

Initial Environmental Examination

Project Number: 52122-001
October 2018

TAJ: Reconnection to Central Asian Power System Project

This report has been submitted to ADB by the Project Management Unit, Barqi Tojik and is made publicly available in accordance with ADB's Public Communications Policy (2011). It does not necessarily reflect the views of ADB.

This initial environmental examination report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



Client

Barqi Tojik

Project

**Reconnection to the Central
Asian Power System Project
Initial Environmental
Examination, IEE**

Document

October 2018





This report on safeguards compliance is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



Contents

1.1	List of Acronyms	4
2	Glossary of Local Terms	4
3	Executive Summary.....	5
4	Introduction: Objective and Performance Requirements.....	5
4.1	IEE Objective	5
4.2	Legal Framework and Key Principles	6
4.2.1	National Environmental Legislative Framework including Requirements for Environmental Assessment.....	6
4.2.2	International Environmental Agreements	7
4.2.3	ADB Safeguards	8
4.2.4	EHS Standards Applied in the Project	8
4.3	Methodology	9
5	Project Description.....	9
5.1	Description of Current Setting and Suggested Upgrades.....	10
6	Description of the Environment	15
6.1	Geography and Topography	15
6.2	Geology, Seismology and Soil	15
6.3	Climate	16
6.4	Water Resources.....	16
6.4.1	Surface Waters.....	16
6.4.2	Ground Waters	17
6.5	Climate Change.....	17
6.6	Biological Resources	20
6.6.1	Flora	20
6.6.2	Fauna.....	20
6.7	Waste	20
6.8	Protected Areas	21
6.9	Land Use.....	22
6.10	Socio-economic Profile	22
6.10.1	Society	22
6.10.2	Economy	23
6.11	Cultural and Historical Heritage.....	24
6.12	Disaster Risks Management.....	24
7	Screening Potential Environmental Impacts and its Mitigation Measures	24



7.1	Audit of Current Status	24
7.2	During Construction.....	28
7.3	During Operation	30
8	Information Disclosure and Consultation	31
8.1	Consultation	31
8.2	Information Disclosure	32
9	Grievance and Redress Mechanism.....	32
10	Institutional Framework.....	33
11	Environmental Management Plan	34
11.1	General Environmental Obligations.....	34
11.2	Contractor's Health and Safety (H&S) Obligations.....	34
11.3	Institutional Arrangements and Reporting	34
11.4	Costs of EMMP	35
11.5	Tender Documents.....	36
12	Annexes	38
12.1	Annex I: Applicable Tajikistan's National Environmental Legislation	38
12.1.1	Environmental Monitoring Law.....	38
12.1.2	Environmental Audit.....	38
12.1.3	Environmental Information Law	39
12.1.4	Local Government Authorities Law	40
12.1.5	Law on Industrial Waste and Consumption Waste	41
12.1.6	Law on Licensing of Certain Type of Activities.....	41
12.1.7	Law on Organization of Sanitary-Epidemiological Safety of the Population.....	42
12.1.8	Tajikistan's Environmental Quality Standards	42
12.2	Annex II: Comparision of Tajik and International Environmental, Health and Safety Standards.....	1
12.3	Annex III: GPS location of the existing 500 kV line from Uzbekistan	1
12.4	Annex IV: Minutes of Public Consultation Meetings	2
12.4.1	Public Consultation at Lolazor Jamoat, Devashtich District	2
12.4.2	Public Consultation at Karatog Jamoat, Tursun-zade District	12
12.5	Annex V: Proposed Handling and Disposal of PCBs.....	22
12.6	Annex VI: Environmental Management and Monitoring Plan (EMMP).....	1
12.6.1	Design Stage (phase A).....	1
12.6.2	Construction Stage (phase B)	2
12.6.3	Operation Stage (phase C).....	9



1.1 List of Acronyms

Abbreviations	Description
ADB	Asian Development Bank
BT	Barqi Tojik (national power utility)
CEP	Committee for Environmental Protection
GRC	Grievance Redress Committee
ha	hectare/s
H&S	Health and Safety
HSEMP	Health, Safety and Environmental Management Plan
IEE	Initial Environmental Examination
OHTL	Over Head Transmission Line
PCBs	Polychlorinated Biphenyls
PMU	Project Management Unit
RoW	Right of Way
SS	Substation
SSs	Substations
TL	Transmission Line

2 Glossary of Local Terms

Hukumat	District Administration
Jamoat	Sub-District, Sub-District Administration
Land committee	Responsible body of District for all land related questions
Mahalla	Village/ Neighborhood



3 Executive Summary

Result of the Initial Environmental Examination of this project that aims to reconnect Tajikistan to the Central Asia Power System through upgrades in Sughd Substation, Regar Substation and the opening of a 500kV Uzbekistan OHTL to connect it with Sughd Substation the limited negative environmental and health and safety aspects can be mitigated through measures that will have a low cost between USD 27,500 and 50,000.

The local environment of the 2 project sites is very arid and with a low ecological value looking at the vegetation and fauna. Activities will be developed in an already highly impacted area by people-made activities and no extra land adquisition will be needed except for the construction of the foundation of 8 new over head transmission line towers.

This IEE has been composed considering the 2009 ADB Safeguards, the National Laws of Tajikistan and International Agreements that the Republic of Tajikistan is signatory of.

The PMU together with the Consultant performed consultation meetings with the Jamoat population at the 2 sites to inform them and other relevant stakeholders on the Project activities, the expected environmental impacts and short blackouts and the associated mitigation measures, as well as the grievance and redress mechanism. Stakeholders' feedbacks and perceptions have been incorporated into the design.

During construction, the Contractor will take all measures to mitigate the possible adverse effects (such as noise and dust). The Contractor will perform the restoration of the construction paths to avoid further land degradation, as well as other requirements set in the Environmental Management and Monitoring plan that can be found on Annex VI.

Environmental Safeguard Due Diligence monitoring and reporting will be performed quarterly by the PMU.

4 Introduction: Objective and Performance Requirements

4.1 IEE Objective

According to ADB Safeguard Policy Statement, June 2009 an Initial Environmental Examination (IEE) is required in category B projects to determine whether significant environmental impacts warranting an EIA are likely



The **key objective of this IEE is to provide an assessment of the health and safety (H&S) and environmental concerns that need to be considered in processing and implementation of the opening of the Uzbekistan 500kv transmission line to connect it with the Tajikistan Sughd Substation and the upgrades in Sughd and Regar Substations (SSs). The objective of these activities is to enable power exchange between Tajikistan and Uzbekistan at 500 kV.**

The IEE provides an initial screening of the activities to be carried out under the proposed component of the project, with the intention of **identifying potentially significant H&S and environmental risks and determining appropriate mitigation measures**. The basic objective of the analysis is to ensure that nobody gets harmed and that the impact on the environment is as low as reasonably practicable. The costs of the implementation of the mitigation measures will be covered with the project funds.

The **scope of work** includes the following,

- Description of the baseline: environmental, socio-economic and cultural and historical conditions;
- Description of the project activities;
- Characterization of potential impacts of the project activities: both during construction and operation;
- Indication on mitigation measures to minimize the impact, including mitigation costs;
- Indication on the needed monitoring;
- Consultations with affected people and disclosure of information with key stakeholders.

4.2 Legal Framework and Key Principles

The legal applicable framework is comprised of National Laws of Tajikistan, international environmental agreements that Tajikistan is a signatory of and the Asian Development Bank safeguards.

4.2.1 National Environmental Legislative Framework including Requirements for Environmental Assessment

The most important laws concerning the environment in Tajikistan are:

- **Law on Environmental Protection (2011)**
- **Law on Ecological Expertise (2012)**
- **Law on Environmental Impact Assessment (2012)**

These laws will be described in the following paragraphs. For further information about other applicable environmental laws, see Annex I.

Environmental protection in Tajikistan is embedded in the Law on Environmental Protection of 1993 amended in 1997 and superseded by 2011 (№208) Law on Environmental Protection. It defines the legal framework, protected objects, and the role and responsibilities of the Government, the Committee for Environmental Protection (CEP), local



authorities, public organizations and citizens. **The Act also provides the guarantee of citizens' rights to a healthy and favorable environment and requires the use of a combined system of environmental impact assessment and evaluation of the environmental impact assessment (EIA), in any decision in respect of activities that may have a negative impact on the environment. Citizens have the right to receive environmental information, as well as participate in the development, adoption and implementation of decisions relating to the environmental impacts.**

The principles performing the IEE process are laid down in **the Law on Ecological Expertise** (2003 amended in 2005, 2007, 2008, 2010, superseded in 2012 by the new Law on Ecological Expertise, State environmental review) and in the Governmental Decree 'course of the Assessment of Environmental Impact' of 2006 (amended in 2013, now called Procedure on Environmental Impact Assessment, № 252). **This Resolution approves the list of facilities and activities which require the development of materials necessary for assessment of impact on the environment.**

The Law on Environmental Impact Assessment, new version adopted and signed by the President of the Republic of Tajikistan in 2012 (№ 818) regulates the general procedure for environmental assessments organization and guiding, defines the rights and obligations of the parties, and establishes the rights of citizens to obtain information on environmental hazards and construction activities. The Law defines the principles and procedures for environmental impact assessment, having the purpose of studying the compatibility of proposed actions and projects with the requirements of environmental legislation and standards (norms) and environmental safety of society.

Together with a detailed project description, the EIA study is the basis to go for the environmental permit and must be submitted to the Committee. **As a rule, the Committee prepares an expertise to the project within one month.** In preparation of this expertise, all subdivisions that might be involved in the project do participate. With this expertise, the permission is given, is not given or given with requirements and obligations that must be followed by the company during construction and/or during operation. If the Committee concludes that an environmental permit cannot be given because e.g. limit values are exceeded or other environmental aspects are not sufficiently mitigated, the developer can change its design and submit the impact assessment again.

4.2.2 International Environmental Agreements

Among others, Tajikistan is part of the Convention on Biological Diversity, the Ramsar Convention on 'Protection of Wetlands', the Montréal Protocol on Substances that Deplete the Ozone Layer, the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters and the UN Conventions on Climate Change and Desertification.



In relation to the **Electric and Magnetic Field**, the recommendations of the International Non-Ionizing Radiation Committee (ICNIRP) for 50/60 Hz frequencies.

On SF6 Handling,

- Recommendations of the International Council on large Electric Systems (CIGRE: SF6 Task Force: Handling and given Recycling of SF6 Mixtures).
- DIN EN* 60376 'Specification of technical grade sulfur hexafluoride (SF6) for use in electrical equipment'.
- DIN EN 60480 'Guidelines for the checking and treatment of sulfur hexafluoride (SF6) taken from electrical equipment and specification for its re-use'.
- IEC 62271: High-voltage switchgear and control gear - Part 303: Use and handling of Sulphur hexafluoride (SF6).

4.2.3 ADB Safeguards

The **Asian Development Bank (ADB) requirements are based on the 2009 ADB's Safeguards Policy Update and the 2010 Operations Manual Section F1/BP**. ADB's Safeguard Policy Statement requires application of International (International Finance Corporation Environmental Health and Safety Guidelines, EHS Guidelines) or National environmental standards, whichever more stringent.

The environmental safeguard policy of the ADB is grounded in ADB's poverty reduction strategy and long-term strategic framework. The poverty reduction strategy recognizes that **environmental sustainability is a prerequisite for economic growth and efforts to reduce poverty**. In this context, environmental sustainability is one core issue of ADB's safeguard policy.

ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans, and private sector investment operations. Environmental assessment is a process rather than a one-time report, and includes necessary environmental analyses and environmental management planning that take place throughout the project cycle.

ADB screens all proposed projects to determine their potential environmental and social impacts. **This project was rated as Category B which means that the proposed project's potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily** than for category A projects. An initial environmental examination, including an Environmental Management Plan, is required.

4.2.4 EHS Standards Applied in the Project

The Tajik EHS standards have been compared with the IFC standards and other international guidelines and standards. Please refer to Annex II for details on that comparison. In general it can be concluded that the Tajik system of environmental standards is well developed and for the purpose of the present



project it is in line with the requirements of the ADB. It was therefore decided to use the Tajik standards as the reference in the present project.

4.3 Methodology

This IEE has been prepared considering the findings of a field visit to both substations of the International Environmental and Social Expert in July 2018 and meetings held with the PMU and the ADB counterparts during July 3-12, 2018, on top of the analysis of secondary data. Public consultation meetings took place on September 29 in Devastich District (where Sughd Substation is located) and on October 15 in Tursun-zade District (where Regar Substation is located).

5 Project Description

The Republic of Tajikistan has received a grant from the Asian Development Bank (ADB) towards the cost of the Wholesale Metering and Transmission Reinforcement Project. **Parts of this financing are being used for the opening of the 500kV Uzbekistan Transmission Line to connect it with the Tajikistan Sughd Substation and upgrades at Sughd and Regar Substations, both in Tajikistan.**

The objective of the project is to enable power exchange between Tajikistan and Uzbekistan at 500 kV and reconnecting Tajikistan to the Central Asia Power System. Expected exports are 100-120MW November to April by Uzbekistan and similar volume May to October by Tajikistan. Power exchange at 220kV between the two countries is happening since April 2018.

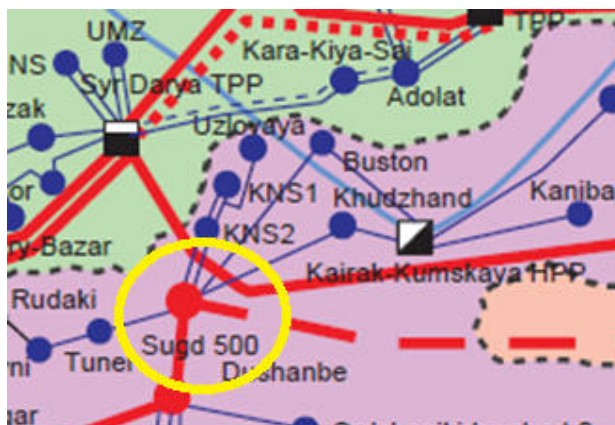


Figure 1. Diagram of the electric grid that shows the current setting where the Uzbekistan 500 kV OHTL passes 300m away of Tajikistan's Sughd SS but does not connect to it.



Looking at the development objective of the project, the project will **improve power reliability and quality of supply in nearby regions of Tajikistan and Uzbekistan, improving the living conditions as well for citizens and the business climate. The project will mean also an economic opportunity for the Government of Tajikistan for increased revenues. An increase in the national revenues could translate into a rise of the national budget for investments that could improve the quality of life of Tajikistan's citizens.**

5.1 Description of Current Setting and Suggested Upgrades

"Sughd" substation is located in Sughd province, Jukumat Devashtich (district), Jamoat Lolazor (sub-district), at 1,600 m from the town Kurkat.

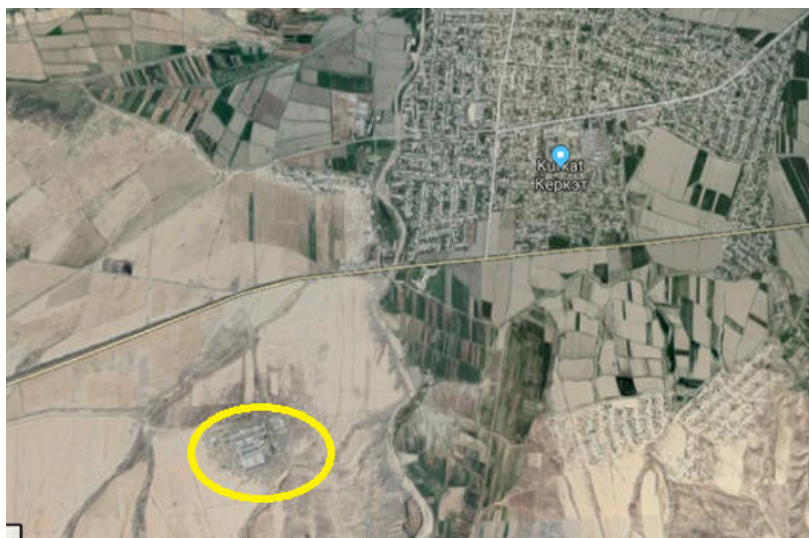


Figure 2. Location of Sughd substation

Substation Sughd 500/220 kV was built in 2010 in the scope of a project financed by the Exim Bank of China. The substation has 2 groups of single phase autotransformers with 167x3 MVA capacities. 500 kV switchyard has a one and a half configuration only with one connected transmission line dispatch #518 which is coming from Substation Dushanbe 500 kV.

Transmission line from Syrdarinskaya SS (Uzbekistan) crosses the territory of the Republic of Tajikistan and it is owned by the Uzbekistan power utility Uzbekenergo. Current route of the existing Uzbekistan line is going 300m West of Sughd SS.



The technical characteristics of the existing 500 kV transmission line are,

- Suspension tower type: P500-1 (PUE towers)
 - o Maximum weight span: 520m
 - o Maximum wind span: 590m
 - o Conductor width: 3*400/51 mm (same with 3*ACSR Zebra)
- Tension tower type U1: (PUE towers)
 - o Maximum weight span: 610m
 - o Maximum wind span: 645m
 - o Conductor width: 3*400/51 mm (Same with 3*ACSR Zebra)
 - o Insulator type (Glass type 150 kN)
- Optical ground wire: none
- Arrester wire: 90 mm

Three possible routes for the Over Head Transmission Line (OHTL) sections that will be built were considered.

Option #1. In accordance with this option, 5 towers of the current 500 kV line (Uzbekistan) would be dismantled and 3 pcs of 45-90 degrees (LAT and HAT) and 2 terminal towers (DET) would be installed. The new line would be crossing the existing 500 kV line #518 one time. Option #1 is marked in green color in Figure 3.

Summary,

- Dismantle 1,375m (+-5m) of the current overhead line
- New towers:
 - o LAT-HAT 45-90 degree (single circuit) towers – 3 pcs.
 - o DET towers (terminal towers) – 2 pcs.
- Total length of new OTL 500 kV – 1,910 m.

Option #2. In accordance with this option, 3 towers of the current 500 kV line (Uzbekistan) would be dismantled and 4 towers of 45-90 degrees (LAT and HAT) and 2 terminal towers (DET) would be installed. The new line would be crossing the existing 220 kV line two times. Option #2 is marked in yellow color in Figure 3.

Summary,

- Dismantle 703 m (+-5m) of the current overhead line – 4 pcs.
- Install new towers:
 - o Single circuit (LAT-HAT 45-90 degree) towers – 4 pcs.
 - o Terminal towers (DET) – 2 pcs.
- Total length of new OHTL: 1230 m

The GPS location of the existing 500 kV line from Uzbekistan can be found on Annex III.



Option #3. In accordance with this option 4 towers of the current 500 kV line (Uzbekistan) would be dismantled and 8 angle towers of 45-90 degrees (LAT and HAT) would be installed. Option #3 is marked in red color in Figure 3.

Summary,

- Dismantle 703 m (+/-5m) of the current overhead line – 4 pcs.
- Install new towers:
 - o Single circuit (LAT-HAT 45-90 degree) angle towers – 8 pcs.
- Total length of new OHTL: 1,442 m

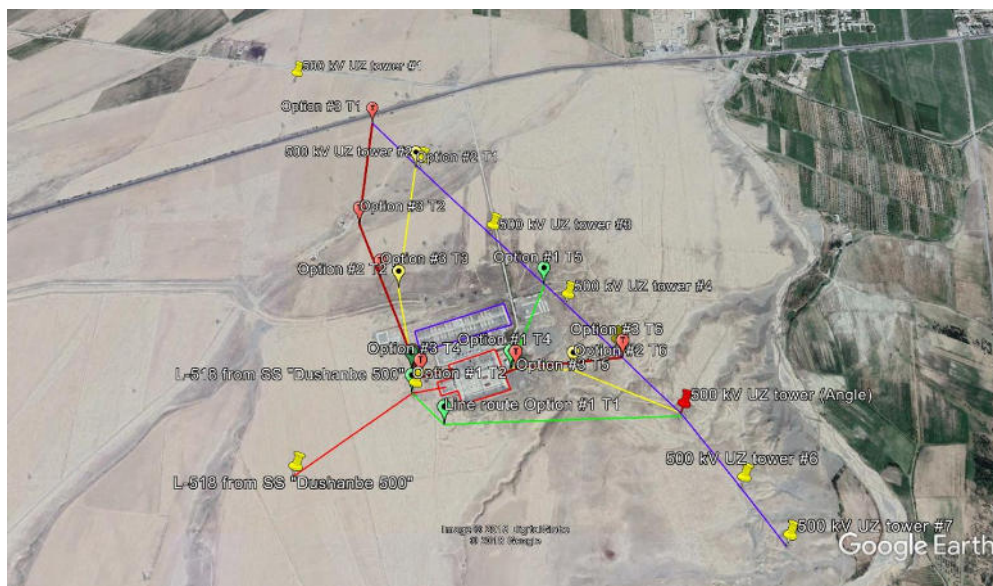


Figure 3. Possible line routes for the new OHTL sections.

Route option 3 has been chosen since it is the one that involves the least crossings with existing lines. Best construction practises advise to reduce the number of crossings with existing lines and the accumulation of towers as much as possible.

The scope of the construction of the two new OHTL sections is limited and it will happen in a high density infrastructure area. During the visit all above mentioned options of line routes did not cross any houses. Therefore, **no resettlement is needed.** The area around the substation can be described as unfit for neither housing nor farming and is not being used for any income generation activity. The land around the substation has no water available for



irrigation and it was only used for growing forage grass for cattle once a year 50 years ago during the Soviet era.

The standard angle tower designs used in other OHTLs in Tajikistan have a foundation area of 100-144 m². Therefore, the land required for the new towers foundation is approximately 600-864 m² (around 0.06 ha).

As indicated by Barqi Tojik, Right of Way (RoW) for a 500 kV line should be 50m from the centre of the line towers which results in a line corridor of 100m free from of any constructions. Land required for new OHTLs RoW is approximately 144,200 m² (around 14.42 ha). Required access paths for construction will be around 2,200 m².

In order to make technically feasible the power exchange between the two countries, **the following upgrades will be performed at Sughd Substation, within the current boundaries,**

- **New 500/220 kV Power Transformers.** Actual transformers are working over-loaded.
- **New 500 kV bay installation.**
- **Replacing the current transformers and voltage transformers at 220 KV level.**
- **Upgrading of the relays and Scada.**
- **Upgrading the control and low voltage cable layout.**
- **Upgrading the protection relays and Scada.**

Substation "Regar" 500/220/10 kV is located in Karategin Province, Tursun-zade district, jamoat Qaratog, around 50km west from Dushanbe, not very far from the border with Uzbekistan, and it covers an area of 36 ha. It was built in 1974 and the oldest auto-transformer dates from 1987.

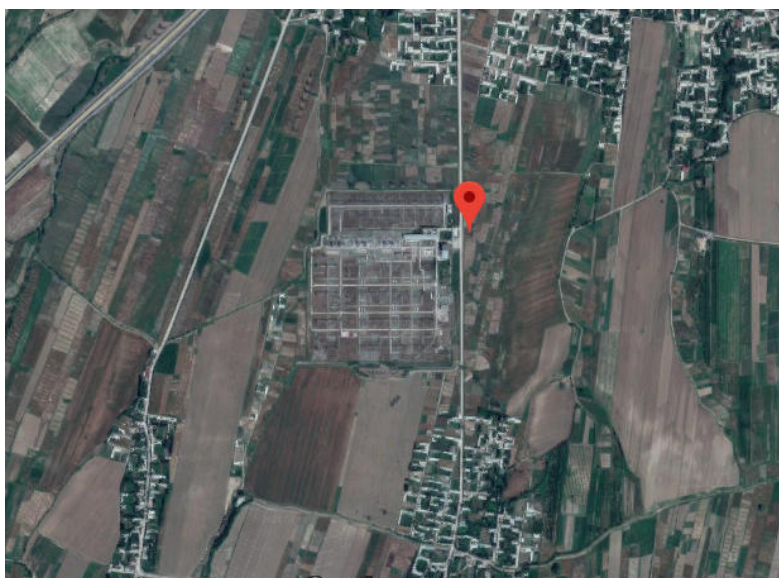


Figure 4. Location of Regar substation



The following **upgrades will be done under the Project at Regar Substation, within the current boundaries,**

- **Installation of a new 500 kV bay.**
- **Replacing of current transformers and voltage transformers at 220 KV level.**
- **Upgrading the control and low voltage cable layout.**
- **Upgrading the protection relays and Scada.**



6 Description of the Environment

Given that the specific environmental and social baseline description (health and safety aside) is limited, further baseline data collection has to be performed by the contractor before the actual works start.

6.1 Geography and Topography

Tajikistan is a Central Asian country bordering Uzbekistan, Kyrgyzstan, Afghanistan and China.

It is a landlocked country with an area of about 140,000 km². 93% of the country is covered by high mountains and more than 50% of the country is located above 3,000 m above sea level.

6.2 Geology, Seismology and Soil

Tajikistan's territory is characterized by mountains formed during the Gerzen and Alpine orogenesis. The country is located in an active seismic belt and hence is exposed to frequent strong earthquakes.

Rivers bring rich soil deposits into valleys from the surrounding mountains, creating fertile soils in their vicinity. Soil degradation is a major problem, especially through water erosion on steep cultivated slopes. Other problems are desertification and increasing levels of soil salinity. Soils (and water) in many areas are polluted by mineral fertilizers and agricultural chemicals.



Figure 5. Land around the Sughd Substation, non-arable.



Figure 6. Land around the Sughd Substation, no irrigation system.

The upgrades at the SSs will be performed in the current premises and within the fence borders of the current SS area. No land adquisition will be needed for the SSs upgrades, therefore, no new land will be used for that purpose. Both SSs are located in flat areas. The land surrounding Sughd Substation is not suitable for agriculture as it has no organic matter and it has many stones within the soil layers, plus it has not infrastructure in place for irrigation. It was last used for agriculture purposes 50 years ago.

6.3 Climate

The continental climate of Tajikistan changes with altitude. The annual temperature varies from +17°C and above in the south of the country, to -6°C and lower in the Pamir Mountains. Maximum temperatures can exceed +47°C and fall to -63°C, respectively.

Heavy rainfalls occur, making the steep slopes on the riverside even more vulnerable to landslides and mudflows.

6.4 Water Resources

There are no surface waters in the project areas.

6.4.1 Surface Waters

Tajikistan is rich in water resources and has a dense river network. Most of Tajikistan's rivers flow from east to west and lead to the Aral Sea. Their maximum spring and summer flow is important for irrigation of agricultural fields on semi-desert areas. Problems occur from severe over-utilization of water for irrigation purposes. Flooding sometimes occurs during spring.

Tajikistan possesses about 1,300 lakes, which can be found mainly in the Pamir region. Other standing water bodies are water reservoirs, which are mainly used for irrigation, electricity generation and fisheries.



6.4.2 Ground Waters

Important groundwater reserves of Tajikistan are mainly located in the quaternary alluvium of the large river valleys (e.g. Syr Darya, Vakhsh) and intermountain depressions. There is a wide range of springs in the country, especially in the Pamir Mountains. Groundwater is used for drinking water supply, industrial processes and irrigation of lands.

The main water consumer is agriculture using up to 93 % of the total freshwater intake. Intensive groundwater pollution in Tajikistan is due to infiltration of irrigational wastewater, e.g. along the left bank of Syr Darya River.

The groundwater level varies considerably depending on the morphology and season. In floodplains, the water table is close to the surface but where the line corridor is running through mountainous areas the water level is more than some tens of meters below.

6.5 Climate Change

Looking at the University of Notre Dame Climate Change Adaptation Index, Tajikistan is the **81st most vulnerable country** and the **50th least ready country** to climate change risk. The key aspects that contribute the most to its vulnerability are: food import dependency; reduced agriculture capacity and low engagement in international environmental conventions. The readiness to respond to climate change effects is reduced by the vague control of corruption, education and innovation.

As it can be seen in the map below, both project areas are in areas of the countries which precipitation tends to decrease since 1961.

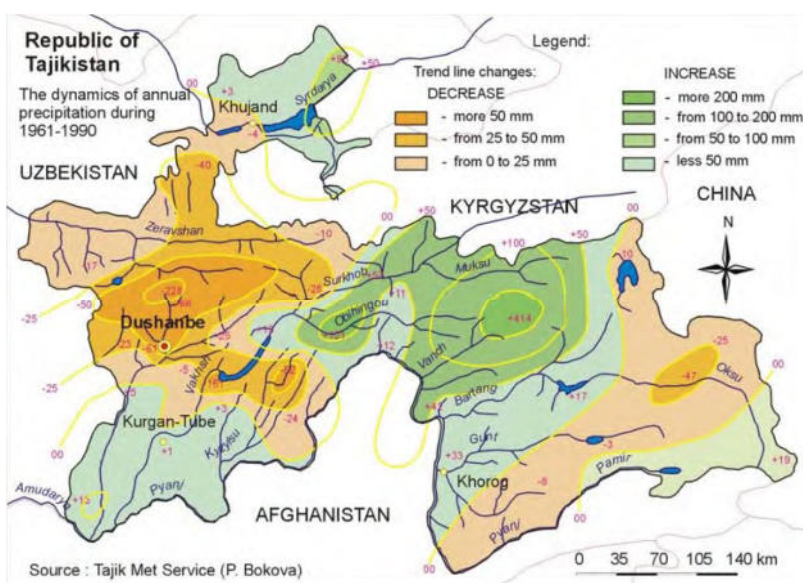


Figure 7. Changes in precipitation pattern in Tajikistan.



VULNERABILITY		READINESS
SECTOR	COMPONENT	
		● Denotes worst scores
Indicator	1997 to 2016	Score
Vulnerability		0.438
Food		0.589
Projected change of cereal yields		0.307
Projected population change		0.383
Food import dependency		0.839 ●
Rural population		0.788
Agriculture capacity		0.862 ●
Child malnutrition		0.356
Water		0.345
Projected change of annual runoff		0.412
Projected change of annual groundwater recharge		0.311
Fresh water withdrawal rate		0.717
Water dependency ratio		0.173
Dam capacity		0.131
Access to reliable drinking water		0.325
Health		0.374
Projected change of deaths from climate change induced diseases		0.061
Projected change in vector-borne diseases		0.658
Dependency on external resource for health services		0.281
Slum population		-
Medical staff		0.819
Access to improved sanitation facilities		0.052
Ecosystem Services		0.456
Projected change of biome distribution		0.741
Projected change of marine biodiversity		0
Natural capital dependency		0.530
Ecological footprint		0.210
Protected biome		0.362
Engagement in international environmental conventions		0.895 ●



Human Habitat		0.424
Projected change of warm periods		0.058
Projected change of flood hazard		0.682
Urban concentration		0.268
Age dependency ratio		0.624
Quality of trade and transport infrastructure		0.735
Paved roads		0.174
Infrastructure		-
Projected change of hydropower generation capacity		-
Projected change of sea level rise impacts		-
Dependency on imported energy		0.797
Population living under 5m above sea level		-
Electricity access		0
Disaster preparedness		0.413

VULNERABILITY	READINESS
----------------------	------------------

● Denotes worst scores

Indicator	1997 to 2016	Score
Readiness		0.296
Economic		0.297
Doing business		0.297
Governance		0.299
Political stability and non-violence		0.434
Control of corruption		0.182 ●
Regulatory quality		0.302
Rule of law		0.280
Social readiness		0.292
Social inequality		0.627
ICT infrastructure		0.301
Education		0.240 ●
Innovation		0.001 ●

Table 1. University of Notre Dame Climate Change Adaptation Index, 2006. Factors that contribute to the vulnerability and readiness of Tajikistan to climate change.



6.6 Biological Resources

6.6.1 Flora

Tajikistan belongs to two major vegetation zones and has a variety of habitats and ecosystems. Large differences in altitude, topography, climate and soil give rise to different natural environments ranging from deserts in Southern Tajikistan to alpine environments in Pamir.

Tajikistan features a great diversity of flora. More than 5,000 species of plants are recorded in the country, with two threatened plant species among them. Grasses, bushes, and shrubs predominate.

The still existing forests are limited to regions with little anthropogenic impact. They are light and small, consisting mainly of junipers and shrubs. The other vegetation is sparse and dominated by sagebrush and ferula. With increasing altitude, there are fescue-and alpine steppes.

The vegetation in both project areas is heavily degraded, bushes and forests are destroyed almost everywhere.

6.6.2 Fauna

The country's animal life is abundant and diverse. Generally, there are about 80 species of mammals, 360 species of settled and migrating birds, 44 species of reptilians and 49 species of fishes in Tajikistan. According to IUCN (International Union for Conservation of Nature, 2006), threatened species include seven mammal species, nine bird species, one reptile species, three fish species and two invertebrate species.

The two new stretches of the OHTL are not crossing any birds migration route.

6.7 Waste

The industrial sector generates about 1.5 million tonnes of waste annually, an amount that is roughly equivalent to the yearly amount of municipal waste. There is an estimated total of 200 million tonnes of accumulated waste in the country. More than 120 waste sites of different types (urban landfills, agriculture, mining and manufacturing waste) cover an area of 1,400 ha.

Initial studies and inventories of waste sites have been carried out, and some progress has been made, but most waste legacies and the emerging waste issues remain unresolved.

Tajikistan has several opportunities to improve its management of waste and chemicals: developing its national inventory of waste and bringing its waste and chemicals statistics up to date; revising its financing and support of recycling and reuse of municipal waste and encouraging youth initiatives and education on waste; improving the conditions in major landfills and taking action on



hazardous waste landfills; securing the conditions of tailings at risk from natural disasters and erosion; and developing a national chemical profile and regulations.

In Central Asia, as in other parts of the world, there is a growing concern about the rapidly increasing amounts of plastic waste and of electronic and electrical waste (e-waste). **There are no facilities or established procedures in Central Asia for separating waste in batteries, and no cultural awareness of the potential problems when e-waste is not managed properly. No system exists for the return or disposal of used electronics such as computers.**

Widely used as insulating and coolant fluids in electric equipment, including transformers and capacitors, polychlorinated biphenyls (PCBs) are toxic and persistent organic pollutants that can remain in the environment for many years and accumulate in animals and along the food chain. They are thought also to be carcinogenic. PCBs can damage the liver, the endocrine, reproductive, immune and nervous systems, and can cause other health effects in animals. Humans are thought to be at similar risk. The 2001 Stockholm Convention on Persistent Organic Pollutants banned their production.



Figure 8. PCBs containing capacitors in Central Asia.

Information for this section has been sourced from the 2013 report “Waste and Chemicals in Central Asia: A Visual Synthesis”, elaborated by ZOI y GRID ARENDAL with the support of the Swiss Development Agency.

6.8 Protected Areas

According to the World Commission on Protected Areas (WCPA), five State Nature Reserves (IUCN Category I), three National Parks (IUCN Category II), a variety of small Nature Monuments (IUCN Category III) and 23 Nature Refuges (Zakazniks, IUCN Category IV) can be found in Tajikistan. In addition, areas



under international agreements and programs (e.g. Ramsar Sites according to the Ramsar Convention and Important Bird Areas – IBA- according to BirdLife International) are present in the country. Tajikistan has designed five wetland sites (Ramsar sites) under the Ramsar Convention.

None of the protected areas in the country will be affected by the project.

6.9 Land Use

Approximately 1/4 of Tajikistan's land area is under agricultural use with production of cotton, grain, vegetables, potatoes, fruits and wine and rearing of sheep, goats, cattle and yaks. Pastures are the most common agricultural use (21%). Desert and semi-desert lands are irrigated and show cotton plantations, gardens, and vineyards. In narrow valleys (especially in the north) orchards, fruit trees, mulberry groves, and small cultivated fields can be found.

In general, the agricultural land use in Tajikistan is strongly dependent on irrigation and fertilization. Particularly cotton requires intense irrigation. Another important land use is mining. Some fishing is done in the upper Amu Darya River, the Kayrakum Reservoir (fish farming), and the Syr Darya River.

In Soviet times, tobacco was the most important crop. Since then, the cultivation of tobacco has decreased significantly and the production of cereals, vegetables and potatoes has been growing. With wheat and oats being the most important crops, there are some additional incomes with the growing of apricots, apples, grapes, mulberries and peaches.

6.10 Socio-economic Profile

The population of Lolazor Jamoat where Sghud Substation is located was of 15,060 people in 2015. The per centage of the population who were women then was 51.34%. Main sources of income are **agriculture and cattle rising, counting with 3,597 farms** in 2015.

The population of Qaratog Jamoat where Regar Substation is located was of around 227,683 people in 2009. More socio-economic information of Qaratog Jamoat is to be added.

6.10.1 Society

According to the 2008 census, the country's population was 7,373,800. However, the population in 2015 is estimated to be 8,610,000 people. Population density is 63 persons per square kilometer. Tajikistan is divided into four regions: Sughd, Khatlon, Gorno-Badakhshan and Region of Republican Subordination, while the capital Dushanbe is administratively separate. Each region is divided into several districts (districts) which are subdivided into



village level self-governing administrative units – jamoats. There are 58 districts (rayons) and 368 jamoats in Tajikistan.

Less than 1/3 of the population live in urban areas. Most people live in small villages (*qishlaqs*). Living conditions in most rural areas are primitive. Paved roads, potable running water, indoor toilets, and modern indoor heating and electrification are still only available in urban areas.

Tajikistan's population is composed of over eighty different ethnic groups. 80% of the population belongs to the Tajiks, being direct descendants of the Iranian peoples and the largest indigenous group in the country. Other ethnic groups living in the country are Uzbeks (about 15 %), a declining Russian population (1.1 %) and several other such as Kyrgyz, Tatars, Ukrainians, Germans, Jews and Armenians. 95 % of the people are Muslim (90 % of Sunni Muslims and 7 % Shi'a Muslims); 5 % belong to other religions.

Tajikistan is a dominant-party system with the People's Democratic Party of Tajikistan being the biggest party. It is a presidential Republic with Emomali Rahmon being the President since 1994.

6.10.2 Economy

With some of the world's highest mountains covering 93% of its territory, Tajikistan faces obvious obstacles to its development. These include unstable food security, limited transport connectivity, and low levels of private investment. Due to its narrow economic base and reliance on remittances by labor migrants, Tajikistan's economy remains vulnerable to external shocks.

31.3% of the population lived below the national poverty line in 2015. The proportion of employed population below USD 1.90 purchasing power parity a day in 2015 was 4.8%. For every 1,000 babies born in Tajikistan in 2016, 43 died before their fifth birthday.

Tajikistan's economy traditionally depends on agriculture. 2/3 of the labour force is still occupied in this field, which accounts for almost 24 % of the GDP. The main crop produced for export is cotton.

In contrast, the industrial sector is poorly developed, providing 14.4 % of the GDP and only around 4 % of total employment. A small number of state-owned enterprises dominate this sector. Industries include mining, chemicals, fertilizers, cement, machine tools, refrigerators, textiles and food processing. Hydropower and aluminum are significant resources with aluminum being the country's most important mineral-based product.

At present, Tajikistan's tourism sector is still very limited.

Tajikistan's GDP is expected to grow by 6.0% in 2018 and 6.5% in 2019. Per capita GDP growth is expected at 3.3% in 2018 and 5.4% in 2019. Inflation rates are forecasted at 7.5% in 2018 and 7.0% in 2019.

GINI index in Tajikistan is 30.8, the country ranks 133 over 189 countries what it means that the distribution of income among individuals or households is very inequal.



6.11 Cultural and Historical Heritage

The territory of Tajikistan has been continuously inhabited since the early Stone Age. It is located on the important historical trade routes of the Silk Road connecting East and West.

Unfortunately, many of the historical heritage has been destroyed over the years due to earthquakes and the civil war (1992-1997).

None of the historical heritage of the country will be affected by the project. In case any chance find happens during the excavation works, the procedure stated in the impact B.11. of the Environmental and Monitoring Management Plan shall be followed.

6.12 Disaster Risks Management

As a consequence of the degraded environment (in combination to the steep slopes), there are frequent mudslides, flooding and avalanches, causing huge material damage and even loss of life.

There is no foreseen disaster risk at any of the two project sites.

7 Screening Potential Environmental Impacts and its Mitigation Measures

7.1 Audit of Current Status

These are the specific findings of the field survey and performed audit to the two substations that will be upgraded,

- A safety briefing was delivered to the visiting group and hard hats were provided to the consultants.
- The SSs counted with Health and Safety (H&S) notice boards with information on fire wardens and first aid procedures. First aid kits were in a good condition.
- Anti-fire equipment is regularly inspected and maintained.
- Training is provided for those carrying out potentially hazardous activities. When staff is hired, they are trained on H&S, and then there is a H&S day once a month and they have to pass ad exam once a year. There is a H&S engineer at each regional branch.
- The SSs were generally clean, tidy and kept free of trip hazards.
- Inner walkways (concrete slaps) and inner roads were in good condition.



- Personal protective equipment was readily available and in use and firefighting equipment available in working areas.
- Auto transformers count with an automatic fire-extinguisher system. For the auto transformers that will be replaced, the oil peat concrete structure and the automatic fire-extinguisher system will be replaced by a new one (nitrogen type most probably, which it is capable of coping with the very high temperatures of the oil). Oil collection tanks are checked once a year and the oil is sent to the main regional branch.
- There seems not to be risks of used construction materials containing asbestos.
- Toilets were in a hygienic condition.
- Electrical panels and cables at the telecom and protections room had pieces of wood set across as a preventive measure for avoiding accidentally touching them.
- There is a limitation and control of exposure of workers to electric fields, magnetic fields and electromagnetic fields that it is implemented through log books.
- The status of the access roads was good.
- Both SSs never received complaints from neighbors.
- SSs have university students doing internships on them, which it is a way of them relating positively with the broader community.
- There were no dead birds or any other sign of the wild life being negatively affected by the substations.
- Usual practice with the dis-installed equipment is to keep it at the site as a source of spare parts.
- Batteries are kept in a separate room, which it is a good practice.
- Telecom and protections computer rooms that count with electronic equipment were refrigerated to avoid over-heating.
- Fences around the substations were in good condition and the substations counted with 24 hours security service.
- Hazardous waste is picked up by the regional Barqi Tojik office from time to time.
- The black waters are connected to septic tanks. Pumps are used to empty the septic tanks by a licensed supplier when full.
- Usual working hours are 40 hours a week. Which it is in line with the local Work Code.



- Safety area around the SSs is respected.
- In relation to the area where the new two OHTL sections will be built next to Sughd SS, there are no buildings neither non-building structures at the Right of Way. The land surrounding Sughd Substation is not suitable for agriculture as it has no organic matter and it has many stones within the soil layers, plus it has not infrastructure in place for irrigation. It was last used for agriculture purposes 50 years ago.

The audit of the current status of the two substations concludes that the Environmental, Health and Safety and Social aspects are being taken care of in a responsible manner. No corrective actions related to the current status need to be implemented as part of the project.

The following pictures show some of those described aspects.



Fig. 9. H&S information board at Regar SS



Fig. 10. Good condition of walkways at Regar SS



Fig. 11. Security fence and inner roads at Sughd SS



Fig. 12. Auto-transformer equipped with automatic fire-extinguishers at Sughd SS





Fig. 13. Oil collection tank that is conducted leaked oil from the auto-transformers via pipes at Sughd SS

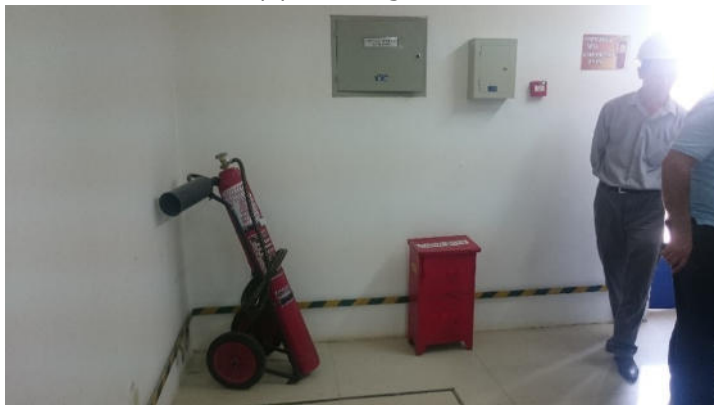


Fig. 14. Fire extinguishing bottles ready available and maintained at the buildings in Sughd SS



Fig. 15. Telecom and protections computer rooms that count with electronic equipment were refrigerated to avoid over-heating at Regar SS.

7.2 During Construction

The upgrade of the SSs does not involve land acquisition. No construction of new access roads will be needed for the upgrades at the SSs. In the case of the opening of the OHTL, simple paths for construction will be set in place and the area will be restored afterwards to avoid accelerating erosion and land degradation.

During the construction phase, the project might mainly cause the following impacts. The proposed mitigation measures are suggested in relation to them,

- **Soil pollution and erosion.** Mitigation measure: proper maintenance of machinery at the designated areas will be performed; adequate construction site management and restoration of the created access paths in the case of the OHTL opening.



- **Pollution of surface water and groundwater.** Mitigation measure: re-fueling will be only allowed at designated places and proper maintenance of machinery at the designated areas will be performed. It will be compulsory for all workers to use the toilets. To determine whether old oil from the exchanged equipment of the SS Regar (since it is the only one with old equipment) is contaminated with Polychlorinated biphenyls (PCBs), oil samples will be taken and sent for analyses to a certified laboratory. Please for more indications on PCBs refer to Annex V.
- **Waste generation** (limited steel, ceramics, used oil) due to demolition of equipment like old circuit breakers and replacement of transformers; domestic waste generation by the workers. Mitigation measure: **electrical equipment will be kept in most cases as a source of spare parts and it takes time to unsubscribe it into Barqi Tojik's assets list, so almost none electrical waste will have to be managed by the contractor. In the case of other electrical equipment such as the dismantled conductors, they will be managed safely by a licensed company hired by the contractor. The dismantled OHTL towers will be sent to Uzbekistan, to the power utility Uzbekenergo, by Barqi Tojik.** The concrete foundations of the 4 towers of the Uzbekistan OHTL that will be dismantled will be re-used in other civil engineering works. New concrete pedestals will be built for the new equipment that will be installed at the substations. The old concrete pedestals will become waste that will have to be safely managed. Domestic waste generation will be minimized, collected and disposed safely unless parts of it such as plastic bottles can be recycled.
- **Air pollution.** Due to the limited time of the construction period, and limited numbers of needed truck movements, the impacts on ambient air quality by machinery and vehicle exhausts will be low. Emissions from machines and transportation will be rapidly dispersed in the air. Some dust generation will take place caused by ground works at mostly small construction sites and vehicles. Mitigation measures: trucks transporting sand, gravel and rocks shall be covered with tarpaulins. Stockpiles should be placed at the relevant construction sites and should be covered to avoid dust generation. Water spraying should be done. SF6 handling in the SF6 circuit breakers will be performed following the safety guidelines.
- **Health and safety risks** (e.g. through works under high voltage). Mitigation measure: H&S clinics will be delivered as needed and limitations on the time exposure to electromagnetic fields will be monitored through a worker's log book. Personal protection equipment will be used in EVERY case when a risk is present, such as working in the existing switchyard.
- **Spread of STD/STI/HIV/AIDS.** Mitigation measure: briefing on how to avoid the spread of these illnesses will be delivered to the construction workers by the contractor at the beginning of the construction works.
- **Noise emissions and vibration.** Mitigation measure: high noise levels will be avoided in the late evening and at night in Regar SS. Around Sughd SS, there are no neighbors around that could get negatively affected.
- **Impacts on infrastructure.** Mitigation measure: for bringing the new equipment and construction machinery to the site, road stretches and



bridges will be reinforced if needed.

- **Impacts on power supply.** Short blackouts might happen although most probably other SSs will be capable to supply the power to the area usually serviced by the two SSs. Mitigation measure: expected blackouts will be estimated and they will be communicated via the public consultation meeting in the case of Sughd SS and through a notification **in the newspaper and/or radio station in the case of Regar SS.**
- **Socio-economic impact.** The contractor will be encouraged to source as much supplies as possible locally and to hire local workers.

The construction of 5 new transmission towers will involve the following stages, that will have to be performed with strict safety, project quality and environmental protection practices,

1. Transporting materials to the tower sites
2. Building the foundations and anchors
3. Assembling the towers
4. Raising the towers
5. Unreeling and installing the conductors
6. Installing the counterpoise wires
7. Restoring the site

7.3 During Operation

During the operation phase, the project might mainly cause the following impacts,

- **Soil pollution.** Timely maintenance of machinery at safe areas will be performed in order to avoid oil spills. In the case of waste water, the IFC EHS Guidelines that indicate that secondary containment (SC) has to be included wherever liquid wastes are stored in volumes greater than 220 litres, will be followed. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater). The oil collection peats underneath the autotransformers, as well as the related pipes and the swam tank will be inspected every year to monitor that there are no cracks in the system. In the case the visual check detects soil contamination or potential contamination, a soil analysis will have to be performed. Responsible waste management system in place, in compliance with the laws of Tajikistan.
- **Surface water and groundwater.** Timely maintenance of machinery at safe areas will be performed in order to avoid oil spills. In the case of waste water, the IFC EHS Guidelines that indicate that secondary containment (SC) has to be included wherever liquid wastes are stored in volumes greater than 220 litres, will be followed. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater). The oil collection peats underneath the autotransformers, as well as the related pipes and the swam tank will be inspected every year to monitor that there are no cracks in the system. Responsible waste management system in place, in compliance with the laws of Tajikistan.
- **Electric and magnetic fields.** Limit values according to the European



Directive 2004/40/EC. Limit on exposure of workers of 10 kV/m and 500 μ T. At the moment, it is internationally agreed that for the public and for permanent exposure, the electric field must not exceed 5 kV/m and the magnetic flux density must not exceed 100 μ T. This means, outside the fence of substations 5 kV/m and 100 μ T respectively is the limit. The same is valid for settlements. Maintenance staff and operators will fill in a logbook with information on the exposure times when working in the switchyard areas to enable the monitoring of this H&S aspect.

- **Contribution to climate change (SF₆ gas).** To assure a safe use and handling of Sulphur hexafluoride that will make sure that this Green House Gas is not emitted into the atmosphere, the regulations referred on section 4.2.2. shall be followed. SF₆ has approximately 25,000 times more global warming potential than that of CO₂ gas.
- **Fire.** To reduce the risk of the equipment and facilities setting into fire, the following measures will be followed: timely maintenance of the equipment, immediate reporting of oil leakages, automatic anti-fire system of the autotransformers including the water storage, pump and pipes is kept in good condition and maintained; fire-extinguishers undergo maintenance once a year and are kept in sufficient numbers at the buildings; anti-fire training is delivered at the beginning of the assignment to staff and seminars are delivered periodically; aircon units are available at the telecommunications and protections rooms and are run when needed; personal protective equipment is kept available and used.
- **Drinking water quality.** Keep the water filtration system from the well regularly maintained and upgraded over time.

More details on the mitigation measures that will have to set in place in relation to those impacts during operation, can be found in the Environmental Management and Monitoring Plan (EMMP) in Annex VI. If extending the current environmental, health and safety, labour and community practices to the new equipment in the SSs, no real concern should arise.

8 Information Disclosure and Consultation

Information disclosure and consultation are being undertaken as per the requirements of ADB SPS and the local policies and principles.

8.1 Consultation

The objectives of the stakeholder consultation process are to disseminate information on the project and its expected impact and outcome among primary and secondary stakeholders and to gather information on relevant issues so that the feedback received can be used to address prevailing issues at early stages of the project design. Another important objective is to determine the extent of the concerns amongst the community, to address these at the project level and to suggest appropriate mitigation measures of any adverse impacts at early stages of the project design.



ADB Safeguards Policy Statement of 2009 principles and National laws on land acquisition and resettlement requirements including project plans and proposed activities were first disclosed to the Land Committee representative of the Lolazor Jamoat where the Sughd SS is in July 2018.

The PMU together with the Consultant performed consultation meetings with the Jamoat population at the 2 sites to inform them and other relevant stakeholders on the Project activities, the expected environmental impacts and short blackouts and the associated mitigation measures, as well as the grievance and redress mechanism. Stakeholders' feedbacks and perceptions have been incorporated into the design.

Public consultation meetings took place on September 29 in Devastich District (where Sughd Substation is located) and on October 15 in Tursun-zade District (where Regar Substation is located). The minutes of those public consultation meetings can be found in Annex IV.

8.2 Information Disclosure

Notifications on the expected blackouts will be published in the newspapers and/or radio stations in relation to the population supplied by Regar SS (capital city mainly). In the case of Sughd SS, which it is a much more rural and less populated area, the direct information disclosure will be done through a meeting with the community and the word will be spread out by the majalla leaders. The final version of this Initial Environmental Examination Report will be uploaded to the ADB website after approval from Barqi Tojik and the ADB.

Any stakeholder is entitled to make questions on environmental aspects to the project to the PMU in line with the Environmental Information Law of the Republic of Tajikistan. The PMU will have to reply within 30 days, or deny the query together with an explanation within 5 days.

9 Grievance and Redress Mechanism

The Grievance Redress Committee (GRC) will be constituted in order to assist the affected people in resolving queries and complaints.

During the broader consultation meetings, **it will be indicated that in case of occurrence of any damage created by machinery work or similar, affected people can submit their grievance to the GRC representative in the jamoat and seek compensation for the damages. These are the key characteristics of the Grievance and Redress Mechanism for the project,**

- First step: one joint Project Grievance Redress Committee will be established at the Jamoat formed by the Jamoat representative (the head of the Jamoat in the case of Sughd SS), the PMU Safeguards



Specialist and a community member. A Complaints Registration Book will be kept available at the Jamoat.

- Second Step: If the Project Level Grievance Redress Committee is not able to resolve the grievance within a 14-day period, the complaints should be presented to the BT Rayon representative
- Third Step: If the BT Rayon is not able to resolve the grievance within a 14-day period, the complaints should be presented to the BT PMU at the central level, Dushanbe.
- The affected peoples can submit their case to the appropriate court of law at any point of the process if they will to. Anyway, the APs are suggested to follow the instances above.
- Timeframe: the Grievance Mechanism will be active from the preparation phase until 1 year after the conclusion of the works.
- Complaints can be submitted in verbal or written form.

Based on experience on some projects, contractors have put emphasis on the financial compensation for nuisances. This may be acceptable for some social impacts where evacuation or permanent resettlement and land claim is necessary or where houses have been accidentally damaged. However, it is not best international practice to accept payment for environmental impacts. An approach whereby the subproject contractor pays money for nuisances rather than control impacts at source will not be acceptable. This practice should not be allowed and financial compensation shall not be allowed as mitigation for environmental impacts or environmental nuisance.

10 Institutional Framework

This is the Project institutional framework.

Jamoat Land Committee: the head of the Jamoat will be the focal point for the Grievance and Redress Mechanism and will be make sure that a Complaints Registration Book is kept available at the Jamoat.

Executing Agency: The Executing Agency for the Project will be Barqi Tojik's PMU. The PMU will be responsible for monitoring and reporting on the implementation of the mitigation measures and the Grievance and Redress Mechanism. A PMU member will be part of the Grievance and Redress Committee and will have to perform the related duties.

Committee of Environment Protection: Tajik authority that is responsible for issuing environmental permits for infrastructural projects. This committee is directly ranked under the government of the Republic of Tajikistan and has the status of a ministry. The Committee has several subdivisions dealing with nature protection areas, soil, water, hydrometeorology etc. and has departments in the regions.

Funding Agency: The Asian Development Bank (ADB) will be the funding agency of the Project. The main responsibilities of ADB are: guidance for SDDR preparation, approval and disclosure of the SDDR and issuance of a no objection letter for the beginning of the construction works.



Contractor: The contractor will provide the PMU with monthly reports on the implementation of mitigation measures.

11 Environmental Management Plan

11.1 General Environmental Obligations

The Environmental Management Plan (EMP) as stipulated in this IEE Report lists all needed mitigation and monitoring measures necessary to implement the Project in an environment-friendly manner. Monitoring measures and related monitoring parameters, location, measurement, frequency, responsibilities and costs are given for the construction and operation phases of the project.

11.2 Contractor's Health and Safety (H&S) Obligations

Considering the H&S targets, the H&S obligations of the project are:

- Above all 'ZERO ACCIDENT'
- to contribute with the upgrades to build substations that are intrinsically safe,
- a healthy place to work in and have an as low as reasonable practicable impact on the environment;
- to execute the substation upgrades, the dismantling of the OHTL stretch and the building of the 2 new OHTL sections without health or environment related incidents and to form the basis for a safe operation and maintenance;
- to comply with the applicable laws and regulations.
- In order to reach these objectives, the Contractor shall develop, implement and operate a Health and Safety Management Plan (HSMS) and shall determine persons being responsible for all H&S issues on construction site(s). Key tasks to be considered by the contractor are given. The main focus of H&S during construction is the preparation and consideration of a **site-specific H&S plan**. The employer shall have the right to extend these H&S requirements in case of the needed actions to fulfill the H&S targets and objectives.
- In order to fulfill the health and safety tasks and the environmental requirements given in this EMP the contractor has to set up an overall Health, Safety and Environment Management Plan (HSEMP) and implement a Health, Safety and Environment Management System (HSEMS).

11.3 Institutional Arrangements and Reporting

The construction contractor is obliged to implement the ESMP. Doing so, he shall set up a Health, Safety and Environmental Management Plan (HSEMP) and install a Health, Safety and Environmental Management System (HSEMS) during the entire construction period covering all construction sites and all construction activities.



The PMU will be responsible for supervising and monitoring the implementation of the HSEMP by the Contractor. For that, the PMU shall perform field visits about twice a month. The PMU will be supported by the Project Implementation Consultant (PIC).

The Contractor will prepare monthly progress reports about the implementation of the HSEMP. Based on these reports and own field visits the PMU shall prepare monthly Safeguard Monitoring Reports showing the progress of the implementation of the HSEMP. The reports shall contain all discrepancies from the EMP and list all HSE relevant incidents and accidents that occur during the implementation of the Project.

Based on these reports PMU will prepare semi-annual safeguard performance and monitoring reports and submit them to ADB, Barqi Tojik and to other relevant national authorities. In doing so, the PMU will be supported by the Project Implementation Consultant (PIC). In addition, the implementation of the HSEMP shall be audited twice a year by an independent internationally experienced auditor.

11.4 Costs of EMMP

The implementation of the EMMP will monitoring costs for Barqi Tojik and implementation cost for the contractor.

The responsibilities of the person performing the monitoring, either sourced internally within BT or through hiring an environmental consultant, will be,

- Review the proper integration of all environmental measures and plans into the detailed design and plans as stipulated in the EMMP;
- Approve Standard Operation Procedures developed by the contractor for environmental impact avoidance and mitigation measures
- Approve the integration of environmental management and monitoring plans as well as related detail designs into the overall detail design to be provided by the contractor prior to the works;
- Support and advice the PMU to ensure all environmental requirements and mitigation measures as per IEE and environmental performance criteria are incorporated in the project contracts or variations are recommended and that the EMMP will be effectively implemented;
- Develop any additional IEE or update existing IEE needed due to fine tuning of the project
- Prepare a final supervision report on the final consideration of environmental aspects taken into account in plans, designs and SOPs of the contractor prior to the commencement of the construction

Additional costs for mitigation measures of environmental impacts, such as (i) Exploitation Handling, Transportation and Storage of Construction materials, (ii) Construction Waste Disposal, (iii) Work Camp Operation and Location, (iv) Loss of trees and vegetation cover of the areas for towers and temporary workspace, (v) Safety Precautions for the Workers, etc. couldn't be estimated at this stage due to the fact that these measures and their cost are depending on the detail design which is not available at this stage of the project.



Additional costs will arise as well through Environmental Management and Monitoring tasks to be fulfilled by the contractor. At this stage of the project, these costs can only be estimated for the development of Standard Operation Procedures (SOPs) for mitigation measures, since this task is independent from any details. Standard Operation Procedures considering the Construction phase shall refer to the following environmental impact mitigation measures as described in the EMMP matrix in Annex VI:

1. Exploitation, Handling, Transportation and Storage of Construction materials
2. Construction Waste Disposal
3. Loss of trees and vegetation cover of the areas for towers and temporary workspace
4. Safety Precautions for the Workers

Item	Unit	No Units	Unit Cost (USD)	Cost (USD)
ESM (TA Contract)2	Lump Sum Contract	1 month	22,000	22,000
Local Environmental Specialist	Fees	1.5 months	2,000	3,000
Local Environmental Consultant for Contractor	Development of Standard Operation Procedures (SOPs)	1 month	2,000	2,000
Analysis of samples of oil from deployed equipment commissioned at the 1970s and 1980s for the detection of PCBs	Sample analysis	10	50	500
Analysis of soil samples that might be polluted by refrigeration oil (mineral oil)	Sample analysis	Cannot be determined until the current concrete peats are removed.	100	
			Grand Total	More than 27,500

Table 2. Cost estimate of mitigation and monitoring measures.

The costs of implementation of the mitigation and monitoring measures stipulated in the EMP are at least **USD 27,500, and up to USD 50,000.**

11.5 Tender Documents

The Environmental and Monitoring Management Plan presented in Annex VI (Section 12.5) shall be part of the tender documents to be prepared to the Project.





12 Annexes

12.1 Annex I: Applicable Tajikistan's National Environmental Legislation

12.1.1 Environmental Monitoring Law

Law No. 707, from 2011, specifies organizational, legal, economic and social framework for environmental monitoring and governs the relations of the public authorities, local governments of the towns and villages, public organizations and citizens in the affected area.

On its article 12, it specifies the duties and responsibilities of the Environmental Monitoring Subjects included in the National Register of Environmental Monitoring:

- Initiate and implement local monitoring of the human impact sources on the natural environment using their own funds;
- Ensure the creation of the material and technical base required for the environmental monitoring;
- Carry out local monitoring using tools and means prescribed by the legislation procedures for ensuring common procedures in the measurements;
- Identify officials responsible for the local environmental monitoring;
- Provide training in accordance with the qualification requirements;
- Submit mandatory data to the state agency authorized for the environmental monitoring arrangement and for free in a timely manner.

2. The local environmental monitoring is carried out by the natural resources users or entities engaged by them in accordance with the programs (the regulations) requirements developed and agreed with the state agency authorized for the environmental monitoring arrangement and implementation.

3. The organizations and individual entrepreneurs whose activities pose a relatively high risk for the environment will arrange and carry out the environmental monitoring as stipulated by the legislation.

12.1.2 Environmental Audit

Law 785, from 2011, defines environmental auditing principles and procedures for environmental audit in order to prevent the harmful effects of administrative, economic and other kind of activities on the environment, life and health of the population of the Republic of Tajikistan.

This is the purpose sought:

- Basis of the environmental policy strategy of the economic entity;
- Prioritizing the environmental planning of the business entity, and identification of additional opportunities for its implementation;

Involved tasks of the environmental audit:

- Verification of compliance with the business entity laws on environmental protection;
- Improving the impact of an economic activity on the environment;



- Monitoring;
- Reduction of the emergency risks related to environmental pollution.

Types of environmental auditing,

1. Proactive environmental audit to be conducted by an environmental audit firm or an auditor engaged by the company without forming a legal entity based on the economic entity resolution.
2. Mandatory environmental audit to be conducted by an environmental audit organization based on the resolution made by state authorities. The procedure for appointment of mandatory environmental audit are determined by the Government of the Republic of Tajikistan.

12.1.3 Environmental Information Law

Law No. 705, from 2011, specifies the organizational, legal, economic and social framework for environmental information provision for the Republic of Tajikistan and promotes the rights of individuals and legal entities to obtain complete, accurate and timely environmental information. It also regulates relations in the given sphere.

Present law stipulates the environmental information types and main sources as well as the procedures to be followed in the provision of environmental information to individuals and legal entities, that are non-governmental agencies or other government agencies, including:

1. The general environmental information will be provided to the individuals and legal entities by the environmental information insiders (holders) that are not a public authority or other government agency (hereinafter - the Applicant), upon the request and free of charge, unless otherwise provided by Tajik legislation.
2. **The general environmental information will be provided to the Applicant by the environmental information insiders within ten days from the Application receipt date or notify the Applicant on refusal in its provision specifying the reasons for such denial within five days** upon the receipt request in accordance with the Tajik legislation and international legal acts recognized by Tajikistan.
3. Requirements for the general environmental information application are prescribed by Tajik legislation.
4. **The general environmental information will be provided in the format, scope and content specified in the application for the provision of general environmental information, and, in case of insufficient technical resources, the environmental information owner will provide the information in the existing format and scope, indicating the relevant reasons.**
5. **If the owner of the requested general environmental information is a legal entity that is not a public authority or other government agency, then the public authority or other government agency in whose address the Application was received and are competent to meet this application shall request needed information from the environmental information insider within ten days from the Application receipt date, with the written notice to the Applicant.**



6. **If the information holder is a public authority or other government agency, it will provide this information to the Applicant within one month from the Application receipt date or notify the Applicant on refusal in its provision specifying the reasons for such denial within five days and explaining the procedures and decision appeal period.**
8. If compliance with the Application for general environmental information is not a responsibility of the public authority or any other government agency, the Application should be transferred to other public authority or government organization, competent to comply the Application notifying the Applicant within five days from the Application receipt date.
9. In case if the requested environmental information relates to the specialized environmental information type, the environmental information insider shall offer the Applicant to enter into the contract to provide specialized environmental information within five days of Application receipt date.
10. If there are grounds for refusal to provide environmental information stipulated by Tajik legislation and international legal acts recognized by Tajikistan, the environmental information insider notify the Applicant in writing within five days of the refusal to provide environmental information indicating reasons for refusal,

Special provisions for giving environmental information to public authorities and government agencies,

1. The general environmental information will be provided to public authorities or other government agencies by the environmental information insider in accordance with the Tajik legislation upon the request, through the information exchange or distribution.
2. The specialized environmental information will be provided to the public authorities free of charge, unless otherwise provided by the Tajik legislation. To other government agencies the specialized environmental information will be provided as per prescribed order and as specified in Article 11 of the given Law.

12.1.4 Local Government Authorities Law

Law No. 526, from 2004, regulates the establishment, powers and activities of local governments:

- defines the powers of local government. Local government agency and the executive of cities and regions is the Chairman of the city (district), being the representative of the President of the Republic of Tajikistan.
- defines the powers of Majlis deputies, which includes the approval of the city budget, local taxes and tax collection, regulation of water consumption, use of land and other natural resources within its powers.
- defines the powers of the President of the city (district) that includes the heads of enterprises, organizations and institutions under the jurisdiction of the city, and the responsibility for the activities of sanitary-epidemiological protection of the city inhabitants.



- defines the fees that local public authorities may impose, which may also include payment for the removal of waste and measures for environment protection.

12.1.5 Law on Industrial Waste and Consumption Waste

Law No. 44, from 2002, regulates issues related to waste management. The Act contains the definition of waste types, including consumer waste, recycled materials, municipal solid waste and hazardous waste. Article 5 defines the powers of the state executive agency for the field of waste management. So, the competent authority is the State Committee for Environmental Protection under the Government of the Republic of Tajikistan.

Powers of state executive authorities in the management of MSW defined in Articles 5 and 6, include:

- State control.
- Monitoring and supervision of the state of the environment.
- Licensing of hazardous waste management.
- The development of government regulations on waste management.
- Implementation measures in the aftermath of disasters and accidents related to waste management.
- Waste inventory management.
- Organization of decontamination and waste disposal with the restoration of the damage caused to the environment on their cost.
- Creation of economic and social motivations for waste use by individuals and legal persons.

12.1.6 Law on Licensing of Certain Type of Activities

Law No. 37, from 2004. According to Article 17 of the Act and Article 8 of the Law "On industrial waste and consumption waste", **activities for the hazardous waste management shall be licensed by an authorized state body.**

Hazardous waste is defined as a substance having one of the following properties: toxicity; infectious; danger of explosion; flammability; high reactivity.

The authority for licensing activities for the hazardous waste management is the Committee of Nature Protection of the Republic of Tajikistan and its organs. Licensing is carried out in accordance with law and regulation of "Hazardous waste management licensing" dated 2003. This procedure requires the submission of documentation and cost estimation for each stage. The procedure is performed by above committee, but in certain cases, judgment is required to be provided by state authority on sanitary-epidemiological control.



12.1.7 Law on Organization of Sanitary-Epidemiological Safety of the Population

Law No. 49, from 2003. This law establishes the legal, institutional and economic framework and the measures related to the provision of sanitary-epidemiological safety of the population. The law defines the regulatory role of the government for ensuring sanitary and epidemiological rules and defines the organization and structure of the sanitary and epidemiological surveillance.

Article 21 of the law establishes the sanitary and epidemiological requirements for the collection, use, processing, transportation, storage and disposal of industrial and domestic waste environment for human habitation, flora and fauna, conservation and improvement of the purity of air, the establishment of state control over the use of air in the cities and industrial centers and other settlements points, sources of air pollution, as well as strengthening the rule of law in this relationship for the benefit of present and future generations

12.1.8 Tajikistan's Environmental Quality Standards

Environmental quality standards in Tajikistan are based on GOST, SNiP and SanPiN. GOST refers to a set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent States (CIS). SNiP means Technical Standards, a set of rules that specify the minimum standards for constructed objects such as buildings and nonbuilding structures. SanPiN are sanitary rules and norms (standards).



12.2 Annex II: Comparison of Tajik and International Environmental, Health and Safety Standards

Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
Topic: Emissions of Ozone Depleting Substances			
In Tajikistan standards on PCBs could not be discovered, neither clear regulations of handling, disposal and emergency regulations on PCB and Persistent Organic Pollutants (POPs), even though Tajikistan has signed the Stockholm Convention in May 2002, ratified in February 2007, and the National Implementation Plan has been transmitted in November 2007 and an inventory of POPs and PCB has been established..	No relevant numeric standard (<i>Although 'no new systems or processes should be installed using CFCs, halons, 1,1,1-trichloroethane, carbon tetrachloride, methyl bromide or HBFCs).</i>	There will be no utilisation of ozone depleting substances (halons, PCBs, CFCs, HCFCs).	Good practice
Topic: GHG emissions			
No relevant numeric standard.	GHG will be quantified and reported annually if >25,000 tonnes CO ₂ equivalent per year are expected (as per IFC PS3, 2012)	GHG will be quantified and reported annually if >25,000 tonnes CO ₂ equivalent per year are expected (as per IFC PS3, 2012)	Most relevant
Topic: ambient air			
(unit mg/m ³) PM 0.15 NO 0.06 NO ₂ 0.04 SO ₂ 0.05 Ammonia 0.06 Benzopyrene 0.1 Benzene 0.1 Acetone 0.35 Petrol 1.5 V2O5 0.002 Vinyl acetate 0.15 HCl 0.2 HF 0.005 Fe ₂ O ₃ 0.04 HNO ₃ 0.4 H ₂ SO ₄ 0.1	Where set, national air quality standards apply. If no national standards are set then apply WHO standards WHO guidelines, unit µg/m ³ : PM _{2.5} 10 (1 yr) PM _{2.5} 25 (24 h) PM ₁₀ 20 (1 yr) PM ₁₀ 50 (24 h) Ozone 100 (8 h) NO ₂ 40 (1 yr) NO ₂ 200 (1 hr) SO ₂ 20 (24 h) SO ₂ 500 (10 min)	mg/m ³ : PM 0.15 NO 0.06 NO ₂ 0.04 SO ₂ 0.05 CO 3.00 Ammonia 0.06 Benzopyrene 0.1 Benzene 0.1 Acetone 0.35 Petrol 1.5 V2O5 0.002 Vinyl acetate 0.15 HCl 0.2 HF 0.005 Fe ₂ O ₃ 0.04 HNO ₃ 0.4	Tajikistan standards supplemented by WHO standards where needed to achieve a more comprehensive requirement.



Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
Xylol 0.2 Manganese and its oxides 0.001 Copper oxides 0.002 Magnesia 0.05 Nickel oxide 0.001 Inorganic dust (SiO ₂ 70 %) 0.05 SiO ₂ = 70 % - 20 % 0.1 SiO ₂ is less than 20 % 0.15 Lead and its compounds 0.0003 Lead sulfur 0.001 Hydrogen sulfide, H ₂ S 0.008 Turpentine 1 Ethyl alcohol (ethanol) 5.0 Butyl alcohol (butanol) 0.1 Propane alcohol (propanol) 0.3 Methyl alcohol (methanol) 0.5 Styrene 0.003 Soot 0.05 CO 3.0 Phenol 0.01 Formaldehyde 0.003 Fluoride (HF, SiF ₄) 0/05 Freon (all brands) 10 Chromium trioxide 0.0015 Chlorine 0.03 ZnO 0.05 Ethylene oxide 0.03 Magnesia 0.05 Nickel oxide 0.001 Inorganic dust (SiO ₂ 70 %) 0.05 SiO ₂ = 70 % - 20 % 0.1 SiO ₂ is less than 20 % 0.15 Lead and its compounds 0.0003		H ₂ SO ₄ 0.1 Xylol 0.2 Manganese and its oxides 0.001 Copper oxides 0.002 Magnesia 0.05 Nickel oxide 0.001 Inorganic dust (SiO ₂ 70 %) 0.05 SiO ₂ = 70 % - 20 % 0.1 SiO ₂ is less than 20 % 0.15 Lead and its compounds 0.0003 Lead sulfur 0.001 Hydrogen sulfide, H ₂ S 0.008 Turpentine 1 Ethyl alcohol (ethanol) 5.0 Butyl alcohol (butanol) 0.1 Propane alcohol (propanol) 0.3 Methyl alcohol (methanol) 0.5 Styrene 0.003 Soot 0.05 Phenol 0.01 Formaldehyde 0.003 Fluoride (HF, SiF ₄) 0/05 Freon (all brands) 10 Chromium trioxide 0.0015 Chlorine 0.03 ZnO 0.05 Ethylene oxide 0.03	



Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
Lead sulfur 0.001 Hydrogen sulfide, H ₂ S 0.008 Turpentine 1 Ethyl alcohol (ethanol) 5.0 Butyl alcohol (butanol) 0.1 Propane alcohol (propanol) 0.3 Methyl alcohol (methanol) 0.5 Styrene 0.003 Soot 0.05 Phenol 0.01 Formaldehyde 0.003 Fluoride (HF, SiF ₄) 0/05 Freon (all brands) 10 Chromium trioxide 0.0015 Chlorine 0.03 ZnO 0.05			
Topic: discharge to surface waters			
Requirements to water quality in fishery water bodies pH 6.5-8.5 Aluminium (Al) 0.04 Iron (Fe) 0.1 Cadmium (Cd) 0.005 Copper (Cu) 0.001 Nickel (Ni) 0.01 Lead (Pb) 0.006 Zinc (Zn) 0.01 Chromium (Cr+6) 0.02 Chromium (Cr3+) 0.07 Oil and petrochemicals 0.05 Arsenic (As) 0.05 Calcium (Ca) 180 Silicon (SiO ₃ 2-) 1.0	Temperature of wastewater prior to discharge does not result in an increase greater than 3°C of ambient temperature at the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use and assimilative capacity among other considerations. For treated sanitary wastewater: pH 6-9 BOD 30 COD 125 Total nitrogen 10 Total Phosphorus 2 Oil and grease 10 TSS 50 Total coliform bacteria 400/100ml	Temperature of wastewater prior to discharge does not result in an increase greater than 3°C of ambient temperature at the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use and assimilative capacity among other considerations. For treated sanitary wastewater: pH 6-9 BOD 30 COD 125 Total nitrogen 10 Total Phosphorus 2 Oil and grease 10 TSS 50 Total coliform bacteria 400/100ml Silicon (SiO ₃ ²⁻) 1.0	Tajikstan standards supplemented by IFC standards where needed to achieve a more comprehensive requirement.
Topic: waste treatment and disposal			



Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
No numeric standards stated in the source documents. All waste produced must be handled and disposed of in accordance with national law on waste of production and consumption.	No relevant numeric standard.	All waste produced must be handled and disposed of in accordance with national law on waste of production and consumption.	
Topic: secondary containment of liquid waste			
No numeric standards stated in Tajik legislation.	Secondary containment (SC) is included wherever liquid wastes are stored in volumes greater than 220 litres. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater).	Secondary containment (SC) is included wherever liquid wastes are stored in volumes greater than 220 litres. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater).	IFC requirement is more stringent.
Topic: noise limits at night time			
Noise emissions at the night time (23:00-07:00) should not exceed the following levels (SanPin 2.2.4/2.1.8.562-96): <ul style="list-style-type: none"> • Inside residential and public buildings: <ul style="list-style-type: none"> – Hospital and health centers wards, and operating rooms: 25 dB(A); – Residential rooms in apartments, rest houses, boarding houses, houses for the elderly and disabled, sleeping rooms in kindergartens, and residential schools: 30 dB(A); – Rooms in hotels and hostels: 35 dB(A); • In residential and other areas: <ul style="list-style-type: none"> – Recreational areas immediately adjoining hospital buildings and health centres: 35 dB(A) – Areas immediately adjoining residential buildings, polyclinics, dispensary, rest houses, homes for the elderly and disabled, kindergartens, schools and other educational institutions, libraries; 45 dB(A); – Areas immediately adjoining hotel and dormitory buildings: 50 dB (A) 	Noise emissions should not exceed the following levels or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site: Outdoor: Residential; institutional, educational: Night time (22:00-07:00): 45 dB(A) Industrial, commercial: Night time (22:00-07:00): 70 dB(A)	Tajik standards apply with night time defined as 22:00 – 07:00 in line with IFC EHS General Guidelines. Exception 1: IFC standard will prevail from 22.00 to 23.00 Exception 2: areas adjoining hotels and dorms where IFC standard is more stringent 45 dB (A)	See left cell please.
Topic: noise limits at day time			



Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
<p>Emissions at the day time (07:00-23.00) should not exceed the following levels (SanPin 2.2.4/2.1.8.562-96):</p> <ul style="list-style-type: none"> • Inside residential and public buildings: <ul style="list-style-type: none"> – Hospital and health centers wards, and operating rooms: 35 dB(A); – Consultation rooms of polyclinics, ambulant clinics, dispensers, hospitals, and sanatoria 35 dB(A). – Classrooms, teacher's common rooms, other educational venues such as conference halls and public reading rooms: 40 dB(A). – Residential rooms in apartments, rest houses, boarding houses, houses for the elderly and disabled, sleeping rooms in kindergartens, and residential schools: 40 dB(A); – Rooms in hotels and hostels: 45 dB(A); – Halls of cafes, restaurants, eating rooms: 55 dB(A); – Shops trade halls, passenger halls in airports and stations, consumer services centres: 60 dB(A); • In residential and other areas: <ul style="list-style-type: none"> – Recreational areas immediately adjoining hospital buildings and health centres: 45 dB(A) – Areas immediately adjoining residential buildings, polyclinics, dispensary, rest houses, homes for the elderly and disabled, kindergartens, schools and other educational institutions, libraries: 55 dB(A); – Areas immediately adjoining hotel and dormitory buildings: 60 dB (A) – Rest areas at the territory of hospitals and sanatoria 35 dB (A) – Recreation areas at the territory of micro-districts, and residential areas, rest houses, houses for the elderly and disabled, children's playgrounds in kindergartens, schools and other educational institutions: 45 dB (A) 	<p>Noise emissions should not exceed the following levels or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site:</p> <p>Outdoor</p> <p>Residential.; institutional, educational.: Daytime (07:00-22:00): 55 dB(A) Industrial, commercial: Night time (22:00-07:00): 70 dB(A).</p>	<p>Tajik standards with daytime defined as 07:00 – 22:00 in line with IFC EHS General guidelines.</p> <p>Exception: areas adjoining hotels and dorms where IFC standard is more stringent 55 dB (A).</p>	<p>See left cell please.</p>
Electric and Magnetic Fields (50 Hz) for the Public and at Working Places			



Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety Guidelines	Adopted standard for the project, rationale	Rationale
<p>In countries of the former USSR a formula is used to calculate the exposure time of workers that is:</p> $T[\text{hrs}] = 50/E - 2$ <p>E = electric field [kV/m]</p>		<p>Limit values according to the European Directive 2004/40/EC. Limit on exposure of workers of 10 kV/m and 500 μT.</p> <p>At the moment, it is internationally agreed that for the public and for permanent exposure, the electric field must not exceed 5 kV/m and the magnetic flux density must not exceed 100 μT. This means, outside the fence of substations 5 kV/m and 100 μT respectively is the limit. The same is valid for settlements.</p>	Best practice.
Topic: drinking water. Please refer to tables in the next pages.			



DRINKING WATER GENERAL ANALYSIS CONTENT AND LIMITS						
Parameter	Units	Tajikistan Standard ⁵⁾	WHO Standard	EU Standard ³⁾	Project Standard ⁸ (mg/l unless stated otherwise)	
Physical Quality						
pH	---	6-9	6–9	6.5-9.5	TS	6-9
Total Dissolved Solids	mg/l	1000	---		TS	1000
Hardness	Mg-eqv/l	7.0	---		TS	7.0
Turbidity	EMF (formazine) or mg/l (caoline)	1.5	---	Acceptable to consumers and no abnormal change	TS	1.5
Inorganic Chemical Quality						
Aluminium (Al)	mg/l	0.5]	---	0.2	EU	0.2
Ammonium ion (NH ₄)	mg/l		---	0.5	EU	0.5
Antimony (Sb)	mg/l	0.05	0.02	0.005	EU	0.005
Arsenic (As total)	mg/l	0.05	0.01	0.01	EU	0.01
Barium (Ba)	mg/l		0.7	---	TS	0.7
Beryllium (Be)	mg/l		---	---	TS	
Boron (B)	mg/l		0.5	1.0	WHO	0.5
Cadmium (Cd)	mg/l	0.001	0.003	0.005	TS	0.001
Chloride ion (Cl ⁻)	mg/l	350	---	250	EU	250
Chlorine (Cl)	mg/l	0.3-0.5 (free) 0.8-1.2 (bounded)	5	---	TS	0.3-0.5 (free) 0.8-1.2 (bounded)
Chromium (Cr ⁺⁶) (Cr ⁺³)	mg/l	0.05 0.5	0.05	0.05	TS	0.05 0.5
Copper (Cu)	mg/l	1.0	2	2.0	TS	1.0
Cyanide (CN)	mg/l		0.07	0.05	EU	0.05



DRINKING WATER GENERAL ANALYSIS CONTENT AND LIMITS						
Parameter	Units	Tajikistan Standard ⁵⁾	WHO Standard	EU Standard ³⁾	Project Standard ⁶ (mg/l unless stated otherwise)	
Fluoride ion (F ⁻)	mg/l		1.5	1.5	EU	1.5
Hydrogen Sulphide (H ₂ S)	mg/l		---	---	TS	
Iron (Fe)	mg/l	0.3	---	0.2	EU	0.2
Lead (Pb total)	mg/l	0.03	0.02	0.01	EU	0.01
Manganese (Mn)	mg/l		0.4	0.05	EU	0.05
Mercury (Hg)	mg/l		0.001	0.001	EU	0.001
Molybdenum (Mo)	mg/l		0.07	---	WHO	0.07
Nickel (Ni)	mg/l	0.1	0.02	0.02	EU	0.02
Nitrate ion (as NO ₃ ⁻)	mg/l	45	50	50	TS	45
Nitrite ion (as NO ₂ ⁻)	mg/l		3 or 0.2	---	TS	3.0
Phosphate ion (PO ₄ ²⁺)	mg/l	3.5	---	---	TS	3.5
Selenium (Se)	mg/l		0.01	0.01	TS	0.01
Silicon (Si)	mg/l	10	----	----	TS	10
Silver (Ag)	mg/l		---	---	TS	0.05
Sodium (Na)	mg/l		---	200	TS	200
Sulphate ion (SO ₄ ²⁺)	mg/l	500	---	250	EU	250
Strontium (Sr)	mg/l		---	---	TS	---
Uranium (U)	mg/l		0.015	---	WHO	0.015
Vinyl Chloride (C ₂ H ₃ Cl / H ₂ C)	mg/l		0.0003	0.0005	WHO	0.0003
Zinc (Zn)	mg/l	5.0	---	---		5.0
Other quality parameters						
Petrochemicals	mg/l	0.1		0.1-5	TS	0.1
Sufactants (anionic)	mg/l	0.5		----	TS	0.5
COD	mg/l	----		150-400	EU	150-400
Permanganate oxizability	mg/l	5		----	TS	5
Specific electrical conductivity	2x10 ⁻³			----	TS	2x10 ⁻³



Notes:

1. This table shows upper limit values, unless indicated otherwise as a range or lower limit value.
2. This table does not include organic chemicals, detergents, pesticides or disinfection by-products. Refer to WHO Guidelines for Drinking Water Quality for Chemical Lists and Guideline Values, the most stringent of which will also form the project standard.
3. EU Council Directive 98/83/EC of 3rd November 1998
4. EU Standard for radioactivity expressed as Tritium 100 Bq/l with a total indicative dose of 0.1 mSv/year
5. SanPin 2.1.4.1074-01.
6. **) – for climatic region III



12.3 Annex III: GPS location of the existing 500 kV line from Uzbekistan

Existing line 500 kv from Uzbekistan (Syrdarinskaya)						
Tower #	Tower type	Line angle	Ahead Span	Latitude (GPS)	Longitude (GPS)	Altitude
1	ST *	0	668	40° 7'28.00"C	69°13'17.55"B	487
2	ST *	0	404	40° 7'14.39"C	69°13'39.62"B	498
3	ST *	0	388	40° 7'4.83"C	69°13'51.19"B	522
4	ST *	0	249	40° 6'55.59"C	69°14'2.38"B	523
5	ST *	0	307	40° 6'50.03"C	69°14'9.33"B	524
	AT *	Right 8° 12'	301	40° 6'42.72"C	69°14'18.14"B	521
6	ST *	0	223	40° 6'34.72"C	69°14'25.31"B	525
7	ST *	0	-	40° 6'28.93"C	69°14'30.57"B	515
ST* = Suspension tower 500 kV AT*= Angle tower						



12.4 Annex IV: Minutes of Public Consultation Meetings

12.4.1 Public Consultation at Lolazor Jamoat, Devashtich District

Date: 29.09.2018, Saturday **Time:** 9:30 AM to 12.30 PM

Venue: Polevoy stan (place used for the farmers during the agricultural season) nearby Substation «SUGHD-500», Jamoat Lolazor, Devashtich district, Sughd Province.

Participants:

Local authorities and land owners potentially affected by the construction of the new transmission line towers

- Rakhmonov Temur, Head of Jamoat Lolazor
- Unusov Hasan, Land committee representative, Devashtich District
- Rajabaliev E, Environmental Specialist of Devashtich District
- Umarov Abdumad, farmer
- Abduraupov A, farmer
- Boymurodov Mirzo, Kishgir Farm
- Quronboev O, Quronboev Farm

AF-Mercados EMI (the Consultant)

- Parviz Khakimov, Social & Environmental Specialist
- Timur Usmanov, Power Transmission Specialist

Other relevant stakeholders that were directly invited but could not attend were: Sughd Substation management and staff, NGOs with activity in the area, Aarhus-center Khujand, responsible of energy of Devashtich District.

The reason why women did not attend the public consultation is believed to be the high burden of the household chores.

Agenda

- Opening remarks
 - Introduction to the project
 - Introduction to the ADB social and environmental protection policy
 - Introduction to the Grievance Redress Mechanism
 - Questions & Answers Session
-

I. OPENING REMARKS

Parviz Khakimov and Timur Usmanov welcomed the participants of the Public Consultation and expressed their appreciation for attending, nonetheless their busy schedule. They also expressed their gratitude to the PMU that provided an



official letter to the local government of Devachtich District to support the PC team during the field visit and to ensure the participation of the local population.

II. INTRODUCTION TO THE PROJECT

Technical Aspects

Then, Timur Usmanov, explained to the participants the Project and the chosen route option. The importance of the Project that will improve the energy security of both countries was explained. It was explained that one of the activities of the Project is the connection of the existing Uzbekistan 500 kV transmission line to the Sughd Substation which is located in their district, Jamoat Lolazor. In accordance with this project, the future contractor will install a few transmission line towers and dismantle some others, as well as doing some upgrades in the equipment of the substation. The project is funded by the ADB (Asian Development Bank).

Social and Environmental Aspects and Policy Framework

The second part of the presentation was delivered by Parviz Khakimov who explained to the audience the social and environmental aspects of the Project during the construction and operation phases. The potential effects to the local population and the environment were discussed.

First, he explained to the participants the Policy Framework of the Project in line with local laws, the Constitution of the Republic of Tajikistan and ADB's safeguard policy. As environmental and social safeguards are a cornerstone of ADB's support to inclusive economic growth and environmentally sustainable growth, ADB's safeguard policy aims to manage and reduce the environmental and social risks in development projects and minimize and mitigate, if not avoid, adverse project impacts on people and the environment and maximise the positive ones. The Safeguards Policy applies to all ADB-supported projects after 20 January 2010. ADB works with borrowers to put policy principles and requirements into practice through project review and supervision, and capacity development support. The Safeguards Policy also provides a platform for participation by affected people and other stakeholders in project design and implementation. The suggested mitigation measures to the foreseen impacts were discussed.

III. GRIEVANCE REDRESS MECHANISM

The steps to address the complaints of the local population were explained to the meeting participants in line with the drafted Grievance Redress Mechanism (GRM). During the explanation of the GRM he accentuated the attention of the audience on the necessity of the creation of the Grievance Redress Committee



that will be functioning within the Jamoat starting from September 29, 2018 (that very day).

The procedure for addressing complaints is:

- First step: reporting the complaint in written or verbal form to the Project Grievance Redress Committee. A Complaints Registration Book will be kept available at the Jamoat.
- Second Step: If the Project Level Grievance Redress Committee is not able to resolve the grievance within a 14-day period, the complaints should be presented to the Barki Tojik Rayon representative.
- Third Step: If the Barki Tojik Rayon is not able to resolve the grievance within a 14-day period, the complaints should be presented to the Barki Tojik PMU at the central level, Dushanbe.
- The affected people can submit their case to the appropriate court of law at any point of the process if they want to. Anyway, the affected people are suggested to follow the instances above.
- The Grievance Mechanism will be active from the preparation phase until 1 year after the conclusion of the works.

The local committee for addressing complaints of population (Project Grievance Redress Committee) was established as follows:

- Timur Rahmonov, head of Lolazor Jamoat, confirmed;
- Sobir Rahmonov, head of association of dehkan farms, tentative;
- Rajabaliev E, Environmental Specialist of Devashtich District, confirmed;
- Najmiddin Shermatov, most respectful person in Jamoat Lolazor, tentative;
- Isroiljon Ismatulloev, head of committee of Lolazor Jamoat, tentative;
- Hasanboy Unusov, representative of local land committee in Jamoat Lolazor, tentative.

IV. QUESTIONS AND ANSWERS

Then, the floor was open for questions.

Question 1: When is the start of the construction phase expected and how will it take place?

Answer: At the moment the feasibility study and tender documents are being developed, then the bidding process will start most probably by the beginning of the next year (2019). In any case, local residents will be notified on the date of project start through the local media and an organized meeting.

Question 2: What is the procedure for the assessment of the possible damage?



Answer: In sum, no households will be affected, and no resettlement is expected. The land is non-productive. Only grass cultivation for cattle was happening during the Soviet Era once a year. Thus, there is no entitlement for compensation in line with the Land Code of the Republic of Tajikistan.

However, short blackout 5 times, 5 hours long each are expected, and local population will be informed ahead and partial to total power supply from other substations is expected.

Question 3: We understand the importance of the Project for Tajikistan and Uzbekistan to improve the relationship between the two neighbouring countries, and it is also beneficial for us, though some possible negative impacts will happen on the land used by farmers and any leakage of oil in pre- and construction phases will negatively affect the cattle health as the land after the collection of wheat and maize is used as pasture to feed own cattle. How will this issue be addressed by the Project?

Answer: The key mitigations measures have been explained and they are mentioned in the Initial Environmental Examination and the Social Safeguards Due Diligence Reports. In line with these documents, affected people should get compensated if the damaged is proved.

Question/request 4: As we said before, we fully support the Project implementation. At the same time, we are kindly asking for your support in the form of building a new health centre as the existing one is in unsatisfactory condition and by building this infrastructure the Project also would contribute to the improvement of the health and the welfare of the local community. From our side, for building the proposed new health centre, we are ready to provide workforce free of charge and deal with managing all the documents, including the land use certificate.

Answer: Your request will be passed to Barki Tojik PMU and the ADB.

Question 5: What will be the procedure for compensation for using the land that belongs to us during the construction phase and how it will be compensated? As you explained during your presentation all land right related issues will be solved within the Land Code of Tajikistan. But in the past, when the Sughd Substation-500kV was built and started operating we lost our right to use the land on a buffer of 500 meters due to security reasons. We understand these reasons, but we still have to pay tax for each hectare of land as per certificate since 2012 even when we cannot use it.

For instance, this year we are paying a land tax of TJS 189 per hectare. We need support to solve this issue. Our understanding is that land use right should be passed to Sughd Substation as we do not use the land anymore. That land that we cannot use anymore needs to be compensated to us by providing us with new land from the reserves of the Devachtich district. We understand that this issue should be addressed by the local government but an official letter from Barqi Tojik to the Local Government will help to solve this issue asap and



allow us to minimize our expenses. In addition to the Land Tax, we are pay per certificate a social tax for 2 person each of TJS 70 for seven months each year. In addition, per each hectare of land we pay once a year TJS 30 on taxes for the use of tractors. As well, the cost of the issuance of new land certificates and other related documents needs to be solved, as it is costly for us. Please convey all these issues to the relevant bodies.

Answer: Your requests and concerns will be passed to the PMU of Barki Tojik.

V. SOCIO-ECONOMIC SURVEY

In addition to the conducted Public Consultation, per request of Faizullo Kudratov, local Social Consultant of the ADB, a questionnaire on the socio-economic situation of the households was answered by the attending farmers.

Other conclusions

The head of the Jamoat promised to send copies of the certificates of the land use rights holders around SUGHD-500.

Attachments:

1. Official letter of the Barki Tojik PMU to the local government of Devashtich district announcing the public consultation and asking for their support.
2. List of participants.
3. Pictures.



Attachment 1: Official letter of the Barki Tojik PMU to the local government of Devashtich district announcing the public consultation and asking for their support.

ҲУКУМАТИ
ҶУМҲУРИИ ТОҶИКИСТОН
МУАССИСАИ ДАВЛАТИИ
«МАРКАЗИ ИДОРАИ ЛОИҲАҶОИ
БАҲШИ ЭЛЕКТРОЭНЕРГЕТИКА»



ПРАВИТЕЛЬСТВО
РЕСПУБЛИКИ ТАДЖИКИСТАН
ГОСУДАРСТВЕННОЕ УЧРЕЖДЕНИЕ
«ЦЕНТР УПРАВЛЕНИЯ ПРОЕКТАМИ
ЭЛЕКТРОЭНЕРГЕТИЧЕСКОГО СЕКТОРА»

GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN
STATE ESTABLISHMENT
“PROJECT MANAGEMENT UNIT FOR ELECTRO – ENERGY SECTOR”

734042 ш. Душанбе к. Кахаров – 39А телефон: 222-25-58; Факс: 222-25-56; E-mail: pmu_tj@mail.ru

18.09.18 № 16/2015-1901

ба: _____ аз _____

Мақомоти иҷроияи ҳокимияти
давлатии ноҳияи Деваштиҷ

Муассисаи давлатии «Маркази идораи лоиҳаҳои баҳши электроэнергетика» ба маълумоти Шумо мерасонад, ки дар доираи татбиқи Лоиҳаи «Насби таҷҳизоти худкори зиддисадамавӣ барои пайваستшавии низоми энергетикӣ кишвар ба низоми ягонаи энергетикӣ Осиёи Марказӣ» дар асоси Созишномаи Грантӣ байни Ҳукумати Ҷумҳурии Тоҷикистон ва Бонки Рушди Осиё амалӣ шуда истодааст, чиҳати пайвасти хатҳои интиқоли барқӣ 500кВ-и Ҷумҳурии Ёзбекистон ба зеристгоҳи «Сугд-500» дар ҳудуди ноҳияи Деваштиҷ яқчанд пояи хати интиқоли барқ насб карда мешаванд.

Бояд қайд намуд, ки тибки талаботи Бонки Рушди Осиё пеш аз оғоз намудани корҳо аз ҷониби ширкати мушовирӣ - Mercados Energy Markets International S.A. (Испания) арзёбии таъсири экологӣ ва иҷтимоӣ гузаронида шуда, вобаста ба ин воҳӯриҳои намояндагони ширкати мушовирӣ бо намояндагон аз шуъбаи энергетика ва ҳифзи муҳити зисти мақомоти иҷроияи ҳокимияти давлатии ноҳия дар санаи 29 сентябри соли 2018 дар бинои маъмурии ҷамоати деҳоти Лолазор ба нақша гирифта шудааст.

Аз ин лиҳоз, аз Шумо эҳтиромона хоҳиш менамоем, ки чиҳати иштироки мутахассисони дар боло зикргардида дар воҳӯрии машваратӣ, мусоидат намоед.

Директори иҷроия

Н. Назарзода



Attachment 2: Attendance List.

ATTENDANCE LIST

ATTENDANCE LIST				
Project: <u>Tajikistan-Uzbekistan project</u>				
Location: <u>Sugd region, Dushanbe district, Lobzor</u>				
Subject/Agenda: <u>Public consultations</u>				
Date: <u>29.09.2018</u> Participants: Total _____ Males _____ Females _____				
No	Name and Surname	Community/ Company	Position	Signature
1	Parviz Khakimov	AF Mercados	Social and Env-L expert	
2	Timur Usurachov	AF Mercados	IT Engineer	
3	Timur Rohinshov	Jamot	Head of Jam	
4	Rahmonov Sobir	Lobzor	Deputy	
5	Umara Abdum	F/Bogdanu		
6	Abdurajabov A			
7	Rajabaliy E.	Representative	Specialist	
8		of Environmental	92-464-52-68	
9	Kunusov Hasan	Land committee	92-904-43-81	
10		representative		
11	Bogmurada Mirzo	Kirgiz Farm	92-830-10-99	
12	Qarantobir D.	Kirgiz Farm	92-702-00-00	
13				
14				
15				
16				
17				
18				
19				
20				



Attachment 3: Pictures Taken at the Public Consultation Meeting.



Picture: Notification on the public consultation set at the front façade of the Jamoat, on the left hand side of the window.





Picture: Discussion during the public consultation.



Picture: Discussion during the public consultation (2).



Picture: Farmers filling in the socio-economic survey.



12.4.2 Public Consultation at Karatog Jamoat, Tursun-zade District

Date: 15.10.2018, Monday **Time:** 10:00 AM to 12.00 PM

Venue: Meeting room of Jamoat Karatog, Tursunzade District, Province of Republican Subordination.

Participants:

- Yusupov Ahtam, Head of Jamoat Karatog
- Kholov M, Land committee representative, Tursunzade District
- Khasanova M, Environmental Specialist of Tursunzade District
- Toshev A, Representative of Barki Torki Branch in Tursunzade District
- Farmers
- PMUES (Project Management Unit)
 - Rahmatzoda Zafar, Deputy Director
 - Karimov Sirodjhidin, Head of Social and Environmental Department
- AF-Mercados EMI (the Consultant)
 - Timur Usmanov, Power Transmission Specialist

39 people in total attended the meeting. Complete list of participants can be found in the attachment.

Other relevant stakeholders that were directly invited but could not attend were: NGOs with activity in the area, Aarhus-center Dushanbe, responsible of energy of Tursunzade District.

Agenda

- Opening remarks
 - Introduction to the project
 - Introduction to the ADB social and environmental protection policy
 - Introduction to the Grievance Redress Mechanism
 - Questions & Answers Session
-

I. OPENING REMARKS

Rahmatzoda Zafar together with Karimov Sirodjhidin and Timur Usmanov welcomed the participants and expressed their appreciation for attending, nonetheless their busy schedule. They also expressed their gratitude to the PMU that provided an official letter to the local government of Tursunzade District to support the PC team and to ensure the participation of the local population.



II. INTRODUCTION TO THE PROJECT

Technical Aspects

Then, Timur Usmanov, explained to the participants the Project and the scope of works that are planned to be implement inside Regar Substation. The importance of the Project that will improve the energy security of both countries was explained. The project is funded by the ADB (Asian Development Bank).

Social and Environmental Aspects and Policy Framework

The second part of the presentation was delivered by Mr. Karimov together with Timur Usmanov who explained to the audience the social and environmental aspects of the Project during the construction and operation phases. The potential effects to the local population and the environment were discussed.

First, it was explained to the participants the Policy Framework of the Project in line with local laws, the Constitution of the Republic of Tajikistan and ADB's safeguard policy. As environmental and social safeguards are a cornerstone of ADB's support to inclusive economic growth and environmentally sustainable growth, ADB's safeguard policy aims to manage and reduce the environmental and social risks in development projects and minimize and mitigate, if not avoid, adverse project impacts on people and the environment and maximise the positive ones. ADB works with borrowers to put policy principles and requirements into practice through project review and supervision, and capacity development support. The Safeguards Policy also provides a platform for participation by affected people and other stakeholders in project design and implementation. The suggested mitigation measures to the foreseen impacts were discussed.

III. GRIEVANCE REDRESS MECHANISM

The steps to address the complaints of the local population were explained to the meeting participants in line with the drafted Grievance Redress Mechanism (GRM).

The procedure for addressing complaints is:

- First step: reporting the complaint in written or verbal form to the Project Grievance Redress Committee. A Complaints Registration Book will be kept available at the Jamoat.
- Second Step: If the Project Level Grievance Redress Committee is not able to resolve the grievance within a 14-day period, the complaints should be presented to the Barki Tojik Rayon representative.
- Third Step: If the Barki Tojik Rayon is not able to resolve the grievance within a 14-day period, the complaints should be presented to the Barki Tojik PMU at the central level, Dushanbe.



- The affected people can submit their case to the appropriate court of law at any point of the process if they want to. Anyway, the affected people are suggested to follow the instances above.
- The Grievance Mechanism will be active from the preparation phase until 1 year after the conclusion of the works.

The local committee for addressing complaints of population (Project Grievance Redress Committee) was established as follows:

- Yusupov Ahtam, Head of Jamoat Karatog
- Kholov M, Land committee representative, Tursunzade District
- Khasanova M, Environmental Specialist of Tursunzade District
- Toshev A, Representative of BT Branch in Tursunzade District

IV. QUESTIONS AND ANSWERS

Then, the floor was open for questions.

Question 1: When is the start of the construction phase expected and how will it take place?

Answer: At the moment the feasibility study and tender documents are being developed, then the bidding process will start most probably by the beginning of the next year (2019). In any case, local residents will be notified on the date of project start through the local media and an organized meeting.

Question 2: What is the procedure for the assessment of the possible damage?

Answer: The expected scope of works are going to take place inside Regar Substation, in the existing switchyards.

As well, short blackouts are expected to happen 2-3 times, 5 hours long each. The local population will be informed ahead and partial to total power supply from other substations is expected.

Question 3: We understand the importance of the Project for Tajikistan and Uzbekistan to improve the relationship between the two neighbouring countries, and it is also beneficial for us, though some possible negative impacts will happen on the land used by farmers and any leakage of oil in pre- and construction phases will negatively affect the cattle health as the land after the collection of wheat and maize is used as pasture to feed own cattle. How will this issue be addressed by the Project?

Answer: The key mitigations measures have been explained and they are mentioned in the Initial Environmental Examination and the Social Safeguards Due Diligence Reports. In line with these documents, affected people should get compensated if the damaged is proved.

Question/request 4: In the scope of this project, how many transmission lines are planned to be built and how long will it take their construction?



Answer: The project does not provide for the construction of any transmission lines as the exchange of electricity between the energy systems of Tajikistan and Uzbekistan will occur along existing lines that have already been built more than 20 years ago. Only a 500kV Uzbekistan transmission line will have to be open for it to go through Sghud Substation, meaning that 6 new towers and around 1,4km of conductors will have to be installed.

Question 5: At the moment, there is a limited shortage in the supply of electricity in the villages of the Jamoat. Is a shutdown causing it?

Answer: Your requests and concerns will be passed to the PMU of Barki Tojik.

V. SOCIO-ECONOMIC SURVEY

In addition to the conducted Public Consultation, per request of Faizullo Kudratov, local Social Consultant of the ADB, a questionnaire on the socio-economic situation of the households was answered by the attending farmers.

Attachments:

1. Official letter of the Barki Tojik PMU to the local government of Tursunzade district announcing the public consultation and asking for their support.
2. List of participants.
3. Pictures.



Attachment 1: Official letter of the Barki Tojik PMU to the local government of Tursun-zade district announcing the public consultation and asking for their support.

ҲУКУМАТИ
ҶУМҲУРИИ ТОҶИКИСТОН
МУАССИСАИ ДАВЛАТИИ
«МАРКАЗИ ИДРОАИ ЛОИҲАҲОИ
БАҲШИ ЭЛЕКТРОЭНЕРГЕТИКА»



ПРАВИТЕЛЬСТВО
РЕСПУБЛИКИ ТАДЖИКИСТАН
ГОСУДАРСТВЕННОЕ УЧРЕЖДЕНИЕ
«ЦЕНТР УПРАВЛЕНИЯ ПРОЕКТАМИ
ЭЛЕКТРОЭНЕРГЕТИЧЕСКОГО СЕКТОРА»

GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN
STATE ESTABLISHMENT
"PROJECT MANAGEMENT UNIT FOR ELECTRO – ENERGY SECTOR"

734042 ш. Душанбе к. Кахаров – 39А телефон: 222-25-58; Факс: 222-25-56; E-mail: pmu_tj@mail.ru

12.10.18 № 16/2239-2044

Ба: _____ аз _____

Мақомоти иҷроияи ҳокимияти
давлатии шаҳри Турсунзода

Муассисаи давлатии «Маркази идораи лоиҳаҳои баҳши электроэнергетика» ба маълумоти Шумо мерасонад, ки Лоиҳаи «Насби таҷхизоти худкори зиддисадамавӣ барои пайвастишани низомии энергетикӣ кишвар ба низомии ягонаи энергетикӣ Осиёи Марказӣ» дар асоси Созишномаи Грантӣ байни Ҳукумати Ҷумҳурии Тоҷикистон ва Бонки Рушди Осиё, ки айни замон таҳия карда шуда истодааст, амалӣ карда мешавад. Чихати пайвасти хатҳои интиқоли барқи 500 кВ-и байни Ҷумҳурии Тоҷикистон ва Ҷумҳурии Ёзбекистон дар зеристгоҳи «Регар-500» ва хатҳои интиқоли барқи мазкур таҷхизотҳои иловагӣ васлу насб карда мешаванд.

Бояд қайд намуд, ки тибқи талаботи Бонки Рушди Осиё пеш аз оғоз намудани корҳо аз ҷониби ширкати мушовирӣ - Mercados Energy Markets International S.A. (Испания) арзёбии таъсири экологӣ ва иҷтимоӣ гузаронида шуда, вобаста ба ин воҳурии намоёндогони ширкати мушовирӣ бо намоёндогон аз шӯбаи энергетика ва ҳифзи муҳити зисти мақомоти иҷроияи ҳокимияти давлатии шаҳри Турсунзода дар санаи 22 сентябри соли 2018 дар бинои маъмурии ҷамоати деҳоти Қаратог ба нақша гирифта шуда буд. Мутаассифона, бо баъзе сабабҳо воҳурии муҳими ба нақша гирифта шуда баргузор нагардид.

Мавриди зикр аст, ки дар сурати саривақт омода нашудани ҳуҷҷатҳои зарурӣ, Бонки Рушди Осиё метавонад, Гранти бо ин мақсад ҷудошавандаро бекор созад, ки ин мувофиқи мақсад намебошад.

Аз ин лиҳоз, аз Шумо иловатан эҳтиромона хоҳиш менамоем, ки чихати дар санаи 15 октябри соли 2015 таъкил намудани воҳурии дар боло зикр гардида ва иштироки намоёндогони шаҳри Турсунзода дар он, мусоидат намоед.

Директори иҷроия

Н. Назарзода



Attachment 2: Attendance List.

ATTENDANCE LIST #1

ATTENDANCE LIST				
Project: <u>Tajikistan - Uzbekistan Interconnection project</u>				
Location: <u>Tursunzade district, Jamoat Kuraloo</u>				
Subject/Agenda: <u>Public consultation for Land use</u>				
Date: <u>15.10.2018</u> Participants: Total _____ Males _____ Females _____				
No	Name and Surname	Community/ Company	Position	Signature
1	Rahmatzoda Z.	PMU-S	Deputy	
2	Karimov S.	PMU-S	Head of Proj	
3	Мухомбатов А.	г. Кудатли-Мухомбатов	р.м.с.	
4	Маманов Т.	HP Mercados	Consultant	
5	Розов С.	г. Кудатли-Мухомбатов	г.м.с.	
6	Тошев Р.	г. Кудатли-Мухомбатов	г.м.с.	
7	Касимов М.	г. Кудатли-Мухомбатов	г.м.с.	
8	Одинов Р.	г. Кудатли-Мухомбатов	г.м.с.	
9	Бобоев Р.	г. Кудатли-Мухомбатов	г.м.с.	
10	Ҳасанов А.	г. Кудатли-Мухомбатов	г.м.с.	
11	Тошқуров А.	г. Кудатли-Мухомбатов	г.м.с.	
12	Норинатов А.	г. Кудатли-Мухомбатов	г.м.с.	
13	Назаров Б.	г. Кудатли-Мухомбатов	г.м.с.	
14	Назаров А.	г. Кудатли-Мухомбатов	г.м.с.	
15	Назаров А.	г. Кудатли-Мухомбатов	г.м.с.	
16	Тошқуров А.	г. Кудатли-Мухомбатов	г.м.с.	
17	Бобоев Р.	г. Кудатли-Мухомбатов	г.м.с.	
18	Бароева Р.	г. Кудатли-Мухомбатов	г.м.с.	
19	Назирова Т.	г. Кудатли-Мухомбатов	г.м.с.	
20				



ATTENDANCE LIST #1

ATTENDANCE LIST				
Project: <u>Tajikistan - Uzbekistan Interconnection Project</u>				
Location: <u>Tursunzade district, Jamoat Karatub</u>				
Subject/Agenda: <u>Public consultation for project</u>				
Date: <u>15.10.2018</u> Participants: Total _____ Males _____ Females _____				
No	Name and Surname	Community/ Company	Position	Signature
1	Пирев К.Б.	Хушнӯз-200	Раис	[Signature]
2	Абдуллоев Навруз			[Signature]
3	Абдуллоев Навруз	Раис		[Signature]
4	Абдуллоев Навруз	Раис		[Signature]
5	Абдуллоев Навруз	Раис		[Signature]
6	Абдуллоев Навруз	Раис		[Signature]
7	Абдуллоев Навруз	Раис		[Signature]
8	Абдуллоев Навруз	Раис		[Signature]
9	Абдуллоев Навруз	Раис		[Signature]
10	Абдуллоев Навруз	Раис		[Signature]
11	Абдуллоев Навруз	Раис		[Signature]
12	Абдуллоев Навруз	Раис		[Signature]
13	Абдуллоев Навруз	Раис		[Signature]
14	Абдуллоев Навруз	Раис		[Signature]
15	Абдуллоев Навруз	Раис		[Signature]
16	Абдуллоев Навруз	Раис		[Signature]
17	Абдуллоев Навруз	Раис		[Signature]
18	Абдуллоев Навруз	Раис		[Signature]
19	Абдуллоев Навруз	Раис		[Signature]
20	Абдуллоев Навруз	Раис		[Signature]

1

Page 2



Attachment 3: Pictures Taken at the Public Consultation Meeting.







AF-Mercados
Reconnection to the Central Asian Power System Project
Initial Environmental Examination, IEE - October 2018



12.5 Annex V: Proposed Handling and Disposal of PCBs

The PCBs waste requiring disposal mainly consist of:

- Waste arising during the manufacturer / use of PCBs - both solids and liquids.
- Dielectric fluid removed from transformers because of degradation and contamination
- Dielectric fluid in scrapped transformers
- Dielectric of scrapped capacitors in manufacture and in redundant equipment
- PCB contaminated materials e.g. scrap capacitors, windings, absorbent material used in cleaning equipment or spills - Imported Waste.

PCBs waste from its major uses

(a) Transformers The adequate disposal of transformers dielectric fluid based on polychlorinated biphenyl (PCB) should be mandatory in order to escape from environmental consequences. With PCB filled transformers are principally used, where the consequence of fire from ignition of the dielectric due to arcing or from an external source would be serious e.g. in ships, basement of buildings and mines. However, the dense fumes, which are evolved when PCBs are subjected to high temperature makes them unacceptable in some situations. The rejected dielectric and scraped transformer contribute the PCB's waste to the environment.

(b) Capacitors The capacitors are used to smooth out the large load fluctuations on industrial power supply systems. The lower chlorinated PCBs are used in large capacitors. Even in small electrical gadgets, the small PCB filled capacitors are fitted particularly in fractional horse power motors used in domestic and light industrial electrical equipment. Typically these contain lower chlorinated PCB, mainly absorbed on the windings. The PCB waste in these application arises, when the equipment is scrapped, capacitors replaced and during manufacture of capacitors. In present time, there has been a considerable reduction of PCBs used in the capacitors.

Recommendations for Proper Handling and Disposal of PCBs Waste

A. Labeling of Products and Wastes

Modern Electric transformers and large capacitors containing PCBs should be identified with labels, informing buyers the need for adequate disposal. The manufacturer should undertake retrospective labeling, wherever possible. The strict maintenance procedure for PCBs filled units are required in comparison to units filled with hydrocarbon oils.

B. Storage and Containment

The bulk liquid PCBs and waste liquid PCBs must be adequately sealed and well labeled and stored in heavy duty containers, but not in standard drums. In case of highly chlorinated type of PCBs used in transformers, appropriate labeling should be used by the manufacturers. The PCBs for reclamation from PCBs based material should be stored in sealed containers to avoid contamination of external environment.

C. Handling

Appropriate housekeeping is mandatory, when PCBs are utilized for any product manufacture. The transfer of liquid PCB should have to be



appropriately conducted to ensure that it does not become a residual source of pollution.

Where large quantities of PCBs are still used, the bunds, dump tanks should be provided to prevent PCBs passing into the drains, if the dielectric fluid is mishandled. Strict precautions should be taken to ensure that PCBs do not enter into sewerage system or watercourse particularly from old disused transformer dump yard or storage place.

D. Incineration

Most of the PCB waste generated is destroyed by controlled incineration in units fitted with wet gas scrubbing systems, capable of achieving sustained temperatures of 1,100°C. The waste disposal by this method is used particularly for following processes:

- Liquid waste from manufacturing process and from transformers and large capacitors. Solid waste from manufacturing process usually is cast in drums.
- Miscellaneous solid waste including waste from manufacture of small capacitors, contaminated rags, saw dust, fuller's earth etc. at manufacturing and handling plants.

E. Recovery

The PCBs waste principally from transformer applications and also from large capacitors can be recovered by clarification and vacuum distillation process. In large capacitors, the excess fluid is drained off for recovery and incineration.

Given the capabilities and facilities available in Tajikistan, the application of a PCB removal system (also called a PCB dechlorination system) is suggested. PCB removal systems use an alkali dispersion to strip the chlorine atoms from the other molecules in a chemical reaction. This forms PCB-free transformer oil and a PCB-free sludge. The two can then be separated via a centrifuge. The sludge can be disposed as regular non-PCB industrial waste. The treated transformer oil is fully restored, meeting the required standards, without any detectable PCB content. It can, thus, be used as the insulating fluid in transformers again. The Tajik State National University (TSNU) has the capacity to perform the PCB dechlorination system.



12.6 Annex VI: Environmental Management and Monitoring Plan (EMMP)

Note: this EMMP shall be reviewed and detailed by the contractor before commencement of the project.

12.6.1 Design Stage (phase A)

Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
A.1. Several	Improve the baseline data for a better impacts and mitigation measures definition, with a special focus on biodiversity.	<p>Given that the specific environmental and social baseline description (health and safety aside) is limited, further baseline data collection has to be performed by the contractor before the actual works start.</p> <p>The subcontractor engaged for this study on the baseline data collection shall have the right capacity to perform such surveys (and baseline environmental tests).</p> <p>In the case the visual check detects soil contamination or potential contamination, a soil analysis will have to be performed. The parameters to be monitored in order to detect any pollution of the soil by mineral oils are: Total Petroleum Hydrocarbons, PCB's and heavy metals (copper, zinc, lead).</p>	<p>1.No later than first payment instalment</p> <p>2. Include it in the contract.</p>		Contractor	Barqi Tojik (ESM/ES)
A.2. Waste disposal	Ensure adequate disposal options for all waste including transformer oil scrap metal and household waste from the work camp	<p>1. Elaborate Waste Management Plan and waste management training (including PCBs) for construction staff – connection of waste disposal with regional collection and disposal system and licensed local waste management company.</p> <p>2. Identify appropriate transport and sufficient locations for disposal of transformer oil and scrap metal.</p> <p>4. Designate disposal sites in the contract with the licensed local waste management company and cost unit disposal rates</p>	<p>1.No later than first payment instalment</p> <p>2. Include it in the contract.</p>	Locations approved by CEP, Regional offices, municipalities and Barqi Tojik and waste disposal local authorities	Contractor	Barqi Tojik (ESM/ES)



		5. Prepare a PCB spill handling and disposal procedure, provide handling and emergency training and equip teams with special clothing, appropriate sealed steel containers and solvents for cleaning if the results of equipment to be uninstalled indicate that the oils on the contain PCBs.				
--	--	--	--	--	--	--

12.6.2 Construction Stage (phase B)

In General, during construction the Law of the Republic of Tajikistan on Environmental Protection need to be followed
Ecological Requirements during Project Design and Implementation are defined as well by the Ecological Expertise after review of detailed design, IEE/EMMP and LARP.
It should be confirmed that the project will specially comply with:
-the maximum permitted noise and vibration levels and other harmful influences as well as health norms and standards of hygiene

Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
B1. Orientation on environmental requirements for Contractor and Workers	To ensure that the contractor and workers understand and have the capacity to ensure that environmental requirements and implementation of mitigation measures are addressed and carried out appropriately.	1. Barqi Tojik to engage environmental specialist to monitor and progress all environmental statutory and recommended obligations, as part of the Project Implementation Consultant package mast probably. 2 Conduct special briefing for managers and / or on-site training for the contractors and workers on the environmental requirements of the project. 3. Record attendance and achievement test. 4. Agreement on critical areas to be considered and necessary mitigation measures, among all parties who are involved in project activities. 5. Continuous progress review and refresher sessions to be followed	Induction for all site agents and above including all relevant Barqi Tojik staff and new project staff before commencement of work. At early stages of construction for all construction employees as far as reasonably practicable	All staff members in all categories. Monthly induction and three-month refresher course as necessary until contractor complies	Contractor and the ESM/ES	Barqi Tojik ESM/ES observe and record to Committee for Environmental Protection (CEP)



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
		6. Considering and following Norms of Construction Safety, providing detailed regulations on construction worker's health and safety, including information on how to prevent the spread of AIDs and other sexually transmitted diseases.				
B2. Water quality	To prevent adverse water quality impacts due to negligence of environmental best practice. Ensure adverse impacts on water quality caused by construction activities are minimized.	1. Proper construction of temporary drainage and erosion control measures, maintenance and management including training of operators and other workers to avoid pollution of water bodies by operation of construction machinery and equipment (car and machinery park with drainage system). 2. Storage of lubricants, fuels and other petrochemicals in self-contained. 3. Proper disposal of solid waste from construction activities and work camps. 4. Cover the construction material and soil stockpiles with a suitable material to reduce material loss. 5. Following regulations on Industrial and Municipal Waste.	Timing will depend on the construction schedule.	Relevant locations to be determined in the detailed project design	1. ESM/ES enforces contractor 2. Contractor must report to Barqi Tojik and CEP in case of <u>any event</u> of water pollution. 3. ESM/ES supervises monitoring plan and activities.	Contractor responsible on monitoring CEP reviews results Control monitoring by CEP
B3. Air quality	To minimize effectively and avoid complaints due to airborne particulate matters released to the atmosphere.	CONTROL ALL DUSTY MATERIALS AT SOURCE. 1. All heavy equipment and machinery shall be fitted in full compliance with EU standards due to lack of existing and enforced standards. Gasoline and Diesel driven Machinery shall be checked before in one of the few well equipped vehicle inspection stations before allow utilization. Visible smoke at exhaust pipes shall not be accepted. 2. Fuel-efficient and well-maintained haulage trucks shall be employed to minimize exhaust emissions. Trucks shall be checked in vehicle inspection station	All construction sites within 100 m of sensitive receivers.	A list of locations to be included in contract and other sensitive areas identified by the ESM/ES along the ROW during works need to be elaborated.	Contractor should maintain acceptable standard. ESM/ES to supervise monitoring plan and activities.	Contractor reports monitoring results to CEP ESM/ES observes. Control monitoring by CEP.



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
		<p>as well. Trucks with visible smoke at exhaust pipe shall be excluded from project work</p> <p>3. Stockpiled soil and sand shall be slightly wetted before loading, particularly in windy conditions.</p> <p>4. Vehicles transporting soil, sand and other construction materials shall be covered. Limitation to speed of such vehicles is necessary and need to set and controlled.</p> <p>5. Spraying of bare areas with water. For any spray plan, the required amount of water and the availability of water at the location need to be assessed before to avoid water overuse and resource scarcity.</p>				
B4. Noise and Ground Vibration	To minimize noise level increase and ground vibrations during construction operations	<p>1. All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations and with effective silencing apparatus to minimize noise. If need, equipment with excessive noise development shall be equipped with additional encapsulation of the machinery and noise-minimization walls shall be installed.</p> <p>2. As a rule, the operation of heavy equipment shall be conducted in daylight hours. Hammer-type percussive pile driving operations shall not be allowed at night time.</p> <p>3. Well-maintained haulage trucks shall be used with speed controls.</p> <p>4. Contractor shall take adequate measures to minimize noise nuisance in the vicinity for the workers and neighbors.</p>	Maximum allowable noise levels should be below 70dB at the boundary of the construction site.	During construction stage, the most sensitive locations need special attention.	Contractor should maintain the acceptable standards ESM/ES to supervise relevant activities.	Contractor. Control Monitoring by CEP



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
B5. Soil Erosion/ Surface Run-off	Prevent adverse water quality impacts due to negligence of anticipated impact and ensure unavoidable impacts are managed effectively. To minimize soil erosion due to the construction activities of towers, stringing of conductors and creation of access tracks for project vehicles	1. Back-fill should be layered as before and compacted properly in accordance with design standards and graded to original contours where possible. 2. Clearing of plants surface cover to be minimized during site preparation. The area shall be replanted with an appropriate vegetation cover to ensure interception of rainwater and the deceleration of surface run-off before the completion of the project. 3. If trees are removed they will be replanted in a nearby location within the project site.	Because some area can be subject to seasonal heavy rain, construction plan need to consider measures before and during construction.		Contractor and ESM/ES	Barqi Tojik/ ESM/ES CEP shall review construction plan accordingly and make site visits sporadically
B6. Exploitation, Handling, Transportation and Storage of Construction materials	To minimize contamination of the surroundings (Due to implementation of works, concrete and crushing plants)	1. In order to minimize and/or avoid adverse environmental impacts arising from construction material exploitation, handling, transportation and storage measures to be taken in line with regulations and requirements of CEP and conditions/recommendations in approval. 2. Conditions that apply for selecting sites for material exploitation 3. Conditions that apply to timing and use of roads for material transport 4. Conditions that apply for maintenance of vehicles used in material transport or construction 5. Conditions that apply for selection of sites for material storage 6. Conditions that apply for aggregate production 7. Conditions that apply for handling hazardous or dangerous materials such as oil, lubricants and toxic chemicals (PCBs).	Elaboration of a simple material handling and transportation plan, including detail design for material storage, access roads. Update monthly	1. List of borrow areas to be prepared one month prior to construction. 2. List of routes of transport of construction material is to be prepared for the contract and agreed one month prior to construction 3. Report of vehicle conditions is available 4. Map of locations of storage is prepared by the contractor. 5. Environmental accident checklist and a list of banned substances are to be	Contractor and ESM/ES to agree format of reporting	Barqi Tojik / ESM/ES Approved and monitored by CEP



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
				included in the contractor's manual.		
B7. Construction Waste Disposal (to be applied also to PCBs)	Minimize the impacts from the disposal of construction waste.	<p>Waste management plan to be submitted to CEP and approved one month prior to starting works.</p> <p>1. Estimating the amounts and types of construction waste to be generated by the project.</p> <p>2. Investigating whether the waste can be reused in the project or by other interested parties.</p> <p>3 Identifying potential safe disposal sites close to the project or those designated sites in the contract.</p> <p>4 Investigating the environmental conditions of the disposal sites and recommendation of most suitable and safest sites.</p> <p>5. Piling up of loose material should be done in segregated areas to arrest washing out of soil. Debris shall not be left where it may be carried by water to downstream flood plains, dams, lagoons, rivers, canals, etc.</p> <p>6. Used oil and lubricants shall be recovered and reused or removed from the site in full compliance with the national and local regulations.</p> <p>7. Oily wastes must not be burned! Disposal location to be agreed with local authorities and CEP</p> <p>8. Waste transformer insulating oil to be recycled, reconditioned, or reused at appropriate facilities with permissions and under state control</p> <p>9. Machinery should be properly maintained to minimize oil spill during the construction.</p>	Waste management shall include detail design of waste and hazardous waste storage and container systems as well as giving routes, amount of transportation and destination. Hazardous waste transport needs to be accompanied by receipt system (at each point of transfer of the waste from collection - to transportation - to other transportation - to disposal), a receipt and the checked amount must be confirmed by the receiver. From time of the signature the receiver is responsible of the total	<p>1.Dumping A list of temporary stockpiling areas to be prepared at the contract stage for agreement.</p> <p>After the completion of the works no single construction waste shall remain at the project site. It shall be managed as per the "Actions" indicated.</p>	1.Contractor 2-10. ESM/ES should supervise and take action to complete contractor's relevant activities according to IEE/EMMP requirement and environ. standards	Barqi Tojik/ ESM/ES Monitoring by CEP



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
		10. Solid waste/household waste should be collected and transported by the local system or safely transported and disposed at an approved solid waste facility. Open burning of any material is illegal and contrary to good environmental practice	amount of hazardous waste. Update of the waste management plan has to be done monthly.			
B8. Safety Precautions for the Workers	To ensure safety of workers	1. Providing adequate warning signs 2. Providing workers with hard hats 3. Contractor shall instruct his workers in health and safety matters, and require the workers to use the provided safety equipment. Workers need to be informed and trained about sanitation and health care issues and the specific hazards of their work. 4. Establish all relevant safety measures as required by law and good engineering practices. 5. Following all guidance and obligation referring Norms of Construction Safety, providing detailed regulations on construction worker's health and safety.	Prior to commencement and during construction	Location to be identified by contractor. Inspected by ESM/ES	Contractor and ESM/ES	Barqi Tojik / ESM/ES sporadically inspect and report Observed by CEP
B9. Traffic Condition	Minimize disturbance of vehicular traffic and pedestrians during haulage of construction materials, spoil and equipment and machinery, blocking access roads during works; damage / maintenance problems for roads	1. Submit temporary haul and access routes plan one month prior to start of works. 2. Formulate and implementation of a plan of alternate routes for heavy vehicles. 3. Vicinity of schools and hospitals to be considered. 4. Installation of traffic warning signs, and enforcing traffic regulations during transportation of materials and equipment and machinery. Conditions of roads and bridges to be considered.	Prior to planning and construction special inspection of narrow and unpaved village streets, inspection of endangered buildings. Inspection and contact to endangered	The most important locations to be identified and listed. Relevant plans of the Contractor on traffic arrangements must be available.	Contractor and Engineer	Barqi Tojik / supervised by ESM/ES Observed and complain record by district authority or municipality



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
	and bridges used by the haulage trucks, dust nuisance in the vicinities of the transportation ways, especially to schools and hospitals.	5. Provision of culverts on water channels and drains. 6. Widening/upgrading of access paths/roads 7. Consider vibration damages to village houses (old clay brick or adobe buildings) along narrow and unpaved village streets	villager properties throughout the construction.			
B10.Social Impacts	To ensure minimum impacts from construction labor force. To ensure minimum impacts on public health. To ensure minimum effects of indirect impacts of constructions to the people: Dust, Noise, Vibration and rock blasting effects etc. To minimize access problems for local population during construction.	1. Potential for spread of vector borne and communicable diseases from labour camps shall be avoided (worker awareness orientation and appropriate sanitation should be maintained). 2. Claims/complaints of the people on construction nuisance/damages to be considered and responded to promptly by the Contractor 3. LARP has to be finalized within detail design 4. Blackouts due to be replacement of equipment will be minimized by an accurate stimation and mitigation programme by BT through the supply from other SSs and previous notification to the affected people who will be notified via the public consultation meeting in the case of Sughd SS and through a notification in the newspaper and/or radio station in the case of Regar SS.	Organize meetings with Affected Peoples (APs) explaining and discussing impacts and solutions before commencement of construction. Complaints of APs to be solved as soon as possible during construction.	Clarification of conditions and necessary actions at all identified locations with expected impacts and compensation measures before commencement of construction	Contractor and the ESM/ES Accompanied by mediator Barqi Tojik for the estimation and mitigation of blackouts.	Barqi Tojik / ESM/ES District authority, municipalities
B11. Archeological artefacts	Ensure that no damage to archaeological artefacts due to construction activities, particularly earthworks, takes place.	In the event of the unexpected discovery of archaeological objects during construction operations the contractor shall immediately inform the residential engineer who will notify the Institute of Archaeology / Ministry of Culture and the PMU for further instructions. In this case the construction works at the localized site			PMU, Residential Engineer and Contractor	PMU and Institute of Archeology.



Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
		<p>would be stopped until Institute of Archaeology give clearance for the continuation of the operations.</p> <p>Works will resume only after appropriate measures have been taken as requested by the Institute of Ministry of Culture and confirmation has been received that works may continue.</p>				

12.6.3 Operation Stage (phase C)

Impact	Objective	Actions	Conditions	Remarks	Agency	Monitoring
C.1. Drinking water quality	Ensure workers count with safe drinking water. Temporary diarrhea due to unsafe water is a common nuisance in Tajikistan.	Keep the water filtration system from the well regularly maintained and upgraded over time.			Barqi Tojik	Barqi Tojik
C.2. Waste water management	Ensure there is no water or soil pollution due to leakage from the septic tank.	Ensure there is no leakage from the septic tank. Hiring a company to dispose the waste safely is more sustainable than not keeping installing additional numbers of tanks.			Barqi Tojik	Barqi Tojik
C.3. Waste Management	Ensure there is no pollution due to PCBs, e-waste and regular waste.	Proper maintenance of oil peats and waste management system in place.			Barqi Tojik	Barqi Tojik
C.4. Soil Pollution	Avoid soil pollution due to leakage from the septic tank or from the auto transformers or circuit breakers.	In the case the visual check detects soil contamination or potential contamination, a soil analysis will have to be performed. The parameters to be monitored in order to detect any pollution of the soil by mineral oils are: Total Petroleum			Barqi Tojik	Barqi Tojik



		Hydrocarbons, PCB's and heavy metals (copper, zinc, lead).				
C.5. Health and Safety	The SSs and the OHTL is a healthy environment for Barqi Tojik staff to work on.	Provide H&S training and personal protection equipment to workers and monitor how effective it is through exams, medical check-ups and others, including anti-fire aspects.			Barqi Tojik	Barqi Tojik
C.6. Electric and magnetic fields	Ensure the electric field of 5 kV/m and the magnetic flux density of 100 μ T are not exceeded.	Maintenance staff and operators will fill in a logbook with information on the exposure times when working in the switchyard areas.			Barqi Tojik	Barqi Tojik
C.7. Contribution to climate change (SF6 gas).	Safe use and handling of Sulphur hexafluoride.	Training on good practices to staff, maintenance to prevent emissions and monitoring to detect emissions.			Barqi Tojik	Barqi Tojik