - As required by the local communities (refer to "Section 6.3.2") all communication / updates to the local communities should be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas (including Mahalla Community Union); (ii) Telegram Channel; (iii) Youth Union of the Republic of Karakalpakstan; and (iv) Family and Women's Committee of the Republic of Karakalpakstan
  - Consider undertaking a capacity building and training program for selected local community workforce members. This could be undertaken in coordination with key and prominent NGO's and/or research and academic institutions such as the National University of Karakalpakstan that already demonstrated interest in this aspect in particular (refer to "Section 6.3.2" earlier).
  - The local recruitment process will be conducted in an inclusive and diverse manner, which means job opportunities will be open to all community members regardless of their class, race, color, gender, age, disability, civil status etc.
  - Recruitment will be based on competency and skill.
  - Efforts and resources will be allocated to make sure that women are also fairly targeted and recruited and are provided opportunities for learning skills to participate equally as men.
  - Gender inclusive advertising will be identified, in consultation with female stakeholders (such as women's groups and CBOs) and will be utilized in the announcement of job opportunities.

- Candidate selection (recruitment) will be conducted by a mixed-sex panel (comprising of at least two people). Candidate promotion selection will always be carried out by a gender diverse and balanced panel (more than one person and never by a single-sex panel).
- It will be prohibited to terminate the contract of a female worker during her maternity leave.

- Considering implementing a Community Development Plan which aims to benefit the local communities to the greatest extent possible. It is recommended that a structured approach is developed for such a program that takes into account the community's needs and priority development projects which could benefit local communities (which logically should also take into account other factors such as allocated budget by the Developer, timeline for implementation of such projects, etc.)

18. CLIMATE AND METEOROLOGY

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to climate and meteorology. The section then presents an assessment of potential impacts during the various Project phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

18.1 Assessment of Baseline Conditions

18.1.1 Methodology for Assessment

The methodology was based on secondary data available through online resources on key climate and meteorology conditions. This includes temperature, wind speeds, humidity, rainfall, sand/snowstorms and other as applicable.

The assessment provided below is for Karakalpakstan which is considered representative of the Project site and the local communities.

18.1.2 Results

Temperature

The figure below presents the annual temperature variations in Karakalpakstan based on historical information throughout the past 30 years. The "mean daily maximum temperature" (solid red line) presents the peak temperature on an average day each month, while the "mean daily minimum temperature" (solid blue line) presents the average minimum temperature.

As presented below, the hottest months are typically June – August, with averages reaching a maximum of 35°c. The coldest months are typically December – February with averages reaching a minimum of -4°C.

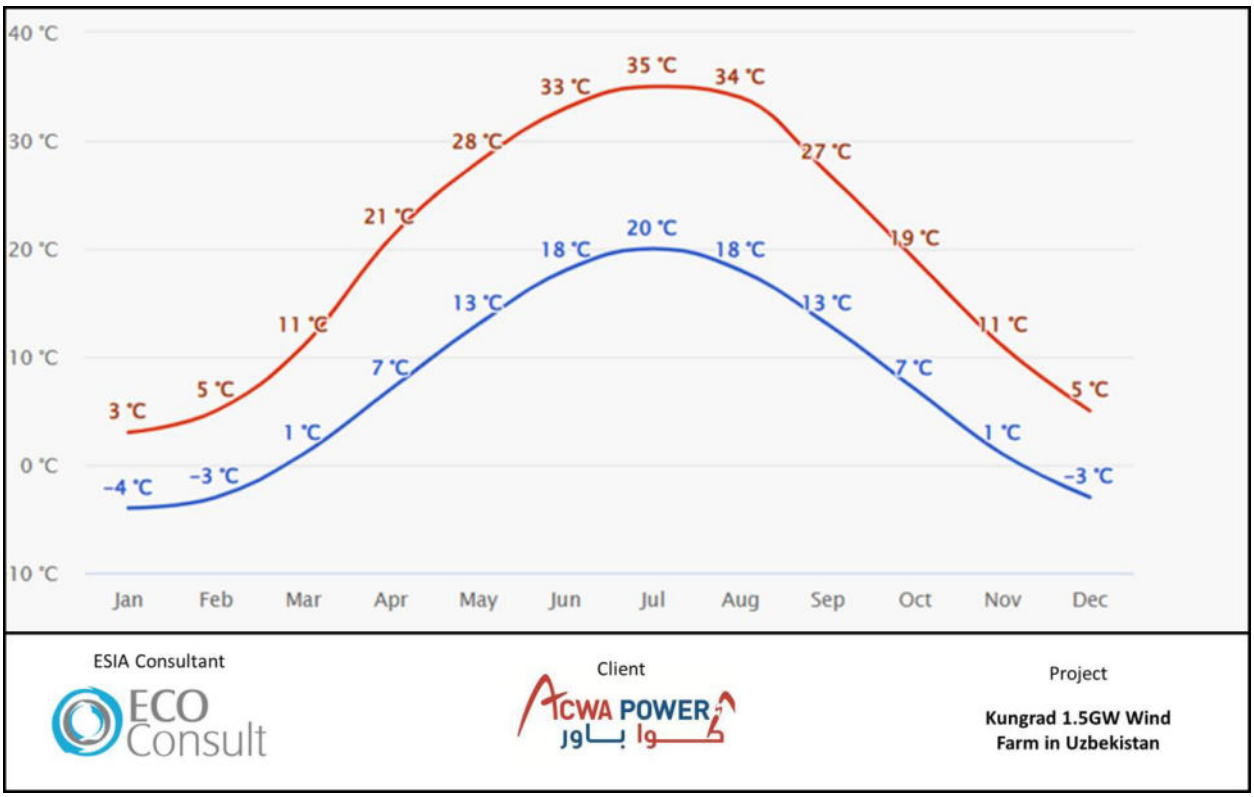

Figure 87: Average Monthly Maximum and Minimum Temperatures for the Past 30 Years

Wind Speed and Direction

The figure below presents the windspeed patterns across Karakalpakstan. As noted below, there is a distinct seasonal variation, with higher wind speeds prevalent during the winter months. January is the month with the highest wind speeds, ranging from a minimum of 14 km/h to a maximum of 29 km/h, with an average speed of 22 km/h.

The summer month of July experiences the lowest wind speeds, ranging from 7 km/h to 21 km/h (minimum and maximum, respectively), with an average wind speed of 14 km/h.

The figure that follows categorizes the months based on the frequency of different wind speeds, whereas noted only February and December witnessed speeds exceeding 61 km/h. Generally, wind speeds in Karakalpakstan predominantly fall within the range of 19 km/h to 38 km/h.

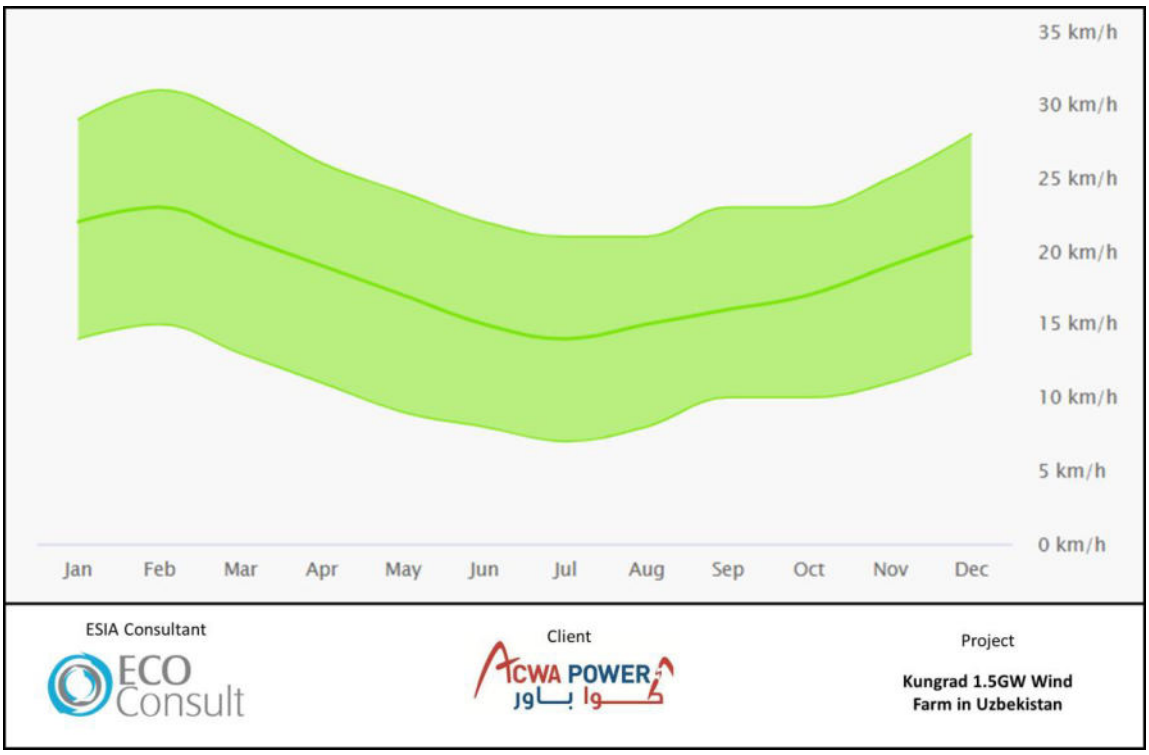

Figure 88: Average Monthly Wind Speeds for the Past 30 Years

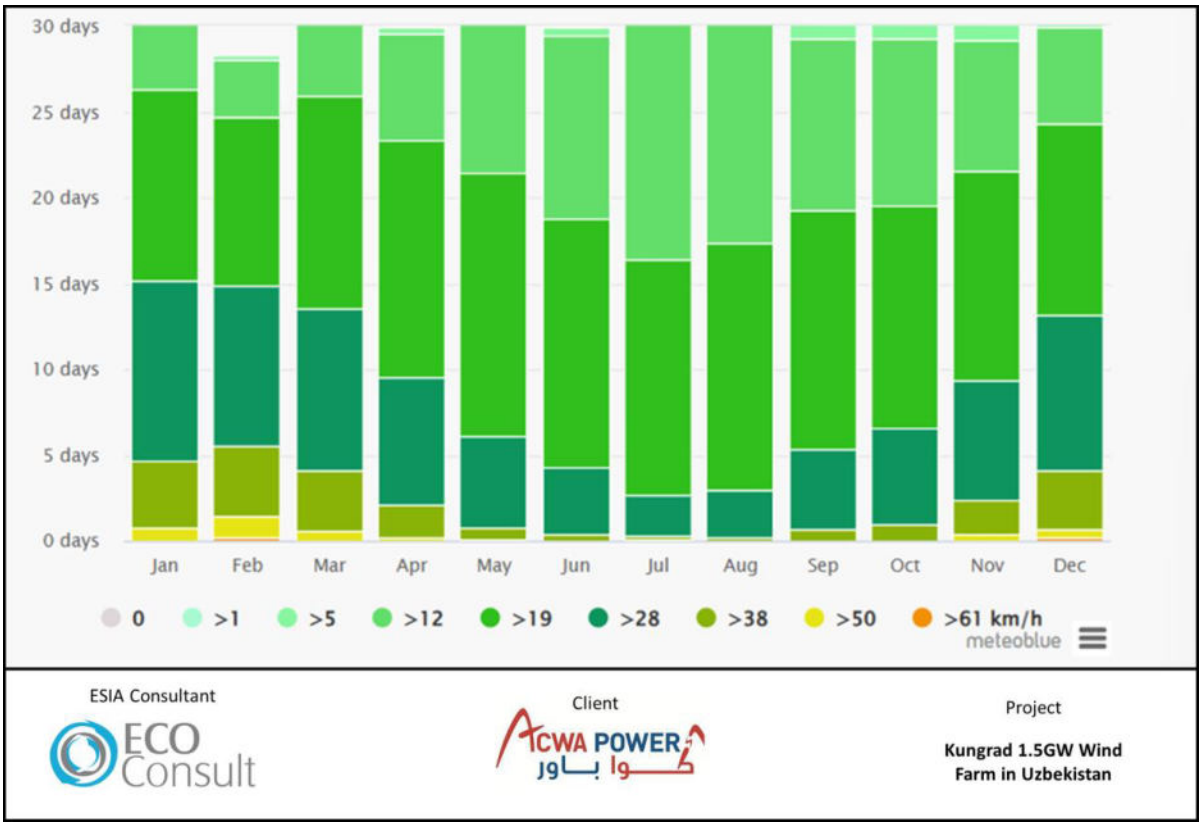

Figure 89: Wind Speed Patterns in Karakalpakstan Over the Past 30 Years

The figure below presents a wind rose with distinctive patterns in wind direction. The prevailing wind direction is predominantly from the north-northeast (NNE) to the east-northeast (ENE). Conversely, the sector with the least occurrence of wind direction spans from the south-southeast (SSE) to the north-northwest (NNW).

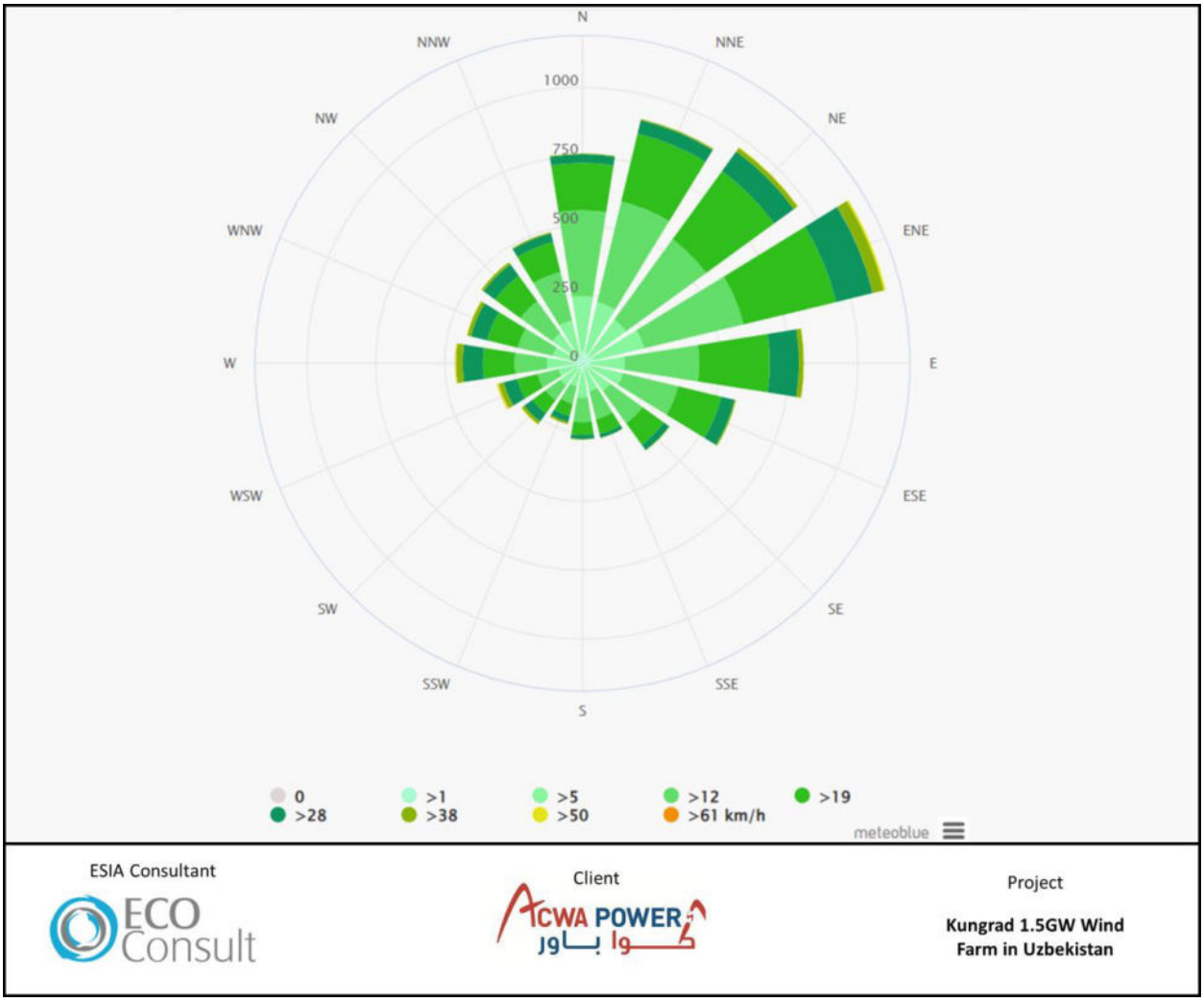

Figure 90: Wind Rose of Karakalpakstan

Rainfall

The figure below presents the amount of rainfall and number of rainy days across the year in Karakalpakstan. As noted, March has the highest number of rainy days (at around 5.5) as well as highest precipitation (at around 10-20mm). September has the lowest number of rainy days (at around 0.4) as well as lower precipitation (at around 2-5mm).

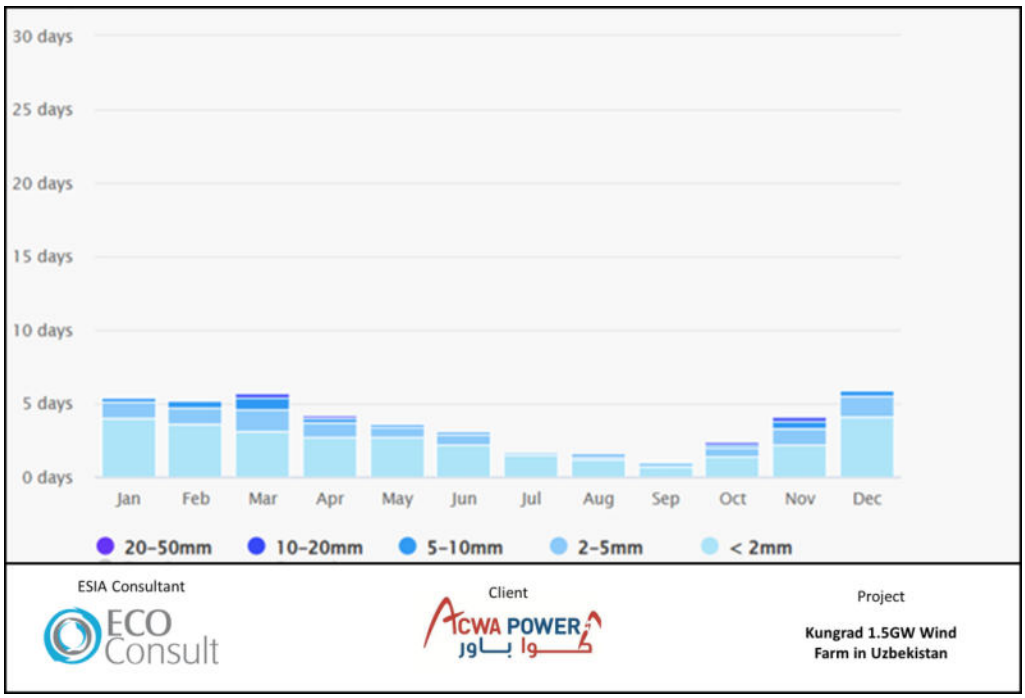

Figure 91: Average Monthly Rainfall Distribution in Karakalpakstan for the Past 30 Years

Snow days

The figure below presents the frequency of snow days in Karakalpakstan, indicating that snowfall occurs exclusively from November to March. Notably, February stands out with the highest number of snow days, reaching 2.4 days during that month.

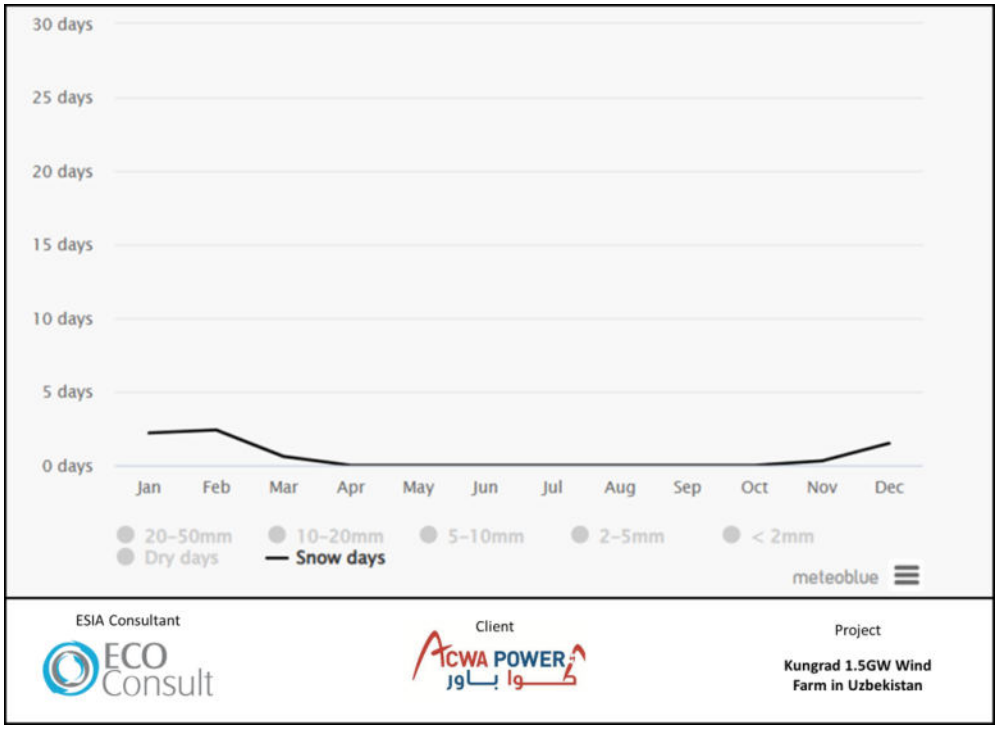

Figure 92: Snow Days in Karakalpakstan

Humidity

In Karakalpakstan, there is a seasonal fluctuation in average humidity levels. As shown in the table below, January registers the highest average humidity at 67%, highlighting a relatively more humid condition during winter. In contrast, May records the lowest average humidity at 25%, indicating drier conditions in spring. The data suggests a gradual rise in humidity from May onward, reaching its peak in November at 62%, followed by a decline in December. This pattern reflects the distinct humidity variations between winter and spring, with a subsequent increase and decrease in the later months of the year.

Table 76: Average Humidity Levels

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Humidity	67%	61%	47%	32%	25%	21%	22%	24%	28%	36%	50%	62%

Salt/ Dust storm

As outlined in the "Climate Risk Country Profile: Uzbekistan" by the World Bank in 2021, the anticipated consequences of diminishing glacial mass and river flow in the Amu Darya and Syr Darya basins, coupled with expected rises in average temperatures, are set to accelerate the desiccation of the Aral Sea. This phenomenon is foreseen to exacerbate desertification across the extensive land surrounding the Aral Sea, with winds carrying sand, dust, agricultural chemicals, and salt up to 300 km from the former seabed. Remote sensing data analysis reveals a 36% increase in the area of salt-affected soils between 2000 and 2008, contributing to the development of salt and dust storms.

The impact of these environmental transformations is particularly significant in Karakalpakstan, notably in its capital city, Nukus. The escalation of desertification, manifested through dust storms, has tangible implications for public health, specifically in relation to respiratory diseases. There is concern that the frequency of salt and dust storms may amplify in the coming decades as climate change continues to drive increased desertification and hasten the desiccation of the Aral Sea.

Heat/Cold waves

The frequency of heat waves in Uzbekistan varies across its territories, with the desert areas experiencing the highest risk due to maximum air temperature norms nearing 40 degrees Celsius. In these regions, the occurrence of heat waves poses a significant threat to human health. The number of days with high air temperatures serves as an index for assessing the likelihood of dangerous heat waves. In accordance with the criteria established by economic entities and design institutes, any instance where the air temperature exceeds or equals 10 degrees Celsius, irrespective of its duration, is considered a hazardous phenomenon in Uzbekistan.

Specifically, in Karakalpakstan, the frequency of days with air temperatures equal to or exceeding 40 degrees Celsius is primarily in the range of 5 to 10 days per year. This indicates a notable occurrence of high-temperature days in the region, emphasizing the potential risks associated with heat waves, particularly in the context of the established temperature threshold for identifying dangerous phenomena.

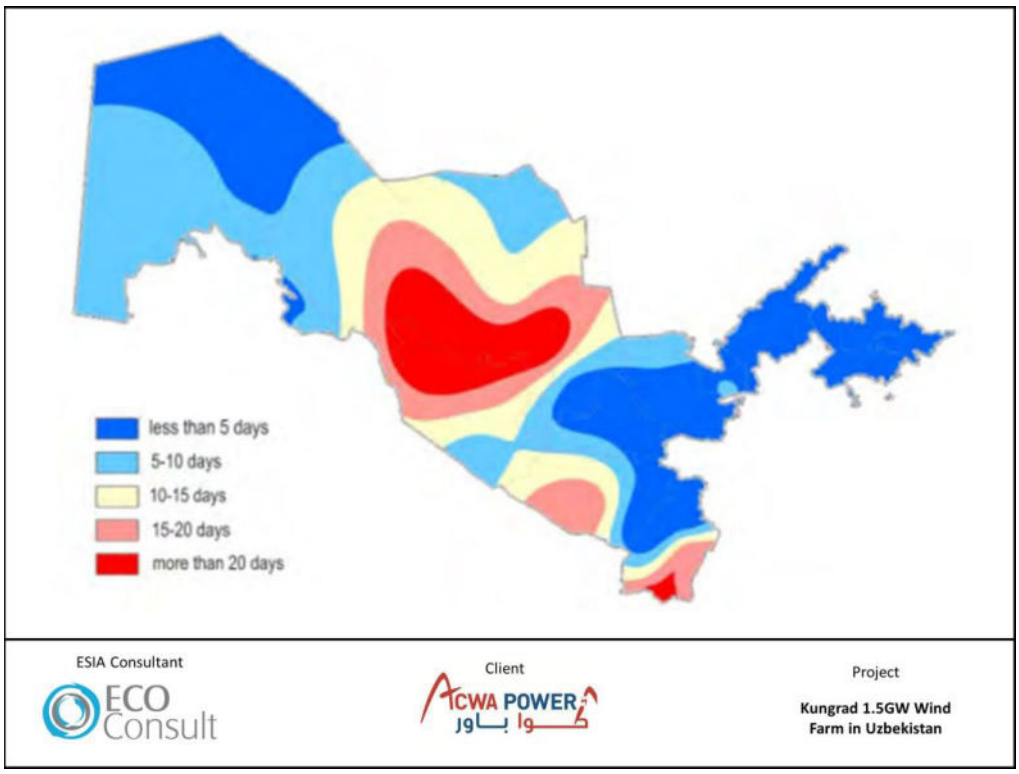

Figure 93: Number of Days with Temperatures Higher Than 40 Degrees Celsius in Uzbekistan

The figure below illustrates that the months characterized by temperatures surpassing 40 degrees Celsius are primarily from May through July. This observation suggests an anticipation of increased heatwave occurrences during these months, with particular emphasis on the month of July. The data indicates a heightened likelihood of extreme heat events, emphasizing the need for attention and preparedness during this period to mitigate potential adverse effects.

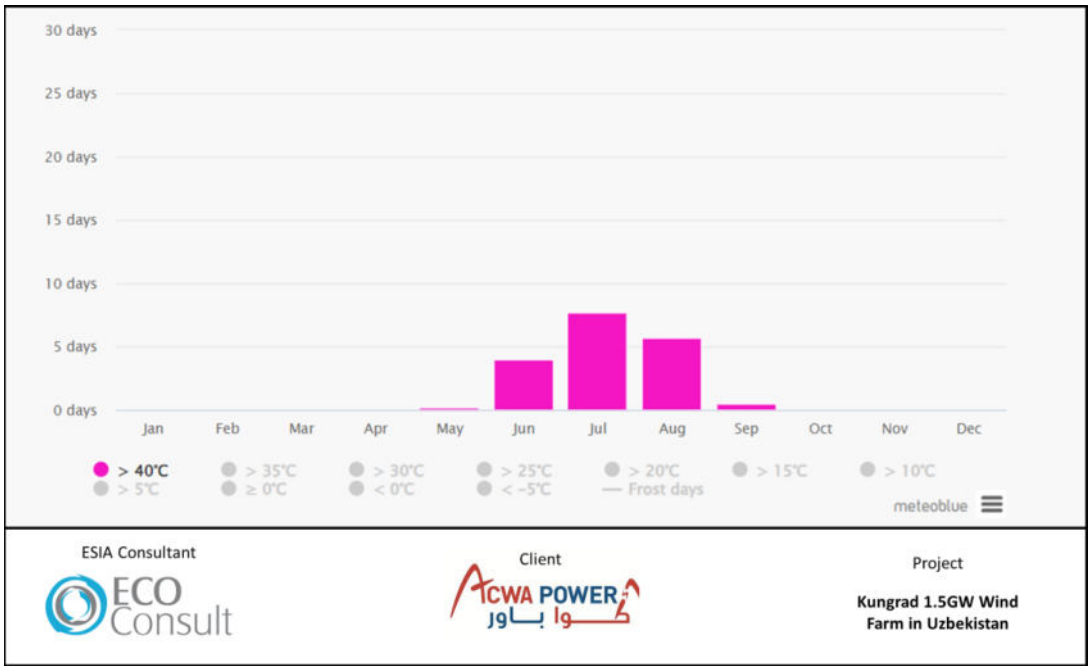

Figure 94: Months Characterized by Temperatures Surpassing 40 Degrees Celsius

According to the figure below, it can be seen that the number of cold days where the temperature falls below 0 degrees Celsius occur during the period between the months of November and March. Historically, the month of January has the greatest number of days with temperatures below 0 Degree Celsius averaging at 5 days for the past 30 years.

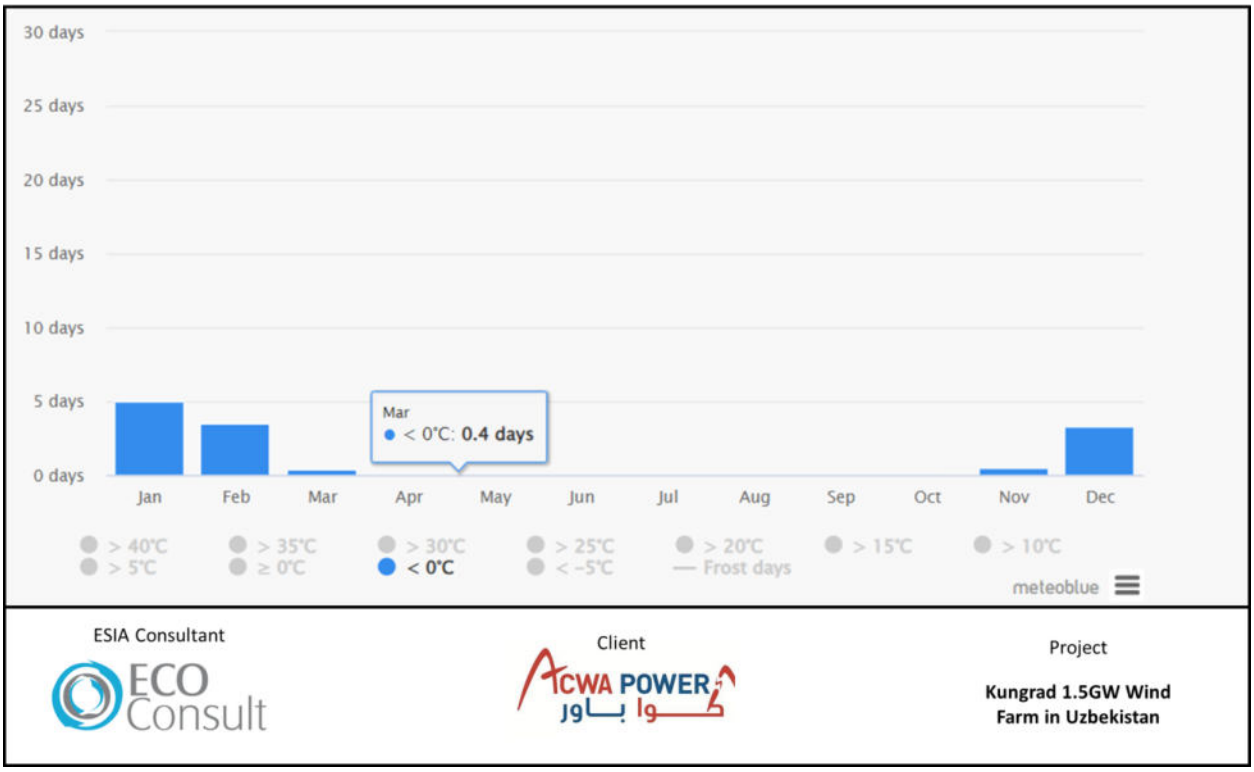

Figure 95: Number of Cold Days Below 0°C in Karakalpakstan

18.2 Assessment of Potential Impacts

This section discusses the potential impacts anticipated from the various Project phases to include the planning and construction phase and the operation phase. For each identified impact, a set of mitigation measures and monitoring requirements have been identified to eliminate the impact or reduce it to acceptable levels.

The key risks on climate and meteorology are related to the following:

- Impacts on occupational health and safety from onsite construction works related to extreme climate conditions such as sandstorms, extreme heat, extreme cold, etc. Such risks have been previously assessed under “Section 15” and applicable mitigation and monitoring measures have been identified.
- Impacts on worker health and safety from transportation activities (e.g. worker transportation to/from local community areas, component transportation, etc.) related to extreme climate conditions such as sandstorms, snowstorms, etc. Such risks have been previously assessed under “Section 14.2.6” and applicable mitigation and monitoring measures have been identified.

Taking the above into account, there are no further requirements to be considered.

19. HUMAN RIGHTS AND GENDER ASSESSMENT

This section is a gender and human rights risk assessment. The assessment was conducted in accordance with the following:

- Guidance Note: On Implementation of Human Rights Assessments Under the Equator Principles; and
- UN Guiding Principles on Business and Human Rights.[35]

The assessment includes the following:

- A high-level review of human rights and gender indicators at the national level;
- A Project-site specific context of socio-economic and development factors;
- An overview of the national labor law and the rights available to workers to identify possible gaps which may lead to labor violations. Gaps were reviewed and benchmarked against the International Bill of Human Rights and the eight ILO Core Labor Standards as outlined in EP4 Guidance Note;
- Based on the gaps identified, possible human rights risks are outlined and classified according to human rights categories and potentially impacted groups; and
- Mitigation measures that are needed during the construction and operation phases.

19.1 Overview of Human Rights and Gender Context in Uzbekistan

This section provides a high-level overview of human rights and gender indicators in Uzbekistan with a focus on conditions in Karakalpakstan as available and relevant. The review draws on reliable sources such as the United Nations Development Program (UNDP), the World Bank, Amnesty International, the International Labor Organization (ILO) and Uzbekistan's national legislation.

19.1.1 Development Context

The Human Development Index (HDI) is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living. Uzbekistan's HDI value for 2021 was 0.727 – positioning the country at 101 out of 191 countries. While still below the global median, Uzbekistan has continued a twenty-year trend of advancement in HDI value, from 0.686 in 2000.[36]

19.1.2 Political Change and Constitutional Reform

For 25 years after gaining independence in 1991 following the fall of the Soviet Union, Uzbekistan was led by President Islam Karimov. President Karimov's rule was characterized by stability and economic stagnation which were underpinned by repressions of political and civic freedoms, state control of land and resources including a policy of mandatory nationwide forced labor to support water-heavy cotton

[35] Equator Principles, Guidance Note: On Implementation of Human Rights Assessments Under the Equator Principles.
The UN Working Group on Business and Human Rights, The UN Guiding Principles on Business and Human Rights: An Introduction.
[36] UNDP, Human Development Index 2022.

crops which shrank the Aral Sea, widespread corruption, and prickly relations with the double-land locked country's many neighbors.[37] After a quarter century of rule, the death of President Karimov in 2016 marked a significant time of change in Uzbekistan. Then Prime Minister Mirziyoyev was appointed as president, presenting himself as a reformer and supporter of human rights. In 2017, President Mirziyoyev launched an ambitious and unprecedented reform program aimed at building a private sector–driven, market-based economy. This entailed adopting the 2017-2021 Uzbekistan Development Strategy later continued with the 2022-2026 Uzbekistan Development Strategy which set more ambitious economic goals.[38] The strategy focused on reforms in five main areas: governance systems, judicial systems, economic development, social reforms, security, inter-ethnic harmony and religious tolerance.[39]

Following this platform, in June 2022, President Mirziyoyev announced plans to draft a new constitution which would amend some 65% of the existing constitution. Following a March 2023 referendum, the new constitution became effective on 01 May 2023. The most notable changes included enshrining numerous new human rights and political reforms including extending the presidential term from 5 to 7 years. From the government's side, a tagline for reforms has been "putting the citizen first" and has grown the section on rights and freedoms by 3.5 times across the domains of law, social guarantees, economy, politics, and culture. Perhaps the largest set of changes concern the rule of law.[40] The new constitution includes greater protections of privacy, presumption of innocence, the right to remain silent, increased burdens of proof, right to representation, abolition of the death penalty, and protections against prolonged arbitrary detainment. Further additions include protection against housing confiscation, reaffirmations of gender equality and prohibiting employment discrimination against mothers, guarantees of free secondary and vocational education, protections for people with disabilities, measures to ease freedom of movement into neighboring countries, as well as protect and restore the Aral Sea. [41]

Despite the inclusion of a wide range of articles enshrining important human rights, the constitutional reform has also been heavily criticized internationally for increasing presidential powers and extending the presidential term in a way that, in practice, makes it possible for President Mirziyoyev to stay in power until 2037.[42][43] Indeed, on 09 July 2023, a special election was held in which President Mirziyoyev was granted a new seven year term, despite already being almost half way through his second (and what would have previously been his final) five year term.[44] While many were optimistic in 2016 that president Mirziyoyev would usher in a new era of increased democracy and political freedom in Uzbekistan, this move has been largely identified as a continuation of old authoritarian norms taken from the playbook of the Karimov period. [45]

Box 1: Spotlight on Karakalpakstan

The reform also saw opposition within the Karakalpakstan region. Initial draft of the new constitution released in 2022 removed existing clauses that established Karakalpakstan as a sovereign region and protecting the right of the region to succeed from Uzbekistan. In response, activists in Karakalpakstan

[37] Eurasianet (2016), Uzbekistan: the life and legacy of Islam Karimov
[38] Eurasia Center (2022), Priorities for the New Uzbekistan Development Strategy 2022-2026
[39] The Tashkent Times, Uzbekistan's Development Strategy for 2017-2021 adopted following public consultation. (Article, 16 July, 2023)
[40] Library of Congress (2023), Uzbekistan: new constitution takes effect
[41] ConstitutionNet (2023), Uzbekistan's proposed constitutional overhaul: Charting a course towards liberal values in Central Asia
[42] During the constitutional reform process, it was announced that the new constitution would also act as a reset on President Mirziyoyev term limits. Despite being in the midst of his second 5-year term, he would now be eligible to serve two more seven-year terms.
[43] The Diplomat (2023), Old Trick in New Uzbekistan: Constitutional Reform and Popular Legitmacy
[44] Reuters (2023), Uzbek Leader holds early election to extend rule
[45] The Diplomat (2022), Constitutional Changes Ahead for Uzbekistan

organized peaceful protests in June of 2022.[46] While president Mirziyoyev quickly backtracked on the proposed changes and appointed a special commission to investigate the incident, more than a year later no report has been published.[47] Conversely, despite the right to discuss the sovereignty of Karakalpakstan being ostensibly enshrined in the constitution, trails of protesters remain ongoing. These proceedings have received international criticism for being show trials, eliciting public shows of mercy for and apologies from protesters. Notably, Dauletmurat Tajimuratov a Karakalpakstan lawyer/journalist seen as a lead organizer of the protests was sentenced to 16 years imprisonment,[48] despite video evidence of him encouraging protesters to remain peaceful and witnesses against him admitting having given false testimony.[49]

19.1.3 Political and Civil Rights

In 2023, Uzbekistan scored 12 out of 100 on the freedom house global freedom status scale. While Uzbekistan continues to rank among the least free nations globally, it has shown slow but consistent improvement since first scoring 3 out of 100 in 2017.[50]

Currently, political freedom in the country is extremely limited.[51] Opposition to the ruling party has been unable to develop in an environment that actively stifles political pluralism. Accordingly, Uzbek voters face no meaningful choice in both house and presidential elections, which have consistently been found not to be free and fair. Instead, networks of political elites and oligarchs hold the levers of government, which are largely inaccessible to the average citizen. Despite some recent arrests of members of government for embezzlement and other charges, safeguards remain weak, and corruption remains rampant.[52]

Individual civil freedoms also face significant challenges in Uzbekistan including suppression of individual freedoms of speech, assembly, and religious expression, censorship and repression of free media and targeting of journalists, surveillance of and restrictions to internet use, and limits to independence in academia.[53] Violations of civil rights are exacerbated by a lack of due process and independent judiciary, as well as justice system with a history of violating right to counsel, utilizing torture, punishment by compulsory labor, and maintaining poor prison conditions.[54]

While efforts have been made since 2016 to address these issues, significant barriers remain. For example, torture has long been identified as an issue in Uzbek policing and security.[55] In 2016, Uzbekistan passed a law prohibiting torture followed by a 2017 decree barring courts from using evidence obtained through torture. However, in June 2020 data was released showing that of 757 cases investigated since the law's inception, only 33 had led to prosecution, with the government acknowledging that torture remains a serious problem.[56]

Further, despite constitutional guarantees, freedom of speech and press remains severely limited. Under president Mirziyoyev a modest loosening on control and censorship has led to a cautious emergence of

[46] Foreign Policy (2022), Uzbekistan's Unrest Explained
[47] Radio Free Europe (2023), New Uzbek Constitution Paves Way for President to Stay until 2040, But What Else Changes?
[48] Radio Free Europe (2023), In Uzbekistan's Karakalpakstan, Trial over deadly unrest makes a 'hero' of its intended villain
[49] Radio Free Europe (2023), New Uzbek Constitution Paves Way for President to Stay until 2040, But What Else Changes?
[50] Freedom House (2023), Uzbekistan: Freedom in the World
[51] While formally a constitutional republic with presidential and parliamentary elections, the country was categorized as a consolidated authoritarian regime by Freedom House's Nations in Transit 2023 report.
[52] Freedom House (2023), Uzbekistan: Freedom in the World
[53] Freedom House (2023), Uzbekistan: Freedom in the World
[54] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[55] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[56] Eurasianet (2020), Uzbekistan scrambles to respond to torture death in police custody

some political and social discourse in domestic and social media. However, most continue to avoid direct criticism of the ruling party. While President Mirziyoyev initially released a number of journalists from prison upon taking office, and 2018 was the first year in recent Uzbek history with no recorded arrests of journalists, such arrests have not stopped entirely. Since 2016, journalists have continued to report harassment, interrogation, and warnings by security services for coverage of sensitive topics. In 2022, multiple journalists, including Karakalpak bloggers, were arrested and some sentenced to multi-year prison terms for anti-government reporting. [57] This included enforcement, for the first time, of a March 2021 amendment outlawing insults against the president. The right to privacy in Uzbekistan is limited both online and in person. Across the country, some 12,000 *mahalla* or neighborhood committees provide social services in the community, but also serve, to varying degrees, as sources of information for government and law enforcement authorities on local residents.[58] [59]

19.1.4 Economic and Social Rights

The situation for social and economic rights in Uzbekistan is marked by both instances of progress and ongoing challenges. While Uzbekistan has shown some positive developments in areas like forced labor, freedom of movement, and academic freedom, significant challenges remain in the protection of housing rights and the operation of civil society organizations.

While the Uzbekistan's economic environment has seen reforms towards greater openness and modernization leading to increased economic growth in recent years, shortcomings in regulatory transparency, large informal sector, dominance of state banks, and weak rule of law continue to limit the economy.[60] This reality is underscored by the Heritage Foundation Index of Economic Freedom which ranks Uzbekistan below the national average at 109th out of 176 countries, though showing consistent improvement from its 166th position in 2017.[61] State statistics indicate that the average national salary is around 300 USD per month[62] and 17% of people in Uzbekistan fall below the poverty line. Further, many families remain heavily reliant on remittances which make up just over 20% of national GDP. Some two million people from Uzbekistan are estimated to be working in Russia leaving many vulnerable to currency fluctuations and political developments impacting the Russian economy.[63]

Labor law (explored in detail below) has made important positive reforms in recent years. Most notable, Uzbekistan has made significant strides in combating forced and child labor, once hallmarks of the nation's large cotton industry which, until recently, operated on a system of compulsory labor that indentured nearly 2 million individuals each year.[64] Since 2016, the criminalization of repeated use of forced labor, elimination of the production quota system for cotton, and incentives for voluntary labor have effectively eliminated the practice from the cotton industry.[65] While this represents a significant accomplishment, reports suggest that forced labor may remain an issue in other sectors such as silk production. [66] Further,

[57] Freedom House (2023), Uzbekistan: Freedom in the World
[58] A March 2022 decree regionalized the mahalla system and gave greater powers of oversight and surveillance in the local community.
[59] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[60] Heritage Foundation (2023), Economic Freedom Index: Uzbekistan
[61] Heritage Foundation (2023), Economic Freedom Index: Uzbekistan
[62] Radio Free Europe (2023), Between Migration and Low Wages: Can Uzbekistan solve its Poverty Problem?
[63] IOM (2022), Sanctions on Russia already hitting remittance-dependent countries in central Asia
[64] ILO (2022), Uzbek Cotton is free from systemic child labour and forced labour
[65] By 2018, the International Labor Organization (ILO) reported that approximately 93% of cotton workers were voluntarily employed in 2018, and in 2021, the Uzbek Forum for Human Rights found no systematic forced labor organized by state officials during the cotton harvest.
[66] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan

trafficking of individuals for forced labor and sex work continues to be a problem with Uzbekistan ranked as a tier 2[67] country in the US Department of State 2023 Trafficking in Persons report.[68]

While new articles have been adopted in the 2023 constitution to address housing rights, forced evictions have been a challenge in Uzbekistan linked to urban renewal campaigns. These evictions often occur without due process or adequate compensation and have disproportionately affected the most vulnerable groups such as women, children, persons with disabilities, and minorities. Numerous cases exemplify this issue, such as the forced eviction of Olga Abdullayeva and her family in Tashkent in 2021 to make way for a high-rise development, as well as the 2022 arrest of 44 farmers in Samarkand who complained of land seizures. [69]

19.1.5 Gender and Women's Rights

In Uzbekistan, the gender gap in the Human Development index is -.041, representing only a slightly higher gap than the global average of -.032.[70] Gender equality and women's rights are ostensibly supported by legal protections, but traditional norms and practices often create obstacles to their full realization. Under the 'Strategy for Achieving Gender Quality in Uzbekistan in 2020-2030'[71] and further enshrined in additional guarantees in the newly revised constitution, Uzbek law and policy guarantees the same legal status and rights to women as it does to men across health care, education, culture, and social protection domains. Legally, women permitted to own property, secure outside employment, obtain credit, and run businesses. However, these rights frequently clash with traditional views on women's roles, which can hinder women's efforts to exercise these rights, especially in regions with deeply held cultural norms. [72]

Professional opportunities for women remain constrained by both societal biases and legal restrictions. Women represent around half of Uzbekistan's population and hold 46% of total paid jobs.[73] However, women are predominantly found in lower-paying sectors such as education, healthcare, and social services,[74] whereas men dominate higher-paying technical fields. [75] Further, under the labor code, women in Uzbekistan are prohibited from working as in jobs with 'adverse working conditions' and in positions that require lifting over a maximum allowable weight. This disparity, dictated largely by gender norms, is more pronounced in rural areas due to the scarcity of formal jobs and a lack of requisite skills among women. [76] Across the country, women are disproportionately represented in unpaid work, making up 90% of people dedicated to unpaid childcare and housework.[77]

While equal rights are formally extended to men and women in areas like marriage and divorce, de facto disadvantages persist. Child marriage remains an issue in certain areas. The deeply entrenched problem of domestic violence and sexual harassment often goes unreported, with victims left with a lack of legal

[67] Tier 2 countries are "Countries whose governments do not fully meet the TVPA's minimum standards but are making significant efforts to bring themselves into compliance with those standards."
[68] US Department of State (2023) Trafficking in Persons Report
[69] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[70] HDI for women is .703 compared to .744 for men. While education rates are relatively close with men expecting 12.6 years of education and women 12.4, the gap in economic participation is more significant, with GNI for men at 20,716 compared to 11,147 for women.
[71] Anchored in the principles of the UN Sustainable Development Goals, the strategy aims to promote gender equality, enhance women's access to higher education, and ensure women's freedom from violence.
[72] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[73] ILO (2020), Women and the world of work in Uzbekistan.
[74] Women accounted for 76.5% of all employees in healthcare, welfare, and sports, and 75.6% of workers in education, culture, the arts, and sciences.
[75] Asian Development Bank (2018), Uzbekistan Country Gender Assessment
[76] Asian Development Bank (2018), Uzbekistan Country Gender Assessment
[77] ILO (2020), Women and the World of Work: Uzbekistan

recourse and socially discouraged from pressing charges, and perpetrators rarely facing prosecution.[78] While it is illegal for a male supervisor to coerce a female subordinate into a sexual relationship, sexual harassment in a broader context is not explicitly outlawed. Similarly, rape is seldom reported or prosecuted, with no explicit legal prohibition of spousal rape.[79]

19.2 The Labor Code in Uzbekistan

Karakalpakstan labor law is dictated by Uzbek labor law, with certain rights and responsibilities given to the Karakalpakstan regional government to establish and enforce rights, entitlements, and provisions. The original Labor Code of the Republic of Uzbekistan was adopted on December 21, 1995, and entered into force on April 30, 1996. Twenty-seven years later, on October 28, 2022, the President of the Republic of Uzbekistan signed Law № ZRU-798 “On Approval of the Labor Code of the Republic of Uzbekistan” which replaced the 1996 law and has been in effect *since April 1, 2023.*[80] *The new constitution of Uzbekistan, which came into force in May 2023, also included additional measures related to labor law.*

The below table outlines the most relevant labor laws as well as applicable sections of 2023 Uzbekistan Constitution which underly Labor Rights in Karakalpakstan and compares these codes to established international benchmarks.

[78] Freedom House (2023), Uzbekistan: Freedom in the World
[79] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan
[80] Azizov and Partners (2023), New edition of the Labor Code of the Republic of Uzbekistan

Table 77: Benchmarking National Legislation Against International Standards

Question	Yes/No	Relevant articles from Law № ZRU-798 and other laws	Non-technical summary of Uzbek law	International benchmark	Notable gap between Uzbek law (as written) and international benchmark
Is there a national minimum wage?	Yes	Labor Law Article 245	The minimum wage is set by the president, taking into account proposals developed by the Tripartite Commission on Social and Labor Issues. It is applied throughout Uzbekistan and is mandatory for all employers whether working hourly or monthly. Bonuses, overtime pay, and other incentives do not count towards the minimum wage.	Minimum Wage Fixing Recommendation, 1970 Minimum wage should be established as a social protection and designed to overcome poverty. It should consider the needs of workers and their families, current national wages, cost of living, social security, relative living standards, and other economic factors.	None
Are employment contracts commonly used?	Yes	Labor Law Articles 104-117	The 2023 Uzbek law added additional clarifications outlining what information should be included in different types of employment contracts, requiring that they be in line with international law, and prohibiting clauses that might allow forced labor, poor working conditions, and discrimination. A signed copy of the contract should be kept with each the employee and employer.	Employment Relationship Recommendation, 2006 Countries should provide guidance for effectively establishing employment relationships. They should provide effective access to appropriate, speedy, inexpensive, fair, and efficient procedures for settling disputes and ensure that workers have the protections which they are due.	None
Can employers confiscate passports?		Constitution Article 34 Not specifically addressed in Labor Law	This is not specifically addressed in Uzbek labor law. However, article 34 of the 2023 constitution states that “The State bodies, organizations, citizens' self-governing bodies, and their officials shall have to allow everyone access to documents, resolutions, and other materials relating to their rights and legitimate interests.”	Abolition of Forced Labor Convention, 1957 (Ratified, 1997) Migrant Workers Convention, 1975 (Unratified) Workers must have access to their identity documents at all times and be free to leave the country.	Labor law does not explicitly prohibit employers from confiscating employees’ passports. While the constitution indicates that state bodies should allow everyone access to documents, it is not clear this applies to private employers.
Are workers entitled to	Yes	Labor Law Articles 189, 396,417,42b	Overtime is paid at least twice the amount of the normal wage. At the request of the	Hours of Work (Industry) Convention, 1919 (Unratified)	None

compensation for overtime?			employee, overtime work can be compensated with additional rest time corresponding to the time worked, in which case the overtime work is paid at the normal rate, and the rest time is not compensated.	The rate of pay for overtime shall not be less than one and one-quarter times the regular rate.	
Are there established maximum working hours?	Yes	Labor Laws Articles 181 - 200	Normal hours of work may not exceed forty hours for a five- or six-day working week. For certain categories of employees reduced hours are mandatory (under 18, group I and II disabilities, unfavorable working conditions, care workers, one parent of a child under the age of 3). Overtime should not exceed four hours for two consecutive days and should not exceed 120 hours a year.	Forty-Hour Week Convention, 1935 (Ratified 1992) Reduction of Hours of Work Recommendation, 1962 Set 40-hour work week as the recommended standard. Weekly Rest (Industry) Convention, 1921 (Unratified) and Weekly Rest (Commerce and Offices) Convention, 1957 (Unratified) Workers should be entitled to an uninterrupted weekly rest period not less than 24 hours in each 7-day period.	None
Are workers entitled to daily breaks?	Yes	Labor Law Articles 204-206	Employees working more than four hours must have one break for rest and meals lasting from 30-120 minutes which is not included in the working time. Employees may leave work during their break time. If the shift time exceeds 8 hours the employee must have two breaks. The duration of rest between shifts (the end of work and its beginning on the next day) cannot be less than 12 hours.	No ILO standard	N/A
Are workers entitled to annual leave?	Yes	Labor Law Articles 216-235	Minimum annual leave is 21 days per year after working 6 months. Some employees are entitled to more leave, based on age, work experience, disability, and category of employment. Leave may be divided into parts, but one part must be at least 14	Holidays with Pay Convention (Revised), 1970 (Ratified, 1992) At least three working weeks of annual paid holiday leave (not	None

			calendar days. Unused annual leave and labor holidays must be paid out upon termination.	including public holidays) for one year of service.	
Are workers entitled to weekends and public holidays?	Yes	Labor Law Articles 207-210, 263	Sunday is the common day off for both five- and six-day work weeks, unless other arrangements are necessary for the industry. There are 9 public holiday non-working days per year. If a day off coincides with the holiday, it is transferred to the next working day. Work on public holidays is prohibited with exceptions provided in article 209-210. Workers must be compensated at least double the normal rate for work on weekends and holidays.	No ILO standard	N/A
Are workers entitled to sick leave?	Yes	Labor Laws Articles 202, 229, 281, 460 Order of the Minister of Social Protection No. 21 on the Procedures for the Allocation and Payment of State Social Insurance Benefits.	Sick leave is not explicitly mentioned in the labor law but rather falls under the leave category of temporary disability. No allotment of days or level of payment is specified. However additional guidance is given to determine compensation if the illness or injury is occupational.	Medical Care and Sickness Benefits Convention, 1969 (Unratified) Sets out rules for protecting employees and providing care in case of sickness.	Sick leave is not specifically addressed in the Labor Law but instead falls under the more general category of temporary disability. No specific number of days is granted.
Are female employees entitled to maternity leave?	Yes	Articles 404-405	A woman is granted maternity leave of 70 calendar days before childbirth and 56 calendar days after childbirth with payment not less than 75% of the normal salary. Women are entitled to feeding breaks upon return to work. Employees who adopt a newborn are granted 56 calendar days after the adoption.	Maternity Protection Convention, (Ratified, 1992) Maternity Protection Convention, 2000 (Unratified) Provides for 14 weeks of maternity leave with cash benefit no less than two-thirds of her previous earnings, and breast-feeding breaks. Prohibits hazardous work for pregnant women	None

			Employees are not allowed to terminate employment contracts of a pregnant woman. At the mother's request, she may be granted leave to care for a child until they reach two years of age, with payment determined by the Cabinet of Ministers. A women may also be granted unpaid leave until the child reaches three.	and termination related to pregnancy, maternity leave, or return.	
Are male employees entitled to paternity leave?	Yes (if not taken by mother)	Article 405	At the end of 56-day period of maternity leave, one parent/carer (including fathers or other relatives) is entitled to leave to care for the child until they reach the age of 2 with payment benefits established by the Cabinet of Ministers and paid by social insurance benefits.	No ILO standard. However, paternity leave was identified as a "public good and collective responsibility" by a 2023 ILO report. In 2021 115 out of 185 countries surveyed by the ILO offer a right to paternity leave (9 days as a global average).	Paternity leave is not granted independent of or separate from maternity leave. However, leave is granted to one parent/care giver to care for the child until 2 years of age, which may be claimed by the father.
Are employees entitled to other types of leave?	Yes	Article 237-239	In addition to annual and maternal leave, Uzbek law also grants provisions for childcare leave, study leave, and creative holidays.	Paid Educational Leave Convention, 1974 (Unratified) Members agree to formulate a policy to promote granting paid educational leave for the purpose of training, general education, and trade union education.	None
Must a valid reason be given to lawfully terminate an employment contract?	Yes	Articles 155-174	Article 155 outlines valid reasons for termination. The following chapter 155-174 outlines lawful procedures for termination under different cases and different categories of contracts and employees. Illegally terminated employees are entitled to reinstatement, payment for forced time lost, and material damages. Severance for legally terminated employees is paid at the initiative of the employer.	Termination of Employment Convention, 1982 (Unratified) Establishes that a worker shall not be terminated unless there is a valid reason connected to their capacity or conduct or the operational requirements of the undertaking.	None

Are workers entitled to work injury benefit?	Yes	Article 319-336	Employers are obligated to compensate workers for harm to life or health of an employee done by labor injury or occupational disease. This can include one or more of a one-time allowance payment, monthly payments of lost wages, reimbursements for additional expenses. Amount of one-time payment cannot be lower than the annual salary. Monthly payments are determined as a percentage of the monthly wage, depending on the degree of loss of ability to work. Payments may be reduced in court if the employer is found not to be at fault, but the employer may not refuse to compensate for harm.	Workmen's compensation (agriculture) Convention, 1921 (Unratified) Establishes that nations should provide appropriate compensation for agricultural workers who suffer personal injury by accident arising from their employment. Occupational Safety and Health Convention, 1981 (Unratified) Promotional Framework for Occupational Safety and Health Convention, 2006 (Ratified, 2021) Establishes that nations should enforce safe and healthy working conditions.	None
Does the labor law prohibit discrimination ?	Yes	Articles 3-4, 244 Article 3 of the Law on Guarantees of Equal Rights and Opportunities for Women and Men in the Republic of Uzbekistan	The law prohibits discrimination based on gender, age, race, nationality, language, social origin, property and civil status, place of residence, attitudes towards religion, beliefs, membership in public associations, as well as circumstances not related to the professional qualities of employees and the results of their work. Article 244 prohibits wage discrimination. Article three of the equal rights law prohibits discrimination on the grounds of marital status, pregnancy, family obligations, as well as sexual harassment or wage discrimination. It also prohibits indirect discrimination where persons of one sex are placed in a less favorable adverse position through narratives of gender inequality in media, education, or culture.	Equal Remuneration Convention, 1951 (Ratified, 1992) Equal wages for men and women. Discrimination (Employment and Occupation) Convention, 1958 (Ratified, 1992)	None

Does the law explicitly prohibit sexual harassment?	No	Not explicitly mentioned in labor law. Mentioned in the Law on Protection of Women from Harassment and Violence, 2019, Law on Strengthening Protection of Women and Children, 2023 and Art. 3 of the Law on Guarantees of Equal Rights & Opportunities for Women and Men in the Republic of Uzbekistan, 2019	The law on protection of women from harassment and violence defines and prohibits sexual, physical, economic, and psychological abuse, and provides women with resources and channels for recourse. In 2023, this law was strengthened with harsher penalties and additional articles addressing harassment. However, these laws do not make explicit mention of workplace harassment.	Violence and Harassment Convention, 2019 (Unratified) explicitly defines and prohibits sexual harassment in the workplace and defines measures to protect from, prevent, enforce measures, remedy, train, and raise awareness of sexual harassment related to labor.	Sexual Harassment in the workplace is not explicitly mentioned in the labor law. Accordingly, Uzbek labor law does not explicitly provide for the measures laid out in the Violence and Sexual Harassment Convention, 2019.
Is there a minimum age for employment?	Yes	Article 118	Employment is allowed from the age of 16. At the age of 15, students can be hired from secondary and vocational schools to perform light wok that does not harm their health and development or impede learning. In cultural, entertainment, media, and sports, employment contracts can be made with people under 15 years of age give parental consent and permission from the guardianship authority.	Minimum Age Convention, 1973 (Ratified, 2009) Encourages a 15 as the minimum age of work with exceptions for developing countries (14 as suggested age).	None
Are there special protections for workers under the age of 18?	Yes	Articles 411-422	Imposes restrictions such as limiting shift hours and total working hours to 36-hour work week between age 16-18 and 24-hour for 15-year-olds during free time, and half that during the academic year. It also prohibits harmful working conditions,	Minimum Age Convention, 1973 (Ratified, 2009) Outlines special provisions for workers under the age of 18.	None

			mandates medical examinations, ensures equal wages, and allows for parents or the state to demand termination of employment if it threatens their life, health, security, or moral development.	Worst Forms of Child Labor Convention, 1999 (Ratified, 2008) Defines worst forms of child labor	
Can workers join and form unions?	Yes	Article 21, 37 Law ORK-588 of 2020	Article 37 provides workers the right to voluntarily form and join unions and associations of workers for the purpose of representing and protection their rights and interests. In 2020, President Mirziyoyev signed a decree on union rights simplifying registration, allowing unions to inspect working conditions, and ending production quotas.	Right to Organize and Collective Bargaining Convention, 1949 (Ratified, 1992) Workers' Representative Convention, 1971 (ratified, 1997) Freedom of Association and Protection of the Right to Organize Convention, 1948 (Ratified, 2016)	While Uzbekistan has ratified numerous international treaties protecting the collective rights of workers, independent workers' unions have historically been repressed and remain extremely limited in the country.

Minimum Wage and Working Hours

While Uzbek labor law includes protections such as setting parameters for a living working minimum wage, a 40-hour work week, and social insurance programs to protect periods of leave in practice, gaps in these areas remain. In May 2023, the minimum wage in Uzbekistan was raised by 60,000 UZS to 980,000 UZS[81] (84 USD)[82] per month with another 10% increase scheduled in September, representing a steady trend of incremental increase over previous years. However, an ILO-UNICEF-World Bank report in 2020 found "poverty reduction and decent employment creation have lagged behind [Uzbekistan's] growth rates."[83] With economic growth not translating into poverty reduction, the minimum wage may not satisfy Uzbekistan's obligation to ensure decent living standards. Additionally, social security coverage is lacking, challenging living standards for the most vulnerable. A 2018 survey found that while almost everyone in the public sector is covered, 61% of women and 73% of men in the private sector lack coverage.[84] Social insurance is critical to accessing disability and unemployment pensions, and funding for childcare leave, and vocational training leave. Further, While Uzbek labor law mandates a 40-hour work week, in practice working hours may often exceed this limit. A survey on construction workers found a 50.6-hour work week to be the average with some respondents, especially in Karakalpakstan, reporting 60+ hour weeks. The report indicated that this is exacerbated by the high rates of informal work, which is estimated at 58%, close to the national average around 60%.[85]

Gender Discrimination and Harassment

Despite legal prohibitions on discrimination, gender inequality and discrimination against women remain widespread problems in Uzbekistan's labor force. The gender pay gap persists, with women overrepresented in the three lowest paid sectors (education, health, and social services) they earn 35% less on average than men as of 2018. In 2017 only 1.7% of management staff were women.[86] Further, in 2018, 41% of working women[87] were found to be in “vulnerable” employment – either self-employed without employees or working in unpaid roles for family.[88] Outdated attitudes about gender roles negatively impact women's employment opportunities. According to a 2020 ILO-Gallup survey, only 63% of men and 74% of women in Uzbekistan think it acceptable for women to work outside the home.[89] Some laws also remain discriminatory, including bans on women working in certain occupations[90]- prohibitions criticized by CEDAW as overly protective, discriminatory, and stereotype-based. For women who work, norms which place unpaid childcare and housework solely as the responsibility of women continue to create a double burden.

Protections for sexual harassment have historically been weak in Uzbekistan, with no mention of workplace harassment in labor laws and international organizing raising concerns about high rates of domestic violence and harassment in the country.[91] The long cultural tradition of seeing domestic violence and violence against women as a ‘family matter’ was, for decades, reflected in national legislation which

[81] Kun.uz (2023) Salaries to Increase from May 1st
[82] Converted on XE.com in July 2023 Using 1 USD = 11.615 UZS
[83] ILO, World Bank, UNICEF (2020), An assessment of the social protection system in Uzbekistan
[84] ILO (2020), Women and the world of work in Uzbekistan.
[85] ILO (2021), Transition from Informal to Formal Employment Project in Uzbekistan
[86] ILO (2020), Women and the world of work in Uzbekistan.
[87] This figure was similar for men, at just over 39%
[88] ILO, World Bank, UNICEF (2020), An assessment of the social protection system in Uzbekistan
[89] ILO (2020), Gender and Youth Employment in CIS Countries
[90] Article 393 of the labor code
[91] IPHR (2022), Joint NGO Submission to CEDAW ahead of consideration of Uzbekistan’s sixth periodic report

remained vague and weak on the matter.[92] However, In recent years, following numerous high profile cases of violence against women, legislation has been passed to strengthened protections against such abuse.[93] In 2023, this law was strengthened by criminalizing offenses, implementing/increasing prison sentences for sexual violence and extending the length of protection orders. While these represent important steps, the effectiveness of implementation remains to be seen.

Other forms of discrimination

Uzbek law prohibits discrimination on the basis of disability and mandates reasonable accommodations in employment including reduced working hours and additional leave for certain types of disabilities. However, persons with disabilities continue to face substantial barriers to workforce participation. Employment rates remain low, undermined by issues like lack of accessibility and shortcomings in educational opportunities.[94] Complaints of discrimination based on ethnic groups are rare, and inflammatory ethnic statements are also prohibited by law.[95] Conversely, Uzbek law does not specifically prohibit discrimination based on sexual orientation, nor does it define or offer recourse for hate crimes or harassment based on orientation. Further, the country still maintains laws that criminalize same-sex relationships. Individuals with HIV are prohibited from certain types of work including in the medical and cosmetic sectors.[96]

Child and Forced Labor

Child and forced labor are formally prohibited, and Uzbekistan has made substantial gains in eradicating their use - most prominently in the annual cotton harvest where child and forced labor were longstanding and pervasive issues. Though systemic mobilization of children and forced laborers was eradicated from the cotton harvest by 2021, isolated cases still occur across the country as the economy adjusts away from the previously permissive environment.[97] Pursing recourse for such cases has been rare, and criminal liability has proven difficult to impose in practice, with prosecutions hampered by reliance on victim testimony.[98] It remains to be seen if stronger and more effective enforcement measures for individual cases will complement largescale efforts (such as in the cotton harvest) to fully eradicate child labor.

Access to Justice for Workers

While Uzbek labor laws provide for a wide range of rights and protections, in practice, access to justice to remedy violations remains constrained. Detailed data on specific types of labor cases is unavailable and therefore difficult to analyze. A 2017 UNDP report estimated that in the country of almost 35 million, courts in Uzbekistan review around 700 employment related disputes a year. The ILO reported that fear of losing their job and the relatively high cost of suits, are likely deterrent to seeking formal recourse.[99] However, generally, the International Court of Justice (ICJ) has found that the judiciary in Uzbekistan remains institutionally weak and that the independence of judiciary and judges is not adequately

[92] The Diplomat (2022), A Cycle of Perpetual Violence for the Women of Uzbekistan

[93] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan and Radio Free Europe (2023) Uzbek Authorities Cover Up Sexual Abuse of Teenage Girls in Foster Care. A notable incident occurred in 2021 in which three girls were forced by their foster mother to engage in sexual contact with two officials in exchange for food and furniture over a period of 10 months. While the foster mother was sentences to 5.5 years in prison, the officials were sentenced only 1.5years of "restricted freedom" limiting their ability to go out at night and travel.

[94] ILO, World Bank, UNICEF (2020), An assessment of the social protection system in Uzbekistan

[95] US Department of State 2022, Country Report on Human Rights Practices: Uzbekistan

[96] Human Rights Watch (2021), Uzbekistan, Events of 2021

[97] ILO (2022), 2021 third-party monitoring of child labor and forced labor during the cotton harvest in Uzbekistan

[98] ILO (2022), 2020 third-party monitoring of child labor and forced labor during the cotton harvest in Uzbekistan

[99] ILO (2021), Decent Work Country Programme for the Republic of Uzbekistan 2021-2025

protected in law or in practice. This weakens the capacity of the system to provide effective access to justice and remedies for violations of economic rights.[100]

Effectiveness of Labor Unions

Under former President Islam Karimov, independent labor unions organized by-the-worker for-the-worker were not allowed to develop, continuing a legacy from Soviet times. Upon taking office in 2016 now President Mirziyoyev ratified the Freedom of Association and Protection of the Right to Organize Convention, 1948 and passed legislation creating a more permissive environment for unions. However, since the reforms, the country has seen the establishment of only one independent union - Halq Birligi, formed by cotton workers in the Syrdarya region, in 2021 - which has faced challenging concerns.[101]

Despite the new legal protections, members of Halq Birligi immediately began to report experiencing harassment, intimidation, and reprisals from local authorities, police, and company bosses. Furthermore, the union was quickly brought under the Federation of Trade Unions of Uzbekistan (FTUU), a parastatal body. While union representatives indicate that the move to the FTUU has helped them establish themselves, it has been criticized by others as a way for the government to increase control over the union's activities. Reports suggest ongoing cases of abrupt dismissals and withholding salaries of union members.[102] Accordingly, while Mirziyoyev's administration is making reforms on paper, the practical implementation appears extremely limited, and challenges persist for workers' rights and the formation of independent trade unions in Uzbekistan.

Employment in the Informal Sector

The informal economy remains substantial in Uzbekistan. According to the Ministry of Employment and Labor Relations, in 2020 13.23 million people were employed in the economy, with only 5.7 of those employed in the formal sector. The size informal economy was exacerbated by the impacts of COVID-19, during which time many workers lost jobs, and many Uzbek workers who had sought employment in other countries returned.[103] A 2019 World Bank report also found that informal barriers, opaque regulations, and a lack of protection for property rights also contribute to the informal economy. Informal workers remain largely unprotected, with regulatory gaps excluding them from legal safeguards and social security. Though the government has taken some steps, like tax registration exemptions, major gaps persist in the regulatory framework. More comprehensive measures are required to integrate these workers into the legal framework and realize their labor rights.[104]

[100] ICJ (2022), Submission to the UN Committee on Economic, Social, and Cultural Rights in Uzbekistan
[101] Radio Free Europe (2021), Celebrations over Uzbekistan's first independent union cut short by threats. harassment
[102] Eurasianet (2022) When will Uzbekistan get a truly independent trade union?
[103] ILO (2021), Transition from Informal to Formal Employment Project in Uzbekistan
[104] ILO, World Bank, UNICEF (2020), An assessment of the social protection system in Uzbekistan

19.3 Classification of Identified Human Rights Risks

The following table outlines potential project-related human rights risks that could impact various rights-holders' groups (i.e. workers and affected communities). These are the most commonly seen risks and are organized by the category of human rights to which they belong.

Table 78: Classification of Human Rights Risks

Rights category	Human Rights issues	Example of potential risk	Group impacted	Risk Level
Labor rights	**Right to accessing justice for labor violations:** Workers are entitled to accessible and reasonable mechanisms to seek recourse for violations without fear of retribution or termination. The judiciary in Uzbekistan lacks independence and issues of cost and fear of retribution can limit workers seeking to protect their rights.	Workers face a violation of their labor rights but do not have an accessible reasonable and fair mechanism for seeking justice and resolution.	Workers	Mid
Labor rights	**Fair wages:** Workers should receive equal remuneration for work of equal value. Remuneration should provide for a decent standard of living, covering basic needs, and eliminating working poverty. While Uzbekistan has an established minimum wage, it has not kept up pace economic growth in the country. As of 2021 17% live below the national poverty line and 6.6% of the employed population make be less than $1.90 per day. A wage gap persists, with women making 35% less than men.	Hiring a contractor or third-party service provider that does not pay their workers a fair wage (cash-in-hand) sufficient to attain a standard of living that includes adequate food, clothing, and housing, depriving them and their families of achieving a basic standard of living. Hiring a contractor or third-party service provider that does not pay all workers equal remuneration for work of equal value due to discrimination or favoritism. Inadequately surveying the wage market for similar work of similar value and distorting that market with inappropriate wage values to the detriment of workers and the community.	Workers Local Community	Low
Labor rights	**Working hours:** Uzbek law sets a 40-hour work and double pay for overtime, in line with ILO	Hiring a manager, contractor, or third-party service that does not adhere to established maximum working hours and/or does not compensate	Workers Workers families	Low

	recommendations for an adequate work-life balance and sufficient rest and leisure time. However, given the large size of the informal economy, there is some evidence to suggest that many sectors may normally operate much longer working hours, creating a culture of exceeding legal hours without adequate rest or compensation.	workers for overtime work, harming workers' work-life balance and threatening workplace safety. Workers are required to live on site without adequate periods of leave, infringing on their right to spend time with families, rest, and/or engage in leisure.		
Labor rights	**Right to rest:** Workers should have the right to rest when sick. While Uzbek labor law has robust allowances for annual, maternity, childcare, education, and creative leave, the provisions for sick leave fall under temporary disability are not as clearly outlined.	A worker falls ill and is unaware of their right to take sick leave. Afraid of losing their job, the worker endangers themselves and others at the workplace by coming to work.	Workers	Low
Labor rights	**Right to organize and form unions:** Workers should be able to form unions to protect and advance their rights without discrimination or fear of reprisal. Despite recent reforms, the right to organize has historically been systematically repressed in Uzbekistan.	Workers opt to organize but are harassed, pressured, and face retribution from local and government officials threatening harm to their livelihoods and security. Some workers may be interested in organizing but face barriers such as lack of information and experience, derogatory opinions, and social pressure against organizing.	Workers	Mid
Labor rights	**Forced labor and/or human trafficking:** All individuals should be free from servitude and severe economic exploitation such as in the trafficking of workers or debt bondage. As with child labor, Uzbekistan has made significant strides in eradicating systemic forced labor from the cotton sector and has legal protections against trafficking. However, following this	The Project unknowingly benefits from forced labor or human trafficking through its supply chain. A manager, contractor, or third-party service provider employs individuals under conditions of forced labor, such as those sent by the local community to work on the project against their will, or by putting workers in a position of debt.	Workers Local Community (other individuals under forced labor)	Low

	historically permissive environment, cases of forced labor and trafficking continue to be reported in the country.			
Labor rights	**Occupational health and safety:** Companies should provide and actively promote safe and healthy work conditions for workers. The remote nature of the project	Workers are exposed to harmful working and/or living conditions due to a lack of availability of water, food, electricity, first aid, and other necessities due to the remote location of the project site. Worker's face physical harm during the commute to the Project site.	Workers	Mid
Civil and political rights	**Right to privacy:** Individuals have a right to be protected from arbitrary, unreasonable, or unlawful interference with their privacy. Uzbekistan has historically maintained surveillance of citizens, especially activists, collected from online activity and local authorities.	Local authorities approach the Project management and ask for personal records and information on workers beyond the information specified to be collected in employment contracts according to labor law.	Workers	Mid
Economic, social, and cultural	**Right to social insurance:** The state should provide protections for a range of issues such as inability to work due to illness and injury, unemployment support, and maternity leave. While these are included in Uzbek labor law, coverage is lacking. In the private sector 61% of women and 73% of men lacked social security coverage.	With the high prevalence of informal work in Uzbekistan, a contractor or third party may hire workers informally (or workers may want to work informally), which leaves workers largely unprotected and unable to contribute to and access social insurance, including sick, injury, maternity, or annual leave as well as unemployment benefits.	Workers	Low
Group Rights / Heightened Risk of Vulnerability	**Rights of Women:** Workers are entitled to a safe workplace free from sexual harassment. Despite recent legislation, Uzbekistan has longstanding issues of violence against women.	Sexual harassment occurring without being reported through any formal channels, remaining ongoing and unaddressed harming victims, and negatively impacting the work environment. Women workers report sexual harassment but are not provided with reasonable, accessible, and fair mechanisms to access justice and/or do not have adequate resources, support, or information to navigate the reporting and justice systems.	Workers	Mid

Group Rights / Heightened Risk of Vulnerability	**Child labor:** ILO standards set the minimum age for work at 15 and prohibit hazardous work for all persons under 18 years. Uzbekistan has made significant strides in eradicating systemic child labor from the cotton sector and has legal protections for workers under the age of 18. However, following this historically permissive environment, isolated cases of child labor continue to be reported in the country.	Contractors or third-party service providers hiring workers under the age of 18 and not providing adequate protections (reduced working hours, non-hazardous work, displaying labor rights…) thus harming the child. Discovering children laboring in hazardous conditions and failing to resolve the situation in a manner that considers the best interest of the child. For example, immediate dismissal of the child may put them at risk of further exploitation, threatening their standard of living or security of person.	Workers (children)	Low
Group Rights / Heightened Risk of Vulnerability	**Discrimination:** All individuals should be treated equally regardless of class, race, color, religion, gender, age, political or other beliefs, national or social origin, sexual orientation, disability, civil status, family background etc. While Uzbekistan has strong laws against many kinds of discrimination, it does not prohibit it based on sexual orientation and significant gaps persist for women and people with disabilities.	Workers are recruited, hired, advanced, and compensated based on social, familial, class, religious etc. connections to hiring managers thus creating discrimination against others of different origin, race, religion, ethnicity, family, class etc. Workers with disabilities, women, are not hired based on these characteristics, regardless of their experience, suitability, and capacity to perform the role.	Local Community	Mid

Guidance Material: The Equator Principles Guidance Note on implementation of Human Rights Assessments Under the Equator Principles, September 2020

19.4 Mitigation Measures

Based on the classified human rights risks identified in the previous section, the following mitigation measures should be applied during the construction and operation phases of the Project. The below mitigation measures are applicable to the EPC Contractor, Project Operator and any involved subcontractor throughout the construction and operation phase.

Risks	Mitigation measures	Reference Section / Reference Plan
Right to Accessing Justice for Labor Violations: Workers are entitled to accessible and reasonable mechanisms to seek recourse for violations without fear of retribution or termination. The judiciary in Uzbekistan lacks independence and issues of cost and fear of retribution can limit workers seeking to protect their rights.	A worker grievance mechanism procedure will be implemented, outlining the measures for escalation of grievances by workers. Grievance mechanisms will be explained to all workers as part of their induction training and continuously as part of Tool Box Talks (TBT).	Refer to "Section 15.5" Worker Grievance Mechanism
Fair Wages: Workers should receive equal remuneration for work of equal value. Remuneration should provide for a decent standard of living, covering basic needs, and eliminating working poverty. While Uzbekistan has an established minimum wage, it has not kept up pace economic growth in the country. As of 2021 17% live below the national poverty line and 6.6% of the employed population make be less than $1.90 per day. A wage gap persists, with women making 35% less than men.	Wages for each employee will be determined on a case-by-case basis. Wages must be fair and should meet the basic needs to maintain a safe and decent standard of living. Wages must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions. Remuneration for work of equal value should be provided for female and male workers. Wages should not be below the nationally established minimum wage.	Refer to "Section 15.5" Labor & Working Conditions Management Plan
Working Hours: Uzbek law sets a 40-hour work and double pay for overtime, in line with ILO recommendations for an adequate work-life balance and sufficient rest and leisure time. However, given the large size of the informal economy, there is some evidence to suggest that many sectors may normally operate much longer working hours, creating a culture of exceeding legal hours without adequate rest or compensation.	According to the Labor law, working hours should be set to a maximum of 40-hours a week over 5 or 6 days including at least one hour break every 4 hours. Overtime is allowed with appropriate need, but in all cases, working hours should not exceed 10 per day. Workers should have a 24-hour period of rest after 6 days of work. All workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule.	Refer to "Section 15.5" Labor & Working Conditions Management Plan

Right to Rest: Workers should have the right to rest when sick. While Uzbek labor law has robust allowances for annual, maternity, childcare, education, and creative leave, there provisions for sick leave fall under temporary disability are not as clearly outlined.	Workers should be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract.	Refer to "Section 15.5" Labor & Working Conditions Management Plan
Right to Organize and Form Unions: Workers should be able to form unions to protect and advance their rights without discrimination or fear of reprisal. Despite recent reforms, the right to organize has historically been systematically repressed in Uzbekistan.	Workers have the right to form or join workers' organizations or unions of their choosing without interference and have the right to bargain collectively.	Refer to "Section 15.5" Labor & Working Conditions Management Plan
Forced Labor and/or Human Trafficking: All individuals should be free from servitude and severe economic exploitation such as in the trafficking of workers or debt bondage. As with child labor, Uzbekistan has made significant strides in eradicating systemic forced labor from the cotton sector and has legal protections against trafficking. However, following this historically permissive environment, cases of forced labor and trafficking continue to be reported in the country.	The Labor and Working Conditions Management Plan should explicitly prohibit forced labor and human trafficking. Confiscation of employees' passports should be explicitly prohibited.	Refer to "Section 15.5" Labor and Working Conditions Management Plan
Right to Privacy: Individuals have a right to be protected from arbitrary, unreasonable, or unlawful interference with their privacy. Uzbekistan has historically maintained surveillance of citizens, especially activists, collected from online activity and local authorities	The privacy and protection of workers will be maintained at all times. This will include limiting access to the below data and information to the EPC Contractor HR Manager only: ▪ Contracts ▪ HR files and databases ▪ Payment register ▪ Worker grievance forms and registers ▪ Disciplinary action register This information will be properly handled and stored, saved online through password protected files, and in secured cabinets with a fitted lock in case of hardcopies.	Refer to "Section 15.5" Labor and Working Conditions Management Plan
Right to Social Insurance: The state should provide protections for a range of issues such as inability to work due to illness and injury, unemployment support, and maternity leave. While these are included in Uzbek labor law,	All workers on site will be provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager.	Refer to "Section 15.5" Labor and Working Conditions Management Plan

coverage is lacking. In the private sector 61% of women and 73% of men lacked social security coverage.	Workers should be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract.	
Occupational health and safety: Companies should provide and actively promote safe and healthy work conditions for workers.	An Occupation Health and Safety Plan (OHSP) that is project and site specific will be developed that ensures the health and safety of all personnel and prevents accidents which may injure personnel or damage property. Requirements for worker influx should be developed and to take into account: i) medical examination program for workers; ii) procedures to maintain hygienic conditions onsite, iii) code of conduct for workers; iv) induction training and awareness requirements for risk diseases. Safe transport will be provided to female and male workers, given the remote area of the Project. The codes of conduct, which prohibit gender-based violence, harassment and abuse, will apply to transportation modes.	Refer to "Section 15.2" Occupational Health and Safety Plan Refer to "Section 15.3" and "Section 15.5" for worker influx requirements.
Rights of Women: Workers are entitled to a safe workplace free from sexual harassment. Despite recent legislation, Uzbekistan has longstanding issues of violence against women.	The Worker Grievance Mechanism will prohibit gender-based violence and harassment in the workplace and will outline that a suitably trained male and female person is designated to process grievances in which male / female workers might feel uncomfortable discussing with a person of the opposite sex. The grievance mechanism also includes a procedure to deal with GBVH grievances. Female sanitary, toilet facilities, and prayer rooms will be kept separate from men. All such facilities will have lockable doors with adequate numbers provided. Separate changing rooms and cabinets will be provided for men and women both of which have locking mechanisms. In case of hotel and apartments, separate sleeping rooms for men and women will be provided in shared accommodations Means of securing bedroom doors from inside and out will be provided. Finally, female sanitary and toilet facilities will be kept separate from men. Men and women will be provided with separate sleeping rooms/ dormitories. In addition, female sanitary and toilet facilities will be kept separate from men. All workers will be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct prohibits the following and which is subject to disciplinary action: (i) harassment, gender-based violence and abuse of any kind will not be tolerated; (ii) discrimination based on personal characteristics is prohibited to include but not limited to gender, race, nationality, ethnic, social and indigenous origin, religion or belief, disability, age, or sexual orientation.	Refer to "Section 15.3" and "Section 15.5" Labor & Working Conditions Management Plan Worker Accommodation Management Plan

	All workers will be provided with a copy of the Gender Based Violence and Harassment (GBVH) Code of Conduct and will be required to sign it. In the case body searches are required for security reasons, those will be gender sensitive (i.e. body searches on female workers / employees /visitors should be undertaken by female security officers and vice versa). Safe transport will be provided to female and male workers, given the remote area of the Project. The codes of conduct, which prohibit gender-based violence, harassment and abuse, will apply to transportation modes.	
Child labor: ILO standards set the minimum age for work at 15 and prohibit hazardous work for all persons under 18 years. Uzbekistan has made significant strides in eradicating systemic child labor from the cotton sector and has legal protections for workers under the age of 18. However, following this historically permissive environment, isolated cases of child labor continue to be reported in the country.	The Labor and Working Conditions Management Plan should explicitly prohibit the recruitment of children under the age of 18 in illegal and hazardous work. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction or operation stages, the following should apply: An official letter with the approval of their parents or guardian should be provided. Young workers must provide valid identification that presents proof of age at the recruitment stage. Driver licenses are not admissible as proof of age. Minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp. They are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards. Hazardous jobs include but not limited to the following: ▪ Operating or supervising machines, apparatus, and equipment of substantial power ▪ Operating vehicles of any kind ▪ Exposure to petroleum products and/or hazardous materials of any kind ▪ Lifting, moving, or pushing heavy materials ▪ Work performed at heights ▪ Any underground works ▪ Other activities which entail exposure to dangerous or hazardous equipment, materials, or activities ▪ Other activities similar in nature to the above In accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am.	Refer to "Section 15.5" Labor & Working Conditions Management Plan
Discrimination: All individuals should be treated equally regardless of class, race, color, religion, gender, age, political or other beliefs, national or social origin, sexual orientation, disability, civil	The local recruitment process will be conducted in an inclusive and diverse manner, which means job opportunities will be open to all community members regardless of their class, race, color, gender, age, disability, civil status etc. Recruitment will be based on competency and skill.	Refer to "Section 15.5"

status, family background etc. While Uzbekistan has strong laws against many kinds of discrimination, it does not prohibit it based on sexual orientation and significant gaps persist for women and people with disabilities.	Efforts and resources will be allocated to make sure that women are also fairly targeted and recruited and are provided opportunities for learning skills to participate equally as men. Gender inclusive advertising will be identified, in consultation with female stakeholders (such as women's groups and CBOs) and will be utilized in the announcement of job opportunities. Candidate selection (recruitment) will be conducted by a mixed-sex panel (comprising of at least two people). Candidate promotion selection will always be carried out by a gender diverse and balanced panel (more than one person and never by a single-sex panel). It will be prohibited to terminate the contract of a female worker during her maternity leave.	Labor & Working Conditions Management Plan

20. CLIMATE CHANGE RISK ASSESSMENT

This section provides a high-level Climate Change Risk Assessment (CCRA) related to the Project development. The CCRA is guided by the "Guidance Note on Climate Change Risk Assessment" (EP, 2020).

The CCRA investigates the relevant climate-related 'Physical Risks' defined as risks resulting from climate change which are event driven (acute) or longer-term shifts (chronic) in climate patterns. Acute physical climate risks can include increased severity and frequency of droughts, storms, floods, heat waves and wildfires. Chronic physical climate risks can include sea level rise and longer-term temperature increase.

The CCRA does not include an assessment on 'Transition Risks' as indicated in the Guidance Note (which is only required for Projects with combined Scope 1 and Scope 2 emissions of more than 100,000 tons of CO_2 equivalent annually – which is considered irrelevant for this Project as discussed in the section below). Those are risks related to policy, legal, technology, reputation and market changes.

The key physical risks that have been investigated as part of the CCRA and which are relevant for the Project development include the following:

- Sea Level Rise and Riverine Floods;
- Urban Flash Floods;
- Temperature Increase and Heat Waves;
- Extreme Weather Events;
- Wildfires;
- Infectious Diseases; and
- Water Scarcity and Drought.

20.1 Project GHG Emissions

This section aims to provide a high-level estimation on the GHG emissions and avoidance rates from the Project activities.

One of the key positive impacts of the Project, as far as resource efficiency, is that it will be utilizing wind energy to produce electricity. The Project will be of an installed capacity of 1.5 GW that will contribute to the national grid and reach end users and help meet the increasing electricity demands throughout Uzbekistan – as opposed to meeting such increasing demands through conventional electricity production from thermal power plants.

The Project is expected to provide around 5,304 GWh of electricity per year and is expected to displace approximately 2.5 metric tons of CO_2 annually. This has been calculated based on statistics obtained from IFI Dataset of Default Grid Factors[105] (UNFCCC, 2021) which provided a CO_2 generation factor for electricity production in Uzbekistan, and which was estimated at 467 gCO2/kWh.

The International Financial Institution (IFI), under the Framework for a Harmonized Approach to Greenhouse Gas (GHG) Accounting, published the "GHG Accounting for Grid Connected Renewable Energy

[105] IFI Default Grid Factors 2021 v3.1 | UNFCCC

Projects" (IFI, 2019). The document states that construction emissions for renewable energy projects may be excluded, where forms of renewable energy are generally acknowledged to have low construction/lifecycle emissions.

Nevertheless, to put things into perspective, a research study "Assessing the Lifecycle Greenhouse Gas Emissions from Solar PV and Wind Energy: A Critical Meta-Survey" (Daniel Nugent, Benjamin K. Sovacool, 2013) screened an extensive number of lifecycle studies covering a broad range of wind and solar photovoltaic (PV) electricity generation technologies to identify 41 of the most relevant, recent, rigorous, original, and complete assessments so that the dynamics of their greenhouse gas (GHG) emissions profiles can be determined.

The study concludes that the average lifecycle greenhouse gas emissions for wind farms averaged around 35 g CO2-eq/kWh. The study estimates that around 70% of such emissions are attributed to material cultivation and fabrication (mining, extraction, processing, etc. of final products). Construction activities average 8.4 CO2-eq/kWh, while operational activities average 8.4 CO2-eq/kWh.

This figure above covers all on-site construction activities to include but not limited to transportation of materials, civil works and installation activities, processing of materials, fossil fuels burned in transporting and assembling the system, etc. Similarly, the figure for operation covers all activities to include maintenance, cleaning of modules, replacement of parts, etc.

Based on the above, for this Project, construction activities would amount to around 44,000 tons of CO2-eq, while operational activities would amount less than 44,000 tons of CO2-eq. Based on the amount displaced during operation as calculated above, such numbers are considered negligible (around 3% only).

20.2 Compatibility with Host Country Climate Change Commitments

Background on Climate Change and Uzbekistan's Commitments

Uzbekistan's journey with combating climate change started when they joined the United Nations Framework Convention on Climate Change (UNFCCC) on June 20, 1993. Following on that, Uzbekistan ratified the Kyoto Protocol on 12 October 1999 and ratified the Paris Agreement on 9 November 2018.

In accordance with the above, Uzbekistan prepared and submitted to date three (3) National Communications in accordance with the UNFCCC requirements and guidelines. The first was submitted in 1999 [106] and the Fourth National Communication is currently being prepared. The NC includes (but not limited to) a GHG inventory of Uzbekistan (for the period 1990 – 2017) and the current programs attempting to mitigate climate change at a national level. The NC serve as a continuation of the commitment from Uzbekistan towards the UNFCCC and highlights the progress to date achieved at a national level in reducing emissions through plans/policies or in developing mitigation measures through strategies and programs.

In addition, Uzbekistan submitted its Nationally Determined Contributions (NDCs) to the UNFCCC in October 2021. **The NDC identifies a target of reducing specific GHG per unit of GDP by 35% below 2010 levels by 2030.**

Building on the above, the Republic of Uzbekistan has developed the following national policies or strategies towards combating climate change. A summary of those available to date are provided below.

[106] Initial Communication of the Republic of Uzbekistan (unfccc.int)

Table 79: Uzbekistan Policies and Strategies on Climate Change

Strategy	Key Summary
Sector Driven National Adaptation Plan (NAP) to advance medium- and long-term adaptation planning in Uzbekistan	The Plan aims to address climate change adaptation by integrating it into the country's developmental planning and processes. To address the notable gap in terms of climate system adaptation with a specific focus on the provinces of Karakalpakstan, Bukhara, and Khorazm. The project responds to the urgent need for adaptation measures. It seeks to achieve three key outcomes: strengthening coordination for multi-sectoral adaptation planning, enhancing the evidence base for adaptation planning and prioritization, and developing an adaptation financing strategy. It aligns with Uzbekistan's National Strategy on Sustainable Development and places a strong emphasis on gender inclusiveness throughout the adaptation process.
Strategy for Transition of the Republic of Uzbekistan to a Green Economy for 2019-2030	Developed in accordance with Presidential Decree No. 4477 from October 4, 2019, the Strategy seeks sustainable economic growth by integrating green economy principles into structural reforms. Priorities include improving energy efficiency, using renewable energy sources, addressing climate change, and creating support mechanisms for the green economy. The strategy is being revised to align with Uzbekistan's increased NDC ambitions and decarbonization goals, with an extension until 2050.
National Sustainable Development Goals (SDGs) and targets until 2030	The Resolution of the Cabinet of Ministers No. 841, dated 20.10.2018, emphasizes the importance of integrating various indicators into Uzbekistan's strategy for achieving the National Sustainable Development Goals (SDGs) by 2030. Notably, progress in reducing CO_2 emissions, as measured by one of these indicators, must be a key component of Uzbekistan's Voluntary National Review on SDG progress. These National SDG indicators also encompass adaptation measures. For instance, there is a focus on increasing the resilience of vulnerable populations to climate change impacts, integrating climate responses into policies and development strategies, enhancing awareness and capacity for climate change mitigation and adaptation.
Action Strategy on Five Priority Areas for Development of the Republic of Uzbekistan in 2017- 2021" (UP-4947 dated 07.02.2017)	Provides for the reduction of the energy and resource intensity of the economy, widespread introduction of energy-saving technologies in production, increased use of renewable energy sources, which will help reduce GHG emissions; adoption of systemic measures to mitigate the adverse impact of global climate change and the drying up of the Aral Sea on agriculture development and livelihood of the population.
The Law "On the Use of Renewable Energy Sources" and the Law "On Public Private Partnership" adopted in 2019 in Uzbekistan	Their long-term development plans aim to reach a minimum of 25% of power generation from renewable energy sources (RES) by 2030. To achieve this, they plan to build new RES facilities with a combined capacity of 10 GW, including 5 GW of solar, 3 GW of wind, and 1.9 GW of hydropower plants. The focus in hydropower development is on harnessing the potential of small rivers, irrigation canals, reservoirs, and watercourses. In addition to these goals, it aims to increase the share of renewable energy to **25%** of total power generation, double energy efficiency relative to 2018 levels, and halve the energy intensity of GDP by 2030 as part of their mitigation targets.

Kungrad Wind Power Project Climate Change Related Permits

Aside from obtaining an environmental permit from the Ministry of Ecology, Environmental Protection, and Climate Change for Project implementation, which is based on the EIA study prepared, there are no change related permits or certification.

The Project is designed to generate 1.5GW through wind power technology that will be connected to the National Grid by a high voltage overhead transmission Line. ***This Project's implementation contributes to and is aligned with the key country programs, policies and strategies identified earlier.***

20.3 Sea Level Rise and Riverine Floods

The closest sea to the Project site is the Aral Sea located around 75km to the east. The closet river to the Project site is the Ama Daru River located around 200km to the east. Both are presented in the figure below along with the Project location.

Sea level rise and riverine flood risks are considered irrelevant for the Project due to the following:

- The Aral Sea began shrinking in the 1960s and largely dried up by the 2010s. This issue is discussed in further details in "Section 14.1.5"; and
- The Project site is located at an elevation gain of more than 200m from the Aral Sea and 600m from the Ama Daru River. Therefore, any expected rise attributed to climate change for both (although highly unlikely) cannot reach in general more than 50-70 m within the surrounding area due to the topographical conditions and elevation gains as noted in the figure below.

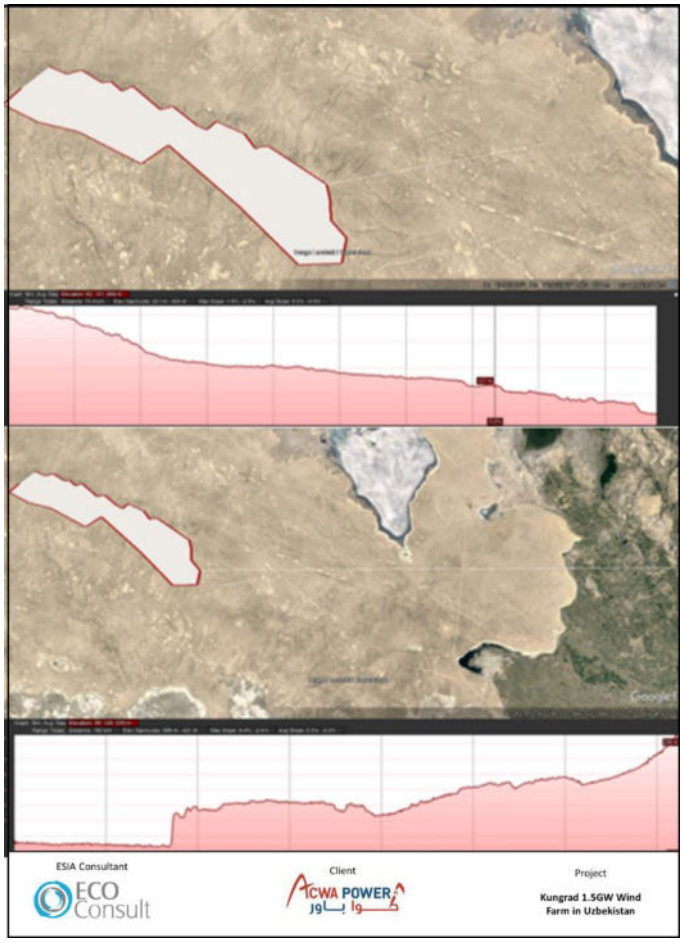

Figure 96: Elevation Change between Project Site and Aral Sea (up) and Ama Daru River (bottom)

20.4 Urban Floods

As discussed in “Section 10.2.1” earlier, the Developer undertook a flood risk assessment for the Project site. The assessment is provided as a standalone document. The assessment and flood model considered impacts related to climate change on flood risks. This was mainly based on incorporating the data/outcomes of a study titled "Stationary and Nonstationary Generalized Extreme Value Modelling of Extreme Precipitation Over a Mountainous Area under Climate Change". The study focused on predicting changes in precipitation levels due to influence of climate change, allowing for more accurate flow and flood risk predictions.

As noted in ““Section 10.2.1” the flood risk assessment concludes that there are no flood risks impacts relevant for the Project site.

Taking the above into account, urban flood risks are considered irrelevant for the Project site.

20.5 Temperature Increase and Heat Waves

The section below is provided from the "Climate Risk Country Profile: Uzbekistan" (World Bank, 2021). Analysis of data from the World Bank’s Climate Change Knowledge Portal (CCKP) shows historical information on temperature in Uzbekistan from 1950 – 2020.

Based on the above, Uzbekistan is characterized with an average monthly temperature of 27.2°C in the hottest month (July), and with an average daily maximum of 35°C in many of the major cities. Winters are cold, with average monthly temperatures of −1°C to −3°C between December and February. The figure below presents the spatial variation of observed average annual temperature across Uzbekistan.

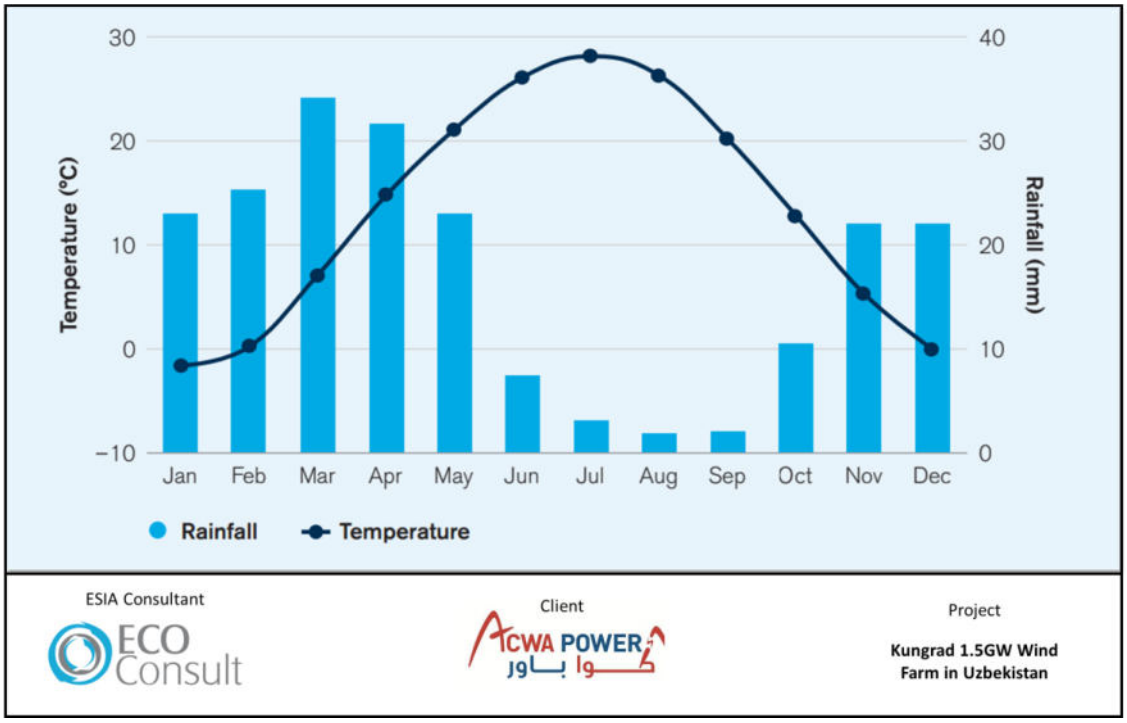

Figure 97:Average Monthly Temperature and Rainfall in Uzbekistan, 1991–2020

The figure below presents the mean temperature in Uzbekistan from 1950 – 2020. As noted below, average annual air temperatures have risen steadily and significantly in Uzbekistan over the past 70 years, with

notable variation from year to year. From 1950 to 2013, temperatures rose at an average rate of 0.27°C per decade.

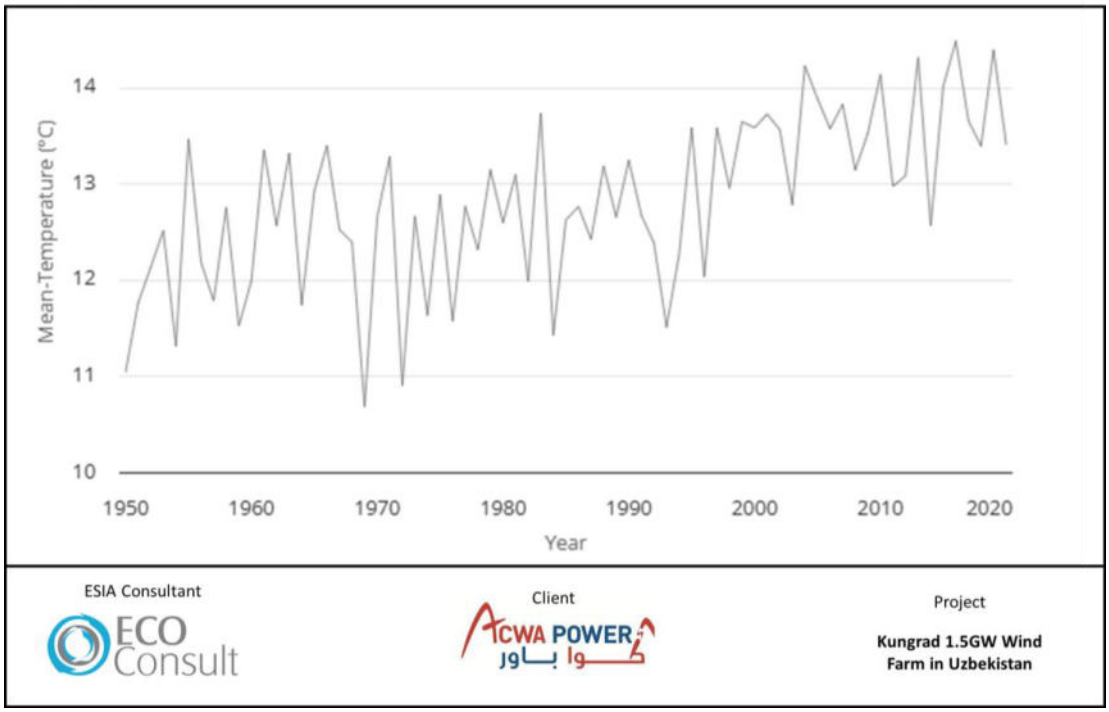

Figure 98: Mean Temperature in Uzbekistan (1950-2020)

The figures below from the Climate Change Knowledge Portal provide a projection of maximum and minimum temperature trends in Uzbekistan under the RCP 8.5 Ensemble (this particular projection scenario operates under the assumption of a business-as-usual approach, without the implementation of any climate change mitigation measures). In 2023, the average maximum temperature is projected to be 20.22°C, while the average minimum temperature is estimated to be 7.68°C. Based on the projections, in 2053 (which aligns with the Project operational period) the average maximum temperature is anticipated to rise to 22.15°C, and the mean minimum temperature is expected to increase to 9.50°C.

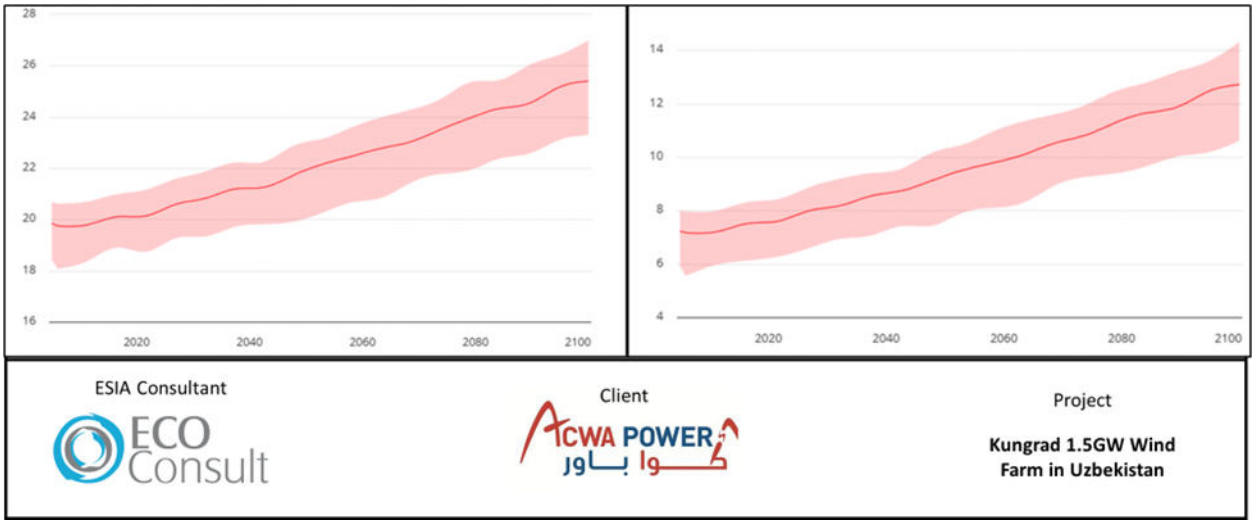

Figure 99: Project Maximum Temperature Increase (left) and Minimum Temperature Increase (Right)

The current median probability of a heat wave for Uzbekistan is around 2% (defined as a period of 3 or more days where the daily temperature is above the long-term 95th percentile of daily mean temperature). The frequency of heat waves has already risen, with the sharpest increase being observed in the northwestern areas surrounding the Aral Sea and the lower Amu Darya. This has led to a rise in the number of very hot days (>40°C).

The daily probability of a heatwave is projected to increase in Uzbekistan under all emissions pathways. This increase in heat wave probability is expected to occur as soon as the 2030s, even under the lowest emissions RCP2.6 pathway (this particular projection scenario operates under the assumption of strong emissions reduction with the implementation climate change mitigation measures). As shown in the figure below, the frequency of heatwaves increases significantly under all emissions pathways, and potentially doubles to over 100 days per year under the highest pathway (RCP8.5).

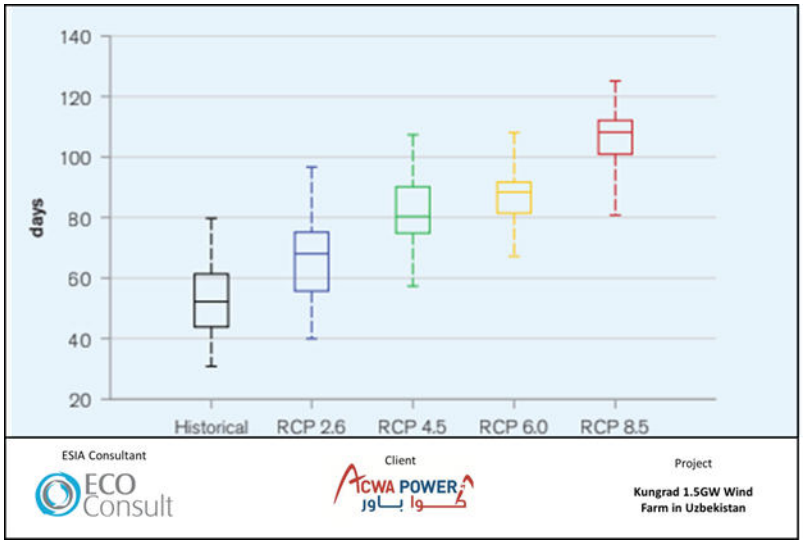

Figure 100: Historic (1986–2005) and Projected Annual Count of Days in which Temperatures Surpass 35°C

Finally, for Karakalpakstan, the Think Hazard tool indicates extreme heat as a medium risk hazard level as noted in the figure below.

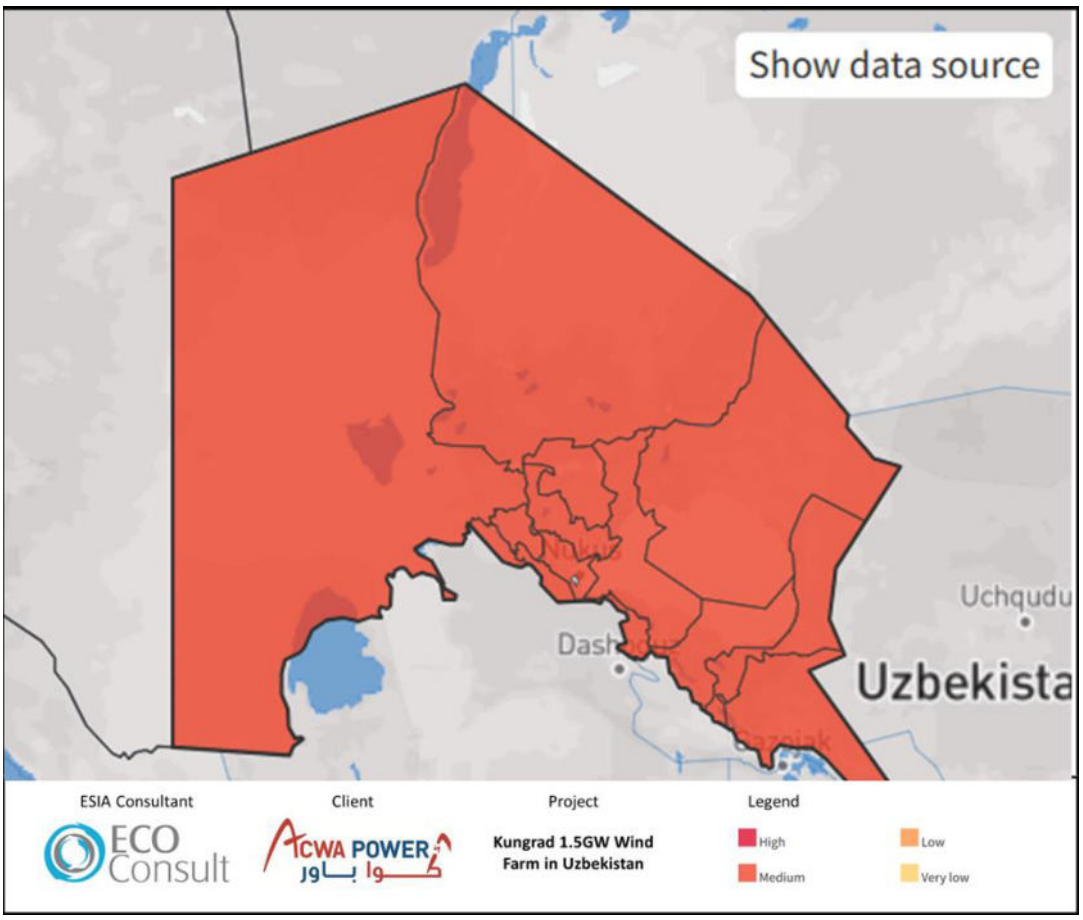

Figure 101: Think Hazard – Hazard Level for Karakalpakstan for Extreme Heat

Taking all of the above into account, Project site can be considered as **medium risk from increasing temperatures and heatwaves**, which could adversely affect the Project through the following anticipated impacts.

Damage to Assets and/or Impacts on Project Efficiency

High temperatures could damage or affect certain Project assets (e.g. cables, blades, etc.) and/or could affect generation capacity. It is assumed that such risks have been taken into account as part of the technical studies of the Project.

Impacts on Outdoor Workers/Laborers

Working in outdoor areas and exposure to high temperatures entails occupational health and safety risks on workers during the construction and operation phase. "Section 15.2" specifically mentions that the OHSP that is to be prepared for the construction and operation phase should take into account risks from working in sunny conditions and high temperatures. This could include measures such as the following;

- Avoid continuous exposure to the sun during the shift. Temporary shelter and or similar protections will be defined and provided. Project should comply with limits to heat exposure during working hours;
- Exposed personnel have to wear protective clothing and cover the skin by means of long-sleeved, closely-woven shirts and long trousers;

- If considered necessary, exposed personnel have to use an SPF 30 or higher sunscreen, before going outdoors on skin exposed;
- Provide adequate amount of water per worker (it suggested to drink about 0.5 liters of water before work commencement, drink 1 to 2 cups of water every 20 minutes, for a total of 4 to 8 liters per day or 1 liter per hour);
- Reduce metabolic heat production (heat produced by the body): automation and mechanization of tasks minimize the need for heavy physical work and the resulting build-up of body heat;
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing;
- Define regular breaks in cool, shaded areas;
- Continuous weather monitoring for informed work scheduling; and
- Worker training on recognizing and responding to heat-related illnesses

In addition, "Section 15.2" specifically mentions that the Emergency Preparedness and Response Plan should be developed by EPC Contractor and Project Operator which should include a section related to heat strokes.

20.6 Extreme Weather Events

Dust and Salt Storms

According to the "Climate Risk Country Profile: Uzbekistan" (World Bank, 2021), the projected reduction in glacial mass and river flow in the Amu Darya and Syr Darya basins along with increased average temperatures projected by the model ensemble (as discussed earlier) are likely to accelerate the desiccation of the Aral Sea. This in turn could hasten the process of desertification across the wide area of land adjoining the Aral Sea, with winds carrying sand, dust, and salt up to 300 km from the former seabed (within the range of the Project site).

Analysis of remote sensing data for the Aral Sea area demonstrates that the area of salt-affected soils that feed the development of salt and dust storms expanded by 36% in the period 2000–2008. Dust storms affect 5.5 million people in Uzbekistan and their increasing frequency, driven by desertification, has been shown to pose a risk to public health in Uzbekistan such as respiratory disease. Such risks may increase in the coming decades, as climate change is likely to drive increased desertification and accelerate the desiccation of the Aral Sea, leading to more frequent dust and salt storms.

Taking the above into account, Uzbekistan is considered at a **medium risk from salt and dust storms**, which could adversely affect the Project through impacts on outdoor workers/laborers. Working in outdoor areas and exposure to salt and dust storm entails occupational health and safety risks on workers during the construction and operation phase. "Section 15.2" specifically mentions that an Emergency Preparedness and Response Plan should be developed by EPC Contractor and Project Operator which should include a section related to dust and salt storms that should consider the following:

- All outdoor activities shall be temporarily suspended during salt and dust storms;
- All workers must avoid staying in open areas and locate nearest shelter and take safe refuge;
- Disposable dust masks shall be distributed and worn by all personnel; and

- Depending on site conditions and expected forecast, all works onsite could be suspended.

Landslide

For Karakalpakstan, the Think Hazard tool indicates landslides as a low-risk hazard level as noted in the figure below. In addition, as required, detailed design of the Project will be considering seismic factors for the area that should be taken into account for design specifications. **Taking the above into account, such risks are considered low and there are no further requirements to be considered**.

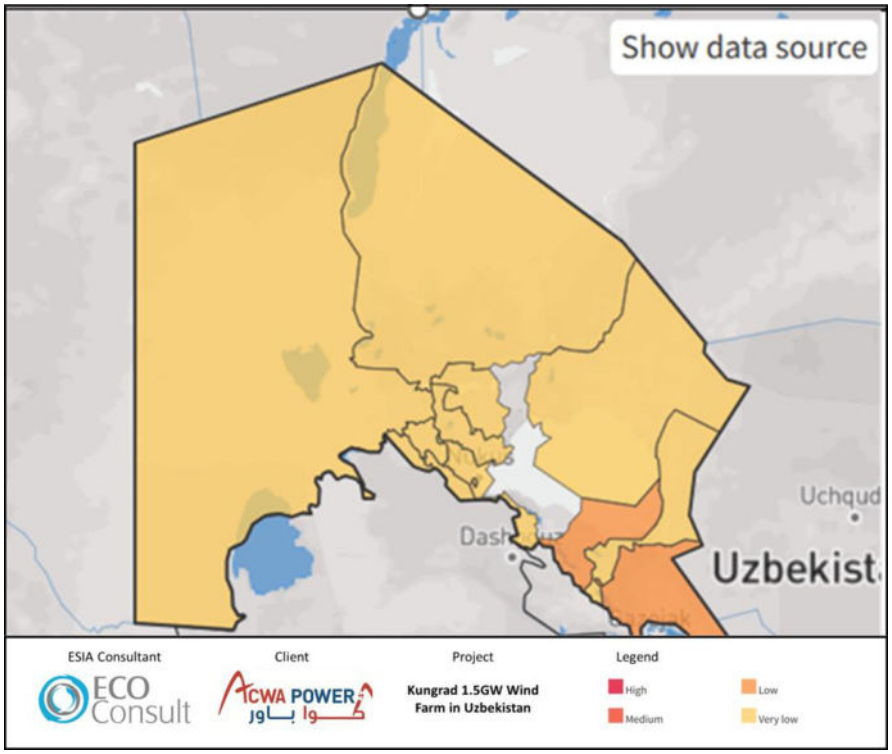

Figure 102:Think Hazard – Hazard Level for Karakalpakstan for Landslide

Earthquakes

For Karakalpakstan, the Think Hazard tool indicates earthquakes as a high-risk hazard level as noted in the figure below. In addition, this is line with outcomes presented earlier under "Section 10.1.1". In addition, as required, detailed design of the Project will be considering seismic factors for the area that should be taken into account for design specifications. **Taking the above into account, such risks are considered low and there are no further requirements to be considered**.

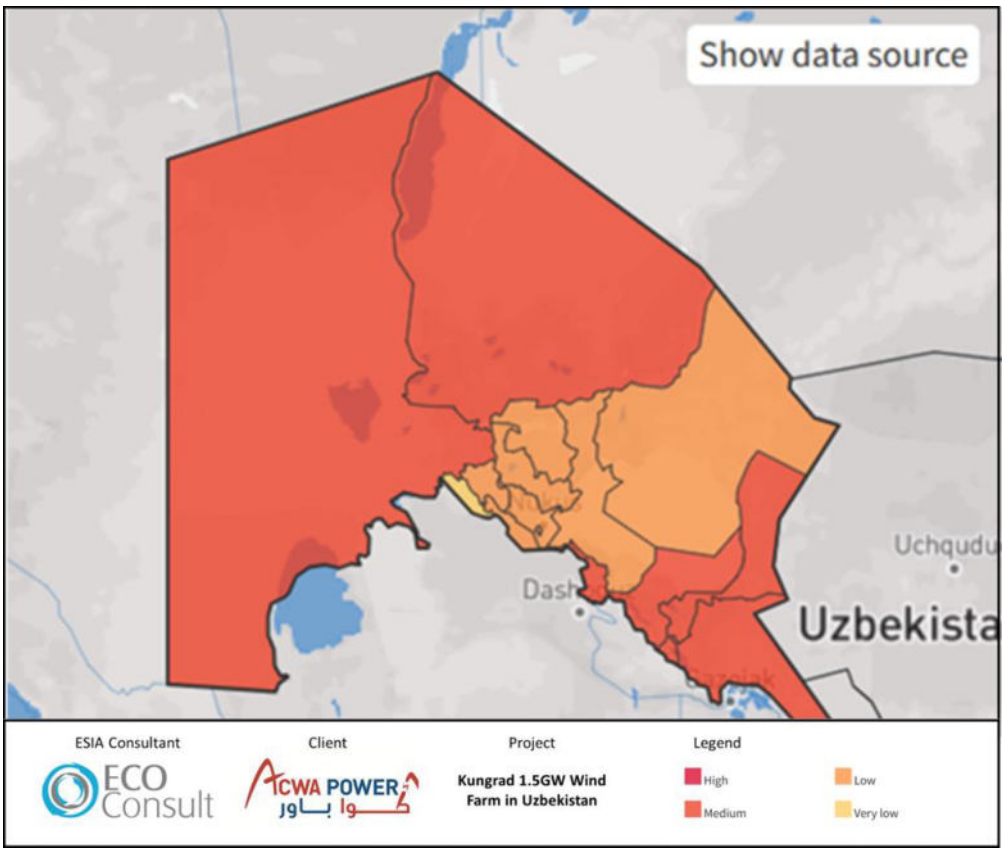

Figure 103:Think Hazard – Hazard Level for Karakalpakstan for Earthquakes

Other

Other known natural disasters are not considered relevant for the Project area such as tsunamis, volcanos, and cyclones. In addition, other extreme weather events have been assessed in other sections – this includes heat waves, flood risks, and sea level rise.

20.7 Wildfires

A wildfire is an unplanned, unwanted, uncontrolled fire in an area of combustible vegetation.

Lightning is the most common ignition source that causes the vast majority of wildfires. Climate change is undoubtedly the biggest trigger of extreme lightning storms. Warmer and longer summer's heat up the land surface. This, coupled with an increase in carbon emissions, causes stronger updrafts that are more likely to produce more powerful and frequent lightning. A 2014 study estimates a 12% increase in the frequency of lightning strikes with every one-degree Celsius increase in temperature.

The increase in temperate and heat waves (as discussed earlier) is expected to correlate with increased risk of wildfire. For Karakalpakstan the Think Hazard tool indicates wildfires as a high-risk hazard level as noted in the figure below. Similarly, the "Climate Risk Country Profile: Uzbekistan" (World Bank, 2021) also indicates this as a high risk.

The Project site and its surrounding area is classified as a desert-like habitat with shrub vegetation as noted in the figure below, which could entail risk of wildfire to some extent but which can be relatively controlled (unlike tree/forest habitats). Based on the area's habitat, **such risks are considered as medium-risk.**

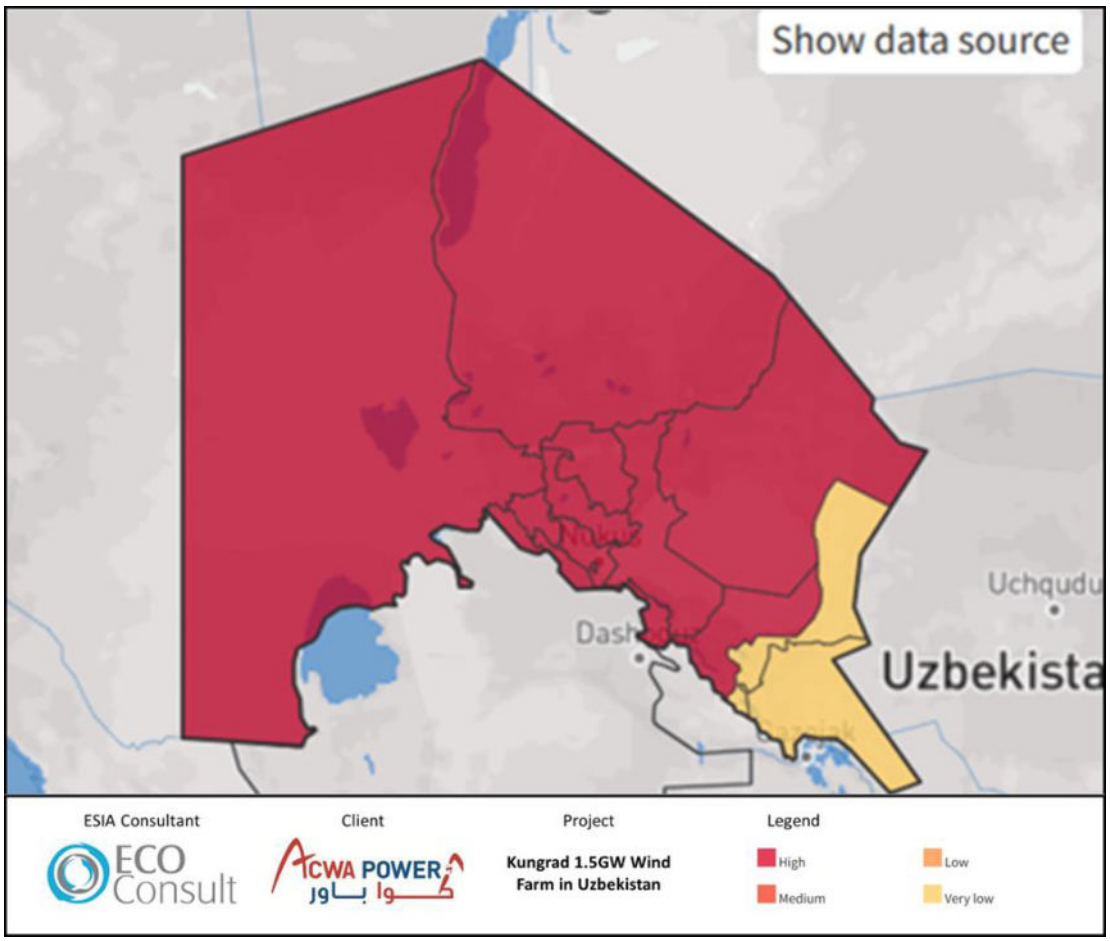

Figure 104: Think Hazard – Hazard Level for Karakalpakstan for Wildfires

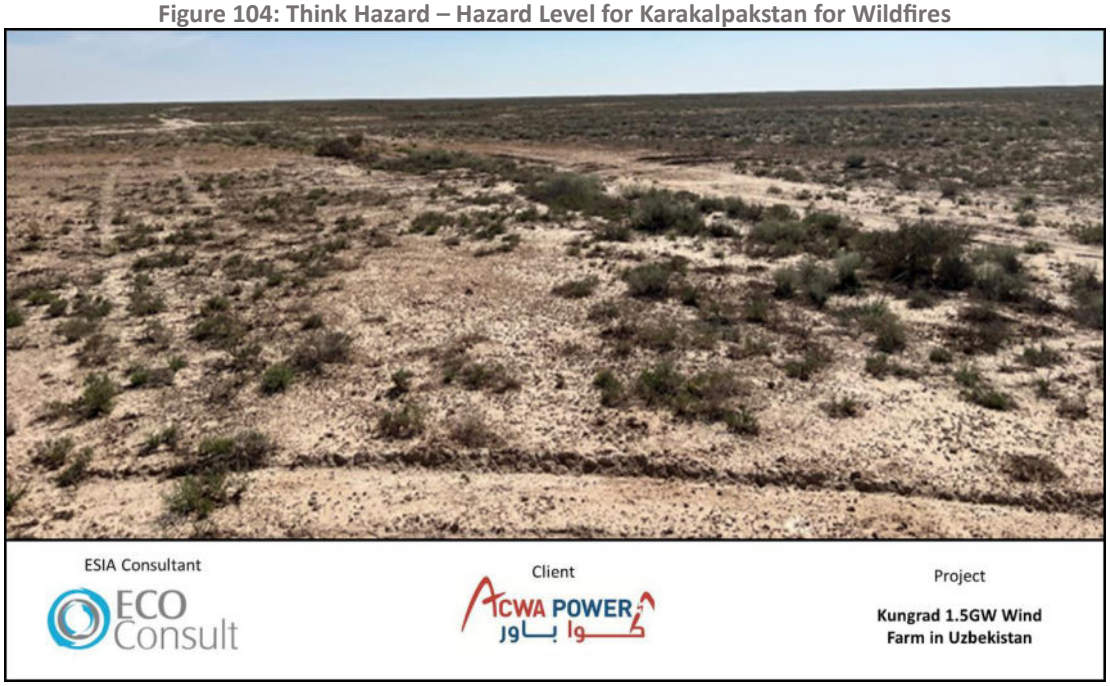

Figure 105: Project Habitat with Shrub Vegetation

"Section 15.2" specifically mentions that the Emergency Preparedness and Response Plan should be developed by EPC Contractor and Project Operator which should include a section related to fire risks that should consider the following:

- Identify requirements for firefighting equipment (e.g. fire extinguisher) throughout the entire Project site and in specific key areas such as but not limited to service vehicles, fuel storage area, generator area,
- Identify requirements for fire control to include but not limited to: (i) prohibiting any sources of uncontrolled fires such as campfires, smoking outside of designated areas, etc. (ii) keep away ignition sources and disconnect power supply from installations; (iii) worker shall ensure that other ignition sources are kept away of the fire; (iv) etc.
- Ensure availability of certified firefighters as part of the emergency responders onsite

20.8 Infectious Diseases

The table below presents the key communicable diseases in Uzbekistan to date which include both vaccine-and non-vaccine preventable diseases.

Table 80: Communicable Diseases in Uzbekistan

Vaccine-Preventable Diseases	
Routine Vaccines	Chickenpox (Varicella)
	Diphtheria-Tetanus-Pertussis
	Flu (influenza)
	Measles-Mumps-Rubella (MMR)
	Measles-Mumps-Rubella (MMR)Shingles
Other Vaccines	Covid-19
	Hepatitis A
	Hepatitis B
	Measles
	Rabies
	Typhoid
Non-Vaccine-Preventable Diseases	
Diseases Name	**Ways it spreads**
Leptospirosis	-Touching urine or other body fluids from an animal infected with leptospirosis -Swimming or wading in urine-contaminated fresh water, or contact with urine-contaminated mud -Drinking water or eating food contaminated with animal urine
Leishmaniasis	Sand fly bite
Hantavirus	Breathing in air or accidentally eating food contaminated with the urine, droppings, or saliva of infected rodents -Bite from an infected rodent -Less commonly, being around someone sick with hantavirus.
Tuberculosis (TB)	Breathing in TB bacteria that is in the air from an infected and contagious person coughing, speaking, or singing.

According to the "Climate Risk Country Profile: Uzbekistan" (World Bank, 2021), there is strong evidence of a relationship between higher temperatures and cases of food and water-borne disease in Uzbekistan. Acute intestinal infections are positively correlated with air temperature both in Tashkent and the country

as a whole, whereas the incidence of bacterial dysentery is three times higher during summer months than at other times of the year.

This suggests that, in the absence of careful adaptation measures, the prevalence of enteric diseases in Uzbekistan is likely to rise in line with projected temperature increases. The increased temperatures that are projected by the model ensemble may create conditions more conducive to the spread of mosquito-borne diseases, increasing the risk of a resurgence of malaria and parasitic diseases such as leishmaniasis.

Respiratory disease is the most common cause of death among children younger than in Uzbekistan and 2010 evidence from Nukus, the capital city of the northwestern area of Karakalpakstan, shows a positive correlation between dust concentration in the air and cases of respiratory disease. The risk of this disease may increase in the coming decades, as climate change is likely to drive increased desertification and accelerate the desiccation of the Aral Sea, leading to more frequent dust storms.

Linking Climate Change to Disease Trends in Uzbekistan

- Climate change significantly exacerbates leptospirosis risks which can be excreted through infected animals' urine, as it leads to more frequent and intense rainfall and flooding events. Exposure to mud or stagnant water can lead to human-animal contact, while heavy rainfall transports leptospires into water bodies, especially during floods. These environmental changes increase the potential for disease outbreaks, making climate change a critical factor in the prevalence and impact of leptospirosis.[107]
- It also significantly amplifies the threat of leishmaniasis, a disease transmitted by sandflies, which affects both animals and humans due to Leishmania parasites. Rising temperatures, altered precipitation patterns, and changes in humidity profoundly influence the behavior and ecology of sandfly vectors, intensifying the risk of disease transmission. As the climate warms, the prevalence of leishmaniasis is projected to increase, underscoring the critical role of climate change in the spread of vector-borne illnesses like leishmaniasis.[108]
- Climate change's impact on hantaviruses is complex. It could lead to more frequent outbreaks but also a decrease due to declining rodent populations. Changes in rodent distribution may introduce hantaviruses to new areas, creating new epidemiological dynamics. Continued research in areas like pathogenesis and diagnostics is crucial as hantaviruses remain a public health concern.[109]
- Climate change affects the prevalence and impact of tuberculosis, particularly in low and middle-income countries. It influences tuberculosis through various mechanisms, including temperature, humidity, and precipitation changes that affect host responses, Vitamin D distribution, UV radiation exposure, and malnutrition. Extreme climatic events, resulting in population displacement and larger susceptible populations, contribute to tuberculosis transmission and hinder diagnosis and treatment

[107] Leptospirosis: risk factors and management challenges in developing countries - PMC (nih.gov)

[108] Impact of Climatic Factors on the Seasonal Fluctuation of Leishmaniasis Vectors in Central Morocco (Meknes Prefecture) - PMC (nih.gov)

[109] Hantaviruses and climate change (clinicalmicrobiologyandinfection.com)

services. Overall, climate change is expected to increase susceptibility to tuberculosis by amplifying underlying risk factors, particularly in vulnerable regions.[110]

Taking the above into account, such risks are considered medium.

Nevertheless, as discussed in "Section 15.3" and 15.5" there are requirements that should be considered for worker influx which takes into account the following:

- Medical examination program. All workers must be subject to a preliminary medical examination before commencement of any job tasks in accordance with local applicable requirements. In addition, routine medical examination for workers (bi-annually) must be undertaken. Such medical examinations must be undertaken at certified centers. Copies of medical examination results of all workers must be retained onsite.
- Details and procedures for ensuring and maintaining hygienic conditions onsite at all times specifically related to toilet and washing facilities, eating areas, etc.
- Induction training and awareness raising sessions on risks associated to the most common contagious diseases (e.g. influenza virus), communicable diseases, general measures for hygiene, code of conduct expected to be implemented and other as appropriate.
- Continuous monitoring with national health officials (e.g. Ministry of Health) and local authorities on updates on health situation within the District in specific and Uzbekistan in general (e.g. for any specific disease outbreaks and control measures to be implemented)
- Screening of expatriate workers for any potential infectious diseases (e.g. malaria)

It is recommended that a similar plan is also undertaken for the operation phase of the Project by the Project Operator.

20.9 Water Scarcity and Drought

The Aral Sea, once the fourth largest inland body of water in the world, served as a vital source of life, nourished by the snowmelt and precipitation from distant mountains. Its waters were harnessed to transform the surrounding desert into fertile farmland, primarily for cotton and other crops. However, the Soviet Union initiated a colossal water diversion project in the 1960s, with the ambitious goal of converting the arid plains of Kazakhstan, Uzbekistan, and Turkmenistan into agricultural lands. Tragically, this endeavor led to a devastating ecological collapse. Excessive irrigation from the region's two major rivers, the Syr Darya and the Amu Darya, triggered a catastrophic reduction in the Aral Sea's size. The once-unified lake split into fragmented bodies, the south Aral Sea splintering into eastern and western lobes. The repercussions were dire, encompassing the collapse of fisheries, the devastation of local communities, increasing salinity, pollution from agricultural chemicals, and the release of hazardous dust from the exposed lakebed, which posed serious threats to public health and soil quality.

Moreover, the impact of this disaster extends beyond the borders of Uzbekistan, affecting neighboring countries as well. Annually, a staggering 135-145 million tons of salt pour into the Amu Darya and the Syr

[110] The impact of climate change on the risk factors for tuberculosis: A systematic review - PubMed (nih.gov)

Darya, equivalent to a staggering 17-20 tons per hectare of irrigated land. Between 1960 and 1990, the Aral Sea's annual river inflow dropped from 55 km^3 to a mere 6-12 km^3, nearly reaching zero during dry years. At present, the sea's level is diminishing at a rate of approximately 0.5 meters per year, with its surface area reduced to a mere 32,000 km^2 and salinity levels surpassing 40 grams per liter and still on the rise.

Since the Amu Darya River is the main source of water in Kungrad District within which the Project is located, this disaster remains a main concern. A study called: "Glacier and runoff changes in the Rukhk catchment, upper Amu-Darya basin until 2050" used hydrological models (CMIP3) to estimate the effect of climate change on the glaciers that feed main tributary to the Amu Darya River. It is projected that temperature rises between 2.2°C and 3.1°C by the 2050s in mountainous areas of Tajikistan could lead to a loss in glacial mass of 36%–45%, relative to present levels, which would cause a slight reduction in the in-river flow by the 2050s, as the smaller glacial mass and increased evapotranspiration are partly offset by a faster glacial melt rate. Another study called:" The role of synoptic processes in mudflow formation in the piedmont areas of Uzbekistan" used the same model to estimate the impact of climate change on the Amu Darya River and related water supply by the 2050s. They project that by mid-century inflow into downstream areas could drop by 26%–35% for the Amu Darya, even as water demand rises in order to allow continued irrigation in the face of higher evaporation rates. This projection implies that by the 2050s there could be severe water shortages in the Amu Darya basins with 50% of their respective levels of demand being unmet.

Not only that, but also according "Climate Risk Country Profile: Uzbekistan" (World Bank, 2021), as of 2014, 80% of Uzbekistan's water supply came from resources originating outside its borders. Uzbekistan shares the major rivers of Central Asia (Amu, Darya, Syr Darya, and Zarafshan) with its neighbors; less than 10% of Uzbekistan's water resources originates in the country. This makes the country more vulnerable to increased upstream river regulation from other countries. In the absence of careful international coordination, the pressure on Uzbekistan's water resources may increase as climate change leads to a reduction in river runoff in the long-term.

Apart from climate change impacts on water supply as discussed above, another key issue is drought. Uzbekistan's arid climate and regular high temperatures make drought an increasingly regular occurrence. Three kinds of drought occur in the country: hydrological drought (water shortages from January to March due to low precipitation in the upper watershed of key rivers), meteorological drought (usually associated with a precipitation deficit, and typically occurring in spring or summer), and agricultural drought (a lack of moisture in the soil that inhibits crop growth). Hydrological drought has been occurring with increasing frequency and severity in the western areas of Uzbekistan in the past two decades, whereas the central and southern provinces have experienced the highest frequency of meteorological drought. The most severe drought of recent decades, occurred in 2000 and 2001, and resulted in severe economic and social consequences. A study called: "Global Changes in Drought Conditions Under Different Levels of Warming" provides a global overview of changes in drought conditions under different warming scenarios. They project large increases in the duration and magnitude of droughts in Central Asia by the end of the 21st century under global warming levels of 1.5°C, 2.0°C and 3.0°C. Droughts of a magnitude that is extremely rare at present in Central Asia (100-year droughts: refers to a drought event that has a 1% chance of occurring in any given year based on historical climate data and statistical analysis) are projected to become 4 to 10 times more common under the same warming scenarios. The CCKP model ensemble suggests that the annual probability of experiencing a severe meteorological drought in Uzbekistan could increase significantly by the 2090s, under all but the lowest emissions pathway. Projections indicate that severe meteorological drought could occur in 58% of all years by the 2090s under RCP4.5 (this particular projection scenario operates under the assumption of moderate greenhouse gas emissions stabilization over the 21st century), whereas under RCP8.5 (this particular projection scenario operates under the

assumption of a business-as-usual approach, without the implementation of any climate change mitigation measures) , severe drought is projected to occur in 87% of all years. While there is some variation regionally within Uzbekistan, risks generally increase westward. Under RCP8.5 (this particular projection scenario operates under the assumption of a business-as-usual approach, without the implementation of any climate change mitigation measures), by the 2090s, the Republic of Karakalpakstan is projected to experience severe drought in 95% of years. In effect, these projections describe a transition to a new regime of chronic meteorological drought.

Finally, and taking all of the above into account, for Karakalpakstan, the Think Hazard tool indicates water scarcity and drought as a high-risk hazard level as noted in the figure below.

Taking all of the above into account, **Project site can be considered as high risk.**

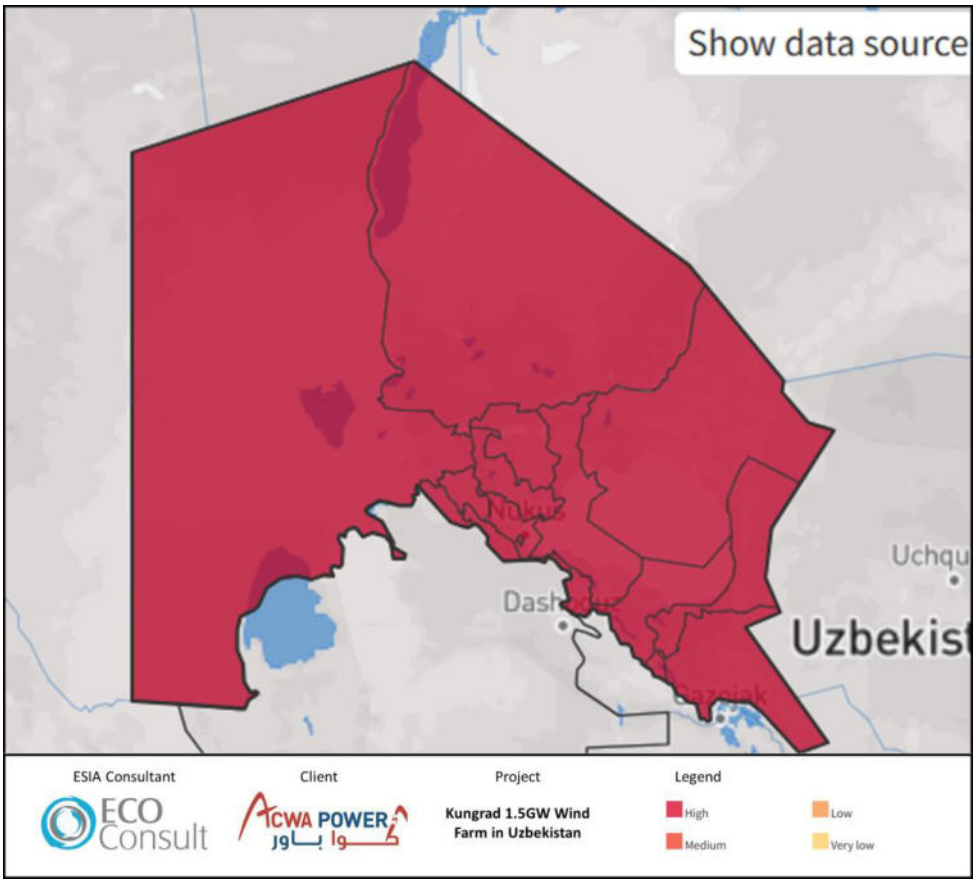

Figure 106:Think Hazard – Hazard Level for Karakalpakstan for Water Scarcity

Addressing the Challenges

Uzbekistan places significant emphasis on sustainable water management and the efficient utilization of its limited water resources. These efforts are crucial in addressing the ongoing water scarcity issue within the region while promoting socio-economic development.

The country is actively engaged in developing its irrigation system and enhancing water management infrastructure to ensure a consistent water supply for households and all sectors of the economy. However, challenges such as global climate change, population growth, and escalating water demand are exacerbating the water resource shortage, potentially hindering future development prospects.

To tackle these pressing challenges, Uzbekistan has formulated several interconnect and comprehensive strategies as noted within the table below. It aims to increase the climate resilience of its agriculture sector, ensure the

sustainable use of water and land resources, and establish early warning and risk management systems for effective climate adaptation.

Table 81: Country Strategies Addressing Water Issues

Strategy	Key Summary
Strategy for Transition of the Republic of Uzbekistan to a Green Economy for 2019-2030	This strategy in water management is dedicated to improving water resource utilization and preventing salinization and land degradation. It focuses on the construction and reconstruction of hydraulic structures, widespread use of information and communication technologies, modernization and automation of water management facilities, adoption of energy-efficient and water-saving irrigation technologies, and mechanisms for sustainable water resource management
Water Sector Development Concept of Uzbekistan for 2020-2030 (UP No. 5863 dated 30.10.2019):	It is a comprehensive strategy aimed at addressing various critical objectives. These goals encompass meeting the rising water demands of the population, economic sectors, and the environment, ensuring the dependable and safe operation of water facilities, efficient management of water resources, enhancing the condition of irrigated lands, and attaining water security in the context of increasing water scarcity and global climate change. The concept places a particular emphasis on the irrigation sector, the reclamation state of irrigated lands which is vital due to agriculture being the primary water consumer. To achieve its objectives, the concept advocates for the adoption of outsourcing and public-private partnership principles in water management, involving the transfer of water management functions to water consumers and introducing market-oriented practices. It also prioritizes the improvement of on-farm irrigation and drainage networks through adaptable mechanisms tailored to local conditions. Moreover, it recommends reforms in state regulation within the water sector, establishing key institutions responsible for water management. Additionally, the concept stresses the implementation of integrated water resources management principles and plans to establish a National Centre for water accounting and coordination. Finally, it aligns its objectives with the State Program for the Development of the Aral Sea region, which targets challenges related to desertification, water and land management, and climate change adaptation, including initiatives such as afforestation and water management enhancements.
State Program for the Development of the Aral Sea Region (2017-2021): This	This program targets afforestation in the dried Aral Sea bottom, climate change adaptation, and water management improvements in South Karakalpakstan. It addresses issues such as land and water salinization, dust storms, and poor-quality drinking water.
South Karakalpakstan Water Resources Management Improvement Project:	This project aims to alleviate the challenges faced by the Karakalpakstan region due to the shrinking Aral Sea. It involves the modernization of irrigation networks, agriculture, and project management to enhance irrigation efficiency, boost agricultural productivity, and foster economic development
Sector driven National Adaptation Plan (NAP) to advance medium- and long-term adaptation planning in Uzbekistan	Phase 1 of this plan stresses the importance of improving coordination and building capacity for climate adaptation in Uzbekistan, particularly in managing water resources. It highlights the need to strengthen institutions like Uzhydromet and promote gender-inclusive coordination and capacity assessments. Furthermore, the document outlines steps to enhance evidence-based adaptation planning, with an implicit focus on water resources. This involves gathering climate data, conducting vulnerability assessments, and implementing economic analysis tools. Successful integration of climate considerations into planning and budgeting will enhance Uzbekistan's resilience to climate challenges. It focuses on developing an adaptation financing strategy, indirectly related to water resources. It involves stakeholder consultations, gender equality, and integrating climate adaptation into budgeting. This project could enhance water resource management in Uzbekistan.

As evident from the above, the Government is aware of such key challenges and is undertaking ongoing efforts to adopt and implement water resilience strategies for water management at the national level, that will include water supply and water demand. The Government is working on this through various national and regional entities such as the Ministry of Water Resources. Therefore, the above will directly and indirectly include Karakalpakstan Region and Kungrad District as well.

However, within the Project context, this underlines the importance of emphasizing water conservation and water efficiency. As discussed within "Section 14.2.5", the ESIA requires the following:

- Coordinate with Ministry of Water Resources of Karakalpakstan to secure the water requirements of the Project given that this is the official entity responsible for water supply. As discussed, water supply will most likely be through tankers whom in turn will source the water from the Amu Darya River
- Develop a water management plan for the construction and operation phase. The plan should emphasize on water conservation and efficiency such as the following in particular:
  - Utilizing the dry-cleaning methods wherever applicable;
  - Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger guns, etc.);
  - Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable.
  - Ensure that washing/cleaning activities (e.g. vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible.
  - Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate.
  - Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.

21. ASSESSMENT OF CUMULATIVE IMPACTS

This section presents the cumulative impact assessment that is relevant for the Project. Cumulative impacts are incremental impacts from other known existing and/or planned developments in the area, and based on currently available information on such existing/planned developments.

Taking the above into account, the known developments within the area include the following and which are presented in the figure that follows:

- The closest wind farm to the Project site is around 300km to the southeast. It is a 100MW Wind Farm that is currently under construction and is expected to become operational in 2024 (before commencement of construction activities of the Project).
- Other development projects within the area in general includes gas exploration activities. Key known activities include the Shakhpakhty Gas field area that includes wells, gas facilities and pipeline (which passes through the Project site as mentioned earlier within "Section 14"). The boundary of the wellfield itself is located around 30 km to the south while the processing facilities are located 50km to the south.

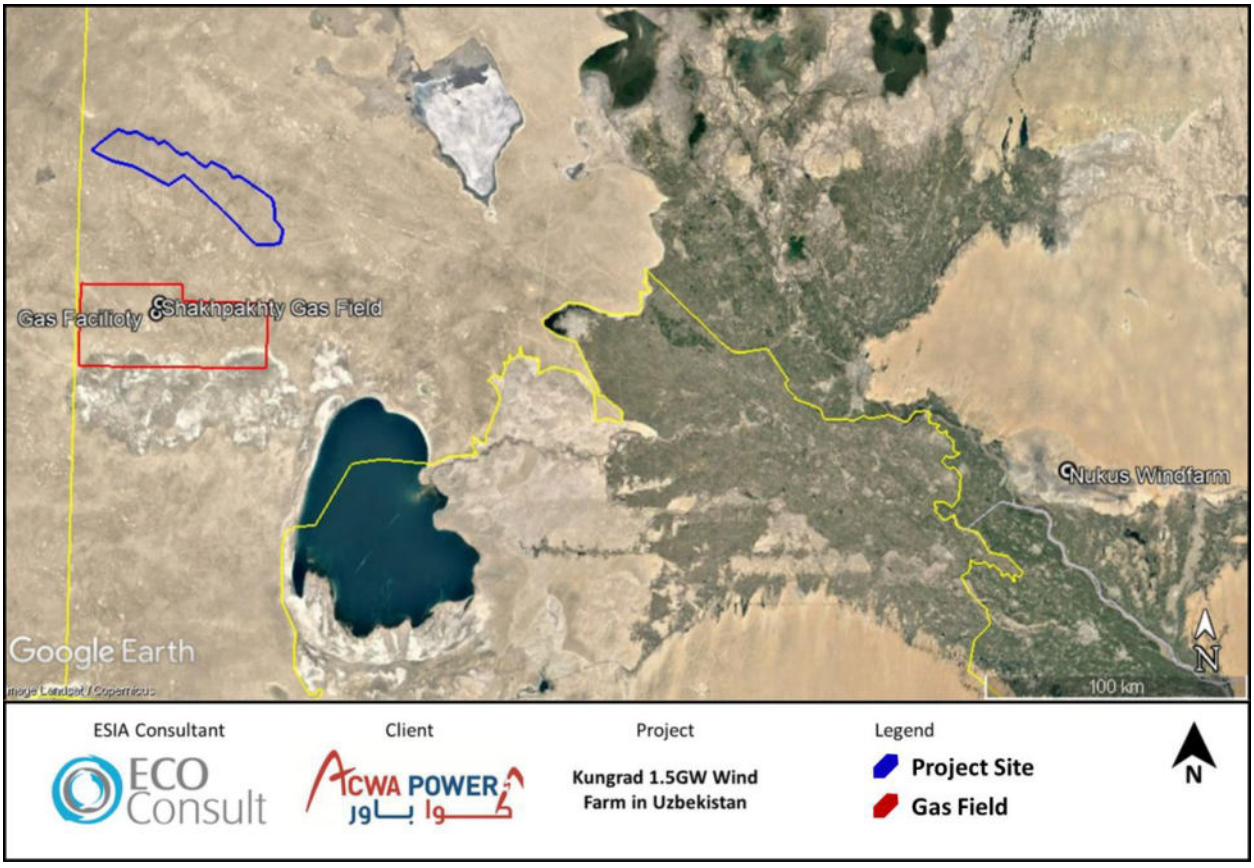

Figure 107: Other Development Projects within the Region

E&S Attribute	Cumulative Impact	Additional Requirements
Landscape and Visual	Key impact is related to visibility of the turbines during operation. As noted within landscape and visual section, such impacts are evident from	None

	the site within which the gas wellfield and processing facilities are located (but not the other wind farm). In addition, as noted within the section, there are no critical visual receptors impacted. Therefore, there are no key issues of concern.	
Land Use	Land use impacts (physical and/or economical displacement) are considered site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Geology, Hydrology and Hydrogeology	Key impacts are related to flood risks, onsite waste management and erosion and sediment control. Such impacts are considered Project and site-specific. In addition, given the distance of other projects, cumulative impacts are considered irrelevant.	None
Biodiversity	Due to the distance of the other projects (including the wind farm and gas facilities) cumulative impacts are considered irrelevant. Any species of conservation concern affected by other projects are unlikely to move to the Project site and be affected again. In addition, migrating birds are not a key issue due to distance.	None
Archeology and Cultural Heritage	Impacts from the Project are considered Project and site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Air Quality and Noise	Key impacts from the Project are mainly related to dust and noise generation from construction activities. Such impacts are considered Project and site-specific. In addition, given the distance of other projects cumulative impacts are considered irrelevant.	None
Infrastructure and Utilities	Key relevant impacts are mainly related to the following: ▪ Impacts on waste facilities (solid waste, wastewater, and hazardous waste). As noted within the section for disposal approvals must be obtained from the relevant authorities to ensure they are able to handle Project requirements. It is assumed these development projects (wind farm and gas facilities) are also undertaking such measures. ▪ Impacts on water resources. As noted within the section, communication with the Ministry of Water Resources of Karakalpakstan is to be undertaken to ensure that they are able to handle the Project's water requirements. It is assumed that these development projects (wind farm and gas facilities) are undertaking such measures and obtaining approvals from such entities for water supply in particular.	None
Worker Welfare, Health and Safety	Key impacts from the Project are related to occupational health and safety, worker accommodation onsite, and worker rights. Such impacts are considered Project and site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Community Health, Safety and Security	Key relevant impacts include the following: ▪ Impacts on noise, shadow flicker and blade/ice throws from operating turbines are considered irrelevant due to the distance of other projects (wind farm and gas facilities). ▪ Impacts from trespassing and interaction with security personnel are considered Project and site-specific. In addition, given the distance of other projects, cumulative impacts are considered irrelevant. ▪ Impacts from worker influx is not expected to be an issue of concern due the following: (i) due to the remoteness of the site it is highly likely that workers will be accommodated within onsite accommodation and not within local communities; (ii) wind farm will be operational once construction activities for this Project commence.	None

Socio-economics	Key impacts are related to potential employment and procurement opportunities during both construction and operation. Such impacts are considered positive. Other projects are expected to provide similar opportunities to local communities as well.	None

22. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

This section presents the Environmental and Social Management Plan (ESMP) for the various Project phases and the overall requirements for the Environmental, Social, Health and Safety (ESHS) Management System (MS).

22.1 Institutional Framework and Procedure Arrangements

Generally, two main pillars govern the successful implementation of any Environmental and Social Management Plan (ESMP) as well as the Environmental, Social, Health and Safety Management System (ESHS-MS) for the project that will be developed at a later stage (as discussed in further details in below). These pillars include:

- Proper identification of roles and responsibilities for the entities involved; and
- Effective control of the process.

All management practices are interlinked, and this section describes how these two pillar criteria could be fulfilled, which in turn helps ensure that the overall objectives are met.

Staffing Requirements

Defining roles and responsibilities of the involved entities identifies where and when each entity should be engaged, their degree of involvement, and the tasks expected of the entity. This in turn eliminates any overlap of jurisdiction or authority and ensures proper communication and effective management of ESMP and ESHS-MS components.

The table below identifies the staffing requirements that are expected for the Project. This should be expanded further in the ESHS Manual that is required as part of the ESHS-MS (as discussed in further details below). This should include an organizational structure that identifies the lines of authority and roles and responsibilities of all involved entities.

Table 82: Roles and Responsibilities of Entities Involved in ESMP

Project Role	Entity	Responsibilities	Staffing Requirements
Project Owner and Developer	ACWA Power	▪ Selection of EPC Contractor and Project Operator; ▪ Implement mitigation and monitoring requirements as applicable for such entity as detailed in the ESMP; and ▪ Ensure overall compliance of EPC Contractor and Project Operator with the requirements of the ESMP and ESHS MS.	▪ Appoint competent E&S Manager ▪ Appoint a Community Liaison Officer (CLO) (male / female) ▪ Appoint Biodiversity Manager with support team as required
EPC Contractor	TBD	▪ Appoint a competent HSE team; and ▪ Implement mitigation and monitoring requirements as detailed in the ESMP and ESHS MS requirements.	▪ Appoint onsite and full-time E&S Manager ▪ Appoint one HSE officer per 50 workers ▪ Appoint Labor Manager ▪ Appoint Emergency response team (doctor, nurse, firefighters, etc.)

Project Operator	TBD	▪ Appoint a competent HSE team; and ▪ Implement mitigation and monitoring requirements as detailed in the ESMP and ESHS MS requirements;	▪ For Project nature and duration, this requires an E&S Manager but it could be off-site / corporate role with support from other onsite personnel
Ministry of Ecology, Environmental Protection, and Climate Change	Granting environmental clearance to the Project	▪ Undertake compliance monitoring	N/A
IFIs	TBD	▪ Appoint Lender Environmental and Social Advisor (LESA) to undertake monitoring on Developer, EPC Contractor and Project Operator to ensure compliance with IFI E&S requirements.	N/A
Owner's Engineer	TBD	▪ Support Developer in implantation of mitigation and monitoring requirements and compliance of EPC Contractor with E&S requirements	▪ Appoint competent E&S Officer to support Developer ESHS Manager

Training and Awareness

An ESHS training plan must be developed and maintained onsite which identifies the type of training that is required for each worker onsite. The plan will ensure that each worker is competent in relation to the tasks to be performed. In addition, signed attendance sheets and training material must be maintained onsite at all times. This should be completed by the EPC Contractor and Project Operator as applicable.

Training should include the following as applicable and as highlighted in the table that follows.

- Basic visitor ESHS induction training;
- Worker ESHS induction training for all workers onsite to include for example EPC Contractor and subcontractor crew;
- Emergency response training for all workers onsite to include for example EPC Contractor and subcontractor crew;
- Specialized training: there are other specific training requirements that must be adhered to and which are related to specific topics as applicable. This includes for example specific training for Occupational Health and Safety (OHS) issues such as working at height, electrical works, etc.; and
- Toolbox Talks (TBT): regular TBT meetings must be undertaken with for example EPC Contractors respective crews and subcontractor crew. Topics and frequency are developed and distributed regularly.

Table 83: Training Elements

Training	EPC Contractor	Project Operator
Basic visitor HSE induction training	✓	✓
Worker HSE induction training	✓	✓

Emergency response training	✓	✓
Specialized training	✓	✓
Toolbox Talks (TBT)	✓	✓

Inspection and Monitoring

ESHS inspection and monitoring must be undertaken to ensure compliance of involved entities with the mitigation and monitoring requirements as detailed in the ESMP and ESHS-MS requirements. This should be completed by the Developer, EPC Contractor, and Project Operator as applicable.

Inspection and monitoring should include the following as applicable and as highlighted in the table that follows.

- Daily HSE inspection and monitoring at the site and preparation of a daily observation report stating therein the corrective measures on observed safety deficiencies, unsafe acts and conditions;
- Weekly site inspections to be carried out using the weekly site inspection checklists template based on requirements of the ESMP and ESHS-MS; and
- ESHS and HR Audits to be undertaken by Developer on EPC Contractor to ensure compliance with ESMP requirement and ESHS-MS. ESHS and HR audits should be undertaken monthly during the construction phase and quarterly during the operation phase.

Table 84: Inspection and Monitoring Elements

Inspection and Monitoring	Developer	EPC Contractor	Project Operator
Daily HSE Inspection and Monitoring		✓	
Weekly Site Inspections		✓	✓
ESHS Audits	✓		
HR Audits	✓		

Meetings

Regular ESHS meetings must be undertaken to discuss ESHS performance onsite, outstanding issues, key issues of concern and other as applicable. Signed attendance sheets and Minutes of Meeting (MoM) must be maintained onsite at all times. This should be completed by the Developer, EPC Contractor, and Project Operator as applicable.

Meetings should include the following as applicable and as highlighted in the table that follows.

- Weekly ESHS meetings
- Monthly ESHS meeting
- Quarterly management ESHS reviews

Table 85: Required Meetings

Meetings	Developer	EPC Contractor	Project Operator
Weekly ESHS Meetings		✓	✓
Monthly ESHS Meeting	✓	✓	✓
Quarterly Management HSE reviews	✓	✓	✓

Reporting

ESHS reporting will be required to summarize the following:

- Progress in implementing the ESMP and ESHS MS plans as required;
- Findings of the monitoring programs, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Outstanding incident report forms;
- Relevant changes or possible changes in legislation, regulations and international practices;
- Reporting on Key Performance Indicators (KPI);
- Grievances (worker and stakeholder); and
- Security incidents.

Reporting should be submitted to the Developer as applicable by the relevant entities as identified below.

Table 86: Reports

Reporting	EPC Contractor	Project Operator
Reporting	Monthly	Monthly

22.2 Environmental, Social, Health, and Safety Management System (ESHS-MS)

The ESIA is considered a key document in assessing and managing environmental and social risks related to the Project. The key output of the ESIA is the ESMP which aims to provide high level mitigations and requirements for managing the environmental and social risks anticipated from the Project.

Throughout the Project's construction and operation phase an Environmental, Social, Health, and Safety Management System (ESHS-MS) must be implemented by all relevant parties (i.e. Developer, EPC Contractor and Project Operator). The ESHS-MS must be project and site specific and must build on and take into account the requirements of the ESMP presented throughout this document.

Summarized below is the overall framework, structure and key requirements for the ESHS-MS for the key entities involved in the Project.

Developer

- ESIA including ESMP
- ESHS Manual that should include: (i) ESHS Policy; (ii) Human Resources Policy and Procedures; (iii) ESHS Organizational Structure and Responsibilities; (iv) ESHS Monitoring and Reporting Requirements; (v) ESHS Meeting Requirements; (Vi) ESHS Training Requirements.
- Stakeholder Engagement Plan (SEP) including stakeholder grievance mechanism;
- Critical Habitat Assessment (CHA); and
- Biodiversity Management Plan (BMP).

EPC Contractor

- ESIA including ESMP
- ESHS Manual (in line with Developer) that should include: (i) ESHS Policy; (ii) Human Resources Policy and Procedures; (iii) ESHS Organizational Structure and Responsibilities; (iv) ESHS Monitoring and Reporting Requirements; (v) ESHS Meeting Requirements; (Vi) ESHS Training Requirements.
- Water Management Plan
- Hazardous Material and Waste Management Plan
- Air Quality and Noise Management Plan
- Traffic and Transport Management Plan
- Occupational Health and Safety Plan
- Emergency Preparedness and Response Plan
- Security Management Plan
- Archeology Management Plan and Chance Find Procedure
- Worker Accommodation Plan
- Labor and Working Conditions Management Plan

Project Operator

- ESIA including ESMP
- ESHS Manual (in line with Developer) that should include: (i) ESHS Policy; (ii) Human Resources Policy and Procedures; (iii) ESHS Organizational Structure and Responsibilities; (iv) ESHS Monitoring and Reporting Requirements; (v) ESHS Meeting Requirements; (Vi) ESHS Training Requirements.
- Water Management Plan
- Hazardous Material and Waste Management Plan
- Occupational Health and Safety Plan
- Emergency Preparedness and Response Plan
- Security Management Plan
- Worker Accommodation Plan
- Labor and Working Conditions Management Plan

22.3 Other ESHS Requirements for Temporary Facilities

This section identifies ESHS requirements for the temporary facilities which were identified earlier under "Section 2.3.6" earlier.

22.3.1 Borrow Pits

Borrow pits will be used to provide fill materials such as gravel, sand, clay for various construction requirements such as base for road networks, foundations for WTGs, and other. EPC Contractor will only import Cement, sand, aggregates and stone from borrow pits that are approved and certified local sources. Official governmental certification and licenses will be maintained onsite at all times by the EPC Contractor for such quarries supplying such materials.

In addition, borrow pit locations are to be subject to a botanical assessment to ensure that they are free of non-native or invasive species.

22.3.2 Worker Camp Area

Due to the remoteness of the site, it is highly likely that Developer and EPC Contractor will establish a worker camp onsite for housing of various workers involved in the construction and operation phase of the Project. Requirements for worker camp area have been discussed previously under "Section 15.3".

22.3.3 Batching Plant

It is highly likely that a mobile concrete batching plant will be established within the Project footprint for preparation of the concrete to be used for foundation installation and other infrastructure requirements (e.g. substation, buildings, etc.). The EPC Contractor is required to prepare a batching plant procedure as part of the construction ESMS (discussed under "Section 22.2") earlier that should consider the following requirements:

- The batching plant will be sited at a sufficient distance (minimum 50m) from any identified watercourses within the Project site including wadi systems and drainage lines;
- Cement storage silos need to be fitted with equipment to minimize dust emissions from the silo – this shall include a reverse pulse Fabric Filter Dust Collector (FFDC) or other dust control technology with an equivalent or better performance;
- Raw materials shall be loaded into the concrete truck agitators by either a telescopic chute (preferred) or a flexible sleeve to prevent spillage;
- Ensure truck agitators are not overfilled at any point;
- Wheel-wash facilities shall be implemented into design to prevent contaminants from being tracked out of the site by trucks leaving the batch plant;
- Dust seals shall be incorporated into batch plant design;
- A lined and bunded concrete washout area will be provided within the batching plant compound to ensure containment of any wash out water;

- A suitable concrete or bitumen lined evaporation ponds to collect concrete washout within the batching plant will be constructed;
- Appropriate drainage and mitigation against siltation/pollution of existing watercourses/drains shall be provided within the batching plant compound;
- Cement, sand and aggregate delivered to the batching plant must be stored away from storm water drains and watercourses, within an enclosed area without exposure to the elements. All cement and concrete materials shall be stored on pallets and under cover;
- Temporary bunds placed downslope of the batch plant are recommended to prevent the migration of any spillages;
- Concrete batching shall not be performed on bare ground but on artificial surfaces;
- It is recommended that all surface water runoff from the batch plant be directed to surface drains and a lined settlement pond equipped with a mobile pump such that water can be reused as far as possible; and
- The concrete washout shall be covered with plastic sheeting at the end of each day and prior to rain events.

22.4 Compilation of the Framework Environmental and Social Management Plan (ESMP)

The tables below present the ESMP for the: (i) planning and construction, and (ii) operation phase respectively and which include the following:

- The E&S attribute (e.g. air quality) that is likely to be impacted;
- A summary of the potential E&S impact and/or likely issue;
- The identified management measures that aim to eliminate and/or reduce the potential impact to acceptable levels. Management measures include mitigation actions, further requirements, additional studies, etc.;
- Monitoring actions to ensure that the identified mitigation measures are implemented. Monitoring actions include: inspections, review of reports/plans, reporting, etc.;
- The frequency for implementing the monitoring actions, which include: once, continuously throughout the construction/operation period (depending on the mitigation measure identified this could include daily, weekly, or monthly), or upon occurrence of a certain issue;
- Parameters and location of monitoring actions as identified and applicable; and
- Responsible entity for implementing the mitigation measures and monitoring actions identified.

Table 87: ESMP for the Planning Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
Geology, Hydrology and Hydrogeology	Erosion and Runoff management	Existing natural flows will be maintained where possible as part of the drainage system design and any change to the natural/pre-development surface water conditions within the site to be minimized to the extent possible.	Mitigation	Submission of final detailed design	Not applicable	Once before commencement of construction activities	EPC Contractor
		In terms of Road Design the following shall be considered; (i) All roads shall be graded and shaped appropriately, (ii) Provision of limiting access road gradients to reduce runoff-induced erosion, (iii) Provision of effective short-term measures for slope stabilization, sediment control and subsidence control, (iv) On steep sections of access road, transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/road side drains, (v) To reduce damage to soil and risks of soil erosion, the length and width of the on-site and off-site roads should be with the route optimized to reduce the need for cut-and-fill material. Run-off and erosion control features should be included in designs.	Mitigation	Visual Inspection	At applicable area	Once before commencement of construction	EPC Contractor
Biodiversity	Direct Impacts on Sensitive Receptors (Vertebrates) - Site Clearance and Earthworks	An exclusion zone of 500m will be incorporated around the Honey Badger burrows and single Marbled Polecat hole within the AoI.	Mitigation	Submission of Detailed design	At applicable areas	Once before commencement of construction	EPC Contractor
		An exclusion zone of 2 km from the active and abandoned Steppe Eagle nest and 500m from all active Long-legged Buzzard nests. A repeat breeding raptor nesting survey will be completed in 2024 and any active new nests will be marked on to a constraints map and exclusion zones (the same to those previously stated) applied during the construction period.	Mitigation	Submission of Detailed design and submission of 2024 nesting survey report	At applicable areas	Once before commencement of construction / during construction activities as applicable	EPC Contractor
		In the unlikely event that MacQueen's Bustard are recorded breeding in the project AoI a buffer of 500m will be applied around all active nests and lekking sites. Once hatched, chicks are mobile so construction buffers can be lifted.	Mitigation	Submission of Detailed design and submission of 2024 nesting survey report	At applicable areas	Once before commencement of construction / during construction activities as applicable	EPC Contractor
Archaeology and Cultural Heritage	Improper management of construction activities could disturb/damage archaeological remains which could be buried in the ground (if any).	Ensure that final detailed design to be prepared by the EPC Contract completely avoids all sites recorded along with the buffer distance requirements.	Mitigation	Submission of final detailed design	Not applicable	Once before commencement of construction	EPC Contractor
		Should the detailed design prepared by the EPC Contractor include any additional areas outside of the current Project footprint that was surveyed in detail, follow inspections for these areas should take place by an archeology and cultural heritage expert.	Mitigation	Submission of addendum survey report	Not applicable	Once before commencement of construction	EPC Contractor
Infrastructure and Utilities	Telecommunication, Radio and TV and Civil / Military Entities	Coordinate and consult with the Civil Aviation Administration, Uzbekistan Air, and Air Défense Forces and telecom / radio/TV authorities in order to; (i) Obtain any requirements on WTG project micro-siting, (iii) Obtain any other requirements that should be considered for Project development.	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	Developer / EPC Contractor
	Gas Infrastructure	The preliminary design of the Project should take into account a 250m buffer from all gas infrastructure onsite as required by UrgenchtransGaz.	Mitigation	Submission of formal letter from UrgenchtransGaz	Not applicable	Once before the commencement of construction	Developer
		It is highly likely that the Project will require several point crossings over the pipeline to connect the various WTG and Project components. This should be incorporated as part of the detailed design. The detailed design must be submitted to UrgenchtransGaz review and approval	Mitigation	Submission of formal letter from UrgenchtransGaz	Not applicable	Once before the commencement of construction	
		Obtain final and formal communication from State Committee on Geology and Mineral Resources that there will be no more exploration or blasting activities within the Project area.	Mitigation	Submission of formal letter from State Committee on Geology and Mineral Resources	Not applicable	Once before the commencement of construction	

Table 88: ESMP for the Construction Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
Landscape and Visual	Visual and landscape impacts due to presence of elements typical of a construction site such as equipment and machinery.	Ensure proper general housekeeping and personnel management measures are implemented which could include: (i) ensure the construction site is left in an orderly state at the end of each work day; (ii) to the greatest extent possible construction machinery, equipment, and vehicles that are not in use should be removed in a timely manner and kept in locations to reduce visual impacts to the area; (iii) to ensure proper storage, collection, and disposal of waste streams generated.	Mitigation	Visual inspections	At Construction active areas	Daily / Weekly	EPC Contractor
		Implementation of restoration and rehabilitation measure to restore the site's visual quality through for example re-contouring the land and removing temporary structures (e.g. batching plant).	Mitigation	Visual Inspections	At Construction active areas	Daily / Weekly	
Geology, Hydrology and Hydrogeology	Solid Waste is expected to be generated from construction activities. Solid waste generated will likely include construction waste (such as debris) and municipal solid waste (during construction such as; cardboard, plastic, food waste, etc.)	Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the municipal approved landfill or for recycling	Mitigation	Submit Contract	Not applicable	Once before commencement of construction	EPC Contractor
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual Inspections	At Construction active areas	Daily / Weekly	
		Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste."	Mitigation	Visual Inspections	At Construction active areas	Once before commencement of construction	
		Adhere to waste hierarchy principles with associated mitigation measures to include prevent, minimize, reuse, recycle, recover and dispose.	Mitigation	Submit report	At construction active areas	Daily / Weekly	
		Distribute a sufficient number of properly contained containers clearly marked as "Construction Waste" for the dumping and disposal of construction waste.	Mitigation	Visual Inspections	At Construction active areas	Once before commencement of construction	
		Seeking ways to reduce construction waste by reusing materials (e.g., through the recycling of concrete for road base coarse).	Mitigation	Submit report	At construction active areas	Daily / Weekly	
		Implement proper housekeeping practices on the construction site at all times.	Mitigation	Visual Inspections	At Construction active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of waste generated onsite, collected by contractor, and disposed of at the landfill. The numbers within	Mitigation	Submit manifests	Not applicable	Throughout construction period	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		the records are to be consistent to ensure no illegal dumping at the site or other areas.					
	Wastewater generation during the construction phase is expected to include black water (sewage water from toilets and sanitation facilities), as well as grey water (from sinks, showers, etc.) generated from workers.	Coordinate with State Unitary Enterprise to hire a private contractor for the collection of wastewater from the site to the closest WWTP.	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor
		Prohibit illegal disposal of wastewater to the land.	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of wastewater generated onsite, collected by contractor, and disposed of at the WWTP. The numbers within the records are to be consistent to ensure no illegal discharge at the site or other areas.	Mitigation	Submit manifests	Not applicable	Throughout construction period	
		Ensure that constructed septic tanks during construction are well contained and impermeable to prevent leakage of wastewater into soil.	Mitigation	Visual inspections	At applicable area	Once before commencement of construction	
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing.	Mitigation	Visual inspection	At applicable area	Daily/weekly	
	Hazardous waste is expected to be generated throughout the construction phase and this could include consumed oil, chemicals, paint cans, etc. Hazardous waste generated will likely be collected and stored onsite and then disposed at the approved hazardous waste disposal facilities.	Hire approved private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor
		Ensure that hazardous waste is disposed in a dedicated area that is enclosed, of hard surface, with proper signage and suitable containers as per hazardous waste classifications and that they are labelled for each type of hazardous waste	Mitigation	Visual inspections	At applicable area	Once before commencement of construction	
		Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		Prohibit illegal disposal of hazardous waste to the land	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Possibly contaminated water (e.g., runoff from paved areas) must be drained into appropriate facilities (such as sumps and pits). Contaminated drainage must be orderly disposed of as hazardous waste	Mitigation	Visual inspections	At construction active areas	Daily / weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Ensure that containers are emptied and collected by the contractor at appropriate intervals to prevent overflowing	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities	Mitigation	Submit manifests	Not applicable	Throughout construction period	
	Improper management of hazardous material entails a risk of leakage into the surrounding environment either from storage areas or throughout the use of equipment and machinery. The nature of construction activities entails the use of various hazardous materials such as oil, chemicals, and fuel for the various equipment and machinery.	Ensuring any new support equipment does not contain Polychlorinated Biphenyl (PCBs) or Ozone Depleting Substances (ODSs) to avoid having hazardous wastes. This includes in particular the BESS and substation components.	Mitigation	Visual Inspections	Not applicable	Throughout the Construction period	EPC Contractor
		Ensure that hazardous materials are stored in an area that is of hard impermeable surface, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another	Mitigation	Visual inspections	At applicable area	Once before commencement of construction	
		Maintain a register of all hazardous materials used and accompanying MSDS must present at all times. Spilled material should be tracked and accounted for.	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.)	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Maintenance activities and other activities that pose a risk for hazardous material spillage (such as refueling) must take place at a suitable location (hard surface) with appropriate measures for trapping spilled material	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Ensure that a minimum of 1,000 litters of general-purpose spill absorbent is available at hazardous material storage facility.	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste	Mitigation	Visual inspection	At applicable area	Upon occurrence	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Erosion and Runoff management	Scheduling to avoid construction activities during heavy rainfall periods (i.e., during the wet season) to the extent practical. In addition, this will include modifying or suspending activities during extreme rainfall and high winds to the extent practical.	Mitigation	Visual Inspection	At construction active areas	Daily / Weekly	EPC Contractor
		Salvage and store topsoil and subsoil before areas are excavated, with topsoil stripped and stockpiled separately.	Mitigation	Visual Inspection	At construction active areas	Daily / Weekly	
		Place clear markers indicating stockpiling area of excavated materials to restrict equipment and personnel movement, thus limiting the physical disturbance to land and soils in adjacent areas.	Mitigation	Visual Inspection	At construction active areas	Daily / weekly	
		Erect erosion control barriers around work sites during site preparation and construction to prevent silt runoff where applicable. This could include but not limited to silt fences, gravel bag berms, fiber rolls, or other similar applications.	Mitigation	Visual Inspection	At construction active areas	Daily / weekly	
		Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible.	Mitigation	Visual Inspection	At construction active areas	Upon occurrence	
Biodiversity	**Note: The below presents the mitigation and monitoring measures required for biodiversity as per the outcomes of the ESIA. However, a detailed and standalone Biodiversity Action Plan (BAP) will be submitted at a later stage which will expand on the mitigation and monitoring requirements included within the ESIA and highlighted below within this ESMP. Refer to the BAP for the full details on mitigation and monitoring requirements.**						
	Potential impacts of Habitat Loss, Fragmentation and Degradation during the Construction Phase.	All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the site will be discussed.	Mitigation	Induction Training records	At Construction active Areas	Once before commencement of Construction	Developer / EPC Contractor
		Prior to construction works, working areas will be clearly demarked so that site workers fully understand the working area.	Mitigation	Visual Inspection	At Construction active Areas	Daily / Weekly	
		Prior to clearance of vegetation, pre-clearance surveys will be undertaken by a suitably qualified ecologist.	Mitigation	Submit Survey report	Not Applicable	Once before commencement of Construction	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		The project will result in the loss of 237.6 habitat hectares. Mitigation will be undertaken in all areas of the site subject to temporary habitat loss in the form of habitat rehabilitation / restoration. Temporary habitat loss totals 91.2 habitat hectares and if all of this area (240ha in total) is restored to a condition score of 0.4 then a total of 96 habitat hectares will be created. This is a minor gain in 4.8 habitat hectares in those areas subject to temporary habitat loss. Permanent habitat loss is 146.4 habitat hectares so the net loss of habitat without additional compensation works will be 141.6 habitat hectares. The Project is therefore committed to habitat restoration works in areas of existing damaged and poor-quality habitats along the access road as well as within the wind farm boundary (e.g. where there are existing vehicle tracks). Habitats in these areas are assessed as having a condition score of 0.2. A total 800ha has been identified along the access road as well as within the wind farm. These areas will be restored to condition score 0.4 which will result in 160 habitat hectares being created and as such the Project will result in at least no net loss and possibly a net gain in natural habitat.	Off set	Longer term during-construction and post-construction monitoring will be required annually in the first five years post construction and then in Years 10, 15, and 20	Refer to BAP	Refer to BAP	
		Habitat rehabilitation will include grading of existing access tracks to remove deep ruts, seeding (with seeds collected from the AoI) and planting of shrubs and bushes (seeds or cuttings taken from the AoI). The Project will therefore develop a seed nursery where plants can be grown from seed for replanting in habitat rehabilitation areas.	Off set	Longer term during-construction and post-construction monitoring will be required annually in the first five years post construction and then in Years 10, 15, and 20	Refer to BAP	Refer to BAP	
		Funding of a Wind Farm Ranger service who will be responsible for patrolling the wind farm (and access road). The Project will commit to two full-time rangers who will be employed for the lifetime of the Project. The rangers will be responsible for ensuring site-wide speed limits are enforced, ensure habitats rehabilitated as discussed earlier are maintained, ensure that there is no poaching (including taking of tortoise) within the wind farm area and to ensure that the wind farm area (and areas adjacent to the access road) remain free from grazing animals. The rangers will work closely with local law enforcement. Rangers will also be responsible for recording any human/wildlife conflict (including road collisions) and to ensure any large carcasses are removed from the WF Project area to reduce potential scavenging behavior by bird species of conservation concern	Off set	Submission of contract with ranger service	Refer to BAP	Refer to BAP	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		which in turn could increase the likelihood of collision with the operational turbines.					
	Sensitive Receptors (Habitats and Flora) - Non-native Species and Introduced Flora	Soil imports to be taken from licensed local quarries or borrow pits to avoid importing non-native and invasive species.	Mitigation	Submit license	Not applicable	Once before import activities are undertaken	EPC Contractor
		Construction vehicles will be clean prior to being taken to site and once on-site they will be left in-situ for the duration of the construction period. Cars and other worker transportation vehicles will be driven along proper roads to the site so the risk of being contaminated with mud etc. is considered very low.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
	Direct Impacts on Sensitive Receptors (Vertebrates) - Site Clearance and Earthworks	All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the receptors within the AoI will be discussed.	Mitigation	Induction Training	Not applicable	Once before commencement of Construction	EPC Contractor
		Prior to construction works, working areas will be clearly demarked so that site workers fully understand the working area. Encroachment into areas outside of agreed working areas will be prohibited and working areas will be subject to regular check by the EPC Contractor to check enforcement of working areas.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		Working areas should avoid trees / shrubs as these are likely, due to their sporadic distribution across the AoI to be of importance to breeding birds (e.g. passerines, raptors).	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		Pre-clearance camera trapping surveys across the site to target for the presence of Honey Badger and Carcal, including at previously known holes or areas of activity. Where additional presence identified on camera traps, additional surveys will be completed in the vicinity of the camera trap to check for active burrow of these species and, where identified, additional camera traps to be deployed to confirm presence.	Mitigation	Submission of Report	At applicable areas	Daily / Weekly	
		Pre-clearance mammal surveys will be undertaken in spring / summer 2024 to identify and map any active Marbled Polecat burrows and if identified within working areas they will be recorded, mapped and exclusion zones will be set up and works may require	Mitigation	Submission of Report	At applicable areas	Daily / Weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		careful planning to avoid most sensitive times for specifies identified.					
		Pre-clearance surveys and translocation will be completed for Central Asian Tortoise, Desert Sand Boa and Blotched Rat-snake.	Mitigation	Submission of Report	At applicable areas	Once before commencement of Construction	
		All construction areas will be subject to full walkover surveys and camera trapping surveys will be used to supplement the results of the walkover surveys (e.g. where a burrow is identified that could be of a PBF species, camera traps will be deployed to record activity) and are not designed to replace physical surveys of all of the working areas. Working areas will be determined by the EPC.					
	Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions	Appropriate speed limits will be enforced on access road (60kph), internal road network and working areas (40kph).	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	EPC Contractor
		Speed limits will be enforced by regular speed checks to be undertaken by the EPC Contractor and workers will be fined. This measure has been employed on other ACWA sites in Uzbekistan. GPS trackers will be placed on to vehicles (e.g. cars and worker transport) that will utilize the access road (and wider road network) and data analyzed by the EPC Contractor. Any driver caught breaking the speed limit will be fined.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		Regular signage will be installed along the site access roads and internal roads informing all drivers of the speed limit	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		Speed limits on the access road and internal site roads will be reduced to 20kmph and 10kmph respectively during the breeding bird season if MacQueen's Bustard are recorded nesting. Changes in speed limits will be enforced through updated signage and speed checks will be regularly completed in these areas.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		A ban of driving at night will be enforced and if absolutely necessary the speed limit will be reduced to acceptable limits	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		Ban against off-road driving at all times of the day	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Regular checks of the road for carcasses and if found these will be moved to at last 50m from the road to reduce the likelihood of hitting scavengers, including birds of prey.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		An incidental / chance find procedure will be included in the BMP so that all workers report any road collisions so that any such incident can be investigated in full.	Mitigation	Submit report	Not applicable	continuous	
		Ensure that no open water bodies are created on the site which could potentially attract sensitive receptors on to the site which would in turn increase the potential for wildlife: vehicle conflict.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
	Direct Impacts on Sensitive Receptors (Habitats, Vertebrates) – Poaching, Collection etc.	The Project will enforce strict controls on hunting, gathering, poaching and otherwise disturbing flora and fauna within the Project AoI. Any breaches of this ban will be strictly enforced, and any workers found in breach of this control measure will be subject to disciplinary procedures which will entail instant dismissal where species of international conservation concern (IUNC CR/EN/VU) or high in-country conservation concern (UzRDB CR/EN) are affected. For more common species a formal warning will be issued, followed by dismissal if the offence is repeated. On other ACWA projects in Uzbekistan there have not been issues with hunting and poaching and therefore this impact is considered unlikely.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	EPC Contractor
		The ban on hunting etc. will be included in the site induction along with discussions about the sanctions for breaches of this control measure.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
		A chance find procedure will be implemented should any site worker find a wild animal, especially one that has become a nuisance (e.g., scavenger in the works camp, presence of small mammals in worker accommodation, presence of snake or scorpion on the works site) and the EPC Contractor will arrange for an appropriately qualified person to capture and relocate. Where scavengers have been identified within the works site additional housekeeping measures may be required.	Mitigation	Submission of report	At construction active areas	Continuous	
		Ensure that no open water bodies are created on the site which could potentially attract sensitive	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		receptors on to the site which would in turn increase the potential for wildlife: vehicle conflict.					
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Disturbance	Site wide induction to include information regarding disturbance of ecological receptors.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	EPC Contractor
		Chance find procedure to report sightings of potentially sensitive receptor (e.g. Goitered Gazelle, MacQueens Bustard) and investigation of any such sightings by the EPC Contractor in order that additional buffer areas can be agreed, where necessary.	Mitigation	Submission of report	At construction active areas	Continuous	
		Ensure that no open water bodies are created on the site which could potentially attract sensitive receptors on to the site which would in turn increase the potential for wildlife: vehicle conflict.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Reduced Air Quality / Dust	Where necessary tracks will be damped down to reduce the risk of dust. Damping down will also include areas of soil / bare earth adjacent to roads. These measures will be implemented where necessary.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	EPC Contractor
		Vehicles will be properly maintained to reduce emissions.	Mitigation	Submission of maintenance schedule	N/A	Monthly	
		Emissions from the batching plant will be monitored in line with control plans to minimize air pollution.	Mitigation	Refer to air quality monitoring measures	At applicable areas	Quarterly	
	Direct Impacts on Sensitive Receptors (Vertebrates) – Noise and Vibration	Vehicles will be properly maintained to noise emissions.	Mitigation	Submission of maintenance schedule	N/A	Monthly	EPC Contractor
		Maintain buffer zones around Steppe Eagle and Long-legged Buzzard nests and know denning sites of Honey Badger (and Caracal) as well as know burrows of Marbled Polecat and Corsac Fox.	As pear earlier requirement under design phase				
		Use of available technology and management practices with construction methodologies to reduce noise and vibration.	Mitigation	Visual Inspections	At applicable areas	Daily / Weekly	EPC Contractor
		Regular monitoring of noise and vibration levels within works compounds and works areas as far as possible and apply corrective measures as necessary.	Mitigation	Refer to noise monitoring measures	At applicable areas	Quarterly	EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Direct Impacts on Sensitive Receptors (Vertebrates) –Lighting	Limit the amount of lighting, especially within the wider AoI (e.g., at turbine construction sites). This will be achieved by ensuring that night-time working is limited.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	EPC Contractor
		Where lighting is required within worker compounds, site offices etc. ensure that any lighting is shielded and protected to reduce light-spill and glare. Low intensity lighting should also be used, where possible, to further reduce light spill.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		For external security lights PIR trigger units should be used and these should be timed to automatically switch off after five minutes.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		No lighting will be installed along the access road from Kirkkiz.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Littering, Waste Management	Waste Management will be included in the Site Induction so that all site workers understand their responsibilities to maintaining a clean and tidy site. Where possible all materials than can be recycled will be.	Mitigation	Induction Training	Not applicable	Once before commencement of Construction	EPC Contractor
		Zero tolerance to littering on the works site and within the worker compound. This zero-tolerance approach should also be applied to smoking and workers must use appropriate smoking areas (supplied with 'butt bins') at all times, even when on construction sites.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Daily inspections of working areas and worker compound should be completed, and corrective actions applied, where necessary.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
	Pest Species	Where pest species are identified the EPC Contractor / Ecologist will be notified and an appropriate course of action taken.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	EPC Contractor
		Where feral cats and dogs are identified the EPC Contractor / Ecologist must be notified and efforts made to catch these animals and transport them to appropriate animal shelters away from the site. Guard dogs for the works site (e.g., security for site offices, workers accommodation) must not be used.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
Archaeology and Cultural Heritage	Improper management of construction activities could disturb/damage archaeological remains which could be buried in the ground (if any).	Any site located within 250 m from any Project component must be demarcated along with signage in English, Karakalpak, Russian indicating "Site of Archaeological / Cultural Heritage Importance – No Access Allowed".	Mitigation	Visual Inspections on demarcations and signage	At applicable areas	Once before commencement of construction	EPC Contractor
		Induction training and Toolbox Talks (TBT) should be delivered to all workers to emphasize the presence and location of the sites and their overall importance	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of construction	
		Driving will only be permitted on formal site roads and off-road driving is prohibited, unless it is driving within a working area (e.g. moving equipment or infrastructure around the site or for maintenance operations)	Mitigation	Visual inspections	Not applicable	Daily / Weekly	
		Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day	Mitigation	Visual inspections	Not applicable	Daily / Weekly	
		Ensure all workers read, understand and sign the worker code of conduct which includes specific requirements related to such an issue and which include: (i) Respect religious sentiments and customs and traditions of co-workers, (ii) Respect the local religious and/or traditional days of celebration and their restrictions, (iii) Respect the religious shrines and burial sites and practices of the local population, (iv) Do not disturb shrines and other religious monuments, and (v) Recognize that shrines and sacred sites may include trees, sheds, piles of pebbles, and piles of offerings	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of construction	
		No worker may possess or withdraw any archaeological item or remains from the Project Area and from the sites recorded in specific (to include above or below ground) such as ceremonial jars, pottery, or similar objects	Mitigation	Visual inspections	Not applicable	Daily / Weekly	
		Throughout the construction phase, and as the case with any Project development that entails such construction activities, there is a chance that potential archaeological and/or cultural heritage remains in the ground might be discovered. It is expected that appropriate measures for such chance find procedures are implemented. Those mainly	Mitigation	A report submitted to the Developer and the Ministry of Culture and Tourism in Karakalpakstan.	N/A	Upon occurrence	Developer/ EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		require that construction activities be halted and the area fenced along with proper signage, while immediately notifying the Ministry of Culture and Tourism in Karakalpakstan. No additional work will be allowed before the Ministry of Culture and Tourism in Karakalpakstan assesses the found potential archaeological site and grants a clearance to resume the work. Construction activities can continue at other parts of the site if no potential archaeological remains were found. If found, same procedures above apply.					
Air quality and Noise	Construction activities will likely result in an increased level of dust, particulate matter and pollutant emissions as well as noise which in turn will directly impact ambient air quality and noise levels.	If dust or pollutant emissions were found to be excessive due to construction activities, the source of such emissions should be identified and adequate control measures must be implemented.	Mitigation	Undertake dust and noise monitoring program	This will include at least one (1) monitoring point which represents activities undertaken. The monitoring should include TSP, PM10 and PM2.5 and noise levels. Results should be compared with national limits or IFC standards as included within the General EHS Guidelines or EU limits, whichever is more stringent	Quarterly	EPC Contractor
		Ensure that for activities associated with high dust and noise levels, workers are equipped with proper Personal Protective Equipment (PPE) to include dust masks, respirators (if required), and earmuffs.	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Apply basic dust control and suppression measures which could include: (i) regular watering of roads for dust suppression; (ii) proper planning of dust causing activities to take place simultaneously in order to reduce the dust incidents over the construction period; (iii) proper management of stockpiles and excavated material (e.g. watering, containment, covering, bundling); (iv) proper covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin); and (v) adhering to a speed limit of: (a) 30km/h at the main access road; (b) 20 km/h within the Project area; and (c) 10km/h within working areas; (vi) Where practical, compact the ground in areas that are heavily used by vehicles and machinery; (vii) Limit or suspend earthworks during extreme weather conditions; (viii) Ensure periodic washing of vehicles in order to remove any dusty material in a dedicated area.	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Ensure that vehicles and trucks comply with the limits for exhaust emissions. This will be through: (i) ensure all vehicles and trucks are equipped with a catalytic	Mitigation	Monitoring	At construction active areas	Quarterly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		convertor; (ii) ensuring that all vehicles and trucks utilized onsite are properly licensed for operation with relevant authorities.					
		Apply adequate general noise suppressing measures. This could include the use of well-maintained mufflers and noise suppressants for high noise generating equipment and machinery, developing a regular maintenance schedule of all vehicles, machinery, and equipment.	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		Develop a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the construction phase for early detection of issue to avoid unnecessary pollutant and noise emissions	Mitigation	Submission of maintenance program	Not applicable	Monthly	
		Turn off any equipment, machine or vehicle not in use	Mitigation	Visual inspections	At construction active areas	Daily / weekly	
		For worker accommodation onsite the following will be undertaken: (i) the site will be appropriately sited at a sufficient distance (i.e., 2-3 km at least) from any construction related activities onsite; (ii) accommodation specifications will ensure that all opening (e.g., doors, windows) as well as façade is of suitable quality that would provide sufficient insulation from outside dust and noise.	Mitigation	Visual Inspection	Not applicable	Once before commencement of construction	
Infrastructure and Utilities	Waste Utilities	Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant.	Additional Requirement	Submit formal communication letter to the relevant entities.	Not applicable	Once before commencement of construction	EPC Contractor
		Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors).	Additional Requirement	Submit formal communication letter to the relevant entities.	Not applicable	Once before commencement of construction	
		Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal.	Additional Requirement	Submit formal communication letter to the relevant entities.	Not applicable	Once before commencement of construction	
	Water Resources Management	Undertake feasibility assessment to determine the optimal water supply option for the Project based on the options provided earlier. Based on the option selected, ensure all permits and requirements are obtained as applicable.	Additional requirement	Submission of assessment	Not applicable	Once before commencement of construction	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Document water consumption of the Project during construction.	Additional requirement	Submit manifests	At applicable area	Monthly	
		Develop a water management plan. The plan should emphasize on water conservation and efficiency such as the following in particular: (i) Utilizing the dry-cleaning methods wherever applicable; (ii) Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger guns, etc.); (iii) Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable; (iv) Ensure that washing/cleaning activities (e.g. vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible; (v) Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate; and (vi) Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.	Additional requirement	Submit water management plan	Not applicable	Once before commencement of construction	
	Road Networks / Traffic and Transport Management	Develop a Traffic and Transport Plan to ensure transportation process of turbine components does not pose a risk of damage to the existing roads, highways, overpasses whilst ensuring public safety. The Plan must adhere to relevant local legislations related to traffic and transport, as well as identify final traffic routes required. The plan should also Update traffic requirements of the Project as established within the ESIA related to materials, equipment, machinery, project workers, services, etc. where for each the number of vehicles, weight loads, schedule, route/duration and other as appropriate must be identified. The study must investigate any constraints which need to be considered along the highways leading to the Project site such as bridges, overhead utility cables, slants in roads, etc.	Mitigation	Submission of Traffic and Transport Plan and approval from local authorities.	Not applicable	Once before commencement of construction	EPC Contractor
		Identify procedures for transportation activities under extreme weather conditions including conditions for suspicion of activities to include in particular: (i) sand and salt storms, (ii) windy	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures					
		Identify requirements to be adhered to and enforced on all haulage suppliers such as licensing, driving instructions and code of conduct, speed limits, accident management, monitoring and reporting, etc.	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Identification of a code of conduct to be adhered to and enforced on all drivers in the Project.	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Identification of speed limits onsite and identification of all traffic signage requirement onsite	Mitigation	Submission of Traffic and Transport Plan	All related areas	Daily / Weekly	
		Identification of a procedure for management of onsite/offsite traffic accidents	Mitigation	Submission of Traffic and Transport Plan	All related areas	Upon occurrence	
		Reflect the procedural actions for traffic management in: (i) induction training material; and (ii) repeated/refresher Toolbox Talks (TBT).	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Identify the Key Performance Indicators (KPI) for implementation of Plan	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Identify roles and responsibilities for implementation of Plan.	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Identify abnormal loads and obtain permits to carry these loads on the highways.	Mitigation	Submission of Traffic and Transport Plan	Not applicable	Once before commencement of construction	
		Ensure all Vehicles are subject to regular inspections/ maintenance program.	Mitigation	Maintaining vehicle inspection/ maintenance log	Not applicable	Daily / Weekly	
	Gas pipeline infrastructure	As part of induction training, it must be emphasized to all workers the presence of the gas pipeline within the Project site. It must also be emphasized that all transportation activities should be restricted to destinated roads and that it is strictly prohibited to approach the gas pipeline or its buffer area.	Mitigation	Submission of induction training records	Not applicable	During the construction phase	EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
Worker Welfare, Health and Safety	Occupational Health and Safety Plan (OHSP)	Prepare an OHSP. Adopt and implement the recommendations/provisions of the OHSP which includes: (i) Risk assessment and job safety planning procedure, (ii) PTW system procedure, (iii) LOTO procedure, (iv) Site control occupational health and safety procedure to include but not limited to PPE requirements, and procedures for work related activities, (v) Occupational health and safety signage requirements, (vii) WTG erection OHS procedure, (viii) Identification of OHS training requirements, (ix) Identification of monitoring and reporting requirements, (x) Identification of roles and responsibilities, and (xi) Identification of measures to reduce the risk of COVID-19 exposure and transmission.	Mitigation	Submit OHSP	Not applicable	Once before commencement of construction	EPC Contractor
			Mitigation	Visual inspections	At construction active areas	Daily / weekly	
			Mitigation	Reporting on the following numbers of: (i) near misses; (ii) injuries; (iii) medical evacuations; (iv) working condition complaints; (v) lost working hours; (vi) working days since the last accident; (vii) HS audit/inspections; (viii) HS training/toolbox talks; (ix) HS meetings; (x) unsafe acts/conditions.	Not applicable	Monthly	
	Emergency Preparedness and Response Plan (EPRP)	Prepare an EPRP. Adopt and implement the recommendations/provisions of the EPRP which generally includes the identification of the following: (i) communication and management process, (ii) emergency procedure, (iii) emergency control measures, (iv) requirements for emergency kits, (v) onsite assembly points, (vi) emergency signs, (vii) training requirements, (vii) monitoring and reporting requirements, and (viii) roles and responsibilities of the personnel involved in implementation of the plan	Mitigation	Submit EPRP	Not applicable	Once before commencement of construction	EPC Contractor
			Mitigation	Visual inspections	At construction active areas	Daily / weekly	
			Mitigation	Reporting on the following numbers of: (i) emergency responders assigned with required certification; (ii) ambulances; (iii) clinics; (iv) fire extinguishers; (v) fire alarms; (vi) doctors / nurses; (vi) emergency drills conducted; (vii) emergency incidents triggered.	Not applicable	Monthly	
	Worker Accommodation Plan	Prepare a Worker Accommodation Plan. Adopt and implement the components of the plan which includes the identification of the following: (i) workforce requirements; (ii) workforce transportation requirements; (iii) accommodation procedures; (iv) specifications of site-specific conditions; (v) gender requirements; (vi) housing rules and regulations; (vii) training requirements; (viii) monitoring and reporting requirements; and (ix) roles and responsibilities of the personnel involved in implementation of the plan	Mitigation	Visual inspections	At accommodation areas	Daily / weekly	EPC Contractor
			Mitigation	Reporting on: (i) worker accommodation incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) worker accommodation grievances and complaints	Not applicable	Monthly	
	Potential Blasting Activities	A Blasting Method Statement will be developed prior to conducting the blasting.	Mitigation	Submission of Blasting Method Statement	Not applicable	Prior to commencement of any blasting activity	EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		A blasting supervisor will be in place to coordinate with the shot-firer. Sirens will be sounded throughout the duration of the blasting and for 30 minutes after.	Mitigation	Submission of CV	All applicable areas	Upon occurrence	
		Entrances to the blasting area will be blocked and no unauthorized personnel permitted to enter.	Mitigation	Visual Inspections	All applicable areas	Upon occurrence /Continuous	
		Public access to construction areas will be restricted using a radial exclusion zone of 300m where blasting works are to take place. Security personnel will be used to ensure that no one except for authorized personnel are present within the exclusion zone to avoid them being hit by flying debris or injured from the inhalation of dust.	Mitigation	Visual Inspections	All applicable areas	Continuous	
		Warning signs indicating the use of explosives for the purpose of blasting will be installed along access roads in the vicinity of the relevant WTGs where such works are taking place, to inform of the risks posed by such activities.	Mitigation	Visual Inspections	All applicable areas	Continuous	
	Inappropriate management of the workforce during the construction phase could entail several human right risks and violations by employing entities such as the EPC contractor. This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	Prepare and implement a Labor and Working Conditions Management Plan (LWCMP)	Mitigation	Submit report	Not applicable	Once before commencement of construction	EPC Contractor
		Provide an overview of the labor use on the project throughout the construction phase	Mitigation	Inspections and audits Reporting on: (i) total number of working hours / total overtime; (ii) % of workers receiving salary payment on time; (iii) % of workforce with written contract; (iv) % of workforce with age verification (child labor); (v) % of workforce above minimum wage; (vi) % of forced labor onsite verified; (vii) number of disciplinary actions issued; (viii) number of drinking water units; (ix) number of rest areas provided; and (x) number of sanitary facilities provided; and (xi) number of worker grievances submitted; (xii) number of outstanding grievances	All applicable areas	Monthly	EPC Contractor
		Provide a Human Resources (HR) policy	Mitigation				
		Identify an HR management procedure for the workforce that will ensure decent and humane working conditions, worker rights, and enhance constructive work floor relations. This should be guided by the Local Labor Law as well as the IFC PR 2 and EBRD PR 2 as well as the ILO Fundamental Labor Conventions covering the following in particular	Mitigation				
		Ensuring all workers onsite are provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager	Mitigation				
		Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual	Mitigation				

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		and medical leaves, bereavement leaves, accommodation, etc.					
		Recognizing workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference	Mitigation				
		Prohibition of child labor within the workforce	Mitigation				
		Overall management of young workers within the labor force. The recruitment of children under the age of 18 in illegal and hazardous work should be explicitly prohibited. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction phase, the following should apply: (i) an official letter with the approval of their parents or guardian should be provided; (ii) young workers must provide valid identification that presents proof of age at the recruitment stage; (iii) minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp; (iv) they are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards; and (v) in accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am.	Mitigation				
		Prohibition of forced labor and human trafficking including confiscation of employees' passports	Mitigation				
		Non-discrimination throughout the entire work cycle in all its forms	Mitigation				
		Providing equal opportunities for all throughout procurement and employment opportunities including women groups	Mitigation				
		Overall management of daily workers, migrant workers and third-party workers	Mitigation				
		Ensure the following on wages: (i) wages to be determined on a case-by-case basis and must be	Mitigation				

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		must be fair and should meet the basic needs to maintain a safe and decent standard of living; (ii) must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions; (iii) must be for work of equal value should be provided for female and male workers; and (iv) should not be below the nationally established minimum wage					
		Ensure the following on working hours: (i) in accordance with the Labor law, working hours should be set to a maximum of 40-hours a week over 5 or 6 days including at least one hour break every 4 hours; (ii) overtime is allowed with appropriate need, but in all cases, working hours should not exceed 10 per day; (iii) workers should have a 24-hour period of rest after 6 days of work; and (iv) all workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule	Mitigation				
		Ensure the following on leaves: (i) workers should be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; and (ii) workers should be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract	Mitigation				
Community Health, Safety and Security	Trespassing of Unauthorized Personnel	Security personnel will be used at the access points to control the entry and exit of people and continuous security patrols will be implemented.	Mitigation	Reporting of any trespassing incident.	At applicable areas.	Upon Occurrence	EPC Contractor
		Storage areas and substation will be fenced off and will have signs with warning notices in English, Russian, Uzbek, and Karakalpak language.	Mitigation	Reporting of any trespassing incident.	At applicable areas.	Upon Occurrence	
		All WTGs will include a locking mechanism and will be locked when no O&M activities are undertaken.	Mitigation	Reporting of any trespassing incident.	At applicable areas.	Upon Occurrence	
		Warning signs indicating the presence of the Project along access roads to inform local people of the dangers posed by the Project in English, Russian, Uzbek, and Karakalpak language.	Mitigation	Reporting of any trespassing incident.	At applicable areas.	Upon Occurrence	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		The Stakeholder Engagement Plan (SEP) that will be implemented will include measures to engage with local communities to inform them about the start of construction works in advance, to educate them on the dangers inside the fenced-off area, and the danger of approaching construction works at other locations.	Mitigation	Reporting of any trespassing incident.	At applicable areas.	Upon Occurrence	
	Security Personnel/ Inappropriate management of security issues and incidents by security personnel towards local communities could result in resentment, distrust and escalation of events	Prepare a Security Risk Assessment (SRA) to ensure that all likely threats have been accounted for stemming from the project's presence and activities. This should include the identification of such risks, evaluation of their likelihood to occur, and assess their potential impacts and measures to reduce these risks. The SRA should identify details regarding relations with public security forces and requirements for private security as well and risks and recommendations for both of these issues	Mitigation	Submit SRA	Not applicable	Once before commencement of construction	EPC Contractor
		Prepare a Security Management Plan that identifies appropriate measures for hiring, rules of conduct, training, equipping, and monitoring of security personnel to control and manage such issues	Mitigation	Submit SMP	Not applicable	Once before commencement of construction	EPC Contractor
			Mitigation	Visual Inspections	At construction active areas	Throughout construction period	
			Mitigation	Documentation of: (i) copies of clearance of security guards in past abuses; and (ii) signed code of conduct by security workers and associated disciplinary measures as applicable	Not applicable	Throughout construction period	
			Mitigation	Reporting on the following: (i) security related incidents/accidents; (ii) security related grievances and complaints	Not applicable	Throughout Construction period	
	The influx of workforce to the area could result in certain community health, safety and security impacts.	Medical examination programs. All workers must be subject to a preliminary medical examination before commencement of any job tasks in accordance with local applicable requirements.	Mitigation	Documentation of Medical examinations	Not applicable	Bi-annually	EPC Contractor
		Details and procedures for ensuring and maintaining hygienic conditions onsite at all times specifically related to the toilet and washing facilities, eating areas, etc.	Mitigation	Visual Inspections	At construction active areas	Daily / Weekly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Development of a code of conduct and associated disciplinary procedures for workers which takes into account appropriate behaviors by workers at all times, religious customs, traditional cultures and social norms in the area.	Mitigation	Documentation of signed Code of Conduct.	Not applicable	Once before commencement of construction	
		Induction training and self-awareness raising sessions on risks associated to the most common contagious diseases (e.g., influenza virus), communicable diseases, general measures for hygiene, code of conduct expected to be implemented and other as appropriate.	Mitigation	Documentation of induction training modules and Toolbox Talks.	Not applicable	Once before commencement of construction	
Socioeconomics	The Project is expected at a minimum to provide job opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standards of living, and bring social and economic prosperity	Project Updates to local communities in accordance with identified measures in the Stakeholder Engagement Plan (SEP) which also includes measures related to management of local stakeholder expectations on jobs during both construction phase. Adopt and implement a Local Employment and Recruitment Procedure as part of the Labor and Working Conditions Management Plan (LWCMP). The procedures must identify the number of job opportunities targeted for local communities to include skilled and unskilled workers. Such job opportunities shall also take into account employment of local communities in the area around the project to include fresh graduate engineers, technicians, laborers, etc. In addition, the procedure must include details on how job opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all including females. The Consideration of implementing a Community Development Plan which aims to benefit the local communities to the greatest extent possible. It is recommended that a structured approach is developed for such a program that takes into account the community's needs and priority development projects which could benefit local communities (which logically should also take into account other factors such as allocated budget by the Developer, timeline for implementation of such projects, etc.).	Recommendation	Submission of SEP, Employment and Recruitment Procedure and Community Development Plan	Not applicable	Continuous	Developer/EPC Contractor

Table 89: ESMP for the Operation Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
Landscape and Visual	Visual and landscape impacts due to presence of elements typical of a wind farm, namely, wind turbines.	Consider to the extent possible painting turbines with non-reflective, matt finishes that blend better with the natural surroundings	Mitigation	Visual inspections	At operational active areas	Once before commencement of operation	Project Operator
		In the case grievances are received from South Ustyurt National Park operators in relation to turbine visibility, consider planting native vegetation or trees around the wind farm to screen the view of the turbines from certain vantage points. Create buffer zones of natural or landscaped features to help blend the wind farm into the landscape; OR In line with the above, consider coordinating with South Ustyurt National Park operators to create designated public viewing areas or platforms where people can appreciate the wind farm from a distance and learn about renewable energy.	Mitigation	Documentation of submitted grievances including grievance closure forms	Not applicable	Throughout operational period	
		Use minimal or no lighting on the turbines unless required for aviation safety. Lighting can increase visibility and, therefore, the visual impact. Limit signage to what is necessary for safety and regulatory compliance	Mitigation	Visual inspections	At operational active areas	Once before commencement of operation	
Geology, Hydrology, and Hydrogeology	Solid Waste Management	Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the municipal approved landfill or for recycling	Mitigation	Submit contract	Not applicable	Once before commencement of operation	Project Operator
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste”	Mitigation	Visual inspections	At operational active areas	Once before commencement of operation	
		Adhere to waste hierarchy principles with associated mitigation measures to include prevent, minimize, reuse, recycle, recover and dispose	Mitigation	Submit report	At operational active areas	Annual	
		Implement proper housekeeping practices on the construction site at all times	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of waste generated onsite, collected by contractor, and disposed of at the landfill. The numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas	Mitigation	Submit manifests	Not applicable	Throughout operational period	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Wastewater Management	Coordinate with State Unitary Enterprise to hire a private contractor for the collection of wastewater from the site to the closest WWTP	Mitigation	Submit contract	Not applicable	Once before commencement of operation	
		Prohibit illegal disposal of wastewater to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of wastewater generated onsite, collected by contractor, and disposed of at the WWTP. The numbers within the records are to be consistent to ensure no illegal discharge at the site or other areas	Mitigation	Submit manifests	Not applicable	Throughout operational period	
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing	Mitigation	Visual inspection	At applicable area	Daily/weekly	
	Hazardous Waste Management	Coordinate and hire a private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Mitigation	Submit contract	Not applicable	Once before commencement of operation	
		Ensure that hazardous waste is disposed in a dedicated area that is enclosed; roofed and of hard surface; with proper signage and suitable containers as per hazardous waste classifications and that they are labelled for each type of hazardous waste	Mitigation	Visual inspections	At applicable area	Once before commencement of operation	
		Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		Prohibit illegal disposal of hazardous waste to the land	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Possibly contaminated water (e.g. runoff from paved areas) must be drained into appropriate facilities (such as sumps and pits). Contaminated drainage must be orderly disposed of as hazardous waste	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Ensure that containers are emptied and collected by the contractor at appropriate intervals to prevent overflowing	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities.	Mitigation	Submit manifests	Not applicable	Throughout operational period	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		The numbers within the records are to be consistent to ensure no illegal discharge at the site or other areas					
	Hazardous Material Management	Ensuring any new support equipment does not contain Polychlorinated Biphenyl (PCBs) or Ozone Depleting Substances (ODSs) to avoid having hazardous wastes. This includes in particular the BESS and substation components	Mitigation	Visual Inspection	Not applicable	Throughout operational period	
		Ensure that hazardous materials are stored in proper areas and in a location where they cannot reach the land in case of accidental spillage. This includes storage facilities that are of hard impermeable surface, with a hard roof, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another	Mitigation	Visual inspections	At applicable area	Once before commencement of operation	
		Maintain a register of all hazardous materials used and accompanying Material Safety Data Sheet (MSDS) must present at all times. Spilled material should be tracked and accounted for	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.)	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Maintenance of all equipment and machinery used onsite. Maintenance activities and other activities that pose a risk for hazardous material spillage (such as refueling) must take place at a suitable location (hard surface) with appropriate measures for trapping spilled material	Mitigation	Visual inspections	At operational active areas	Daily / weekly	
		Ensure that a minimum of 1,000 liters of general-purpose spill absorbent is available at hazardous material storage facility. Appropriate absorbents include zeolite, clay, peat and other products manufactured for this purpose	Mitigation	Visual inspections	At applicable area	Daily / weekly	
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste	Mitigation	Visual inspections	At applicable area	Upon occurrence	
Biodiversity	**Note: The below presents the mitigation and monitoring measures required for biodiversity as per the outcomes of the ESIA. However, a detailed and standalone Biodiversity Action Plan (BAP) will be submitted at a later stage which will expand on the mitigation and monitoring requirements included within the ESIA and highlighted below within this ESMP.**						

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Direct and Indirect Impacts on Sensitive Receptors (Birds) – Collision with Turbines	Operational monitoring will be completed for at least the first three years of operation (so if clusters are commissioned before others are constructed, each turbine or cluster of turbines will have a minimum of three years PCFM surveys), to monitor actual levels of mortality. Post construction fatality monitoring will be completed at all of the turbines and the program of post construction monitoring will include carcass searching, searcher efficiency trials and carcass persistence trials. The results of the post-construction fatality monitoring will be used to inform a GenEst Analysis. Post-construction monitoring will follow the latest international best practice including the recently published PCFM Handbook (EBRD, IFC, KFW 2023). Full details of the PCFM Protocol will be included in an Operational Biodiversity Action Plan (BAP) document.	Mitigation	To be included within the BAP	To be included within the BAP	First 3 years of operation	Project Operator
		An adaptive management strategy will be developed (in line with the PCFM Handbook), and additional mitigation will be undertaken where necessary. If significant impacts are recorded targeted SDOD during key spring and autumn migration periods would be triggered and these would be completed. Significant impact would clearly include any mortality of Steppe Eagle, Eastern Imperial Eagle and Golden Eagle and Cinereous Vulture as PBR thresholds for these species are zero. Adaptive management options for other species would be undertaken including targeted SDOD, if the results of the post-construction fatality monitoring indicate higher than predicted mortality, especially in relation to species of elevated conservation concern. Adaptive management could include undertaking specific observer-led shut down programs if PCFM surveys indicate particular peak periods of bird activity through the AoI (e.g. specific windows of higher migratory activity, specific meteorological conditions causing spikes in bird activity at particular times of the year). Technology-led shut-down on demand could also be retrofitted within the AoI if actual mortality is significantly higher than predicted or if observer led SDOD is not shown to be fully effective (e.g. at reducing Steppe and Golden Eagle collisions to zero).	Mitigation	To be included within the BAP	To be included within the BAP	Upon occurrence	
		Upon the completion of the three-year post-construction fatality monitoring a decision will be taken to continue or cease this survey effort or reduce it to specific times of the year. Cessation or modification of the PCFM surveys will only be completed with prior agreement with the Lenders. If monitoring is ceased site workers will continue to record any carcasses they find and this information will be passed on to the Project team.	Mitigation	Submission of PCFM and meeting with lenders	Not applicable	Once before commencement of operation	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Prepare and implement a chance find procedure and any carcasses seen by site workers will be reported to the Project Ecologist so that they can investigate. In addition, any prey species carcasses found on on-site (e.g. on roads) will be removed to reduce the likelihood of scavenging birds landing within the Project site.	Mitigation	To be included within the BAP	To be included within the BAP	Daily / weekly	
		It is also possible that with increased access to the site that changes in the amount of grazing activity within the AoI changes over time and this will be monitored by the Project Ecologist as this could potentially change activity patterns of raptors and possibly vultures over time	Mitigation	To be included within the BAP	To be included within the BAP	Daily / weekly	
		Construction of Steppe Eagle (and other nesting raptor) platforms within the South Ustyurt National Park. A total of 20 nesting platforms will be installed within the National Park in 2024. Platforms will be constructed at a height of 1.5m and will be constructed out of fire-resistant materials. Steppe Eagle within the Ustyurt Plateau are generally ground nesting and the increases in grassland fires is negatively affecting the regional population because of loss of nests, eggs and chicks. Fire-resistant nesting platforms will improve overall nesting success resulting in increases in the productivity of regionally nesting Steppe Eagle. The Project will fund annual checks of these platforms for at least 10 years so the success of scheme can be recorded.	Off set	To be included within the BAP	Refer to BAP	Refer to BAP	Developer
	Direct Impacts on Sensitive Receptors (Bats) – Collision with Turbines	PCFM Year 1 program will include weekly searches at the wind farm so that bat carcasses are more likely to be encountered and the impact of mortality on bats can be understood. Increases in search frequency in Years 2 and beyond will be agreed with the Lenders prior to changing the PCFM protocols. In addition to the PCFM program, static detectors will be deployed at active turbines (both ground-based and at height) to further understand the use of the site by foraging, commuting and migrating bats. Adaptive management of the turbines will be considered if mortality is significantly higher than expected and or higher levels of bat usage are recorded.	Mitigation	To be included within the BAP	To be included within the BAP	Upon occurrence	Project Operator
	Indirect Impacts on Sensitive Receptors (terrestrial mammals and breeding / resident birds) – Disturbance	Ban on off-road driving, especially during sensitive periods of the year (e.g. breeding bird season) and if off-road driving is required a check of the working area should be completed by the Project's Ecologist	Mitigation	Visual Inspections	At applicable area	Daily / weekly	Project Operator

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Speed limits to be enforced	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Sensitive species are to be included in the site induction for all operational staff where additional control measures will be discussed including allowing animals to move around the site, not chasing after them in vehicles or approaching them on foot and what to do if they observe breeding birds within their works areas	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		If certain species (e.g. birds of prey or MacQueen's Bustard) are accidentally flushed during operation monitoring, staff should monitor the flight of the bird to check if they are struck by turbines	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		A chance find procedure will be implemented and any sensitive species seen by site workers will be reported to the Project Ecologist	Mitigation	Submission of report	At operational active areas	Continuous	
	Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions	Speed limits will be enforced by the O&M Contractor on all site roads. This will be done by regular speed checks and fines will be issued for breaches of the speed limit.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	Project Operator
		Regular signage will be installed along the site access roads and internal roads informing all drivers of the speed limit	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		A gated entrance will be staffed and any visitors or locals using the site roads will be informed of the speed limits and that there are regular checks of vehicle speeds	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		A ban on driving at night will be enforced and if absolutely necessary the speed limit will be reduced to 15kph (including on the site access road)	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Ban against off-road driving at all times of the day, and if necessary, the works area will be subject to a walkover by the Project Ecologist	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Regular checks of the road for carcasses and if found these will be moved to at last 50m from the road to reduce the likelihood of hitting scavengers, including birds of prey	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		An incidental / chance find procedure will be included in the Biodiversity Management Plan (BMP) so that all workers report any road collisions so that any such incident can be investigated in full	Mitigation	Submission of report	At operational active areas	Continuous	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Direct Impacts on Sensitive Receptors (Vertebrates) – Lighting	Site-wide lighting is not being implemented so any lighting impacts during operation will be very limited. Night-time working is not anticipated and will certainly not be a regular occurrence.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	Project Operator
		Where lighting is required within worker compounds, site offices etc. ensure that any lighting is shielded and protected to reduce light-spill and glare. Low intensity lighting should also be used, where possible, to further reduce light spill.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		For external security lights PIR trigger units should be used and these should be timed to automatically switch off after five minutes.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		No lighting will be installed along the access road from Kirkkiz.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Turbines will not be lit and any aviation lights will be shielded to minimize visibility from ground level to reduce the attractiveness of lights to night flying insects which in turn could attract bats.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Lighting above turbine doors will be PIR controlled and timed so that it switches off automatically after five minutes. Again, this measure will be implemented to reduce night-flying invertebrates in proximity to turbines.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
	Direct Impacts on Sensitive Receptors (Habitats and Flora) – Non-native Species and Introduced Flora	Post-construction monitoring will be completed across the AoI to record the presence and distribution of non-native and invasive plant species and a program of mechanical control will be completed over during the operation period to remove these species from the AoI. Chemical control will be avoided however, if necessary, will be used but in accordance with national and international guidelines. The program of control will continue until the species are absent from the Project AoI.	Mitigation	Prepare BAP	Not applicable	Once before commencement of operation	Project Operator
		A program of regular monitoring will be completed with surveys completed in Years 1, 2, 5, 10, 15 to survey for the presence of non-native and / or invasive species and relevant control of these species will be completed, where necessary.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Pest Species	Where pest species are identified, the O&M Contractor / Ecologist will be notified, and an appropriate course of action taken. For small mammal pest's live traps will be	Mitigation	Visual Inspections	At applicable area	Daily / weekly	Project Operator

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		used, to reduce the risk of by-catch. Poison baits should be avoided, unless it can be certain that non-target species will be affected, and any such use should be in accordance with national and international best practice. If poison baits are to be used it must be certain that any poisoned animal cannot move out on to the wider AoI to reduce the risk of natural predators eating poisoned animals.					
		Where feral cats and dogs are identified the O&M Contractor / Ecologist must be notified and efforts made to catch these animals and transport them to appropriate animal shelters away from the site. Guard dogs for the site offices (e.g. security for site offices, workers accommodation) must not be used. These measures are in place to ensure no direct or indirect impacts to Honey Badger.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
	Other	Funding of a Wind Farm Ranger service who will be responsible for patrolling the wind farm (and access road). The Project will commit to two full-time rangers who will be employed for the lifetime of the Project. The rangers will be responsible for ensuring site-wide speed limits are enforced, ensure that there is no poaching (including taking of tortoise) within the wind farm area and to ensure that the wind farm area (and areas adjacent to the access road) remain free from grazing animals. The rangers will work closely with local law enforcement. Rangers will also be responsible for recording any human/wildlife conflict (including road collisions) and to ensure any large carcasses are removed from the WF Project area to reduce potential scavenging behavior by bird species of conservation concern which in turn could increase the likelihood of collision with the operational turbines.	Mitigation	Hiring of ranger services	N/A	Throughout entire operational period	Project Operator
		Measures that will be undertaken as part of the off-setting package in the case the Project will result in a minor residual negative impact on natural habitat (no net loss not achieved) as well as other possible residual negative impacts on Steppe Eagle (net loss due to mortality and possible loss of one breeding pair), residual negative impacts on Golden Eagle, Greater Spotted Eagle, White-tailed Eagle, Pallas's Fish Eagle and Egyptian and Cinerous Vulture (mortality over PBR thresholds) and disturbance impacts to Honey Badger and Caracal (construction and operation).	Off-setting	Refer to BAP			Project Operator
Archeology and Cultural Heritage	Inappropriate operational activities damage or disturb archaeological and/or	Induction training and Toolbox Talks (TBT) should be delivered to all workers to emphasize the presence and location of the sites and their overall importance	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	Project Operator

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
	cultural heritage remains present on the surface of the Project site.	Driving will only be permitted on formal site roads and off-road driving is prohibited, unless it is driving within a working area (e.g. moving equipment or infrastructure around the site or for maintenance operations)	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	
		Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	
		Ensure all workers read, understand and sign the worker code of conduct which includes specific requirements related to such an issue and which include: (i) Respect religious sentiments and customs and traditions of co-workers, (ii) Respect the local religious and/or traditional days of celebration and their restrictions, (iii) Respect the religious shrines and burial sites and practices of the local population, (iv) Do not disturb shrines and other religious monuments, and (v) Recognize that shrines and sacred sites may include trees, sheds, piles of pebbles, and piles of offerings	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	
		No worker may possess or withdraw any archaeological item or remains from the Project Area and from the sites recorded in specific (to include above or below ground) such as ceremonial jars, pottery, or similar objects	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	
Infrastructure and Utilities	Waste Utilities	Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of operation	Project Operator
		Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors)	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of operation	
		Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of operation	
	Water Resources Management	Undertake feasibility assessment to determine the optimal water supply option for the Project based on the options provided earlier. Based on the option selected, ensure all permits and requirements are obtained as applicable.	Additional requirement	Submission of assessment	Not applicable	Once before commencement of operation	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Document water consumption of the Project	Additional requirement	Submit manifests	At applicable area	Annually	
		Develop a water management plan. The plan should emphasize on water conservation and efficiency such as the following in particular: (i) Utilizing the dry-cleaning methods wherever applicable; (ii) Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger guns, etc.); (iii) Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable; (iv) Ensure that washing/cleaning activities (e.g. vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible; (v) Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate; and (vi) Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.	Additional requirement	Submit water management plan	Not applicable	Once before commencement of operation	
Worker Welfare, Health and Safety	Occupational Health and Safety Plan (OHSP)	Prepare an OHSP. Adopt and implement the recommendations/provisions of the OHSP which includes: (i) Risk assessment and job safety planning procedure, (ii) PTW system procedure, (iii) LOTO procedure, (iv) Site control occupational health and safety procedure to include but not limited to PPE requirements, and procedures for work related activities, (v) Occupational health and safety signage requirements, (vii) WTG erection OHS procedure, (viii) Identification of OHS training requirements, (ix) Identification of monitoring and reporting requirements, (x) Identification of roles and responsibilities, and (xi) Identification of measures to reduce the risk of COVID-19 exposure and transmission	Mitigation	Submit OHSP	Not applicable	Once before commencement of operation	Project Operator
			Mitigation	Visual inspections	At operational active areas	Daily / weekly	
			Mitigation	Reporting on the following numbers of: (i) near misses; (ii) injuries; (iii) medical evacuations; (iv) working condition complaints; (v) lost working hours; (vi) working days since the last accident; (vii) HS audit/inspections; (viii) HS training/toolbox talks; (ix) HS meetings; (x) unsafe acts/conditions.	Not applicable	Monthly	
	Emergency Preparedness and Response Plan (EPRP)	Prepare an EPRP. Adopt and implement the recommendations/provisions of the EPRP which generally includes the identification of the following: (i) communication and management process, (ii) emergency procedure, (iii) emergency control measures, (iv) requirements for emergency kits, (v) onsite assembly points, (vi) emergency signs, (vii) training requirements, (vii) monitoring and reporting requirements, and (viii) roles and responsibilities of the personnel involved in implementation of the plan	Mitigation	Submit EPRP	Not applicable	Once before commencement of operation	
			Mitigation	Visual inspections	At operational active areas	Daily / weekly	
			Mitigation	Reporting on the following numbers of: (i) emergency responders assigned with required certification; (ii) ambulances; (iii) clinics; (iv) fire extinguishers; (v) fire alarms; (vi) doctors / nurses;	Not applicable	Monthly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
				(vi) emergency drills conducted; (vii) emergency incidents triggered.			
	Worker Accommodation Plan	Prepare a Worker Accommodation Plan. Adopt and implement the components of the plan which includes the identification of the following: (i) workforce requirements; (ii) workforce transportation requirements; (iii) accommodation procedures; (iv) specifications of site-specific conditions; (v) gender requirements; (vi) housing rules and regulations; (vii) training requirements; (viii) monitoring and reporting requirements; and (ix) roles and responsibilities of the personnel involved in implementation of the plan	Mitigation	Visual inspections	At accommodation areas	Daily / weekly	
				Reporting on: (i) worker accommodation incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) worker accommodation grievances and complaints	Not applicable	Monthly	
	Inappropriate management of the workforce during the operation phase could entail several human right risks and violations by employing entities such as the Project Operator. This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	Prepare and implement a Labor and Working Conditions Management Plan (LWCMP)	Mitigation	Submit report	Not applicable	Once before commencement of operation	
		Provide an overview of the labor use on the project throughout the construction phase	Mitigation	Inspections and audits	At operational active areas	Quarterly	
		Provide a Human Resources (HR) policy	Mitigation				
		Identify an HR management procedure for the workforce that will ensure decent and humane working conditions, worker rights, and enhance constructive work floor relations. This should be guided by the Local Labor Law as well as the IFC PR 2 and EBRD PR 2 as well as the ILO Fundamental Labor Conventions covering the following in particular	Mitigation	Reporting on: (i) total number of working hours / total overtime; (ii) % of workers receiving salary payment on time; (iii) % of workforce with written contract; (iv) % of workforce with age verification (child labor); (v) % of workforce above minimum wage; (vi) % of forced labor onsite verified; (vii) number of disciplinary actions issued; (viii) number of drinking water units; (ix) number of rest areas provided; and (x) number of sanitary facilities provided; and (xi) number of worker grievances submitted; (xii) number of outstanding grievances	Not applicable	Monthly	
		Ensuring all workers onsite are provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager	Mitigation				
		Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc.	Mitigation				
		Recognizing workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference	Mitigation				
		Prohibition of child labor within the workforce	Mitigation				

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Overall management of young workers within the labor force. The recruitment of children under the age of 18 in illegal and hazardous work should be explicitly prohibited. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction or operation stages, the following should apply: (i) an official letter with the approval of their parents or guardian should be provided; (ii) young workers must provide valid identification that presents proof of age at the recruitment stage; (iii) minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp; (iv) they are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards; and (v) in accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am	Mitigation				
		Prohibition of forced labor and human trafficking including confiscation of employees' passports	Mitigation				
		Non-discrimination throughout the entire work cycle in all its forms	Mitigation				
		Providing equal opportunities for all throughout procurement and employment opportunities including women groups	Mitigation				
		Overall management of daily workers, migrant workers and third-party workers	Mitigation				
		Ensure the following on wages: (i) wages to be determined on a case-by-case basis and must be must be fair and should meet the basic needs to maintain a safe and decent standard of living; (ii) must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions; (iii) must be for work of equal value should be provided for female and male workers; and (iv) should not be below the nationally established minimum wage	Mitigation				
		Ensure the following on working hours: (i) in accordance with the Labor law, working hours should be set to a maximum of 40-hours a week over 5 or 6 days including at	Mitigation				

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		least one hour break every 4 hours; (ii) overtime is allowed with appropriate need, but in all cases, working hours should not exceed 10 per day; (iii) workers should have a 24-hour period of rest after 6 days of work; and (iv) all workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule					
		Ensure the following on leaves: (i) workers should be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; and (ii) workers should be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract	Mitigation				
Community Health, Safety and Security	Trespassing of unauthorized personnel to the various Project components	Prepare a Security Management Plan (SMP). Adopt and implement the requirements of the SMP which includes at a minimum the following: (i) Security personnel will be used at the access points to control the entry and exit of people and continuous security patrols will be implemented; (ii) Storage areas and substation will be fenced off and will have signs with warning notices in English, Russian, Uzbek, and Karakalpak language; (iii) All WTGs will include a locking mechanism and will be locked when no O&M activities are undertaken; (iv) Warning signs indicating the presence of the Project along access roads to inform local people of the dangers posed by the Project in English, Russian, Uzbek, and Karakalpak language; and (v) The Stakeholder Engagement Plan (SEP) that will be implemented will include measures to engage with local communities to inform them about the start of construction works in advance, to educate them on the dangers inside the fenced-off area, and the danger of approaching construction works at other locations	Mitigation	Submit SMP	Not applicable	Once before commencement of operation	Project Operator
			Mitigation	Reporting of any trespassing incidents and the measures undertaken in such cases	At operational active areas	Throughout operational period	
	Inappropriate management of security issues and incidents by security personnel towards local communities could result in resentment, distrust and escalation of events	Prepare a Security Risk Assessment (SRA) to ensure that all likely threats have been accounted for stemming from the project's presence and activities. This should include the identification of such risks, evaluation of their likelihood to occur, and assess their potential impacts and measures to reduce these risks. The SRA should identify details regarding relations with public security forces and requirements for private security as well and risks and recommendations for both of these issues	Mitigation	Submit SRA	Not applicable	Once before commencement of operation	Developer
		Prepare a Security Management Plan that identifies appropriate measures for hiring, rules of conduct, training,	Mitigation	Submit SMP	Not applicable	Once before commencement of operation	Project Operator

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring Action	Parameters to be monitored / location	Frequency	Responsible Entity
		equipping, and monitoring of security personnel to control and manage such issues	Mitigation	Visual Inspections	At operational active areas	Throughout operational period	
			Mitigation	Documentation of: (i) copies of clearance of security guards in past abuses; and (ii) signed code of conduct by security workers and associated disciplinary measures as applicable	Not applicable	Throughout operational period	
			Mitigation	Reporting on the following: (i) security related incidents/accidents; (ii) security related grievances and complaints	Not applicable	Throughout operational period	
Socioeconomics	The Project is expected at a minimum to provide job opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standards of living, and bring social and economic prosperity	Project Updates to local communities in accordance with identified measures in the Stakeholder Engagement Plan (SEP) which also includes measures related to management of local stakeholder expectations on jobs during the operation phase. Adopt and implement a Local Employment and Recruitment Procedure as part of the Labor and Working Conditions Management Plan (LWCMP). The procedures must identify the number of job opportunities targeted for local communities to include skilled and unskilled workers. Such job opportunities shall also take into account employment of local communities in the area around the project to include fresh graduate engineers, technicians, laborers, etc. In addition, the procedure must include details on how job opportunities will be announced as well as a selection process that is fair and transparent and provides equal opportunities for all including females. The Consideration of implementing a Community Development Plan which aims to benefit the local communities to the greatest extent possible. It is recommended that a structured approach is developed for such a program that takes into account the community's needs and priority development projects which could benefit local communities (which logically should also take into account other factors such as allocated budget by the Developer, timeline for implementation of such projects, etc.).	Recommendation	Submission of SEP, Employment and Recruitment Procedure and Community Development Plan	Not applicable	Continuous	Developer/Project Operator