

Tajikistan

**MINISTRY OF ENERGY AND WATER RESOURCES
OSHC “BARQI TOJIK”**

CASA 1000 Project

Environmental and Social Impact Assessment

**CASA-1000 TRANSMISSION LINE - CENTRAL
SEGMENT**

Volume 1

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Acronyms and Abbreviations

AC	Alternative Current
ADB	Asian Development Bank
AP	Affected Persons
BP	Bank Procedures
BT	Barqi Tojik
CAF	Central Asian Flyway
CAREC	Central Asian Regional Economic Cooperation
CASA-1000	Central Asia–South Asia Regional Electricity Trade Market
CEP	Committee for Environmental Protection
CIGRE	International Council for Large Electric Systems
CESMP	Contractor’s Environmental and Social Management Plan
COI	Corridor of Impact
D/c	Double circuit
dB	Decibel
deg	degree
E&S	Environment and Social
EA	Environmental Assessment
EAEAF	East Asian-East African Flyway
EE	Environmental Expertise
EIA	Environmental Impact Assessment
EMF	Electro-magnetic Field
EMI	Electro-magnetic Interference
ENE	East north east
EPC	Construction Supervision Engineer
ES	Environmental Supervisor
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ExA	Executing agency
FI	Financial Intermediary
ft	feet
GIS	Geographical Information System
GoT	Government of Tajikistan
GP	Good Practice
GRC	Grievance Redress Committee
GRM	Grievance redress Mechanism
ha	Hectares
HPP	Hydro Power Plant
HVDC	High Voltage Direct Current
IBA	Important Bird Areas
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IEL	Integrated Environments Ltd
IEMC	Independent Environmental Monitoring Consultant
IFC	International Finance Corporation
IFIs	International Financial Institutions
IGC	Inter-governmental Council
km	Kilometers

kV	Kilo volts
kWh	Kilowatt hour
LAR	Land Acquisition Resettlement
LARP	Land Acquisition Resettlement Plan
m	Meters
m/s	meters per second
masl	meters above sea level
MEWR	Ministry of Energy and Water Resources
mm	millimeters
MPs	Management Plans
MW	Megawatt
NGO	Non-Governmental Organization
°C	Celsius
OM	Operational Manual
OP	Operational Policy
OSHC	Open stock holding company
OTL	Overhead Transmission Lines
PAP	Project Affected Person or People
PEO	Project Environmental Officer
PIC	Project Implementation consultant
PMU	Project Management Unit
PMUES	Project Management Unit for Elektro-Energy Sector
PPE	Personal Protective Equipment
PSC	Project Supervision Consultant
RAP	Resettlement Action Plan
RCM	Reliability Centered Maintenance
REA	Regional Environmental Assessment
RIV	Radio Interference Voltage
ROW	Right-of-Way
DRS	Regions under Republican Subordination
RT	Republic of Tajikistan
S/c	Single circuit
SEA	State Environmental Assessment
SEE	State Ecological Expertise
SEP	Stakeholders Engagement Plan
SIA	Social Impact Assessment
sq mi	square mile
SS	Sub station
SSESMP	Site specific Environmental and Social Management Plan
STI	Sexually Transmitted Infection
T/L	Transmission Line
TB	Tuberculosis
TJK	Tajikistan
TOR	Terms of Reference
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Education Scientific and Cultural Organization
VATZ	Vakhsh nitrogen fertilizer plant
WB	World Bank
WPI	Water Pollution Index

EXECUTIVE SUMMARY

1. *CASA 1000 project objective.* The Kyrgyz Republic, Tajikistan, Afghanistan and Pakistan are pursuing the development of electricity trading arrangements and the establishment of a Central Asia South Asia Regional Electricity Market (CASAREM). Since 2005, these four countries have intensified their cooperation with a variety of International Financial Institutions (IFIs), including the World Bank. The proposed project has the purpose and would contribute to alleviating power supply shortages in Pakistan and Afghanistan and would enhance revenues and economic prospects in the Kyrgyz Republic and Tajikistan. It will facilitate the first electricity trade of 1,300 megawatts (MW) of existing summertime hydropower surplus between the two regions, involving the Kyrgyz Republic and Tajikistan in Central Asia and Afghanistan and Pakistan in South Asia. Project preparation was guided by the 4-country minister-level Inter-Governmental Council (IGC) and through consultations with the 10-member Central Asian Regional Economic Cooperation (CAREC) program. A Secretariat of the CASA-1000 project was put in place in 2011. The project is expected to consist of the construction and operation of transmission infrastructure in the four countries. A key aim of the CASAREM initiative is the proposed development of a cross-border electrical interconnection linking all four countries to facilitate the transfer of existing surplus power from the Kyrgyz Republic and Tajikistan, southwards to Afghanistan and Pakistan. It is envisaged that the major share of this export will be used by Pakistan, while a relatively smaller quantity of power (up to 300 MW) will be imported by Afghanistan. A map of the proposed project is shown in Figure 1.



Figure 1: Project location and its main components

2. *Project components in Tajikistan.* Out of the 500-kV line from Datka to Sugd-500 with length of 477 km, about 28 km lies in Tajikistan. Between Sughd-500 and Sangtuda the electricity will be transmitted through the Tajik grid, which will, therefore, be strengthened with a 500kV single circuit line from Regar to Sangtuda (115 km). Additionally, convertor station will be built to transform alternative current (AC) used in the national networks into direct current (DC) for transmission a high voltage and vice versa at Sangtuda. The 500-kV high voltage direct current power transmission line will be built from the Converter Station to the border with the Islamic Republic of Afghanistan. In addition, an Electrode Station will be built on the territory of the Vakhsh District, which will be connected to the Converter Station by an electrode line. Within the framework of the Project, an alternating current line of 220 kV (about 12 km)

will be built from Sangtuda HPP-1 to the Converter Station and the existing substations Sugd-500 and Regar -500 will be expanded.

3. *Expected Beneficiaries.* Communities along the transmission corridor which can potentially get jobs during the construction phase of the project, people in Pakistan and Afghanistan due to alleviating power supply shortages, OSHC “Barqi Tojik”, Kyrgyz Republic and Tajikistan economy due to enhanced revenues and economic prospects.

4. *Location.* Project in Tajikistan will be implemented in three provinces of Tajikistan. For the purpose of convenience, these three parts of CASA-1000 TL are designated as North, Central and South segments:

- 1st North T/L segment – in Sughd province (28 km of 500 kV from SS Sughd-500 to the border with Kyrgyzstan (part of 500 HVAC Kyrgyz Republic – Tajikistan interconnection line);
- 2nd Central segment – in DRS and part in Khatlon province - from Regar SS to Sangtuda (115 km of 500 kV HVAC T/L);
- 3rd Southern segment –in Khatlon province – from Sangtuda SS to the border with Afghanistan (100,5 km of 500 kV T/L, as part of HVDC line, 29 km of 66kV electrode line and 13,9 km of 220 kV HVAC T/L).

5. *Project category.* In accordance with the Bank’s safeguard policies and procedures, including OP/BP/GP 4.01 *Environmental Assessment*, and based on proposed investments and baseline analysis, the project was rated Category A because it involves green-field construction of about 1,200 Km of high voltage Overhead Transmission Lines (OTL), crossing four countries with potential adverse environmental and social impacts that in some cases might be significant due to the fact that proposed civil works will be implemented in/or in the vicinity of environmentally sensitive areas. According to the national legislation the project also is qualified as generating significant environmental and social risks and belongs to National Category 1 for which it is necessary to conduct a full Environmental and Social Impact Assessment.

6. *Purpose of site-specific Environmental and Social Impact assessment.* This ESIA, developed for the Central segment of TL in DRS, has been prepared to identify and assess potential environmental and social impacts of the Project on the biophysical and human environments at the phase of detail designing and to reconfirm/add measures to avoid, minimize, mitigate and manage adverse impacts to acceptable levels as defined by WB OPs and Tajik regulatory requirements and international good practice, and as defined by the applicable international requirements.

7. To do this, this ESIA has incorporated and documented the following processes:

- description of the Project and its activities;
- detailed environmental and social baseline;
- assessment of potential environmental and social impacts and issues, both adverse and beneficial, associated with the Project at the phase of detail designing;
- specifying measures to avoid, or where avoidance is not possible, minimise or mitigate and manage adverse environmental and social impacts along with the supervision monitoring activities and implementing arrangements.

8. The site-specific ESIA is based on the results of the Initial country-specific project ESIA which summarizes potential impacts from construction of transmission lines within a broader corridor of three km width and follows the detailed guidance for further updating of country specific ESIAs and development of sectoral Management Plans (MPs). Taking into account already identified location of TL towers, access roads and labor camps, it describes potential environmental impacts of the project and appropriate preventive actions and mitigation measures (including appropriate monitoring plan) to prevent, eliminate or minimize any anticipated adverse impacts on environment. The ESIA was prepared by a local consultant (joint venture PO RF Kuhiston and Infracokhtor Mushovir LLC) hired by the Client based on the following: (i) analysis of the latest changes in existing national legal documents, regulations and guidelines; (ii) World Bank safeguard policies, as well as other WB guiding materials; (iii) previous ESIA work, presented in the country-specific ESIA; (iv) detailed field investigations and baseline analysis; and (iv) results of consultations with the representatives of stakeholders, local population and all interested parties.

9. *Potential environmental impacts.* The ESIA study confirmed the construction related impacts are likely to be short term and site specific and can be mitigated by applying internationally recognized best construction practices. The impacts are related to aspects such as: (a) location, establishment and operation of the construction camps; (b) construction of 330 towers for Central segment required to support the OTL; (c) routing and construction of access roadways, required throughout the length of the project; and, (d) soil resource management and erosion control activities..

10. The ecological, economic and cultural value of the COI corridor along the Central TL route is not very significant, the populated area covers only 25 km out of 115 km of the CoI route and agriculture is practiced only at few locations. Moreover, the T/L will not to have significant impact on land use as the route and tower locations were selected to avoid not only areas of steep slopes, water courses, but also the settlements, agriculture lands, wildlife habitats and other sensitive environmental and cultural areas.

11. Also, the project is not expected to cause impact to forests as there are no forests there and it will not include any plantation activity, commercial harvesting or harvesting conducted by small-scale landholders or local communities. During the construction phase (and potentially during the operations stage), there might be only some removal of bush vegetation for right-of-way maintenance and for access roads and other associated facilities, impacts of which are not significant. Overall, potential environmental impacts of the proposed T/L are:

- Moderate loss of vegetation;
- Moderate fragmentation of habitat;
- Low risk of reduction of biodiversity and of harm to species of conservation significance;
- Moderate increase in the susceptibility to erosion generally due to construction of towers and access roads;
- Low visual impacts;
- Low dust and nuisance during construction;
- Moderate short-term and localized levels of particulates due to clearing of vegetation during construction;
- Low short-term emissions of greenhouse gases associated with construction;
- Low and localized potential noise effects during construction;
- Low delays to local traffic;
- Low impacts on existing carries and known deposits of construction material;
- Low risk of exposure to unconfirmed health effects from electric and magnetic fields; and
- Moderate health and safety risks during the construction works.

12. The implementation of proven, internationally accepted, and environmentally sound designs, appropriate management and construction practices during T/L construction and operation will be enough to avoid, minimize, mitigate and compensate virtually all potentially specified adverse environmental and social impacts.

13. The proposed CASA-1000 project does not envision any change to the current operational regimes of the Nurek dam, which would result in changes in downstream flows. This analysis that was done for the whole project was based on information available from the feasibility study and other studies in the region. The basic premise for the CASA-1000 project is that the both Tajikistan and Kyrgyzstan have potential surplus of clean energy in summer from their existing hydropower plants without new generation, which is supported by the analysis of past exports and spillage of water, that could be used to offset shortages in Afghanistan and Pakistan. The summer surplus in Tajikistan is linked to the operation of the Nurek reservoir, which regulate the releases in the Vaksh River.

14. *Potential impacts on birds.* The bird survey of Central T/L section in 2020 confirmed the conclusions of avifauna field survey conducted in 2018¹ that ornithological situation in the area depends on the birds habitats and the relief, including the characteristics of mountains and of rivers and lakes in the area of the TL. Of the 183 birds known in this region, 43 are settled, the remaining 140 make seasonal

¹ National Environmental and Social Impact Assessment report for CASA-1000 project, 2018, Annex 2.

migrations. Cases of collision of the latter with electric wires of power lines also depend on the nature of the stay of birds. Sedentary birds living in this region, as a rule, do not collide with wires, because they know the area well. Migrating birds, which fly often at night, are more likely to encounter wires according to statistics. Often these birds make movements in large flocks and the risk of collision with wires is great. The likelihood of a collision in the Gissar Valley, where the bulk of the bird moves along the north-south line, is minimal, but in the Baipazinskaya HPP area the movement of birds is related to the direction of the Vakhsh river, i.e. from east to southwest and the likelihood of bird death from power lines is increasing. Of the globally threatened birds in this region, 9 species are known, and from the Red Book of Tajikistan - 19 species of birds (mostly birds of prey). Birds of prey are of particular concern, as they often land on high-voltage poles. The risks of bird collisions in the area of the Central segment of TL COI are moderate. Taking this into account special birds protection devices are recommended at three T/L section sites.

15. *Social impacts.* ESIA has brought to the fore the following key impacts likely to occur as a result of the project. The potential positive impacts viz., social benefits of the proposed transmission line include: creation of new jobs and respectively, more employment and increased income; contribution to poverty reduction and improvement of country's socio-economic conditions; increased capacity of national transmission company and of other stakeholders. However, some adverse impacts are also foreseen and need to be addressed in the ESMP which contains necessary requirements and mitigation measures in this regard.

16. *Potential adverse social impacts.* The potential negative impacts relate mainly to: resettlement, labour influx and community safety and health. Resettlement impacts are associated with the permanent and temporary acquisition of land plots required for civil works – installation of 330 towers (a surveyed CoI of 90 meters) and 115 km of transmission lines. Installation of towers would mean permanent loss of lands and need to be compensated appropriately. As regards TL, the initial enquiries reveal that no structures will be impacted, nor any physical displacement expected. Lands under the TLs can continue to be used for agriculture and pasture purposes. So, lands under TLs need not be acquired, however, some temporary acquisitions/ disturbances are not ruled out.

17. *Resettlement Impacts.* Any project activity that requires acquisition of land, impacts on assets, or impacts on livelihoods will require preparation of a site-specific Resettlement Action Plan (RAP) based on guidance and standards established in the project's Resettlement Policy Framework. Separate site-specific RAPs will be prepared for the following subcomponents of all three TL segments. Towards these, the PMUES has signed contract with a consultancy firm PO RF Kuhiston to prepare Resettlement Action Plans (RAP). Neither civil works nor construction of the Project infrastructure can start until RAPs are finalized, disclosed, and approved by the Bank and compensations fully paid to the PAPs. RAPs for the Central segment is expected to be ready in September 2020 are associated with the permanent and temporary acquisition of land plots required for civil works.

18. *Permanent land acquisition* will be required for installation of 330 towers. The average "footprint" of each tower will be 20 m X 20 m. The PAPs losing land include mainly dehqan farms² in 12 jamoats in 8 districts of DRS and Khatlon province, but there are also number of smallholders potentially all losing agricultural land. No land to be acquired to relocate houses and/or assets along the CoI part in DRS and Khatlon province. In total about 13,5 ha will be needed for the permanent land acquisition

19. *Temporary land acquisition* will be needed for the 2 construction camps/3 temporary mobile labor camps. The 1st Contractor's construction camp site with the warehouse and office near Chimteppa (Rudaki district, DRS) covers area of approximately 4 ha. For the 2nd construction camp with storage yard Contractor will use the same area which is agreed for the South segment of CASA-1000 TL in Khatlon province and covers area of 7 ha. The temporarily acquired lands will be reinstated to its previous conditions upon completion of construction. However, there will be land use restrictions during construction of the transmission line.

² A dehqan farm is an enterprise involved in the production and sale of agricultural products

20. *Impacts on agricultural lands* will be restricted to the construction phase and/or when the large-scale maintenance measures will be required during operation. During construction, equipments will need to be moved and so are the laborers, which can affect standing crops. This will warrant compensations. However, the impact might be mitigated considering the agricultural season in the potential impact areas, i.e. physical works need be planned for the agricultural areas in consultation with the PAPs depending on harvest time. In extreme cases, extensive use of large machinery may cause a negative impact on agriculture productivity as it may deteriorate fertile soils.

21. *Labor Influx Risks:* The Project will require establishing temporary small mobile labor camps during the construction phase. This will entail influx of external labor force to the project impact area. There is a probability of conflicts to occur between different groups or individuals among the contractors' workforce. Division of workforce between the foreigners and the locals may cause the conflicts same as potential cultural differences, which may lead to misunderstanding. Gender-based labour risks and impacts include women's privacy, sexual harassment, equal pay for equal work and discrimination during hiring. The mitigation measures should include training sessions on local culture for foreign labor force/specialists. This may help not only dealing with host communities, but also to establish good rapport within local workers. If no mitigation measures are foreseen, the potential impact associated with labor influx is rated as Moderate to High.

22. *The potential community safety and health impacts* associated with the project implementation are as follows: a) Increased level of communicable diseases transmitting between contractor's workforce and local communities, and within the group of contractor's employees itself; b) Increased stress levels and associated mental effects experienced by local communities due to the arrival of substantive number of personnel from outside the districts of operation (DRS, Khatlon) or the country; and c) Possible conflicts and tensions due to cultural variations (e.g., gender relations or attitude to alcohol use) and differing mentalities between the local communities and non-resident workforce that may be unfamiliar with the local conventions and customary modes of behaviour. PMUES should ensure that the Contractor's ESMP also includes the measures needed to prevent and mitigate the OHS risks, and GBV impacts during the civil works.

23. *Grievance Redress Mechanism (GRM).* GRM has already been established for the CASA 1000 project. It is a two tier setup- a Grievance Redressal Committee at the district level, and an apex at the national level. While the first level Committees are established in relevant districts covered by the T/L route, BT houses an apex level Committee at the BT/PMUES level. The Project implementation consultant (PIC) helps the BT/PMUES to smooth run, monitor and report on the GRM. The GRM log includes information on what actions have been undertaken, what is outstanding, and who was responsible for each action. The Grievance Logs along with the Grievance Redress Forms are maintained on site with all the complaints registered in the logs and tear-off stubs left with the APs to allow for adequate and transparent redress process. Project affected persons can air their grievances either on their own or through local Jamoat representatives. Anonymous complaints too are entertained by the system. The leaflets containing information on the Project as well as contact addresses/phone numbers to be contacted are shared and available at the level of each concerned Jamoat and communities.

24. *Civil works in the context of COVID 19 pandemic.* Regarding COVID 19 pandemic, the document specifies the PMUES and contractors will follow the WB Guidance document on measures as to address this pandemic undertaking the following: (a) undertaking measures to minimize the chances and contain the spread of the virus as a result of the movement of workers; (ii) ensuring their sites are prepared for an outbreak; (iii) developing and practicing contingency plans so that personnel know what to do if an outbreak occurs and how treatment will be provided; (iv) appointing COVID-19 issues focal point; (v) communicating with the focal point or project health and safety specialist and medical staff (and where appropriate the local healthcare providers), and coordinating designing and implementing the contingency plans; and (vi) encouraging to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

25. *Environmental and Social Management Plan (ESMP)*. The project ESMP is aimed at preventing, mitigating and monitoring identified potential project impacts and proposed mitigation measures. It describes in details the mitigation and monitoring actions to be taken, including implementing arrangements and responsibilities among all involved in the ESMP implementation parties.
26. *Thematic environmental and social management plans*. Thematic E&S plans will be developed by contractor to ensure effective management of environmental issues during TL construction and its operation. These thematic management plans related to management of workforce and camp, site installation, site preparation and restoration, management of construction impacts, wastes, safety etc.
27. *ESMP supervision and monitoring*. It will be done via implementing the Environmental and Social Monitoring Plan which provides the parameters to monitor, location, procedures, roles and responsibilities of parties during the different stages of the project.
28. *ES Reporting*. The ESIA describes also the ESMP implementation reporting documents, purpose, and frequency of reports submission and responsibilities of all involved parties in this process. While the Borrower will present on semiannual basis the progress implementation reports that will include a special chapter on ESMP implementation and on labor safety issues, the contractor and supervising Engineer will prepare in these regards short reports (that might be also part of general project implementation reports) on monthly basis.
29. *ESMP institutional responsibilities and institutional capacities to perform environmental and social safeguards*. The State Joint-Stock Holding Company “Barqi Tojik” (BT) is the Project owner/Executing Agency (ExA). In order to implement the Project, the Government of the Republic of Tajikistan set up the ‘Project Management Unit for Elektro-Energy Sector’ (PMU). Within this PMU the Social Sector and Environmental Monitoring Department has been established which is responsible for the ESMP implementation. The organizational layers of the ESMP include “Barqi Tojik”/PMUES – for overall environmental and social responsibility at the national level as well for the current TL segment; Project Environmental Officer and Social Officer for day-to-day implementation of environmental and social responsibilities on behalf of the Barqi Tojik; PIC Contractor; Independent Environmental Monitoring Consultant (IEMC). The evaluation of the EA institutional capacity has shown that national institutions and implementing entities although have basic capacities to perform their duties concerning ESIA and enforcing the ESMP provisions, there is need for additional capacity building activities. In this regard the Project will support additional training activities to ensure the environmental requirements and the ESMP provisions would be fully implemented.
30. *ESIA disclosure and consultation*. From May to June 2017, the Project Management Unit (PMU) has conducted first round of stakeholder’s consultations for the ESIA. Second round of consultations were conducted in 2018. The latest public consultations on the ESIA and ESMP were conducted in July 2020.
31. The draft site-specific ESIA/ESMP, Executive summary in Russian, Tajik and English have been posted on the websites of the Barqi Tojik ((<http://www.barqitojik.tj>, <http://www.barqitojik.tj/activity/projects>) in early June 2020 for the consideration and comments by stakeholders, and for access of the general public. The documents (in Russian/Tajik) have been also disseminated via environmental network - tajcnet@googlegroups.com and paper copies have been given to representatives of key stakeholders groups in all 8 project districts/12 project jamoats. After virtual public consultations, the document was revised taking into account received comments. The final version of the site-specific ESIA document will be posted on the website of the MEWR/Barqi Tojik and disclosed on the World Bank website.