



"CENGİZ ENERJİ SAN. VE TİC A.Ş."

**Construction of Combined-Cycle Gas Turbine Power Plant with a
Capacity of 550 MW**

Scoping report









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TERMS AND DEFINITIONS

Associated facilities	Associated facilities are facilities that are not financed by the project and that would not have been built or expanded if the project had not been implemented, and without which the project would not be viable (IFC Performance Standard 1)
Impacts on the environment and social conditions	Environmental and social impacts refer to any change, potential or actual, to the physical, natural, or cultural environment, and impacts on the surrounding community and employees, resulting from the business activity to be supported (IFC Performance Standard 1)
Stakeholder	A person or an organization that may influence, be influenced by, or perceive themselves to be influenced by activities or decision-making
The Customer (and also the initiator of the planned activities), also the Company	"CENGIZ ENERJI SAN. VE TIC A.Ş"
Area of influence	An area that may be affected by: (i) the project, its activities and facilities of the Customer, directly operated or managed by it (including its contractors) and included in the Project; (ii) the impacts of unplanned but foreseeable circumstances caused by the Project that may occur at a later time or somewhere else; or (iii) indirect impacts of the Project on biodiversity or ecosystem services upon which the affected communities livelihoods are dependent (IFC Performance Standard 1)
Initiator of the proposed activity	A legal or natural person who intends to carry out the proposed activity and who is responsible for preparing the documentation for the activity in accordance with the regulatory requirements for this type of activity, in order to obtain the relevant permits
Critical habitat	Critical habitat is an area that has high biodiversity value, including (i) sites required for the survival of critically endangered and/or endangered species or areas with special significance for endemic or restricted-range species; (ii) sites that are critical for the survival of migratory species and/or schooling species with global significance; (iii) highly endangered ecosystems and/or unique ecosystems and/or (iv) territories associated with key evolutionary processes (IFC Performance Standard 1)
Cumulative impacts	Impacts arising from additional impacts on the scope of activities or resources used in or directly affected by the project as a result of other existing, planned or realistically determined circumstances during the identification of risks and impacts; generally recognised as significant based on scientific opinion and/or based on the affected communities' concerns (IFC Performance Standard 1)
Makhalla	Makhalla – residential quarter of a city, usually forms a community and a self-governing administrative unit of residents. Makhalla in a broad sense refers to a district or a local community. Promoting it as a 'traditional institution', the Uzbek government has embraced makhalla as a 'fundamental unit' of society. Makhallas were legitimised into law in 1993 under the Law on Institutions of Self-Government of Citizens, otherwise known as the Makhalla Law. Almost every Uzbek technically belongs to a makhalla and in general no one can be excluded based on class, profession or religion. (https://uzbekistangid.ru/kultura/chto-takoe-mahallya-v-uzbekistane)

Environmental and social impact assessment	A set of works that includes the identification, prediction and assessment of the planned activities' impact on the components of the environment and socio-economic conditions, including the analysis of alternative options for planned activities, identification of conditions for their implementation and development of measures in the field of environmental and social management, accompanied by the disclosure of relevant information about the activities and consultations with stakeholders
Post-project analysis	Monitoring activities during construction and operation of facilities, monitoring compliance with stipulations and requirements, monitoring the effectiveness of measures to prevent/minimise impacts, comparing the conclusions of the environmental impact assessment with actual impacts, and developing additional measures (if necessary)
Project	Intended activity – project “Construction of a combined cycle gas turbine power plant with a capacity of 550 MW”
Recipient(s)	Component(s) of the natural or social environment affected by the proposed activity, in particular: <ul style="list-style-type: none"> ● the natural environment and its individual components; ● population, individual social groups, objects of cultural heritage, etc.
Transboundary impact	Any impact (not exclusively of a global nature) within an area under the jurisdiction of a country caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another country (Guidelines on Environmental Impact Assessment in a Transboundary Context for Central Asian Countries, UNECE, 2019)
Khokimiyat	Administration of the city or district
Environmental aspect	An element of an organization's activities, products or services that interacts or may interact with the environment (ISO 14001:2015)

ABBREVIATIONS

TCFD	Task Force on Climate - related Financial Disclosures
LLC	Limited Liability Company
EBRD	European Bank for Reconstruction and Development
IAAP	Index of the atmospheric air pollution
ICO	International credit organizations
MRCC	Mechanism for receiving and considering complaints
IFC	International Finance Corporation
ESIA	Environmental and social impact assessment
EHS	General Environment, Health and Safety Guidelines
OECD	Organisation for Economic Co-operation and Development
SEP	Stakeholder Engagement Plan
GHGs	Greenhouse gases
MPE	Maximum permissible emission
MPC	Maximum permissible concentrations
MPCmo	Maximum allowable concentration of a pollutant in the atmospheric air, maximum one-time
MPCad	Maximum permissible concentration of the pollutant in the atmospheric air, average daily
RUz	The Republic of Uzbekistan
SanR&N	Sanitary rules and norms
PS	Performance standards
SPZ	Sanitary protection zone
Uzhydromet	Center of the Hydrometeorological Service of the Republic of Uzbekistan
AACI	Accelerated assessment of cumulative impacts
VEC	Valuable environmental component
ECA	Export credit agencies

SUMMARY

Environmental and social impact assessment for the project "Combined-Cycle Gas Turbine Power Plant With A Capacity Of 550 MW" to the investor's company "CENGIZ ENERJI SAN. VE TIC A.Ş." is conducted in accordance with the requirements of the International Finance Corporation (hereinafter - IFC) to attract project finance.

The implementation of this project is carried out by the company "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor) in order to implement the Investment Project, the Investor created CENERGO LLC.

Offered by the company "CENGIZ ENERJI SAN. VE TIC A.Ş." the technology of a combined cycle gas turbine plant is determined by the high reliability, mobility and efficiency of fuel and energy resources, which serves as an advantage over other types of power plants.

The implementation of this project will be carried out on the basis of the Decree of the President of the Republic of Uzbekistan No.DP- 361 dated 11/08/2023. "On measures for the implementation of the investment project construction of a combined-cycle gas turbine power plant with a capacity of 550 MW in Jizzakh region."

Objectives of the proposed project:

- meeting the growing demand of the industrial sector, businesses and the public for electricity;
- improving the energy efficiency of production, transportation and distribution of electric energy;
- increasing the efficiency and rational use of electric energy at all stages of the technological process based on energy-saving technologies and optimization of generating capacities;
- ensuring accelerated development and increasing competitiveness of the country's energy sector;
- active involvement of direct foreign investments in the construction of new generating capacities;
- reduction of specific fuel consumption indicators;
- reducing the loss of electrical energy during its transportation;
- improving the efficiency of electricity production;
- decline of fuel gas consumption to energy production; minimization of the negative environmental impact of energy industry facilities;
- creation of additional jobs, improvement of the standard of living of the population.

The Customer intends to involve international creditors to finance the Project, which, when financing projects, adhere to the environmental and social requirements of the International Finance Corporation (IFC).

As part of the work of this stage, the following tasks of environmental and social assessment have been solved:

- preliminary assessment of the planned activity based on the materials provided by the Customer, information collected in open (accessible) sources, data from analog facilities;

-
- determination of applicable national and international requirements;
 - collection, processing and analysis of available information on the natural and socio-economic conditions of the area of planned activity;
 - identification of recipients of impacts;
 - identification of stakeholders and initial consultations;
 - preliminary identification of the impacts of the planned activity;
 - categorization of the project.

The work at this stage resulted in following:

- methodological approaches to impact assessment have been substantiated;
- the initial environmental and social conditions of the potential zone of projected activity's influence were preliminarily determined;
- the identification and preliminary impact assessment on the environment and social conditions were carried out;
- possible measures to prevent and/or minimise negative impacts were considered;
- scope of ESIA proceedings was proposed;
- proposals for interaction with stakeholders are prepared.

1 INTRODUCTION

1.1 General Information

The Environmental and Social Impact Assessment (hereinafter - ESIA) for the project "Combined-Cycle Gas Turbine Power Plant With A Capacity Of 550 MW" (hereinafter - the Project of Gas Turbine Power Plant) for for CENGIZ ENERJI SAN. VE TIC A.Ş (hereinafter - Customer) is conducted in accordance with the requirements of the International Finance Corporation (hereinafter - IFC) to attract project finance.

The project provides for the construction of a combined-cycle gas turbine power plant with a capacity of 550 MW consisting of 1 gas turbine unit (GTU) "Siemens S SGT5-4000F V10", 1 unit of a steam turbine (ST) "Siemens SST-700/900", with a capacity of 185.3 MW, manufactured in Germany, with the necessary buildings and auxiliary facilities and with the creation of an appropriate infrastructure on the territory of a combined-cycle gas power plant with a capacity of 550 MW in Sharaf Rashidov district, Jizzakh region. The total generation of electric energy from the combined-cycle gas turbine power plant will amount to 4,000,000 MW·h per year.

The total area of the allocated site for the construction of a combined cycle power plant is 9.43 hectares.

The territory for the construction of the gas turbine power plant will occupy 2.91 hectares, 3.65 hectares will be used for parking spaces, roads inside the facility, and a customs clearance area. 2.83 hectares will be allocated for landscaping, the general master plan of the enterprise is presented in (Figure 1).

The project provides for the construction of off-site facilities: a new access road with a length of 90 meters, and 220 kV power transmission line (overhead lines) with a length of 8 and 10 km from the project territory to the existing TL 220 kw L-20-D and LZS, gas pipeline and water supply system.

During the construction of the power plant, about 650 builders will work on the territory of the construction site, 600 of them are workers, 50 are engineering and technical personnel.

70 employees are expected to be involved in the operation of a combined cycle steam and gas power plant, of which: 5 people are engineering and technical personnel; 65 people are production and operational personnel, workers and employees.

A detailed description of the planned activities is presented in Section 6 of this report.

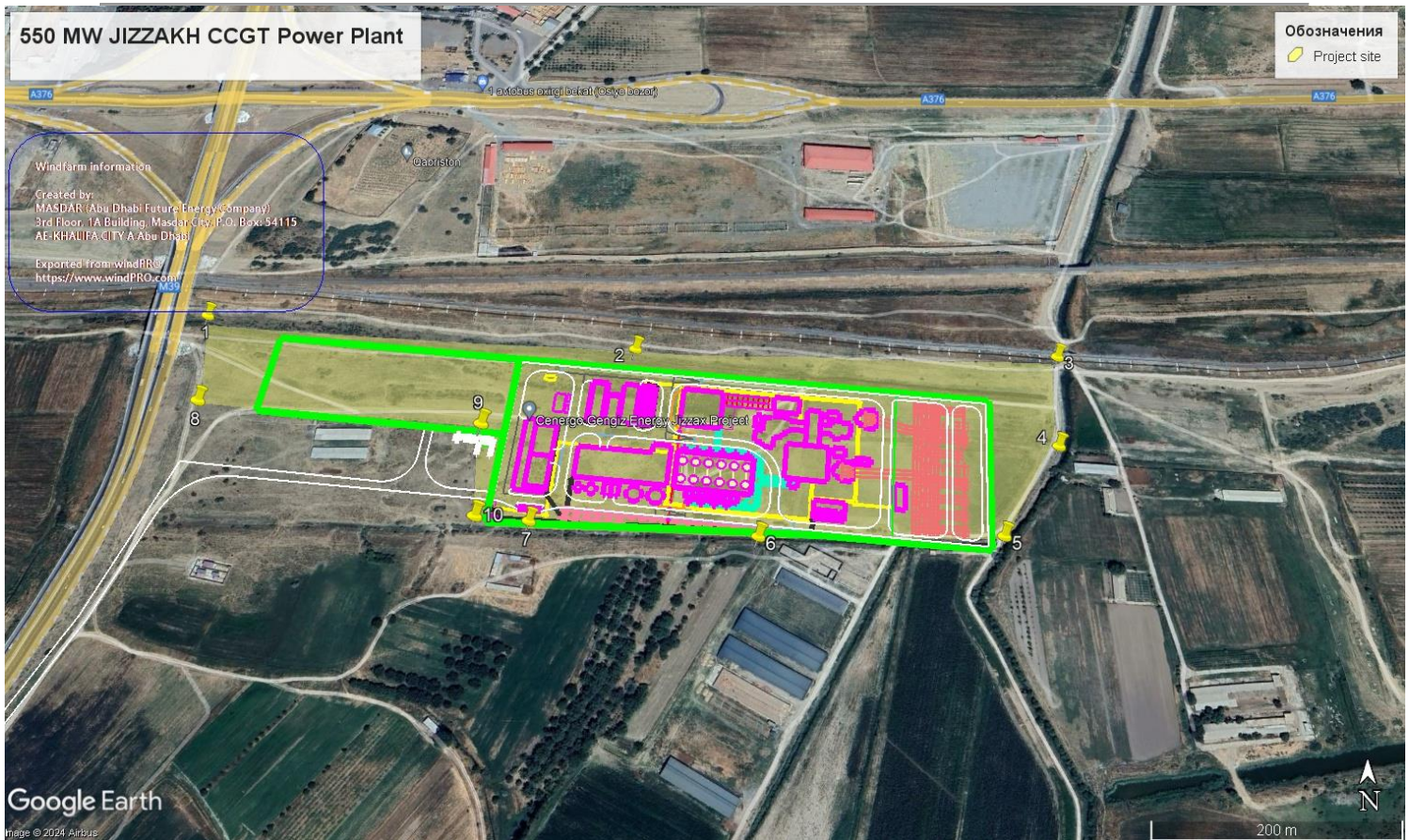


Figure 1 Area of planned activities

The supplier of equipment for the gas turbine power plant is "Siemens" (Germany). CENERGO LLC is responsible for the construction, commissioning works and making the facility to operate.

The Customer intends to involve international creditors to finance the Project, which, when financing projects, adhere to the environmental and social requirements of the International Finance Corporation (IFC).

1.2 Assessment constraints

The assessment conclusions are based on the professional experience of the Consultant, which allows to analyse the design solutions for compliance with environmental requirements of laws and regulations of the Republic of Uzbekistan (hereinafter - RUz), as well as the international practice requirements proposed by the Customer for consideration.

The assessment was conducted solely on the basis of the documentation submitted by the customer, taking into account the data and information obtained from public sources (information on public reaction in connection with the implementation of projects, data on the state of the natural environment, public cadastral data, etc.).

The Consultant will under no circumstances be liable for possible deficiencies in this documentation related to the quality of the initial data provided by the Customer.

1.3 Objectives of the Preliminary Environmental and Social Assessment

The main objectives at this work stage:

- screening is a preliminary assessment of the projected activities based on the proceedings provided by the Customer, information collected from the open (available) sources, and data from similar facilities;
- determination of applicable national and international requirements;
- collection, processing and analysis of available information on the natural and socio-economic conditions of the area of planned activity;
- identification of sensitive (vulnerable) recipients;
- identification of stakeholders and initial consultations;
- preliminary identification of the impacts of the planned activity;
- categorization of the project.

The work at this stage resulted in following:

- methodological approaches to impact assessment have been substantiated;
- the initial environmental and social conditions of the potential zone of projected activity's influence were preliminarily determined;
- the identification and preliminary impact assessment on the environment and social conditions were carried out;
- possible measures to prevent and/or minimise negative impacts were considered;
- scope of ESIA proceedings was proposed;
- proposals for interaction with stakeholders are prepared.

1.4 Input data

To solve the tasks specified in Section 1.2, the following documentation provided by Customer was used:

- The Project of Environmental Impact Statement (EPA) for the construction of a 550 MW combined-cycle gas turbine power plant in Sharaf Rashidov district, Jizzakh region.
- conclusions of the State ecological expertise and authorized bodies in the field of environmental protection;
- technological schemes of production, description of technology, technological regulations.

The Consultant is under no circumstances responsible for the completeness, reliability and relevance of the source data provided by the Customer.

In addition, the following data presented in open sources have been collected and analyzed:

- The open map data of the OpenStreetMaps portal used under the Open Data Commons Open Database License (ODbL) from the OpenStreetMap Foundation (OSMF), available on the portal <https://www.openstreetmap.org/> а также <https://nextgis.com/>;
- Remote sensing data available online through the Google Maps service <https://www.google.com/maps>.
- FAO AQUASTAT Country Profile - Uzbekistan, Food and Agriculture Organization of the United Nations, 2020

2 APPLICABLE STANDARDS AND REQUIREMENTS

2.1 Agreements and Conventions

Table 1. presents international agreements and conventions to which the Republic of Uzbekistan is a party and the requirements of which are potentially applicable to this project.

Table 1. List of international agreements and conventions ratified by the Republic of Uzbekistan and whose requirements are potentially applicable to the project (as of April 2024)

International conventions and agreements	Ratification by the Republic of Uzbekistan	Entry into force IN THE REPUBLIC OF UZBEKISTAN	Main objectives
Environmental protection agreements and conventions			
Paris Convention on the Protection of World Cultural and Natural Heritage Sites, 1972	December 22, 1995	June 15, 1996	Protection of natural and cultural heritage
United Nations Framework Convention on Climate Change, 1992	20 June 1993 (adoption)	March 21, 1994	Stabilization and reduction of greenhouse gas emissions
United Nations Convention on Biological Diversity, 1992	6 May 1995 (affiliation)	October 17, 1995	Conservation of biodiversity, sustainable use of its components and equitable distribution of benefits
United Nations Convention to Combat Desertification, 1994	August 31, 1995	January 29, 1996	Prevention of land desertification and degradation
Kyoto Protocol, 1997	August 20, 1999	February 16, 2005	Setting binding emission reduction targets
Stockholm Convention on Persistent Organic Pollutants, 2001	May 22, 2001	May 8, 2019	Protecting human health and environment against chemicals that remain in the environment for long periods of time, become widely distributed, accumulate in the tissues of living organisms and have harmful effects on human health or the environment
Paris Agreement on Climate Change, 2015.	December 2015	April 2017	The Agreement, in the context of the United Nations Framework Convention on Climate Change, regulates further measures to reduce atmospheric carbon dioxide since 2020.

International conventions and agreements	Ratification by the Republic of Uzbekistan	Entry into force in the Republic of Uzbekistan	Main objectives
Agreements and conventions in the field of labor protection and social responsibility of the International Labor Organization (ILO)			
Forced Labour Convention No.29 (1930)	August 30, 1997	July 13, 1992	Abolition of the use of forced or compulsory labour in all its forms
Protocol of 2014	June 25, 2019	September 16, 2020	The main purpose of the 2014 Protocol is to put an end to forced labour, to take effective measures to prevent and end its use, to provide protection and access to adequate and effective remedies for its victims
Convention No 87 "On Freedom of Association and Protection	October 25, 2016	December 12, 2017	The freedom of association means not just the freedom to join existing associations but also to create new associations. Trade unions have the right to develop an organisation's charter without external influence.
Convention No 98 "On the Application of the Principles of the Right to Organise and Collective Bargaining" (1949)	August 30, 1997	July 13, 1992	Protection of workers' rights to ensure that the freedom of association in the workplace is not impaired. This protection shall apply in particular to acts which have the purpose of conditioning the recruitment or retention of a worker on the condition that he or she does not join a trade union or withdraws from a trade union.
Convention No 100, "On Equal Remuneration for Men and Women Workers for Work of Equal Value" (1951)	August 30, 1997	July 13, 1992	"Equal remuneration for men and women for work of equal value" refers to remuneration rates determined without discrimination on the basis of sex.
Convention No 105 "On the Abolition of Forced Labour" (1957)	August 30, 1997	December 15, 1997	Taking all necessary measures to ensure that compulsory or forced labour does not lead to slavery-like conditions.

International conventions and agreements	Ratification by the Republic of Uzbekistan	Entry into force in the Republic of Uzbekistan	Main objectives
Convention No 111 "On Discrimination (Employment and Occupation) Convention (1958)	August 30, 1997	July 13, 1992	Any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national origin or social origin which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation.
Convention No 138 "On Minimum Age for Admission to Employment" (1973)	April 4, 2008	March 6, 2010	The minimum age for admission to any type of employment or other work which, by its nature or the circumstances in which it is carried out, is likely to be harmful to the health, safety or morals of a young person shall not be less than eighteen years.
Convention No 182 "On Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour"(1999)	April 8, 2008	June 24, 2009	Eradicate and prevent the worst forms of child labour.
Convention No 47 "On concerning the Reduction of Hours of Work to Forty a Week"(1935)	May 6, 1995	July 13, 1992	The principle of a forty-hour working week, applied in a way that does not result in a lower standard of living for workers.
Convention No 52 "On Annual Holidays with Pay" (1936)	May 6, 1995	July 13, 1992	Every person to whom this Convention applies shall be entitled, after one year's continuous service, to annual leave with pay.
Convention No 103 "On Maternity Protection" (revised in 1952)	May 6, 1995	September 25, 1996	The purpose of this convention is to protect the rights of women and children

International conventions and agreements	Ratification by the Republic of Uzbekistan	Entry into force in the Republic of Uzbekistan	Main objectives
Convention No 122 "On Employment Policy" (1964)	May 6, 1995	July 13, 1992	Stimulating economic growth and development, raising living standards, meeting labour needs and eliminating unemployment
Convention No 135 "On the Protection of the Rights of Workers' Representatives in the Undertaking". (1971)	August 30, 1997	December 15, 1997	Adoption of proposals to protect the rights of employee representatives in the enterprise and the opportunities available to them.
Convention No 154 "On the promotion of collective bargaining" (1981)	August 30, 1997	December 15, 1997	Facilitation of negotiations that take place between an employer, a group of employers or one or more employers' organizations on the one hand, and one or more workers' organizations on the other.
Convention №144 "On Tripartite Consultation for the Promotion of International Labour Standards"(1976)	March 4, 2019	August 13, 2020	Ensure effective consultation between government, business and labour representatives on International Labour Organization activities.

Table 2 contains intergovernmental treaties of the Central Asian countries in the field of environmental protection and natural resources, to which Uzbekistan is a party. Legal acts that are potentially applicable to the project are highlighted in the table.

Table 2 List of international agreements and conventions ratified by the Republic of Uzbekistan, and requirements of which are potentially applicable to the project (as of September 2021)

No	Name of the agreement	Uzbeki- stan	Taji- kistan	Kazakhsta n	Kyrgyz- stan	Turkmeni- stan
1.	Agreement between the Governments of the CIS member states on interaction in the field of ecology and environmental protection	+	+	+	+	+
2.	Agreement between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan on cooperation in the field of joint management and protection of interstate water sources	+	+	+	+	+
4.	Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic and the Government of the Republic of Uzbekistan on cooperation in the field of environmental protection and rational use of natural resources	+		+	+	
5.	Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic, the Government of the Republic of Tajikistan and the Government of the Republic of Uzbekistan on cooperation in the field of hydro-meteorology.	+	+	+	+	

6.	Agreement between the Government of the Republic the Government of the Kyrgyz Republic, the Government of the Republic of Tajikistan and the Government of the Republic of Uzbekistan on the parallel operation of energy systems of the Central Asian states.	+	+	+	+	
7.	Agreement between the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan on the establishment of "Central Asian Cooperation" organization.	+	+	+	+	

2.2 National legislation

The decisions justified in the ESIA shall ensure that the requirements of national legislation are met. Table 3 shows the main program documents, regulatory legal acts of the Republic of Uzbekistan, the requirements of which will be considered in relation to all stages of the project life cycle.

Table 3 Applicable national legislation requirements

Regulatory level	Documents and mechanisms
Programme documents	Constitution of the Republic of Uzbekistan, 1992
Regulatory legal acts in the field of environmental protection	Law of the RU "On nature protection", 1992
	Law of the RU "On water and water use", 1993
	Law of the RU "On the protection of atmospheric air", 1996
	Law of the RU "On the protection and use of wildlife", 1997
	Law of the RU "On the protection and use of flora", 1997
	Law of the RU "On environmental expertise", 2000
	Law of the RU "On waste", 2002
	Law of the RU "On protected natural territories", 2004
	Law of the RU "On environmental control", 2013
	Resolution of the Cabinet of Ministers of the RU No 541 of 7 September 2020 "On Approval of the Regulation on State Environmental Expert Review"
	Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 14 of 22 November 2018 "On Approval of the Regulation on the Procedure for Developing and Approving Draft Environmental Regulations"
	Resolution of the Cabinet of Ministers "On Approval of the Regulation on State Environmental Control"(No 49 of 03.04.2002)
National standard - Water quality. O'z DST 951: 2011 - Centralized drinking water supply sources	

Regulatory level	Documents and mechanisms
	<p>National Standard O'z DSt 1057:2004 "Motor vehicles. Safety requirements for technical condition" and O'z DSt 1058:2004 "Motor vehicles. Technical inspection. Inspection methods".</p> <p>GOST-23941-2002 "Noise of machinery. Methods for Determining Noise Characteristics".</p> <p>GOST 23337-2014 "Noise. Methods for measuring noise in the residential area and in the premises of residential and public buildings</p> <p>Rules for industrial wastewater intake and procedure for calculation of compensation payments for excess discharges of pollutants into urban sewerage networks of cities and other settlements of the Republic of Uzbekistan (Annex 1 to RCM No 11 of 2010)</p> <p>Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 05.09.2019, No 737 "On improvement of the environmental monitoring system in the Republic of Uzbekistan"</p> <p>Temporary Recommendations on Control of Groundwater Protection in the Republic of Uzbekistan". State Committee on Natural Resources and Hydrogeology of the Republic of Uzbekistan, Tashkent, 1991.</p> <p>SanPiN RUz No 0293-11 Hygienic Standards. List of maximum permissible concentrations (MPC) of pollutants in the atmospheric air of settlements in the territory of the Republic of Uzbekistan</p> <p>SanPiN No 0267-09 "Sanitary norms and rules for permissible noise in residential and public buildings and in residential areas"</p> <p>SanPin RUz No 0088-99 Sanitary Requirements for the Development and Approval of Draft Maximum Permissible Discharges (MPD) of Substances Into Water Bodies with Wastewater</p> <p>SanN&R No. 0289-10 Sanitary rules and hygienic requirements for the organization of construction and construction work</p>
<p>Health and regulations</p> <p>safety security</p>	<p>Labor Code of the Republic of Uzbekistan, 1996</p> <p>Law of the RU No 938-XII of 03.09.1993 "On State Pension Insurance of Citizens"</p> <p>Law of the RUz No 510-XII of 13.01.1992 "On Employment"</p> <p>Law "On the protection of the health of citizens", 1996</p> <p>Law of the RUz "On the protection of citizens' health", 1996</p> <p>Law of the RU No 174 of 10 September 2008 "On compulsory state social insurance against accidents at work and occupational diseases</p> <p>Law of the Republic of Uzbekistan "On Compulsory Civil Liability Insurance of the Employer", 2009</p> <p>Law "On the Sanitary and Epidemiological Welfare of the Population", 2015</p> <p>Law "On Labour Protection ", 2016</p> <p>Presidential Decree No 5723 of 21 May 2019 "On improvement of the procedure for determining the amount of wages, pensions and other payments"</p> <p>Government Resolution No 4235 of 07.03.2019 on "Measures to further strengthen guarantees of labour rights and support women's entrepreneurship"</p> <p>Resolution of the Ministry of Employment and Labour Relations No 22-14-02019k/k, No 48 of 22.07.2019 "On approval of the List of professions and jobs negatively affecting women's health and in which it is not recommended to employ women"</p> <p>Resolution of the Cabinet of Ministers No 1066 of 31.12.2018. "On measures to improve the activities of the Ministry of Employment and Labour Relations of the Republic of Uzbekistan", Annex No 5 of the Regulation "On the Procedure for Establishing and Organizing Labour Protection Services in Organizations"</p>

Regulatory level	Documents and mechanisms
	Government Resolution No 4008 of 07.11.2018 "On measures to create favourable conditions for the employment of foreign qualified specialists in the territory of the Republic of Uzbekistan"
	Government Resolution No 3839 of 05.07.2018 "On Additional Measures for Further Improvement of the External Labour Migration System of the Republic of Uzbekistan"
	Presidential Decree No 5291 of 28.12.2017 "On additional measures to create favourable conditions for certain categories of pensioners engaged in labour activities"
Social, land acquisition and involuntary resettlement regulations	The Civil Code of the Republic of Uzbekistan, 1996
	The Land Code of the Republic of Uzbekistan, 1998
	The Family Code of the Russian Federation, 1998
	The Tax Code of the Russian Federation, 2007
	The Law of the Republic of Uzbekistan "On rent", 1991
	The Law of the Republic of Uzbekistan "On the protection and use of cultural heritage sites", 2018
	Decree of the President of the Republic of Uzbekistan "On measures to ensure equality and transparency in land relations, reliable protection of land rights and their transformation into a market asset", 2021
	Resolution of the Cabinet of Ministers No 911 (16 November 2019) as amended on 01.08.2021 "On the procedure for withdrawal of land plots and provision of compensation to owners of real estate located on the withdrawn land plot"
	Presidential Decree No 5491 "On additional measures to ensure unconditional security of property rights of citizens and business entities", 2019
	Presidential Decree No 5490 "On measures to further improve the system for the protection of the rights and legitimate interests of business entities", 2018
	Presidential Decree No 5495 "On measures to radically improve the investment climate in the Republic of Uzbekistan", 2018
	Resolution of the Cabinet of Ministers of the RUz No 3857 "On Measures to Improve the Effectiveness of the Preparation and Implementation of Projects involving International Financial Institutions and Foreign Governmental Financial Organizations", 2018
	Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 1047 "On the procedure for the formation and use of centralized funds for the compensation of damage caused to individuals and legal entities in connection with the seizure of land for State and social needs", 2018
	Government Resolution No 3439 of 20.12.2017 "On Measures to Further Enhance the Effectiveness of Cooperation with International and Foreign Financial Institutions"
	Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 317 "On amendments and additions to certain decisions of the Government of the Republic of Uzbekistan aimed at further improvement of the cadastral documentation procedure for immovable property", 2016
	Resolution of the Cabinet of Ministers No 146 (25 May 2011) amended by Resolution of the Cabinet of Ministers No 1024 (20 December 2019) "On measures to improve the procedure for granting land for urban development and other non-agricultural needs"
	Decree of the President of the Republic of Uzbekistan "On additional measures to improve the procedure for leasing agricultural land plots" No. DP-15 of 18.01.2024
	Law of the Republic of Uzbekistan dated "On allocation of land for public purposes and compensation procedures" No. LRU-781 of 29.06.2022

2.3 Requirements of international financial institutions

2.3.1 General Review

The most complete environmental and social requirements for investment projects are considered in the following documents of international credit organizations (hereinafter referred to as the ICO):

- "Equator Principles";²;
- World Bank Environmental and Social Principles³;
- Environmental and Social Policy of the European Bank for Reconstruction and Development and Requirements for the implementation of EBRD projects⁴;
- Common approaches to assessing the environmental and social impact of export credits with governmental support from the Organization for Economic Cooperation and Development (OECD)⁵;
- IFC's (International Finance Corporation) Performance Standards ⁶ and IFC's Environmental, Health and Safety Guidelines, including General Guidelines and applicable industry-specific Guidelines⁷.

"Equator Principles" – ten environmental and social standards that require implementation when financing the project by the relevant financial institution and the initiator of the proposed activity:

1. Analysis and classification
 2. Environmental and social assessment
 3. Applicable environmental and social standards
 4. Social and Environmental Management System and Action Plan
 5. Interaction with stakeholders
 6. Grievance mechanism
 7. Independent analysis
 8. Commitments
 9. Independent Monitoring and Reporting
 10. Accountability and Transparency
- Selected remarks regarding the "Equator Principles":

- Principle 1 involves determination of the category of an investment project by its potential impact according to the IFC classification (see below for more details).

²<https://equator-principles.com/about/>

³<https://projects.vsemirnyjbank.org/ru/projects-operations/environmental-and-social-framework>

⁴<https://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html>

⁵<https://www.oecd.org/trade/topics/export-credits/environmental-and-social-due-diligence/>

⁶https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/performance-standards

⁷https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines/ehsguidelines

- Principles 1-6 set the ESIA requirements.
- Principle 2 requires climate impact assessment and project categorization using the Task Force on Climate-related Financial Disclosures approach (hereinafter referred to as the TCFD);
- Principle 4 requires disclosure of information about the climate impacts of proposed activities, biodiversity and potential impacts on it.

World Bank Environmental and Social Framework include:

- The concept of sustainable development, reflecting the Bank's focus on achieving environmental and social sustainability;
- World Bank Environmental and Social Policy for investment and project financing, which establishes mandatory requirements applicable to the bank;
- Social and environmental standards, which sets out mandatory requirements imposed to the borrower and projects.

The **EBRD's investment activities** are based on the requirements of the Bank's Environmental and Social Policy, updated in 2019.

The projects financed by EBRD must meet ten environmental and social sustainability requirements:

- PR 1 - Assessment and Management of Environmental and Social Risks and Impacts;
- PR 2 - Labour and Working Conditions;
- PR 3 - Resource Efficiency and Pollution Prevention and Control;
- PR 4 - Health, Safety and Security;
- PR 5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;
- PR 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PR 7 – Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
- PR 8 – Cultural Heritage
- PR 9 – Financial Intermediaries
- PR 10 – Stakeholder Engagement and Information Disclosure

Export Credit Agencies (hereinafter referred to as the ECA) of the **Organization for Economic Co-operation and Development** (hereinafter referred to as the OECD) member states are guided by the “OECD Council Recommendations on Common Approaches for Assessing the Environmental and Social Impacts of Government-Supported Export Credits” (2016). The document contains the requirements to be applied by ECA for screening, classification, social and environmental assessment of projects, as well as reporting and monitoring requirements.

2.3.2 IFC requirements

The International Finance Corporation is part of the World Bank Group. IFC is a recognized leader in the field of implementation of environmental and social sustainability requirements imposed to the investment projects.

Long-term IFC activities in dozens of countries and active involvement of the expert community made it possible to generate an exhaustive set of effective mechanisms, including:

- The corporate policy for environmental and social sustainability;
- Performance standards and Guidelines for their application;
- General and Sectoral Environmental, Health and Safety Guidelines.

Accounting and implementation of the IFC mechanisms in the projected activities will ensure that the projected activities meet the highest requirements in the field of environmental and social sustainability.

Obviously, this fact was the basis when selecting the IFC requirements by credit institutions as part of ESIA for the CRC project.

Detailed review of the IFC requirements to be implemented as part of the ESIA is given below.

2.3.2.1 IFC Performance standards

The activities of the IFC in the field of sustainable development are based on the Environmental and Social Sustainability Policy and the corresponding Performance Standards (hereinafter referred to as the PS):

- PS-1: Assessment and Management of Environmental and Social Risks and Impacts;
- PS-2: Labor and Working Conditions;
- PS-3: Resource Efficiency and Pollution Prevention;
- PS-4: Community Health, Safety and Security;
- PS5: Land Acquisition and Involuntary Resettlement;
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- PS-7: Indigenous Peoples;
- PS-8: Cultural Heritage.

PS-1 establishes the following requirements:

- creation of a basic policy for the implementation and preservation of the possibility of compliance with the laws and regulations provided for in the country of location of the facility, as well as to achieve the environmental and social goals of the project;
- creating a basic policy to implement and maintain the compliance with laws and regulations set out in the facility's location, as well as to achieve the environmental and social targets of the project;
- creation of management mechanisms to eliminate/minimize risks and impacts;

- maintenance of organizational capacity and competence;
- creation of appropriate emergency preparedness and response mechanisms;
- creating management mechanisms to eliminate / minimize risks and activities;
- creation of processes for monitoring and analysis of environmental and social indicators as conditions for continuous improvement of the project.

PS-2 uses the provisions of international conventions under the auspices of the ILO and the UN:

- to establish, maintain and improve the relationship between operating and management personnel;
- to facilitate the creation of fair relations, non-discrimination and equal opportunities for workers;
- to ensure compliance with national labor and employment laws;
- protecting workers' rights by addressing the problem of child and forced labour;
- to create safe and healthy working conditions;
- to protect and promote the health of workers.

PS-3: focuses has preventing or minimizing negative impact on the environment and human habitat:

- elimination and/or minimization of adverse impact on humans and the environment by eliminating or minimizing pollutions associated with the projected activities;
- rational use of resources;
- reduction of greenhouse gas emissions associated with the proposed activity.

PS-4 is aimed at eliminating and/or minimizing risks and impacts on population health, safety and security. Special requirements apply to vulnerable groups of the population.

PS-5 considers the impacts associated with land acquisition and restrictions on their use during project implementation (including involuntary resettlement issues). The standard considers both physical (resettlement) and economic displacement (loss of income sources). The standard is important in evaluating the solutions for the construction of an access road and power transmission lines.

PS-6 is dedicated to the conservation of biological diversity, uses the requirements of the relevant international convention. It is important to the project that the habitat is considered by the Standard to be modified, natural and/or critical.

PS-7 considers indigenous peoples as social groups, often belonging to marginalized and/or vulnerable segments of the population. The economic, social and legal status of indigenous peoples limits the ability to protect their rights, especially those related to land and/or nature management.

PS-8 is dedicated to the problems of cultural heritage, its protection, taking into account the requirements of the Convention on the Protection of World Cultural and Natural Heritage

Sites. The standard is important in considering the solutions for the construction of an access road and power transmission lines.

2.3.2.2 IFC Environment, Health and Safety Guidelines

For the effective implementation of the provisions of the IFC PS, a number of methodological documents (guidelines) have been prepared to ensure the application of standards in the evaluation of planned activities.

In Table 4 is provided a brief overview of the IFC guidelines, the application of which is advisable within the framework of the ESIA project.

Table 4 Overview of the IFC guidelines, the application of which is advisable within the framework of the project's EIA

Item	Name	Brief description	Link
1.	General Environment, Health and Safety Guidelines (hereinafter referred to as the GESH)	Document containing examples of good international industry practice of a general nature. The following levels are listed in the Guidelines and performance parameters, which are usually considered achievable at newly commissioned facilities. Application of the Guidelines to existing facilities may require the development of specific targets for each facility and an appropriate timetable for achieving them.	https://www.ifc.org/wps/wcm/connect/be37221a-fc47-4379-b539-eca3fe72c3e6/General%2BEHS%2B-%2BRussian%2B-%2BFinal_.pdf?MOD=AJPERES&CVID=jgel79F
2.	Environmental, Health, and Safety Guidelines Industry sector guidelines	Comments on the implementation of the IFC PS	https://www.ifc.org/wps/wcm/connect/377bfe12-a3c0-433f-a5e3-c51dbebe38d4/SectorSpecificEHSGuidelines_Applicability.pdf?MOD=AJPERES&CVID=lakafE1
3.	Environmental, Health and Labor Safety Guidelines for thermal power plants.	Good practice document for thermal power plants. Applicable by virtue of the sectoral affiliation of the project.	https://www.ifc.org/content/dam/ifc/doc/2000/2008-thermal-power-ehs-guidelines-ru.pdf
4.	Environmental, Health and Safety Guidelines for Water Supply and Sanitation Systems	Applicable, because the project carries out intake and discharge water using surface water bodies	https://www.ifc.org/wps/wcm/connect/eedfad60-8972-494c-8f95-34ec51291b5f/Water_and_Sanitation%2B-%2BRussian%2B-%2BFinal_.pdf?MOD=AJPERES&CVID=jqevNNE
5.	Environmental, Health and Labor Safety for electricity transfer and distribution networks	Good international practice for electricity transmission and distribution networks. Applicable, because the company is planning the construction of a power line related to electricity distribution networks	https://www.ifc.org/wps/wcm/connect/47b11c82-bf10-42d9-a941-345eb92aa507/Electric%2BPower%2BTransmission%2B%26%2BDistribution%2B-%2BRussian%2B-%2BFinal_.pdf?MOD=AJPERES&CVID=jkC-H1u

Item	Name	Brief description	Link
7.	A guideline to good practice "Assessment and management of cumulative impacts: a guide for the private sector in emerging markets"	The document includes a description of the approach to identification of cumulative impacts and their assessment for the development and implementation of measures to manage cumulative effects. Applicable, because within the framework of the ESIA project it is provided conducting an assessment of cumulative assessment	https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_cumulativeimpactassessment
8.	Guideline on environmental and social assessment procedures	Methodical document revealing the requirements for environmental and social assessment procedures	https://www.ifc.org/wps/wcm/connect/6f3c3893-c196-43b4-aa16-f0b4c82c326e/ESRP_Oct2016.pdf?MOD=AJPERES&CVID=IRwoQFr

When developing action plans in the field of environmental and social sustainability, it is advisable to use the following documents:

- Guidelines for the implementation of the Environmental and Social Management system (General provisions), 2015;
- Guidelines for the implementation of the environmental and Social Management system (construction), 2014.

2.3.2.3 Categorization of proposed activities

The scope of the ESIA research and disclosure requirements are related to the definition of the project category to be funded.

According to the primary environmental and social screening, it was determined that, in accordance with the requirements of the Equator Principles and the Recommendations of the OECD Council, the project falls under Category A.

Depending on the specifics of the project and the recipients, the scale and nature of potential impacts, the planned activity can be classified into one of the four categories provided for by the requirements of the IFC:

- A – activities with potentially significant environmental or social risks and/or adverse impacts – diverse, irreversible and/or unprecedented.
- B – types of activities with potentially limited environmental or social risks and/or adverse impacts – few, mainly affecting only the territory of the immediate implementation of the project and mostly reversible, the level of which can be effectively reduced with the help of mitigation measures.

- C – activities with minimal environmental or social risks and/or adverse impacts.
- FI – activities related to investments in financial institutions or using mechanisms involving financial intermediaries.

At this stage of work, it is assumed that the project belongs to Category A according to the requirements of the IFC due to the following circumstances:

- The project is potentially associated with significant negative impacts on the environment and social conditions, some of the impacts are irreversible;
- the project's area of influence includes the territories adjacent to the project;
- the implementation of the project will require the implementation of various measures to prevent and/or minimize negative environmental and social impacts.

The Consultant's experience related to the environmental assessment of such industries indicates that the impacts of the planned activities are controllable when using environmental/social management and monitoring measures.

For a Category A project, a comprehensive full-scale ESIA is carried out, which is also provided by the assignment to the Contract between the Consultant and the Customer. Within the framework of ESIA studies, the project category must be confirmed.

3 METHODOLOGICAL AND INFORMATIONAL SUPPORT

3.1 Assessment methodology

Environmental and social impacts – any changes, potential or actual, in the physical, natural or cultural environment, as well as impacts on the local population and personnel caused by the planned activity [1].

In accordance with the requirements of the ESIA agreement, the project provides for the use of a methodology based on the provisions of [1, 2] and other IFC documents applicable to ESIA.

The ESIA procedure includes:

- determination of the composition and scope of research;
- stakeholder identification;
- disclosure of information and consultations,
- assessment of alternatives to planned activities, consideration of realistic options;
- identification and assessment of the significance of potential impacts;
- development of measures to prevent and/or minimize, compensate for impacts;
- substantiation of management and monitoring decisions;
- assessment of cumulative and residual impacts.

The ESIA provides for interaction with stakeholders, including the participation of organizations related to the planned activities.

The materials specified in Section 1.3 were used as initial data for determining the composition and scope of work. Gaps in the initial data of this stage of work will be eliminated during further work on the study of background studies and/or at the beginning of the implementation of the main phase of the ESIA.

To determine the composition and scope of the ESIA work, an analysis of applicable requirements was performed (Section 2), alternatives and characteristics of the project were considered (Sections 4, 6), as well as a preliminary analysis of the initial conditions of the Project (Sections 5, 7, 8) and identification of environmental and social impacts (Section 9) has done.

Later in this section, methodological approaches to certain types of work as part of the ESIA are considered in more detail.

3.2 Determination of the composition and scope of work of the EIA

Determining the composition and scope of ESIA work is one of the main tasks of the preliminary assessment⁸. For this purpose, at this stage of the ESIA are carried out the following:

- determination of applicable national and other requirements applicable to the ESIA;

⁸ In the practice of research performed in accordance with the requirements of the MFO

- cameral analysis of documentation on planned activities, including the search and justification of analog objects;
- reconnaissance survey of the site and the area of the proposed activity;
- collection, generalization and evaluation of available information on natural, man-made and socio-economic conditions of the area of planned activity;
- identification of the most sensitive (vulnerable) recipients of exposure;
- identification of stakeholders, including the initiation of interaction with their representatives;
- preliminary determination of the impacts of the proposed activity. As a result of the performance of these works:
 - collected the necessary data that were not available at the beginning of the work on the stage;
 - The area of influence has been preliminarily determined;
 - the assignment for the ESIA has been prepared; composition and content and of the ESIA materials have been determined;
- A Draft plan for interaction with stakeholders has been developed.

3.3 Baseline assessment

The assessment of the current situation involves fixing the initial (current) state of the components of the natural environment and socio-economic conditions within the boundaries of the zone of potential influence of the planned activity in accordance with the requirements of PS-1 of the IFC.

This assessment is initiated at the preliminary assessment stage of the ESIA and continues during the ESIA procedure. Gaps in the initial data are eliminated as a result of background research and/or as a result of collecting relevant information.

3.4 Impact identification

The main methods used to identify the impacts on the environment and social environment of the area where the planned activity is located:

- analysis of materials of specialized studies, results of engineering surveys, urban planning and/or other documentation of territorial planning, environmental monitoring data;
- analysis of decisions on planned activities and associated projects, taking into account the stages of the life cycle (construction, operation, decommissioning);
- stakeholder consultations;
- identification of impacts as a result of the analysis of the "source – path–recipient" chain ⁹.

⁹ In accordance with the requirements of the ESIA assignment.

In assessing the significance of impacts, important attention is paid to identifying recipients, as well as determining their sensitivity to potential impacts.

With regard to environmental components and socio-economic conditions, potential impacts and their significance should be established for each stage of the life cycle of the planned activity.

ESIA considers the following stages of the life cycle:

- construction;
- exploitation.

Decommissioning of the facility is not considered, since the preservation of electricity needs is assumed for a conditionally unlimited period, the forecast of impacts beyond which becomes impractical.

Identification and assessment of the significance of impacts include:

- impact forecast;
- impact assessment itself (see below for details);
- check of residual influences.

At the subsequent stages of the work, a justification of measures to prevent and/or minimize (compensate) negative impacts and/or their consequences will be carried out. The effectiveness of measures to prevent and/or minimize negative impacts is determined by the level of residual impacts, in terms of their acceptability for receptors or significance.

The assessment process will continue until an acceptable level of residual effects is achieved.

3.5 Impact characteristics

The impacts of the proposed activity are classified based on their characteristics, which ultimately determine the ability to manage and control. In Table 5 is given the characteristic of impacts adopted for the purposes of this ESIA.

Table 5 Impact characteristics

Indicator	Definition	Characteristic
Orientation	Positive	Impacts which connected c with positive changes (consequences) for recipients
	Negative	Impacts which connected c negative changes (consequences) for recipients
Genesis	Direct	Impacts related to the direct interaction between the proposed activity and recipients
	Indirect	Impacts which not connected c with direct interaction of the planned activity and recipients
Mechanism	Cumulative	Impacts of the planned activity, the significance or consequences of which for recipients may increase as a result of impacts unrelated to the planned activity, but specific to the territory and/or recipients in question

3.6 Impact Significance Assessment

This study uses a traditional methodological approach to assessment, which allows to analyze the potential impacts of the planned activities by several indicators (Table 6)

- distribution (scale);
- duration;
- reversibility.

Table 6 Impact assessment indicators

Indicators	Significance	Characteristics
Distribution (scale)	Local	Impact is localized within the boundaries of the facility site, the sanitary protection area, and/or part of the area of the planned activity in the immediate vicinity of the facility (part of the catchment area)
	Domestic	The impact is localized within the area of the planned activity (administrative district, municipality) or the catchment area of a large watercourse
	Regional	The impact is localized within several areas or catchment areas of large watercourses
	Transborder	Impact affecting recipients beyond state borders
Duration	Short-term	Impacts which connected c with short-term or irregular events
	Medium-term	Impacts which are limited by stages of construction, exploitation
	Long-term	Impacts are alike with stages of construction, operation, there are residual effects
Reversibility	Reversible	Recovery of the initial state of the recipient or in a result of acceptance of corrective/compensatory measures and (or) self-recovery
	Irreversible	Impacts which determe permanent recipient's changes

In Table 7 typical criteria for the analysis of impacts to assess their magnitude are presented.

Table 7 Impact magnitude table

Impacts	Criteria
Insignificant	The impact does not affect the recipient's indicators, their values are comparable to background levels, the functions and processes inherent in the recipient are not violated, the changes are within the limits of natural variability
Small	Changes that can be captured by generally applicable monitoring methods without affecting significant ecosystem or community functions Distribution: local or domestic Duration: short-term or medium-term Reversibility: reversible
Medium	Impacts that may lead to changes in ecosystems or in the way and quality of life of communities, but without their transformation, loss (total or partial) of their natural functions Distribution: domestic or regional Duration: medium-term or long-term Reversibility: reversible or irreversible

Impacts	Criteria
High	Impacts related to the transformation of ecosystems and/or the loss of their functions, the transformation of the quality of life of communities Distribution: regional or cross-border Duration: medium-term or long-term Reversibility: reversible or irreversible

The significance of an impact is determined by its magnitude and the sensitivity of the recipient. In turn, sensitivity to impacts depends on the recipient's resilience to change (the ability to restore and/or maintain significant functions) and the recipient's value/uniqueness.

In Table 8 are presented the characteristics of the impacts, allowing to assess their significance.

Table 8 Matrix for assessing the significance of impacts

Magnitude (degree) impacts	Sensitivity of the recipient			
	Minor	Low	Medium	High
Insignificant	Negligible	Negligible	Negligible	Negligible/low
Small	Negligible	Low	Low / Moderate	Moderate
Medium	Negligible	Low / Moderate	Moderate	High
High	Low	Moderate	High	High

Impact significance assessment is also carried out taking into account the implementation of measures to prevent and/or minimize negative impacts and/or their consequences.

3.7 Justification of the measures

Impact significance assessment provides making management decisions to prevent/reduce impacts, control and monitoring.

Justification of measures are be carried out in accordance with the hierarchy recommended by the IFC PS-1:

- impact prevention;
- impact minimization;
- recovery of affected components/ecosystems/communities – if applicable;
- compensation to affected components/ecosystems/communities – if applicable;
- "offset" (improvement)¹⁰ – if applicable.

Special attention is paid to the impacts, the significance of which is assessed as "High". However, this does not mean that the Consultant and the initiator of the planned activity will not consider measures for other impacts.

¹⁰ Usually, with regard to measures for the conservation of biodiversity.

3.8 Requirements for the assessment of cumulative impacts

Cumulative impacts are impacts generally recognized as significant based on scientific opinion and/or based on the concerns of the affected communities. The requirements and approaches to assessing cumulative impacts are set out in a number of IFC documents:

- PS-1 [1];
- P37-P43 IFC Guidelines [2];
- The Guideline "Assessment and management of cumulative impacts: a guide for the private sector in emerging markets" [3].

To assess cumulative impacts, the methodology of Accelerated Assessment of Cumulative Impacts (hereinafter referred to as AACI), considered in [3], is used.

When assessing cumulative impacts, it is required:

- to make a forecast of the joint (cumulative) impact of planned activities, other types of activities/projects, natural conditions with an assessment of the sustainability of a valuable environmental component (VEC);
- to justify management measures that exclude any significant risks to the functioning of the VEC.

AACI provides for a comprehensive analysis of the available information [3]:

- determining the scope of work, stage 1 – VEC, spatial and temporal boundaries;
- determining the scope of work, stage 2 – other activities and significant factors;
- determining the background state of the VEC;
- assessment of cumulative impacts on the VEC;
- assessment of the significance of the projected cumulative impact;
- preparation of management decisions regarding cumulative impacts.

Sources

1. Performance standards for environmental and social sustainability. IFC, 2012
2. International Finance Corporation Guidelines: Environmental and Social Sustainability Performance Standards. IFC, 2012
3. Good Practice Guide "Assessment and Management of cumulative impacts: a guide for the private sector in emerging markets". IFC, 2013

4 ALTERNATIVES TO PLANNED ACTIVITIES

4.1 Zero alternative

Zero alternative is the conditional name of a possible alternative associated with the rejection of the planned activity. When evaluating this alternative in accordance with the requirements of the IFC PS-1, the following should be taken into account:

- Increasing demand for electricity in the Republic of Uzbekistan generates demand for the introduction of energy-efficient technologies through the construction of new high-tech power plants. The project is part of the "Concept of providing the Republic of Uzbekistan with electric energy for 2020-2030" and a public priority for sustainable development, the rejection of the planned activity is not economically justified.
- The proposed combined cycle power plant powered by gas is the most promising and widespread in the energy sector, characterized by simplicity of the technological scheme and high efficiency, low fuel consumption and high efficiency of electric energy production.
- Decentralization and construction of additional low-power power plants such as the proposed project for the construction of a combined-cycle power plant with a capacity of 550 MW on the territory of Sh. Rashidov district, Jizzakh region, will lead to a significant reduction in losses of electric energy during its transportation, as well as a reduction in fuel consumption and, accordingly, emissions of pollutants into the atmospheric air.
- The use of a combined-cycle gas turbine cycle makes it possible to improve the environmental performance of an energy enterprise and significantly reduce the level of environmental pollution. Compared with steam turbine and gas turbine power plants, the proposed technology will reduce the consumption of natural gas and, accordingly, emissions of pollutants, in particular nitrogen oxides into the atmosphere.
- The implementation of the project contributes to the socio-economic development of the region, the rejection of the investment plan means the non-use of existing potential (resources, personnel).
- The condition for the admissibility of the planned activity is the development and implementation of design solutions that ensure compliance with the principle of guaranteed not exceeding the permissible level of impact on the components of the natural environment and the population/staff.

Taking into account the above, the conclusion about the preference of considering the construction and operation of a combined-cycle power plant in comparison with zero alternative can be made already at the stage of preliminary environmental and social assessment and not consider this alternative in the future.

4.2 Location

Analysis of the available information suggests that the placement of a combined-cycle gas power plant in a designated area near Jizzakh city is optimal from the point of view of the effectiveness of investment costs.

The provision of the design electric capacity of a combined-cycle gas turbine power plant with a capacity of 550 MW to the existing power system will solve the issue of covering the shortage of energy supply in a number of districts of Jizzakh region and, in particular, the combined-cycle power plant with a capacity of 550 MW and Jizzakh city.

The choice of the location of the combined cycle gas turbine power plant planned for construction is also due to the availability of available sources of water consumption, a gas pipeline and other necessary infrastructure.

At the same time, the construction of the combined-cycle power plant on a dedicated site will be accompanied by:

- the need to obtain rights to new land plots – a site for the placement of combined-cycle power plant facilities and infrastructure facilities;
- significant withdrawal of land for the site and infrastructure – roads, utilities, etc.;
- the need to organize a separate sanitary protection zone.

Thus, all other things being equal, the alternative location of the projected facility is less preferable due to the availability of existing infrastructure, access roads and a detailed comparison of different options for the placement of the construction site in the ESIA studies is impractical.

4.3 Technological alternatives

When considering the issue of commissioning additional capacities for the production of electric energy and the construction of thermal power plants in Jizzakh region, it was also assumed to obtain electric energy using traditional gas-fueled power units.

Analysis of all parameters, including the type of fuel used, fuel consumption per 1 kW/hour, efficiency and, accordingly, the amount of electric energy produced showed that compared with traditional generators, a combined cycle combined cycle power plant running on gas for electricity generation consumes 2.0 times less fuel and efficiency is more than 61%, whereas in traditional power units - below 45%.

The construction time of the Gas piston installation is much shorter than the construction time of powerful thermal power plants of other types.

The use of a combined-cycle gas turbine cycle makes it possible to improve the environmental performance of an energy enterprise and significantly reduce the level of environmental pollution. Compared with steam turbine and gas turbine power plants, the proposed technology will reduce the consumption of natural gas and, accordingly, emissions of pollutants, in particular nitrogen oxides into the atmosphere.

4.4 Other alternatives

In recent years, significant positive changes have been observed in the legislation of the Republic of Uzbekistan, aimed both at improving the efficiency of energy industry enterprises, introducing energy-efficient technologies, and increasing the investment attractiveness of this sector of the economy as a whole.

It should be noted that within the framework of the "Concept of providing the Republic of Uzbekistan with electric energy for 2020-2030" it is stipulated the following:

-
- increase of electricity production from 63.6 billion kWh to 120.8 kWh;
 - reduction of natural gas consumption in the production of electric energy from 16.5 billion cubic meters to 12.1 billion cubic meters;
 - reduction of electricity transmission losses to 2.35% and distribution losses to 6.5% (1.85 times less than in 2019).

The implementation of these plans will ensure the energy security of the country, taking into account forecasts that in 10 years energy consumption in Uzbekistan will increase by almost 2 times.

At the same time, today the main part of the generating capacities (about 85%) are thermal power plants, and therefore, by 2030, it is projected to introduce 15.6 GW of new and modernized small generating capacities of thermal power plants. While 6.4 GW of physically obsolete equipment of generating capacities at large thermal power plants is projected to be decommissioned.

It is noted that plans to reform the electric power industry of Uzbekistan by 2030 have already been announced earlier, in the summer of 2019. It was assumed that the structure of generating capacities by 2030 would look like this: power units using natural gas will reach 16.3 GW, or 51% of the total capacity (now - 33%), hydroelectric power plants - 3.8 GW, or almost 12% (now - 16%), power units using coal, 2.6 GW, or 8.2% (now 11%).

Thus, the implementation of the project corresponds to the program for reforming the energy sector of the Republic of Uzbekistan.

5 INFORMATION DISCLOSURE AND STAKEHOLDER ENGAGEMENT

5.1 Stakeholder engagement tasks and consultation planning

As required by IFC PS1, any project financed by Global Lending Agencies should ensure a continuum of stakeholder engagement from the early stages of project preparation, including meaningful consultation and disclosure of relevant information on proposed economic and business activities. Stakeholder engagement should continue throughout the life cycle of the project. The initiation of the engagement process at an early stage of the project, along with the adoption of appropriate communication mechanisms, helps to ensure the following:

- timely public access to information about the project and its potential impacts;
- participation of key stakeholders in the ESIA procedure;
- identification of new stakeholders;
- the opportunity for affected and interested parties to provide input into the design of the Project, the identification and assessment of its impacts, and the development of measures to mitigate and/or enhance (if positive) impacts.

Stakeholder engagement is also necessary to identify and properly manage potential negative impacts of the Project, to help ensure that affected parties benefit from the Project.

A Stakeholder Engagement Plan ("SEP") will be developed to ensure effective stakeholder engagement as part of the Project's impact assessment. This plan will be disclosed to the public, updated regularly and will include: This plan will be disclosed to the public, updated regularly and will include:

- description of standards and requirements for stakeholder engagement activities;
- identification of stakeholders;
- recording and accounting for stakeholder consultation and disclosure activities undertaken;
- planning of future activities and procedures for stakeholder engagement throughout the life cycle of the Project;
- reporting and monitoring of the engagement process;
- description of the grievance redress mechanism.

5.2 Stakeholders

Stakeholders may include affected communities or individuals and their formal and informal representatives, different levels of government, local authorities,

politicians, religious leaders, non-governmental organisations and special interest groups, professional or academic communities, and companies/businesses.

According to common practice applied to the stakeholder identification process, these are divided into the following categories:

- affected parties, comprising communities affected both directly and indirectly by a proposed activity;
- stakeholder organisations and individuals;
- vulnerable groups.

A description of these stakeholder groups is provided below. A more detailed list of stakeholders will be presented in the SEP. It should be noted that the above list is subject to additions, refinements and changes throughout the life cycle of the project.

5.2.1 Affected parties

Affected parties include individuals, groups and other organisations within the social footprint of the Project that are directly affected by the proposed activity (actual or potential). Affected parties are the most susceptible to changes associated with the proposed activity. Interaction with these parties should be intensive.

A preliminary list of affected parties includes:

- settlements within the borders of Sharaf Rashidov city, the so-called makhallas: Gozgontepa, Khalkobod, Sukokli and Olmachi (these makhallas were determined at the stage of the initial assessment of the project during consultations with administrative authorities as populated areas within a radius of 1000 m to 3000 m from the boundaries of the project territory);

5.2.2 Stakeholders

This category includes individuals/groups/organisations who may not be directly affected by the project (but who nevertheless believe that their interests may be affected in some way by the project), and who may be able to influence the project process.

This category of stakeholders includes the following communities and organisations:

- Khokimiyat of Jizzakh city;
- Khokimiyat of Sharaf Rashidov district, Jizzakh region;
- Department of Ecology and employees Protection of Jizzakh city and Sharaf Rashidov district;
- The Center for sanitary and epidemiological supervision of the city of Sharaf Rashidov district;
- Department of Cultural Heritage of Jizzakh region
- Employment Center of Sharaf Rashidov district;
- Makhallas - Gozgontepa, Khalkobod, Sukokli and Olmachi.

5.2.3 Vulnerable groups

This category includes individuals who may be disproportionately affected by the Project or further disadvantaged relative to other groups in society due to their vulnerable status. Ensuring that they are equally representative and involved in the interaction and decision-making process of the Project may require additional effort. The following vulnerable groups are identified in the pre-assessment phase:

-
- poor citizens and their families, whose well-being depends on social payments from the state;
 - households, headed by women, women farmers, women engaged in seasonal agricultural work
 - households with disabled people or ethnic/language minority groups;
 - People with disabilities and/or diagnosed socially significant diseases (tuberculosis, HIV/AIDS, etc.).

5.3 Previous stakeholder engagement activities

At the time of writing this report the Consultant had held working meetings and initial consultations with representatives of regional authorities (Khokimiyats of Jizzakh city and Sharaf Rashidov district), Jizzakh city and Sharaf Rashidov district Environmental Inspectorate, Sanitary and Epidemiological Service of Sharaf Rashidov district, Department of Land Resources and State Cadastre of Sharaf Rashidov district.

On 21-22.04.2024, initial consultations were held with residents and chairpersons of Gozgontepa, Khalkobad, Sukokli and Olmachi makhallas.

Data on the socio-economic situation (income, unemployment, ethnic composition of the population, vulnerable groups, social support programmes, social conflicts and problems, infrastructure - schools, hospitals, clinics, roads, public transport) and makhalla passports are requested.

Minutes of consultations and lists of participants are presented in Annex to this report.

5.4 5.4 Future stakeholder engagement activities

Stakeholder engagement activities are carried out throughout the project life cycle and include the following stages:

Baseline research stage:

May – June 2024. Conducting baseline social surveys:

- focus groups (women, youth, residents of the project area);

- in-depth interviews with farmers affected by the project (checking procedures for land acquisition, compensation payments);
- in-depth interviews with chairmen of makhalla committees located in the project area.

Environmental and social impact assessment stage:

- **June 2024 (tentatively).** Disclosure of information: submission of the ESIA, SEP and Non-Technical Summary (NTS) report on the UMK website and through posting in makhalla committees and khokimiyats. Receipt of comments and suggestions on disclosed documents within 30 days.
- **June 2024 (tentatively).** Disclosure of final and updated versions of the ESIA, SEP and NTS report online and upon request of stakeholders.

5.5 National legal requirements

Key national legislation on consultation and stakeholder engagement are the provisions on access to information, any legal requirements related to public consultation, plus existing channels for lodging complaints.

The Constitution of the Republic of Uzbekistan (adopted on 8 December 1992) contains a chapter on the economic and social rights of citizens. Under it: "Everyone shall have the right, both individually and collectively, to submit applications and proposals, and to lodge complaints with competent state bodies, institutions or public representatives. Applications, proposals and complaints shall be considered in the procedure and within the time-limit specified by law" 2(chap. VIII, art. 35).

Environment, Community Health and Safety

The national ESA procedure is regulated by the Law "On environmental expert review" (2000) updated on 14 September 2017, and Cabinet of Ministers Resolution No 541 of 07.09.2020 "On Approval of the Regulation on State Environmental Expert Review".

The Regulation contains information on the procedure for mandatory public discussions and hearings on draft Environmental Impact Assessments for proposed activities belonging to Environmental Impact Categories I and II prior to the State Environmental Expert Review.

Public participation in ESA process. The Constitution of the Republic of Uzbekistan (arts. 50.55) lays the foundation for the participation of citizens and public associations in environmental management. Law of the Republic of Uzbekistan of 09.12.1992. (updated on 18.04.2018) "On nature protection" in Articles 12-13 regulates the right of citizens to unite in public organizations for nature protection, to request and receive information about the state of the environment and measures taken for its protection, as well as the authority of NGOs established. Legislation in the field of ecology and environmental protection provides for public participation as a) an

individual citizen or a group of citizens; b) through citizens' self-governance bodies and c) through non-governmental non-profit organizations.

Direct participation of non-commercial environmental protection organizations is envisaged in the course of environmental assessment of documentation for construction of new and reconstruction of existing facilities for management purposes. In particular, article 27 of the Law of the Republic of Uzbekistan "On Nature Protection", as well as article 23 of the Law of the Republic of Uzbekistan of 2018. "The SEE law enables NGOs and citizens to carry out public EE in any area of activity that needs to be justified by independent groups of specialists at the initiative of the NGOs themselves and at their own expense or on a voluntary basis.

The public expert review may be carried out independently of the state ecological expert review. It is prohibited to hinder the implementation of public environmental expertise. It is established that the conclusion of the public environmental expertise is of a recommendatory nature.

In addition, when conducting the State Environmental Expert Review, the contracting organizations are obliged to publish the announcement of the State Environmental Expert Review and information about its results in the media, in cases where the authorized bodies include the construction facility in the list of important objects.

Consultations in the land acquisition and resettlement process

Decree of the President of the Republic of Uzbekistan No 5491 (August 5, 2019).

The Decree "On Additional Measures to Unconditionally Guarantee the Right of Ownership of Citizens and Business Entities" governs the procedures, mechanism of making decisions on the seizure of land for state and public needs which is allowed only after an open discussion with interested parties whose land is planned to be withdrawn, as well as assessing the benefits and costs.

On 16 November 2019, the Cabinet of Ministers approved "Regulations on the Procedure for Land Acquisition and Compensation to Owners of Immovable Property Located on an Acquisition Land Plot". This Regulation defines the procedure for the withdrawal of a land plot for state and public needs.

According to this regulation:

- local municipalities (khokimiyats) as well as investors can initiate the acquisition of land in the manner prescribed by the Regulation;
- If it is necessary to withdraw a land plot, an open discussion with the participation of representatives of the khokimiyat as well as investors and owners is held.

5.6 Existing Grievance Redress Mechanism

Any citizen of Uzbekistan has several channels to submit his or her complaints.

On village (makhalla) level):

- Physical visit to Makhalla Citizens' Assembly Office to meet with Chair;

- Call to President's Virtual Reception (telephone number is 1000 or 0-800-210-00-00) or send message to President's Virtual reception online (www.pm.gov.uz);
- Call to hotlines established at each district or regional Khokimiyat;
- Send written complaint (letter) to district/regional Khokim/ industry-specific ministry/President;
- Attend meetings with district/regional Heads of Sectors on integrated socio-economic development of regions (4 sectors established in each district);
- Attend meetings with leadership of line ministries and agencies that have to regularly meet with citizens in rural areas.

If a citizen is not satisfied with reply provided by Makhalla Chair, or s/he has received incomplete response, the citizen can apply to upper level, specifically to District Khokimiyat.

District level:

- Physical visit to Khokimiyat on citizens reception days to meet with district Khokim or deputy Khokims
- Call to hotlines established in each Khokimiyat;
- Physical visit to Public reception offices under President's Virtual reception and established in each district nationwide;
- Call to President's Virtual Reception (telephone number is 1000 or 0-800-210-00-00) or send message to President's Virtual reception online (www.pm.gov.uz);
- Send written complaint (letter) to district Khokim/ industry-specific Ministry/President
- Attend meetings with district/regional Heads of Sectors on integrated socio-economic development of regions (4 sectors established in each district);
- Attend meetings with leadership of line ministries and agencies that have to regularly meet with citizens in rural areas.

If a citizen is not satisfied with reply provided on district level, or he has received incomplete response, citizen can apply to upper level, specifically to Regional Khokimiyat.

Regional level:

- Physical visit to Khokimiyat on citizens reception days to meet with regional Khokim or deputy Khokims;
- Call to hotlines established in each Khokimiyat;
- Physical visit to Public reception offices under President's Virtual reception and established in each regional centre nation wide;
- Call to President's Virtual Reception (telephone number is 1000 or 0-800-210-00-00) or send message to President's Virtual reception online (www.pm.gov.uz);

- Send written complaint (letter) to regional Khokim/ line Ministry/President;
- Attend meetings with regional Heads of Sectors on integrated socio-economic development of regions (4 sectors established in each district);
- Attend meetings with leadership of line ministries and agencies that have to regularly meet with citizens in rural areas.

5.7 Grievance Redress Mechanism

IFC PS1 calls for the development of a Grievance Redress Mechanism for external and internal stakeholders.

Local residents and other stakeholders should be able to raise concerns or complaints about the project, its impacts and mitigation measures, and receive a competent response. This mechanism should be put in place at the early stages of project implementation and maintained throughout the project life cycle.

Complaints and appeals concerning the project can be made by using the following means:

- by e-mail to: nailya.galeyeva@cenergo.uz
- by mail to: Khalkobad mahallya, Sharaf Rashidov street, Jizzakh region, the Republic of Uzbekistan
- by phone: +998 88 330 00 20 , Galeeva Nail

More detailed information on the Grievance Redress Mechanism will be provided in the SEP.

6 DESCRIPTION OF THE PROPOSED ACTIVITY

6.1 General information

6.1.1 Location and composition of the existing production

Administratively, the planned combined cycle gas turbine power plant will be located in Sharaf Rashidov district of Jizzakh region. The distance from the allocated territory to the border of Jizzakh, which is located in a westerly direction, is 5.5 km.

The territory of the allocated construction site is surrounded on all sides by empty agricultural fields.

The nearest highways run in a northerly direction at a distance of 325 meters (A 376) and in a westward direction at a distance of 95 meters (M 39) from the designated site for the construction of a power plant.

The Jizzakh-Khawast railway line runs in a northerly direction at a distance of 60 meters from the site under consideration.

The nearest surface watercourse to the designated construction site is an irrigation canal, which flows at a distance of 11.5 meters in an easterly direction with a capacity of 20 to 25 cubic meters of water per second and a total depth of up to 4 meters along the edge of the normal water level (Figure 5).

It is planned to install a Siemens "Siemens SGT5-4000F V10" gas turbine unit (GTU) with a capacity of 365.3 MW (50 Hz), manufactured in Germany (1 unit) on the allocated territory.

Also, at the planned power plant, electric energy will be generated using a steam turbine (ST) "Siemens SST-700/900", with a capacity of 185.3 MW, manufactured in Germany (1 unit). (Table 9).

The total generation of electric energy at the power plant will be 4,000,000 MWh per year.

The operating mode of the new combined-cycle gas power plant is basic, year-round, round-the-clock with the maximum possible number of hours of use of production capacity.

Modern and innovative technologies used at the new power plant will have high efficiency, which is twice as high as those of existing, traditional thermal power plants. This, in turn, will generate twice as much electricity with the same consumption of natural gas.

It should be noted that in standard gas turbine installations for the production of electricity, the efficiency is 35-40%. In the proposed combined cycle with the use of combined cycle gas plants, the efficiency will be in the range of 55-60%. The construction time of a combined-cycle gas power plant is much shorter than the construction time of traditional thermal power plants of other types. At the same time, the transition to a combined-cycle gas cycle makes it possible to improve the environmental performance of the plant and significantly reduce the level of harmful emissions into the atmosphere.

The total electrical efficiency of the proposed CCGT is 61%. The CCGT in question belongs to a relatively new type of power plant powered by natural gas. Combined-cycle gas units are designed to produce the maximum amount of electricity (primary and secondary from hot exhaust gases).

Table 9 Main technical characteristics of a combined-cycle gas power plant

Characteristic	Description/value
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Type of technology	Combined cycle gas turbine technology
The total area of the allocated plot for construction is	9.43 ha.
Number of combined cycle gas turbine plants (CCGT)	1 unit, capacity 356.3 MW
Type of CCGT	Gas Turbine (GT) series: "Siemens SGT5-4000F V10" – 1 unit. (manufacturer Germany)
Number of steam turbines (ST)	1 unit, capacity 193.7 MW
Type of steam turbine	Steam turbines (ST) of "Siemens SST-700/900" (manufacturer Germany) series.
CCGT ECE	61%
Power generation	550 MW
Number of working hours per year	7800 hours/year
Fuel	Natural gas
Annual consumption of natural gas	748 800.0 thousand m ³ /year
Consumption of conventional fuel for electricity generation	1230 r.y.t/kWh
Type of condenser cooling	Water-cooled
Type of cooling tower	Cooling towers with artificial ventilation
Number of chimneys	2 units
The height of two chimneys of the CCGT	60 meters
Diameter of the chimney mouth	The bypass pipe is 7.0 meters and the boiler pipe of the heat exchanger is 7.2 meters

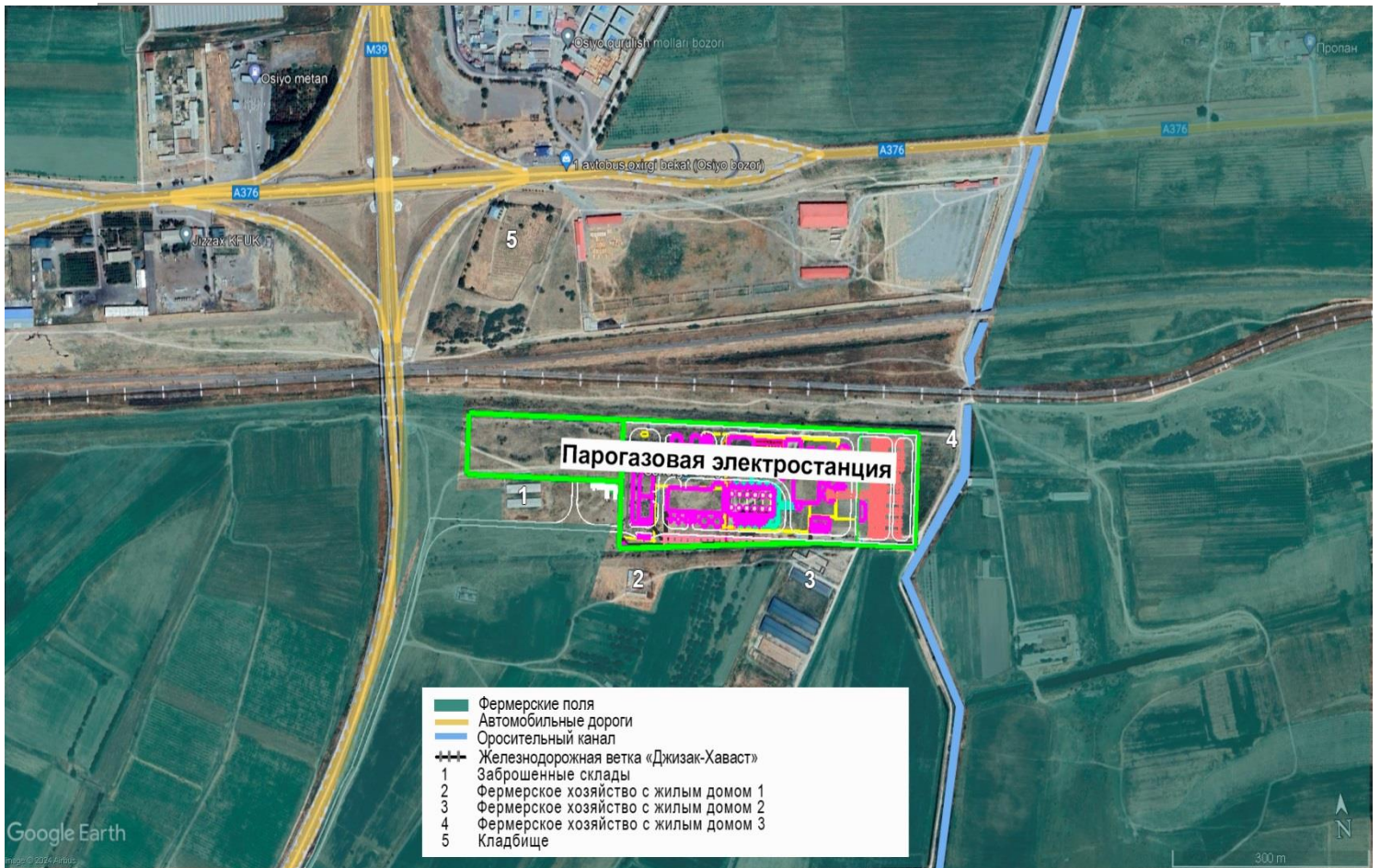


Figure 2 Industrial site of the power plant and adjacent facilities

6.1.2 Combined-cycle gas turbine power plant construction project

GTU - SGT5-4000F model with a capacity of 365.3 MW (50 Hz) is a powerful, reliable, energy-efficient gas turbine showing excellent performance in a simple cycle – 365.3 MW and high efficiency in a combined cycle – 62%.

The ease of maintenance of the modular design leads to short downtime, ensuring that the GTU reaches maximum operational readiness in a short time.

Innovative internal cooling air channels ensure reliable long-term operation and the ability to start quickly. Changing the design of the hydraulic gap (HCO) reduces losses in the gap, which increases the efficiency of the GTU, minimizes wear, mechanical, vibration, and temperature loads during start and stop.

The main structural components of SGT5-4000F:

- 15-stage axial compressor;
- annular combustion system;
- 4-stage air-cooled turbine.

The rotor with self-centering, leveling discs, with Hirth notches, central thrust is a guarantee of simple and fast assembly, maintenance, repair, balancing and replacement of parts on site. The upgraded internal channels for the cooling air flow reduce the load on the main structural components of the GTU, ensure a long period of maintenance-free operation.

Variable angle guide vanes plus two stages of high-speed variable pitch guide vanes (VGV) increase partial load efficiency and optimize performance over a wide range of operating conditions.

Built-in valves provide a controlled supply of cooling air.

Technical characteristics of GTU:

- Full capacity 329 — 385 MW
- fuel – natural gas, LNG, acid gases, distillate oil, H₂, biodiesel, kerosene, jet fuel, condensate, oil;
- 50 Hz
- efficiency – 41% — 41.5%;
- heat consumption – 8780 — 8675 kJ/kWh;
- turbine speed – 3000 rpm;
- pressure ratio 20.1 to 1, 21.0 to 1
- exhaust gas consumption – 724 – 800 kg/s;
- exhaust temperature – 599 — 619°C;

Specific emissions of pollutants:

- No_x ≤ 25 ppm at 15% on liquid fuel (with water injection for NO_x control);

- CO ≤ 80 ppm;
- Formaldehyde – N/A

Siemens has improved the SGT5-4000F, providing higher component efficiency due to better aerodynamics of the compressor and turbine, as well as higher gas turbine performance.

With its high steam capacity, the SGT5-4000F is excellent for cogeneration or combined heat and power generation (CHP), for example, for:

- desalination of seawater;
- technological steam;
- district heating.

Siemens SST-700 steam turbine 185.3 MW

The steam turbine model "SST-700" is an energy efficient and standard solution for a turbine with a short delivery time due to a fixed predesigned structure.

The "SST-700" model steam turbine provides a short period of power generation, cost-effective supply of materials and fast delivery from the factory.

A ramjet turbine with a capacity of 185.30 MW consists of a high-pressure steam turbine (backpressure), which drive a generator installed between them.

The steam turbine with an internal casing is a competitive and optimized product for combined cycle power plants.

Technical parameters:

- rotation speed from 3,000 to 3,600 rpm;
- inlet pressure up to 180 bar / up to 2,611 psi;
- Inlet temperature: up to 585 °C / up to 1,085 ° F;
- exhaust steam parameters: up to 0.3 bar / 4.4 psi;
- superheated steam temperature: 565 °C / 1,050 °F;
- superheated steam pressure: 45 bar (A) / 842 psi;
- controlled extraction: 72 bar / 1,044 lb/sq. an inch.

The principle of CCGT operation.

The air compressed in the CCGT compressor continuously enters the combustion chamber, where it promotes the combustion of gaseous fuel at constant pressure. Gorenje The combustion products enter the gas turbine, where the kinetic energy of the gas flow is converted into the mechanical work of rotating the turbine rotor, where electrical energy is obtained. The temperature of the gases in front of the gas turbine, depending on the turbine series, is in the range of 1100-1500 °C.

After the CCGT, the exhaust gases at a temperature of 670 ° C enter a waste steam generator (waste heat boiler), in which steam is formed by transferring the thermal energy of gases from the gas turbine to feed water and steam. Gases from the recovery boiler are

released into the atmosphere through the chimney at a temperature of about 85-140 °C.

The steam generated in the recovery boilers enters the steam turbine, where the kinetic energy of the steam drives the turbine, generating secondary mechanical energy, and accordingly additional electrical energy is obtained.

The combined cycle gas plant consists of two separate units: steam power and gas turbine. In combined-cycle gas installations, the first generator is located on the same shaft with a gas turbine, which generates an electric current due to the rotation of the rotor. Passing through a gas turbine, the combustion products give it only a part of their energy and still have a high temperature at the outlet of the turbine. Further, the combustion products enter the steam power plant, into the heat recovery boiler, where water vapor is heated. The temperature of the combustion products is sufficient to bring the steam to the state necessary to rotate the steam turbine and obtain additional electrical energy.

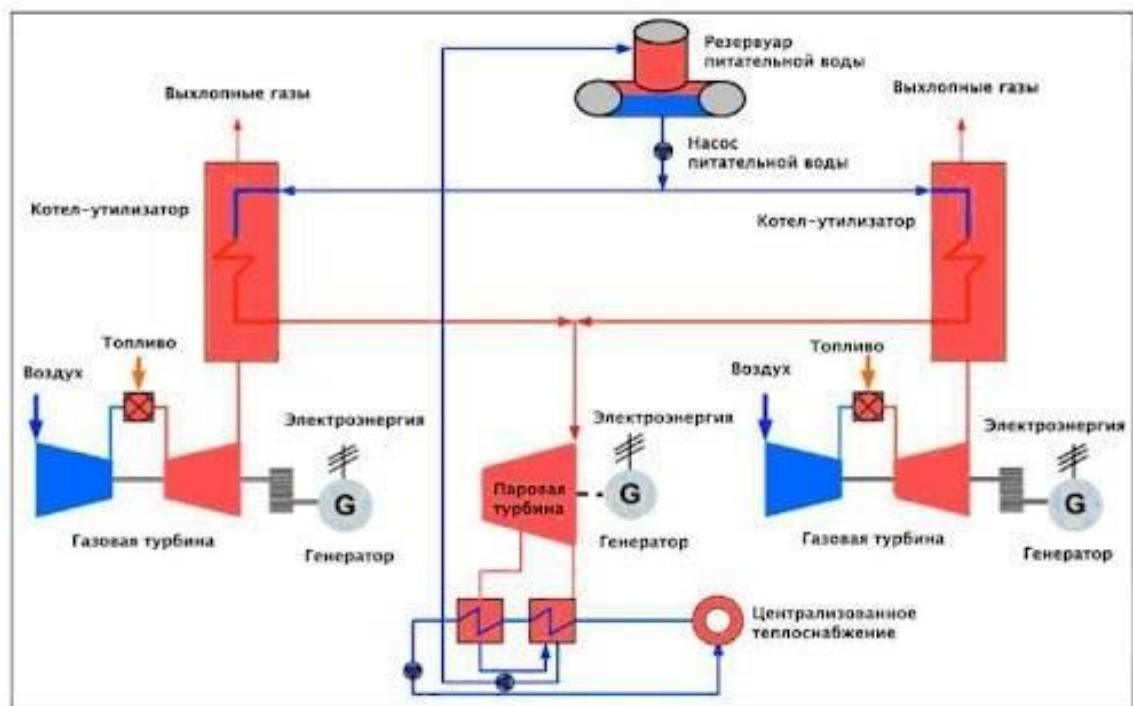


Figure 3 Cycle of electric energy production

It is planned to have production units on the territory of the power plant, where electricity will be directly generated, as well as auxiliary units.

Table 10 Composition of production and support units

Item	Name
1.	Water intake facilities
1.1	Water intake area

1.2	Pumping station
2.	Chemical water treatment site (ChWT)
2.1	The building of the water treatment plant
2.2	Sewage sump
2.3	Chemical dosing building
2.4	Containers with raw water.
2.5	Containers with demineralized water
2.6	Cooling tower
2.7	Condenser for cooling water
2.8	The fire station building
3.	Gas turbine plant
3.1	Gas turbine
3.2	Waste heat boiler
4.	Steam turbine plant
4.1	Steam turbine
4.2	Water-cooling condensers
5.	Compressor station
5.1	The building of the gas compressor station
5.2	The building of the gas measurement station
6.	Transformer section
6.1	Transformers
6.2	High voltage distribution area
7.	Support units
7.1	Administrative building
7.2	Repair and mechanical workshop
7.3	Warehouse building
7.4	Parking place for cars
7.5	Dining room
7.6	Laboratory
7.7	Diesel generator set
7.8	Checkpoint.

6.2 Land use

The construction of the facility is envisaged on a plot of agricultural land allocated by the khokimiyat of Sharaf Rashidov district.

The total area of the allocated plot for the construction of the combined cycle gas turbine power plant is 94,305.25 m² or 9.43 ha, including: for the construction of the station 29,120.00 m² or 2,912 ha; for hard surfaces (parking, roads and others) 28,630.25 m² or 2,863 ha; for green spaces 28,630.25 m² or 2,863 ha.

6.3 Water supply

The water supply of the planned power plant during operation consists of production and household and drinking needs.

The power plant's water supply sources are:

- drainage channel of the Jizzakh reservoir - for industrial water supply (Figure 4);
- centralized district water supply for household and drinking needs.

Water consumption for the production needs of a power plant consists of water consumption:

- to recharge the steam-water cycle and the circulating cooling system;
- to purge cooling towers;
- on the need for additional water of the ChWT system.

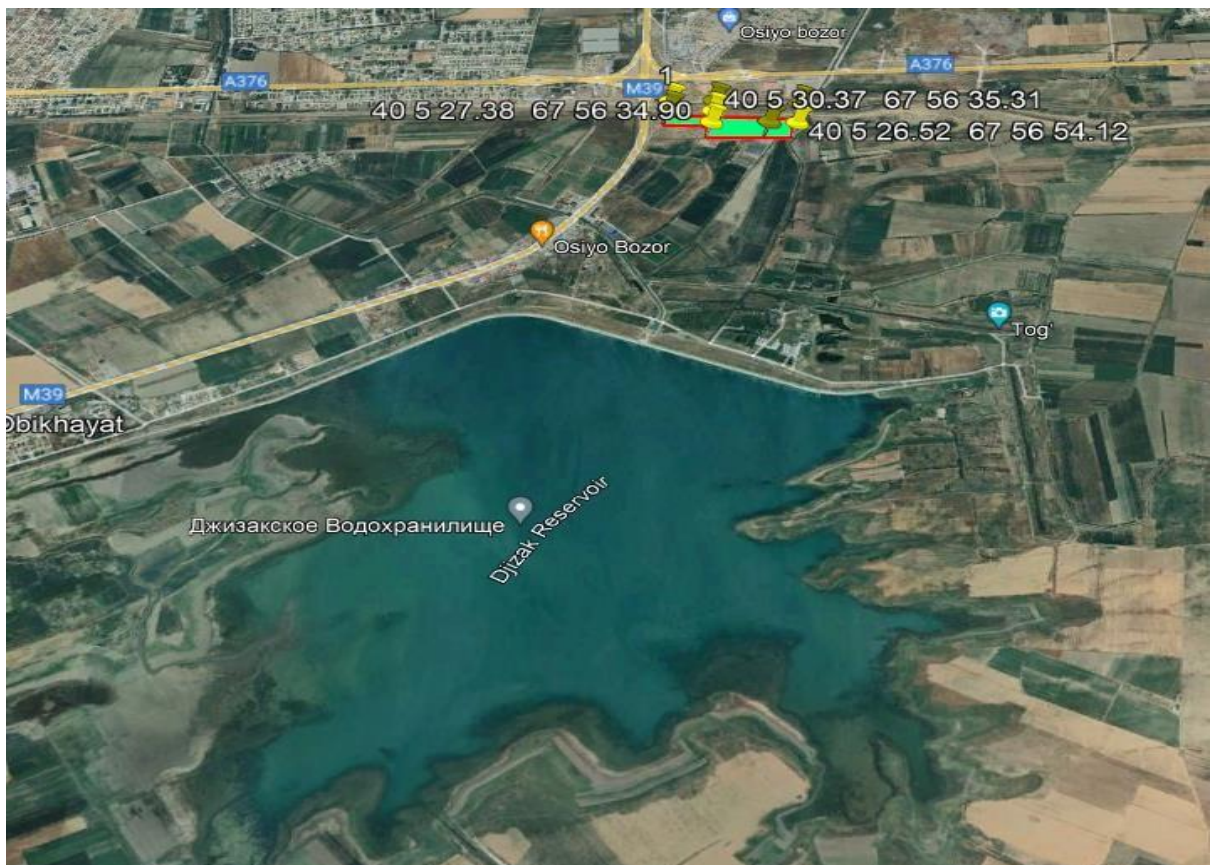


Figure 4 Drainage channel of the reservoir of Jizzakh

A closed, circulating cooling system is used to cool the CCGT equipment. A mixture of demineralized water and ethylene glycol is used as a cooling medium in a closed circuit.

The heated water of a closed circuit is cooled by water from an auxiliary (external) circuit, which includes wet fan cooling towers with an internal pool, pumping stations, an

inhibitor dosing system and monitoring devices. The water bowl of the cooling tower is filled with clarified water supplied by pumps from the tanks of the industrial water supply.

The additional water consumption consists of the losses of the settling tanks, the circulating cooling system (evaporation and entrainment of drip liquid in cooling towers), the water consumption for purging cooling towers, as well as the intake of additional water into the ChWT system.

The primary purified water is sent to the raw water reservoir, from where the water flow is further distributed to the needs of the cooling tower, to recharge the cooling tower, to demineralize and cool the systems.

The circulating water cooled at the cooling towers is supplied via circulation pumps to the condensers of the steam turbine and to all auxiliary equipment through circulation ducts. After condensers and other heat exchangers, the spent (heated) water is sent to cooling towers for cooling by circulating water ducts.

Replenishment of losses in the circulation system (evaporation and entrainment of water in cooling towers, purging of the circulation system) is provided by supplying additional water from the raw water tank.

In order to avoid the formation of salt deposits on the walls of the equipment, constant purging of cooling towers is provided. Purge waters are conditionally pure. The water after purging, being conditionally clean, is planned to be discharged through the water pipes into the irrigation canal (Figure 5).



Figure 5 Irrigation canal next to the project area

According to the data provided by the investor, the production water consumption is formed conditionally based on the calculation of electricity generation per 1 MW of about

0.36 m³ of water.

The approximate water consumption is calculated taking into account the water consumption per 1 MW - about 0.36 m³ (water intake for the chemical water treatment system, recharge of the raw water tank, fire system and others).

With the production capacity of the power plant - 550 MW/h, the hourly water consumption will be: $550.0 \times 0.36 = 200.0$ m³/hour, 4800 m³/day.

The power plant will use a circulating water supply system with the installation of a fan-mounted cooling tower of the "CENK" type (3 fans in each tower). The cooling range of the cooling towers will be 10 C, the inlet water temperature is 34 C, the outlet water temperature is 24 C, the drip loss is 0.20% and the evaporation of water will be 1.30%.

After filling the system with a technological volume of water, then there is a periodic replenishment of water losses in the technological cycle. Replenishment of losses in the circulation system (evaporation and entrainment of water in cooling towers, purging of the circulation system) is provided by supplying additional water from the raw water tank.

The cooling water from the cooling tower will be used mainly in the condenser to condense the exhaust steam. The oil block also uses cooling water to cool the lubricating oil.

6.4 Water disposal

According to the technology, in order to avoid the formation of salt deposits on the walls of the equipment, the cooling towers are constantly purged. Purge waters are conditionally pure. The total salt content in this water does not exceed the salt content in the source water. It is planned to monitor the salinity in the source and purge waters. The purge water of the cooling tower and the water after cooling of the equipment are diverted to the internal sewer network of the enterprise and then it is planned to be sent to the irrigation canal.

An oil-containing water collection and purification system is provided on the territory of the 550 MW power plant, which is an integral part of the power plant operating on gas turbine installations. The system is designed to collect water from areas that may be contaminated with oil, for its subsequent purification.

The oily wastewater will be separated from the oil using an oil separator. The separated oil will be transferred to a specialized organization for processing, and the purified water from the oil separator will be sent back to the tower of the cooling tower.

In case of emergency discharges of wastewater contaminated with petroleum products, it is necessary to ensure their safe removal and transfer of contaminated water to the nearest treatment facilities.

It should be noted that when using the innovative "Dry Flexicycle" technology in the steam cycle of a dry condenser connected to the radiator cooling circuit, the total water consumption of the power plant drops to such a low level that it can be used in the most arid and arid regions. "Dry Flexicycle" is the optimal solution for power plants operating on a flexible base load (both with gas and multi-fuel configurations).

Household waste water will be discharged into waterproofing cesspools with a volume of 60 m³ each, followed by export to the nearest treatment facilities on the basis of an economic agreement with specialized enterprises.

Rainwater from the territory and from the roofs is provided to be collected by a system of trays with further use for irrigation, and then it is discharged by irrigation ditches into the irrigation network of the district.

Household wastewater (excluding water for irrigation of the territory, greenery and 40% of water, which relate to irretrievable losses during floor cleaning) will amount to 17,993 m³/day. or 6277.67 m³/year.

Then, the total volume of production and household effluents at the power plant will amount to 1,651,993 m³/day. or 578401.7 m³/year.

6.5 Provision of material resources

The supply of natural gas to the combustion chambers of gas turbines will be carried out using a gas compressor station.

The gas compressor station is designed to compress a mixture of hydrocarbon gases, which serves as fuel for a gas turbine, where, with constant operation of the station, oil refilling, filter cleaning and other station maintenance are provided for preventive maintenance.

The following equipment and machines will be located on the territory of the repair and mechanical workshops:

- vertical drilling machine;
- milling machine;
- lathe.

Also, on the territory of the power plant there are warehouses for storing various materials (Table 11 describes the characteristics of the raw materials, materials and products used. Table 11 Figure 11), household premises for working personnel and office premises for engineering and technical personnel.

Table 11 describes the characteristics of the raw materials, materials and products used.

Item	Name	Quantity
1	Low-sulfur natural gas, m ³	748.800.000
2	Diesel fuel for emergency diesel generator, tons	1.0
3	Compressor oil, tons	5.0
4	Turbine oil, tons	12,68
5	Transformer oil, tons	0.800
6	Engine oil, tons	0,200
Necessary chemicals and substances for water treatment and water purification		

1	Sodium Hypochlorite 12% liquid	30.0 tons
2	45% liquid caustic	6.0 tons
3	97% liquid sulfuric acid	30.0 tons
4	Liquid Antiscalant	8.0 tons
5	98% sodium metabisulfite crystalline	1.0 tons
6	Coagulant	4.0 tons

Table 12 Characteristics of the natural gas used.

Item	Components	Gas composition, mol %
1	Carbon dioxide, CO ₂	1,27
2	Hydrogen sulfide, H ₂ S	0,0013
3	Methane, CH ₄	94,04
4	Ethane, C ₂ H ₆	3,84
5	Propane, C ₃ H ₈	0.36
6	i-Butane, i-C ₄ H ₁₀	0.03
7	n-Butane, n- C ₄ H ₁₀	0.04
8	i-Pentane, i-C ₅ H ₁₂	0.01
9	n-Pentane, n- C ₅ H ₁₂	0.01
10	Hexane, C ₆ H ₁₄	0.05
11	Oxygen, O ₂	0.08
12	Nitrogen, N ₂	0.35
Other characteristics		
1	Gas density at 20°C (kg/m ³)	0,715
2	Relative gas density at 20°C (kg/m ³)	0,5935
3	The highest Wobbe number (kcal/m ³)	10598,8
4	The lowest calorific value (kcal/m ³)	8165,5
5	Molecular weight of the gas (g/mol)	17,155

6.6 Transportation services

The nearest highways run in a northerly direction at a distance of 325 meters (A 376) and in a westward direction at a distance of 95 meters (M 39) from the designated site for the construction of a power plant.

The Jizzakh-Khawast railway line runs in a northerly direction at a distance of 60 meters from the site under consideration.

It is planned to build an access road from the M39 highway to the facility about 90 meters away.

Vehicles will undergo periodic maintenance and repairs off-site at service stations near the project area.

6.7 Waste

At the projected 550 MW power plant in Sharaf - Rashidov district of Jizzakh region, after commissioning, waste of both industrial and household nature will be generated.

The main production process is the generation of electricity from the combustion of natural fuels. The operation of gas turbines involves the use of oils. The waste generated during the operation of this equipment is spent engine oils, which will be exported to specialized enterprises for the processing of such types of waste.

Sludge from boiler cleaning is formed when deposits (scale) are removed by flushing them with water. The water is neutralized and settled in a specially designated place. The sludge generated in this case, characterized as sludge from cleaning equipment, will be sent to a settling tank for dewatering and then it is planned to be transported to a landfill for construction waste in accordance with an agreement with specialized organizations.

The main wastes in the turbine compartment are: spent turbine oil and compressor oil.

All used oils (compressor, turbine, transformer and motor oils) are subject to regeneration. If own oil regeneration plants are provided, then used oils can be regenerated at the enterprise itself. If not, the used oils will be exported to specialized enterprises for processing such types of waste.

Cable cuts containing non-ferrous metals for processing by "Ikkilamchi Rangli Metallar" LLC.

In the repair shop, where repair work is carried out, metal residues and electrode stubs are mainly formed. The scrap of ferrous metals, together with the electrode ends, is transferred for processing to "Ikkilamchi Kora Metallar" LLC.

Scrap of non-ferrous metals is formed during tool processing of metals, repair of instrumentation and control equipment, and is also contained in a damaged cable. The waste is not flammable, insoluble in water; it is chemically inactive under storage conditions. The scrap of non-ferrous metals is transferred for processing to "Ikkilamchi Rangli Metallar" LLC.

When washing the external heating surfaces of technological equipment in order to cool it, oily wastewater may form. They can form when there is a violation of density in the oil cooling system.

Also, oiled runoff can be formed as a result of rain flushing from the surface of the power plant site, stormwater will be separated from the oil using an oil separator (oil trap). The oils separated from the water are discharged into a receiving container, and as they accumulate, they are exported for processing to a specialized organization. The treated effluents should also be directed to the nearest treatment facilities.

During the operation of the power plant's medical center, the following waste is

expected to be generated (waste from the medical center): disposable syringes after disinfection, used dressing material. These wastes, in agreement with medical institutions, will be sent for disposal.

The main waste from the canteen of the power plant is food waste, which is transferred to feed the livestock of the local population.

The offices of the management and engineering staff are located in the office premises. Waste can be waste paper and human waste. Waste paper is recycled as it accumulates.

In addition, during the operation of the power plant, such types of waste are generated as: used LED lamps - when lighting the territory of the power plant and premises; oiled rags (more than 15%) - when wiping equipment; various containers - when cleaning various materials and reagents; worn-out work clothes - during the life of working personnel; municipal solid waste (MSW); estimates - when cleaning paved and landscaped areas.

The generated municipal solid waste will be exported in accordance with the established procedure to landfills for MSW of "Toza Hudud" LLC in Jizzakh region.

At the designed power plant with a capacity of 550 MW in Sharaf Rashidov district of Jizzakh region, after commissioning, waste of both industrial and household nature will be generated of 21 types in the amount of 127.0 tons per year, of which:

- 18.221 tons/year, hazard class 2 (6 types of waste);
- 0.307 t/year, class 3 (1 type);
- 94.416 tons/year, class 4 (8 types);
- 13.375 tons/year, class 5 (6 types).

6.8 Accidental situation

Emergency risks at a combined cycle power plant with a capacity of 550 MW in Sharaf Rashidov district of Jizzakh region during project implementation will be minimized through the use of a modern automated management and control system for the production process. The automated control system is designed to perform the functions of logical control, regulation in automatic and manual modes, emergency and restrictive protections, warning and alarm systems, monitoring, display and archiving of technological parameters, high-speed registration of major events and indicators in emergency situations.

The causes of emergency situations at the station are various technical and other violations of the supply of materials and raw materials (natural gas, steam, water, electricity, air), as well as violation of the tightness of pipelines and equipment, accompanied by a leak of natural gas, fire, gas contamination, explosion or other phenomena that create a danger for the further operation of the facility.

Emergency situations may occur due to various types of violations: technological failures caused by violation of the norms of the technological regime of production or a separate technological process; mechanical failures caused by partial or complete destruction or wear of technological equipment or individual parts; organizational and technical failures caused by interruption of the supply of raw materials, electricity, and personnel errors; situations caused by natural disasters, fires and possible explosions.

To minimize various emergency situations and, accordingly, damage, it is necessary:

- develop an emergency localization plan, which indicates possible accidents, actions of maintenance personnel and management during emergencies.
- equipment must meet the requirements of standards and technical specifications for their production;
- installation of technological equipment must be installed in accordance with the projects and current standards of technological design and ensure complete safety of the product.
- the design of technological devices and pipelines, their material design should be selected based on the condition of maximizing the reduction in the level of explosion and fire hazard.
- fittings, equipment, pipelines must be designed for the maximum possible pressure to prevent emergency releases.

Sources

1. Environmental Impact Statement (Draft EIS) Draft Environmental Impact Statement (EIS) for the construction of a 550 MW combined cycle power plant in Sharaf Rashidov district, Jizzakh region, "ENVORK" LLC, 2024.

6.9 Associated facilities (projects)

According to the IFC PS-1 definition, associated facilities – facilities that are not funded by the project and that would not have been built or expanded if the project had not been implemented, and without which the project would not be viable.

Also, as an additional criterion, the location of objects in close proximity to the site of the planned activity is usually considered.

The associated objects of the project are _____

The characteristics of the associated objects are presented in Table 13

Table 13 Characteristics of associated facilities

Item	Indicator	Characteristic
Highway		
4.	Name	Undefined
5.	Length, km	0.09
6.	Width of the roadway	Approximately 4-5 meters
7.	The beginning of the road (contiguity)	Village road from highway A-376
8.	End of the road (contiguity)	Project site
9.	Areas where the right-of-way passes through the territory	Sharaf-Rashidosky
10.	Class, type of road	Undefined
11.	The structure of the roadway	Undefined
12.	Project status	Defined on the master plan
PTL		
1.	Name	Undefined
2.	Length, km	2 lines - 8 and 10 km
3.	The width of the right-of-way	Undefined
4.	The beginning of the PTL (contiguity)	Project site
5.	The end of the PTL (contiguity)	to existing 220 kV overhead lines L-20-D and L-Z-S
6.	Areas through which the PTL right of way passes	Undefined
7.	Characteristic PTL (power, availability of bird protection devices)	Undefined
8.	Information about the number of supports, decisions on the grounds	Undefined
9.	Project status	Under discussion
Gas pipeline water pipeline		
1.	Name	Undefined
2.	Length, km	Undefined
3.	The width of the right-of-way	Undefined
4.	The beginning of the gas pipeline (contiguity)	Undefined
5.	The end of the gas pipeline (contiguity)	Undefined
6.	Areas through which the gas pipeline right-of-way passes	Undefined
7.	Characteristics of the gas pipeline (diameter)	Undefined
8.	Project status	Under discussion

7 ENVIRONMENTAL SETTINGS

7.1 Geological structure and relief

According to the geomorphological structure, the grounds are represented by loess-like loams, with layers of lenses of sand and gravel with a thickness of 2 to 40 m. Below are water-saturated pebbles.

Lithological characteristics of sediments. The quaternary deposits of the Hungry Steppe are divided into four complexes: Sokhsky (or Nanai), Tashkent, Golodnostep, Syrdarya. The total thickness of the Quaternary deposits varies from 100 m (in the west) and up to 1 000 m in the eastern part of the Hungry Steppe. In the middle part of the Hungry Steppe, quaternary deposits are characterized by a thickness of 200-300 m.

The most ancient horizon of the anthropogenic (Q1) is the Sokh (Nanai), whose deposits are represented on the plain by loams, clays (reddish tone) and sandy loams, and in the foothills by pebbles, densely cemented conglomerates, overlain by loess (possibly later).

In the foothills of the Turkestan Range, Q1 sediments correspond to alignment surfaces with heights of more than 1000 m.

The average anthropogenic (Q2) is represented by sediments of the Tashkent complex lying on the blurred surface of the Sokha sediments. Its capacity is from 100 to 220 m. Within the proper foothill plain of the Jizzakh steppe, the surface corresponding to Q2 in the form of washed remnants can be traced along the foothills, as well as within the Sanzar and Zaamin cones.

Sediments of the Hungry Steppe period (Q3) are represented by loess-like loams with a thickness of 5 to 40 m, lying in the northern part of the Hungry Steppe on the alluvial sands of the Syrdarya, and in the southern part - on pebbles, sands, loams of alluvial cones of the Sanzara, Zaamina and other rivers. Sediments of the Hungry Steppe cycle compose most of the Hungry Steppe plain.

These sediments are also found in the foothills in river valleys. Apparently, the lowest step of the foothills, composed of pebbles and covered with loess, corresponds to this age. The modern (Syrdarya) complex of quaternary deposits (Q4) can be traced in the Syrdarya valley and is represented by deposits of the second (lake), first terrace and floodplain of the Syrdarya River. Within the actual piedmont Hungry Steppe piedmont plain, the Syrdarya complex is represented by proluvial pebbles and sandy-loamy deposits of modern alluvial fans and log-like depressions. In some areas, especially on the periphery of the Sanzar cone, on the lands adjacent to Arnasai, sands of Aeolian origin are widespread.

7.2 Surface water bodies and groundwater

7.3.1 Surface water

The water resources of Jizzakh region consist of renewable surface and groundwater, as well as return waters from anthropogenic use (wastewater and drainage waters).

The closest surface watercourse to the designated site for the construction of the power plant is the irrigation canal, which flows at a distance of 11.5 meters in an easterly direction with a throughput of 20 to 25 cubic meters of water per second and a total depth of 4 meters along the edge of the normal water level.

The main irrigation canal flows at a distance of 880 meters in the south-west direction with a throughput of 40 to 50 cubic meters of water per second and a total depth of 6 meters along the edge of the normal water level

The main irrigation canal originates from the Jizzakh reservoir, then flows near Jizzakh city in the direction of the agricultural fields of Yangikishlak village and others.

The coastal zone of the Jizzakh reservoir is located in the southern direction from the studied territory at a distance of 1.7 km.

The area of the Jizzakh reservoir is 12.7 km², the depth is 26 m, the water volume is 87.5 million m³, the widest part is 5.1 km. Water is mainly collected from the "Sangzor" river into the reservoir at a rate of about 10 m³/sec. The reservoir supplies water to more than 15 thousand hectares of land in Jizzakh region. During the irrigation season, water from the reservoir is supplied through the drainage system back to the irrigation canal.

The main sources of surface runoff formation in Jizzakh region are the Sanzar and Zaaminsu rivers.

The main high-water artery of Jizzakh region is the Sanzar River (Figure 6), which flows at a distance of 2.6 km to the west of the territory under consideration. The sources of the river are located approximately at an altitude of 3300 m, on the northern slope of the Chumkar-tau ridge. The large lateral tributaries Yelkoyday, Korangul, Karangibulak, Nauka and Zagor only carry water to the main channel during the period of snowmelt and precipitation. Sanzar river flows through the territory of the Bakhmali, Gallaaral and Jizzakh districts.



Figure 6 Sanzar River

Sanzar River, with a total length of 123 km (from the sources to the Kli village), has a catchment area of 2.6 thousand km². Sanzar River is fed by infiltration of atmospheric sedimentation and waters of surface watercourses flowing down from the mountains, belongs to the snow-rain type. The average annual water consumption is 6.9 m³/sec. The maximum water consumption is observed in the spring and summer months, ranging from 7.36 m³/sec in August to 2.94 m³/sec in January.

7.3.2 Groundwater

Shallow groundwater lies at a depth of 3-5 m, in some areas at a depth of more than 10-20 m. Groundwater supply occurs due to infiltration of irrigation water and precipitation. Groundwater has a high concentration of total organic and inorganic compounds and is salty, which makes it unsuitable for use in concrete production or for safe consumption.

The hydrology of Jizzakh city is represented mainly by networks of built canals and collectors that carry water from the mountains, wastewater from treatment plants, enterprises,

as well as precipitation. The system of artificial channels transformed the surface hydrology of the region, which led to the appearance of Lake Aydarkul, which is located along the northern border of the region.

Aquifers of groundwater are filled due to losses due to infiltration of precipitation, mountain streams and irrigation channels.

In Jizzakh region, groundwater in a flat area is close to the surface, the depth of groundwater does not exceed 3-4 m. Groundwater mineralizes, coming to the surface, causing salinization of the soil. With increasing elevation, the depth of groundwater increases, in the foothills and plains it is 10-25 m, while the degree of salinity decreases. Groundwater in mountainous areas is associated with river valleys and is shallow (4-5 m), has high taste characteristics.

In general, the situation with groundwater quality in the region is favorable, where the content of polluting components generally does not exceed MPC levels, with the exception of the northern regions. In most of the territory of the region, there is a tendency to increase the mineralization of groundwater, remaining within the MPC. Previously detected changes in mineralization (1.15-0.05 g/l) and hardness (8.0-18.6 mg/l) were noted at a number of water intakes (Industrial Zone, Kurgan, Sarybazar, Uchtepa, Sanzarselsky, Devon). The main sources of groundwater pollution are public utilities, industrial enterprises, and sewage treatment plants.

7.3 Climatic conditions and the state of atmospheric air

Analysis of climatic characteristics of the area where a combined cycle gas turbine power plant with a capacity of 550 MW is located, was carried out according to the observation data received from the "Uzhydromet" Service at the nearest weather station located in the Jizzakh city.

The climate of Jizzakh city is sharply continental with cold winters and hot summers. The average annual temperature is +15.2°C, the maximum air temperature reaches +42.7°C, the minimum is 31.5°C below zero. The average air temperature for the month of July is +26.71°C, the average temperature for January is -1.49°C. The average annual relative humidity is less than 30%.

The winter period is characterized by extreme weather instability, the development of clouds, frequent precipitation and rapid changes in temperature and humidity. The coldest month of the year is January. In January, the average monthly temperature ranges from 0 to -5.4 °C. Low temperatures are observed in the northern part of the region, which is facilitated by its open position in relation to the northern cold invasions.

Absolute minimum air temperatures range from -29 to -34°C, average absolute minimums from -18 to -26°C. A significant part of the territory of Jizzakh region is characterized by moderate frosts both in the mountains and in the valley. Winters are mild in most of the flat territory of the region, and moderately cold in the far north and in the mountains.

The snow cover in the flat part of the territory is unstable. The number of days with snow cover is insignificant: on average 30-34 days during winter. Stable snow cover is formed in the mountains from a height of 1000 m. The duration of stable snow cover is more than two months. The height of the snow cover in the flat part of the region is low. On average, its long-term average values for 10 days range from 4 to 8 cm, but in some cold winters they can be much higher (in 1969, the snow depth in Jizzakh was 48 cm).

Significant changes in air temperature with weak snow cover lead to soil freezing. The maximum freezing depth reaches 50 cm. In most of the territory, the frost-free period is long: 200-220 days, the shortest frost-free period is observed in the mountains - 170 days.

Summers are hot and dry. The absolute maximum air temperature in the entire

territory of Jizzakh region reaches 45-47°C. According to the absolute maximum, the southern part of the Hungry Steppe is the hottest not only in Jizzakh region, but also in Uzbekistan, second only to some areas of the southern regions.

The entire summer period and most of autumn are characterized by a small area and a large number of clear days. The largest number of clear days is observed in August and reaches an average of 27-28 days. Cloudy days are mainly observed in the winter-spring period. The average number of cloudy days in a month is 10-15.

The state of the atmosphere is significantly influenced by the amount and intensity of precipitation, which performs a cleansing function.

Annual precipitation in most of the region is low at 376.8 mm. In the annual course, the largest share of precipitation falls in the autumn-winter-spring period. In summer, they usually do not fall on the flat part of the precipitation. Precipitation also falls in the mountains in summer.

The annual distribution of precipitation is characterized by the greatest moisture in the winter-spring period, the least in the summer. The monthly maximum precipitation is observed in March and April, the minimum falls in September. Fogs are very rare, the average annual number of days is 5. Fogs are most often observed in the winter months.

The penetration of cold air masses through the northern open part of the region in winter causes a sharp drop in temperature. Frosts occur even in late spring, they cause damage to fruit trees and crops.

Local terrain features also have a significant impact on the wind regime. With the approach of the mountain hills near the northern slopes of the Nuratin range, the wind changes direction to the southwest.

In the area of Jizzakh city, the prevailing winds are western, northern and northwestern directions from the "Tamerlane Gate". The average annual wind speed is 2.5-6 m/sec.

Dry winds and dust storms are among the adverse weather events in the territory of the region. In rain-fed areas, as well as in years when there is not enough irrigation water in irrigated areas, dry winds damage plants at different stages of their development, which leads to significant crop losses. Dry hot winds of low intensity are observed annually throughout the region and intensify near desert areas. The highest frequency of their occurrence is observed in the area of Galliarala and Jizzakh. Dust storms are observed throughout the region, but most of all in the flat part of it. Dust storms are most common in the Galliarala area.

The aridity of the climate and wind activity increase air pollution due to natural dust, which increases dramatically during dust storms and dry winds.

An important meteorological characteristic that determines the conditions for the dispersion of pollutants in the atmosphere is the wind speed. Weak winds contribute to the accumulation of pollutants coming from low emission sources.

Weak winds (0-1 m/sec and 2-3 m/sec) prevail in the considered area – 93.49% of cases.

Winds with a speed of 4-5 m/s, which contribute to the transfer of impurities from high hot springs, account for 5.39% of the annual distribution.

North winds prevail in Jizzakh city. The average annual frequency of these winds is 26.61%. Such winds are most frequent in spring and summer. It should be noted that the average annual wind speed of the eastern and southern directions is 8.21 and 7.84 m/s. The average annual frequency of strong winds (15 m/s) is low and is 0.02%.

The climatic conditions of the area contribute little to the dispersion of impurities

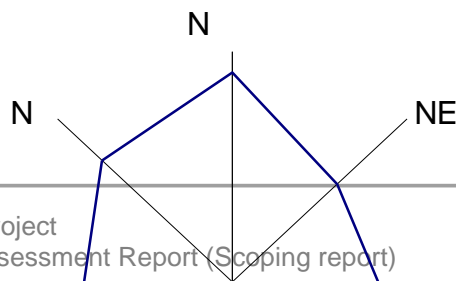
without significant accumulation in the surface layer during periods of inversions.

Thus, based on the analysis of climatic characteristics, we can conclude that high temperatures in the warm season of the area, aridity of the surface, prevailing weak winds causing stagnation, contribute to the accumulation of pollutant emissions from low-lying unorganized sources.

Table 14 Climatic data of the area of the object location

No	Characteristic	Unit of measurement	Magnitude
1.	Coefficient A, depending on the temperature stratification of the atmosphere	-	200
2.	Average annual temperature	0C	+ 15,24
3.	The average temperature of the hottest month (July)	0C	+ 27,76
4.	Absolute maximum	0C	+ 42,2
5.	Average temperature of the coldest month (January)	0C	1,68
6.	Absolute minimum	0C	-19,7
7.	Average annual frequency of wind directions by direction:	%	
	N		9,83
	NNE		8,41
	NE		7,20
	ENE		4,80
	E		8,21
	ESE		3,56
	SE		4,56
	SSE		4,88
	S		7,84
	SSW		3,29
	SW		5,71
	WSW		4,91
	W		7,18
	WNW		4,77
	NW		6,50
	NNW		8,37
8.	Calm	%	25,72
9.	Precipitation	mm	376,80
10.	Wind speed (average)	m/sec	1,45
11.	Wind speed (absolute maximum)	m/sec	34
12.	The highest wind speed, the excess of which is 5%	m/sec	u*=4.06

Thus, both the physical and geographical and climatic conditions of the area under consideration contribute to the accumulation of impurities from low unorganized sources of emissions in the vital layer of the atmosphere.



W

E

S

Figure 7 Frequency of wind direction (wind rose Jizzakh city), %

The snow cover is unstable; it forms and thaws repeatedly during the winter. Only in some years can stable snow cover be observed for at least a month in a row. During the winter, the number of days with snow cover averages 30 days. The average height of the snow cover is 8-12 cm.

In spring, 30% of the annual precipitation falls, mainly in the form of rain, less often in the form of snow (in March), and there are frosts at night.

The area under consideration (a designated site for the construction of a combined cycle power plant with a capacity of 550 MW) is characterized during the year by: northern (8.83%); northeastern (7.20%); eastern (8.21%); western (7.18%); southwestern (5.71%); northwest (6.50%) winds.

The preparation of the ESIA includes an assessment of greenhouse gas emissions associated with the proposed activity, as well as an assessment of physical and transition climate risks in accordance with TCFD recommendations.

7.4 Soils, adverse geological processes and phenomena

Hungry Steppe, in the southwestern part of which Jizzakh is located, is an alluvial-proluvial plain with a general surface slope to the north and northwest. Most of the flat territory of Jizzakh region is occupied by light gray soils. In the Hungry Steppe, the light gray soils are salty, loamy and clayey in mechanical composition, while at the northern foot of the Nurata ridge they are eroded skeletal or cartilaginous and pebble-loamy soils.

Gray soils are the most widespread automorphic soils within the vertical zone, forming at relatively low altitudes of piedmont plains and, less commonly, river valleys. Light gray soils are formed on the sub-mountain sloping plains, as well as in places on the foothills and low mountains, depending on the latitudinal position and exposure of the slopes of the main ridges.

Gray soils develop mainly on loose rocks of quaternary age - loess, on loess-like, but less sorted and thin sediments, and very rarely on eluvium bedrock. The humus horizon with a thickness of 12-15 cm contains 1-1.5% of humus. The humus poverty of gray soils is explained by the insignificant intake of organic residues and their rapid mineralization. Light gray soils, in comparison with other soils of high-altitude zones, are the lightest in terms of mechanical composition and poor in organic matter content.

The total nitrogen content in gray soils is low due to their low humus content. The arable horizon of cultivated soils contains only 0.05-0.09% nitrogen.

In the process of developing the Hungry Steppe, irrigated gray soils were formed as a result of tillage, washing, and irrigation. They differ from the virgin ones by the greater thickness of the humus horizon and the deeper position of the carbonate and gypsum horizons.

The resulting agroirrigation horizon is characterized by a uniform mechanical composition, most often heavy loamy or light loamy, monotonous grayish color and uniform humus content. High carbonate content and alkaline reaction promotes the transition of phosphorus into hard-to-digest forms. In addition, light gray soils are subjected to secondary salinization during irrigation. The main causes of salinization are associated with unsatisfactory drainage due to the lack of an optimal collector-drainage network, insufficient leaching and agrotechnical measures, and evaporation of filtered water.

Since the area under consideration is a fairly developed agricultural area, it is necessary to take into account the contamination of irrigated soils with pesticides. According to the average data from 2000 to 2006, soil contamination with pesticides in Jizzakh region amounted to 0.04 mg/kg (slightly contaminated). This is a favorable factor for the further development of agriculture in the region.

Thus, the condition of the soil in the area of the planned location of the power plant should be considered satisfactory in terms of the nature and degree of uncertainty and pollution.

The soils of the allocated area for the construction of a combined cycle power plant with a capacity of 550 MW are characterized by transitional hydromorphic soils, where meadow-gray grassy soils predominate, as well as saline soils.

Some areas of the soil cover of the land allocated for the construction of the power plant are formed on grassy loess and loess loams, they are also distinguished by the greater thickness of the humus horizon and the deeper position of the carbonate horizons.

The soil of the selected area is characterized by a uniform mechanical composition, most often loamy or light loamy, a monotonous grayish color and a uniform humus content.

Thus, the condition of the soils in the area of the planned location of the combined cycle power plant with a capacity of 550 MW should be considered satisfactory in terms of the nature and degree of unsolved conditions and pollution.

7.5 Vegetation

Vegetation on the territory where the construction of the power plant is planned is presented in the form of various shrubs and separately growing trees.

In the hilly foothills of the Turkestan range and in the low mountains of Nuratau on typical gray soils, perennial drought-resistant variegated grass prevails over ephemera and ephemeroids. In the high foothills and middle zone of the Turkestan Range, Malguzar and Chumkartau, in the middle zone and on the watersheds of Nuratau, within the altitude range of 1200-2200 m, on typical and dark gray soils and partly on brown soils, ephemeroid meadow plants and wormwood are widely developed. Due to the dryness of these mountainous areas, mesophytic variegated grasses and large grasses are not widespread here.

Ephemeral and ephemeroid-wormwood vegetation with long-growing perennials and upland xerophytes prevails on the gray soils of the Adyrs. In general, due to the dryness of the climate, the vegetation of the foothills is poor and monotonous. On typical gray soils, within the heights of 400-800 m and the so-called "upper chul", "mountain semi-desert" vegetation is developed - ephemeral- herbaceous-wormwood. The dominant communities are bulbous bluegrass and ephemera: four species of cruciferous, karabosh, bromus, calendula, annual salsola.

In the irrigated zone, cotton is grown in crop rotation with alfalfa, corn and other forage crops; in the rain-fed zone - barley and wheat. Forest protection strips have been planted along roads and fields. Along the canals and sewers, woody and shrubby plantings, thickets of amber, licorice and porcupine, reeds, cattails, etc. are typical. Among the tree species, elm, acacia, ash, maple, and fruit trees are common.

The condition of artificial plantings and oasis vegetation is satisfactory due to regular maintenance.

Vegetation in the urban area is characterized by a meager assortment of garden and park crops and wild plants, represented mainly by herbaceous forms (pickles).

The typical vegetation of the area of the planned activity is shown in Figure 8.



Figure 8 Typical vegetation of the area of the planned activity

7.6 Animal world

The fauna of the region is represented by desert species that have adapted well to the natural conditions of the Hungry Steppe. The fauna of this region is not very diverse. The fauna of reptiles includes about 21 species. A typical representative is the steppe turtle. Lizards are the most numerous. On the mountain slopes and the foothill plain there are 6 species of geckos: pink and gray geckos, shelled gecko; 3 species of roundheads: takyrnaya, sandy and long-eared roundheads; 4 species of lizards: fast, linear, medium and reticulated; steppe agama. There are spotted skids, sand boa constrictor, snake arrow.

Most of the region (the northeastern part, the southwestern part) is inhabited by animals that have adapted to anthropogenic conditions. Rodents include jerboa, ground squirrels, turtles, lizards and snakes. In sparsely populated areas, predatory animals are found - wolf, fox, badger.

There are no special zones dedicated to the conservation of biodiversity within the lands of the allocated territory.

The fauna of the Sh. Rashidov district is represented here by reptiles (foot-and-mouth disease, mice, rats) and birds (mynah, sparrow, pigeons, etc.), which have adapted to anthropogenic conditions.

There are no Red Book representatives of the fauna in the described territory.

7.7 Territories with special use regimes

The project area is located far from the protected areas, the nearest reserve Zaamin National Park is located at a distance of 60 km from the project area (Fig. 2).

The National park with an area of more than 25 hectares is located in the north of the Turkestan range in the Zaamin district of Jizzakh region. The park was first explored in the 60s of the XIX century by the Russian scientist and biologist Fedchenko A.P. And in 1960, in order to preserve rare juniper forests with their characteristic fauna, the reserve itself was formed.

The relief of the park is a pronounced mountain range. The highest ridge reaches an altitude of 3500 meters above sea level. In the south, the park is surrounded by the slopes of the Turkestan range, separated by narrow deep gorges. In the north, the reserve has a more softened relief with ledges covered with juniper forests.

The climate of the national park is sharply continental, which makes the change of seasons the most pronounced. In spring, the forests are covered with lush greenery. The most precipitation falls in April, October and January. In July and August, the temperature rises to +32 degrees, and in January it can drop to -30.

Due to sudden temperature fluctuations, frost-resistant trees and shrubs grow in the reserve. Among the representatives of the flora, medicinal plants with healing properties are noted: essential oils, fruit and berry, tannins.

A rich flora implies a diverse world of fauna. The park is home to such animals and birds as wolf, vultures, tits, topai hare, Turkestan agama, Turkestan owl, black-throated thrush, lake frog, stone marten and many others. The Turkestan lynx, the forest dormouse and even the white-footed bear hide in the forest thicket.

In addition to the unique nature, the reserve has many natural and historical attractions: huge red boulders of bizarre shape in a clearing in Kyzyl-ataksai, the ancient Boboengok hazel, the Peshagor cave, the Khujai Serob-ota shrine.



Figure 9 Protected areas of Jizzakh region

7.8 Background state of environmental components

7.9.1 Atmospheric air quality

The state of atmospheric air pollution is determined by the interaction of two factors: emissions of harmful substances and the conditions of their dispersion.

The state of atmospheric air in the area of the planned enterprise is caused by emissions from industrial and energy facilities of the city, the operation of automobile and railway transport and depends on the climatic conditions of their dispersion.

Major sources of environmental impact in the north-eastern industrial zone of Jizzakh city are such enterprises as: battery production, reinforced concrete factories, oil depots, textile production, oil extraction production, etc. Inorganic dust, cement dust, nitrogen oxides, sulfur, carbon, and aromatic hydrocarbons are released into the atmosphere of the area from the listed sources of exposure.

According to the Decree of the President of the Republic of Uzbekistan No. DP- 4516 dated on March 15, 2013 and Resolution of the Cabinet of Ministers No. 190 dated July 1, 2013, "Jizzakh" special industrial zone (SIZ) has been established in the city.

In Jizzakh city, as in other developed cities, motor transport accounts for more than 80% of all emissions of pollutants. During the combustion of fuel with exhaust gases, nitrogen and carbon oxides, hydrocarbons and products of their incomplete combustion, lead compounds and benz(a)pyrene enter the atmosphere.

There are no stationary (systematic) observations of the level of atmospheric pollution in Jizzakh.

Based on the National Report on the state of the environment and the use of natural resources in the Republic of Uzbekistan (2008-2011) in Jizzakh region, the degree of load on solid particles is small, emissions of nitrogen oxides, sulfur dioxide, and volatile organic compounds are low.

The emissions of these enterprises contain carbon monoxide, dust, nitrogen oxides, sulfur dioxide, hydrocarbons, soot and aldehydes. Highways of regional importance are characterized by low traffic intensity and are a source of dusting and emissions by mobile vehicles of carbon oxides, nitrogen, hydrocarbons, sulfur dioxide and solid particles.

Freight and passenger transportation of both urban and regional significance is carried out by automobile enterprises of various departmental subordination, as well as small private enterprises and firms. Automobile enterprises and gas stations are scattered throughout the republic. Fuel combustion products and hydrocarbons enter the atmosphere from these facilities.

The natural sources of pollution of the atmosphere, soil and vegetation at high wind speeds include the dry underlying surface, especially the plowed lands of farmland.

Thus, the state of the atmospheric air in terms of the degree of danger to public health in the area where the (planned) combined cycle power plant with a capacity of 550 MW is located should be classified as acceptable.

The state of atmospheric air in the area of implementation of the project under consideration shows a direct dependence on the location of small production facilities and transport.

7.9.2 Surface water bodies

The Sanzar River is fed by the Tuyatartar Canal from the south and the South Mirzachul Canal from the east. A number of channels extending in a submeridial direction from the south of Jizzakh region are powered by the waters of the Sanzar River. The water in the river is poorly mineralized, the salt content corresponds to 0.3 MPC. The oxygen regime is satisfactory (10.4 mg O₂/dm³).

Observations of the composition of water in the Sanzar River are conducted by the forces of the Uzhydromet in a formation 1 km above the village of Kyrk. According to the observations, the water is characterized by class II clean waters (water pollution index (WPI) 0.97) (Table 3). The water is characterized by increased turbidity. The content of pollutants was at the level of: phenols – 3.0 MPC, petroleum products – 0.8 MPC, organic substances (according to BOD₅) – 0.29 MPC, mineral salts - 0.41 MPC.

Table 15 Chemical composition of water in the Sanzar River

No	Indicator name	Unit of measurement	Indicator
1.	Oxygen	mg/dm ³	9,70
2.	BOD	mgO ₂ /dm ³	0,79
3.	COD	mgO ₂ /dm ³	4,7
4.	Ammonia nitrogen	mg/dm ³	0.14
5.	Nitrate nitrogen	mg/dm ³	0,74
6.	Nitrite nitrogen	mg/dm ³	0.009
7.	Ferrum	mg/dm ³	0.04
8.	Copper	mg/dm ³	2.9
9.	Zinc	mg/dm ³	7.5
10.	Phenols	mg/dm ³	0,003
11.	Petroleum products	mg/dm ³	0.04
12.	SS	mg/dm ³	0.01
13.	Suspended substances	mg/dm ³	1088,5
14.	Mineralization	mg/dm ³	413,5

The criteria for assessing surface water pollution are given in Table 16

Table 16 Criteria for assessing surface water pollution

Ingredients and indicators	Limiting sign of harmfulness	Maximum permissible concentration (mg/dm ³)
Dissolved oxygen	General requirements	During the winter under-ice period it should be at least 6.0
BOD ₅	General requirements	3.0 MgO/dm ³
Ammonium saline (NH ₄ ⁺) / ammonium nitrogen	toxicological	0.5 / 0.39

Nitrate ion (NO ₃ -)/nitrate nitrogen	sanitary and toxicological	40 /9.0
Nitrite ion(NO ₂ -)/nitrite nitrogen	toxicological	0.08 / 0,02
Oil and petroleum products	fisheries management	0.05
Phenols	fisheries management	0.001
SS	toxicological	0.1
Iron(trivalent)	organoleptic	0.5
Copper(Cu 2+)	toxicological	0.001
Zinc(Zn 2+)	toxicological	0.01
Chrome(trivalent)	organoleptic	0.5
Chrome(hexavalent)	sanitary and toxicological	0.001
Nickel(Ni +)	Toxicological	0.01
Cobalt(Co 2+)	Toxicological	0.01
Lead(Pb 2+)	sanitary and toxicological	0.03
Arsenic(As 3+)	Toxicological	0.05
Mercury (Nd 2+)	sanitary and toxicological	0.0005
Cadmium(Cd 2+)	Toxicological	0.005
Fluorine ion(F-)	sanitary and toxicological	0.75
Cyanides	Toxicological	0.05
DDT	Toxicological	Absence
1	2	3
HCCH	Toxicological	Absence
Rodanides	sanitary and toxicological	0.1
Methyl mercaptans	Organoleptic	0.0002
Benzene	Toxicological	0.5
Furfural	Organoleptic	1.0
Methanol	Toxicological	0.1
Formaldehyde	sanitary and toxicological	0.01
Butyl xanthogenate	Organoleptic	0.001
Cresyl dithiophosphate	Organoleptic	0.001
Potassium (cation)	sanitary and toxicological	50.0
Calcium (cation)	sanitary-toxicological	180.0
Magnesium (cation)	sanitary and toxicological	40.0
Sodium (cation)	sanitary and toxicological	120.0
Sulfates (anion)	sanitary-toxicological	100.0
Chlorides (anion)	sanitary and toxicological	300.0
Mineralization	General requirements	1000.0
Suspended substances	General requirements	The content of suspended solids in comparison with natural substances should not increase by more than 0.75 mg/dm ³

7.9 Acoustic and vibration environment

The acoustic environment in residential areas directly adjacent to the project area is determined by preparatory work on the construction site, as well as the movement of railway and road transport.

The main source of noise and vibration is the movement of trains along the Jizzakh-Havast railway line.

As part of the background research, noise measurements are provided in residential areas nearby the projected power plant and calculations of noise propagation, if necessary, noise protection measures will be proposed. The proposed measures should ensure the reduction of acoustic effects to values corresponding to the standards of the permissible noise level.

With a similar planning situation at an analog facility, the vibration level in nearby rooms corresponds to acceptable levels.

Noise and vibration levels are currently not monitored in areas and rooms with a normalized quality of the habitat.

7.10 Zone of influence of the planned activity on the environment

According to the IFC PC-1 definition, area of influence – an area (territory) that can be affected by:

- (i) the project, activities and facilities of the Customer directly operated or managed by him (including his contractors) and included in the project;
- (ii) impacts of unplanned but foreseeable circumstances caused by the project that may occur at a later time or in a different location; or
- (iii) indirect impacts of the project on biodiversity or ecosystem services that are a means of livelihood for the affected communities.

The zone of influence of the combined power plant project on the environment, according to a preliminary assessment, includes:

- land plots allocated for the construction of project facilities;
- territories within the boundaries of the SPZ of the power plant;
- the right-of-way lanes of associated facilities and associated zones of chemical and acoustic pollution of atmospheric air;
- the zone of impact on ecosystem services related to the use of the irrigation canal and the Jizzakh reservoir.

At the main stage of the ESIA research, the project's area of influence will be identified in detail, taking into account significant cumulative impacts.

As a separate study, an assessment of impacts on ecosystem services is envisaged, based on the results of which measures will be developed to prevent, reduce or mitigate relevant risks and impacts.

Information on the project's area of influence on socio-economic conditions is provided in Section 8 of the report.

The location of makhallas and other sensitive areas in the project's area of influence is shown in Figure 10.



Figure10 Location of makhallas and other sensitive areas

8 SOCIO-ECONOMIC CONDITIONS

8.1 Republican and regional context

Uzbekistan – the most populous republic in Central Asia. Covering an area of 447,000 km² (population density 79 people per km²), Uzbekistan is the only Central Asian republic that borders all four other States of this group.

Jizzakh region is located in the central part of Uzbekistan between the Syrdarya and Zeravshan rivers. It borders the Republic of Kazakhstan and the Syrdarya region in the north, the Republic of Tajikistan in the southeast, and the Navoi and Samarkand regions in the west. The area of the region is 21.21 thousand km². The administrative center is Jizzakh city.

Administrative-territorial, Jizzakh region is divided into 12 districts. There are 6 cities, 8 urban-type settlements and 100 rural settlements in the region.

The administrative division of Jizzakh region is shown in Table 17 and Figure 11.

Table 17 Administrative districts of Jizzakh region

Item	District name	Administrative center
1.	Arnasaysky	Goliblar
2.	Bakhmalsky	Usmat
3.	Dustliksky	Dustlik
4.	Farishsky	Yangikishlak
5.	Gallaaralian	Galliaral
6.	Sharaf-Rashidovsky	Uchtepa
7.	Mirzachelusky	Gagarin
8.	Pakhtakorsky	Pakhtakor
9.	Yangiabadsky	Balandchakir
10.	Zaaminsky	Zaamin
11.	Zafarabadsky	Zafarabad
12.	Zarbdarsky).	Zarbdar

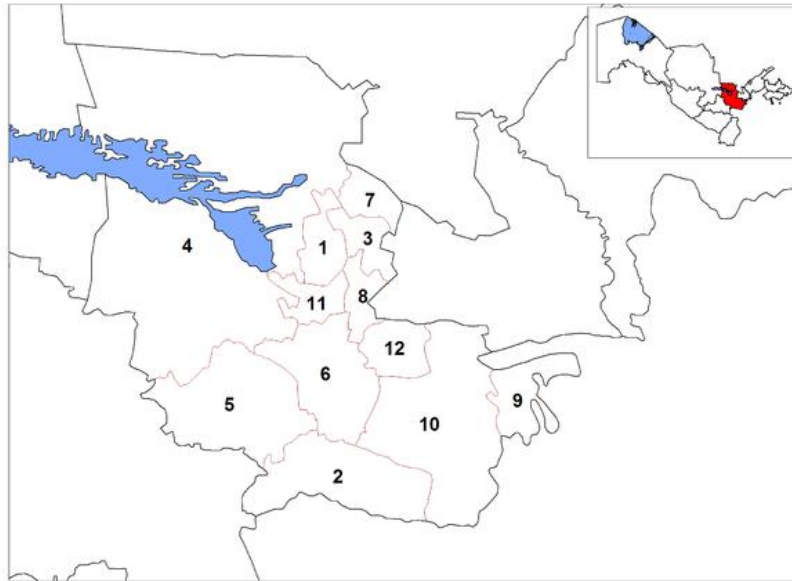


Figure 11 Administrative districts of the Jizzakh region

The construction site is located in Sharaf Rashidov district, in the immediate vicinity of Jizzakh city.

The socio-economic indicators of Jizzakh region are presented in Table 18.

Table 18 Socio-economic indicators of the Tashkent region

Name		Indicators
Territory, km ²		21,178
Population		
Population density, people / km ²		62.5
Total number of people		1 507 400
Women, people		768 774
Men, people		738 626
Urban population, people		707 300
Rural population, people		800 100
Educational institutions		
Primary schools		585
Secondary vocational institutions (colleges)		7
Academic lyceums		14
Higher educational institutions		2
Medical institutions		
Hospitals		32
Government clinics		9
Infrastructure, km		
Transport	Highways	1,965
	Railways	391
	Airport	-

8.2 The area of planned activity and the zone of social influence of the project

According to PS-1 of the IFC, the zone of social influence includes certain territories and communities that may experience positive and negative impacts of the planned activities. Due to the specifics of social impacts, as well as due to the fact that the zone of social influence may not coincide geographically with the zone of influence on the environment, it is defined separately. According to preliminary data, the social impact zone of the project includes the following recipients who are exposed to potential direct and indirect impacts of the planned activities:

- The Almachi Makhalla is located in the 2000 m zone from the project area, the total area is 105 hectares, 2882 households are located on this territory. In total, 8187 people live in this makhalla, 3,442 of them are women.
- The Pastli Sukokli Makhalla is located in the 2000 m zone from the project area, with a total area of 110 hectares, 1275 households are located on this territory. In total, 5810 people live in this makhalla, of which 3005 are women.
- The Khalkobod Mahalla is located in the 2000 m zone from the project area, the total area is 110 hectares, 1712 households are located on this territory. In total, 8390 people live in this makhalla, of which 3923 are women.
- Gozgontepa Mahalla is located in the 2000 m zone from the project area, the total area is 61 hectares, 892 households are located on this territory. In total, 3486 people live in this makhalla, of which 1714 are women.

8.3 Land use

The land plot required for the construction of the facility belongs to the category of agricultural land and is alienated at the expense of farm lands on the basis of the Decision of the Khokim of Sharaf Rashidov district, compensation payments have also already been made.

The assessment of the impacts associated with obtaining land rights and economic relocation in accordance with the requirements of PS-5 of the IFC provides for a social audit of the allocated site and associated facilities. More detailed information is provided in section 9.1.2.

8.4 Demographic characteristics

According to data for April 2024, 37 003 347 people live in Uzbekistan. Since 2016, the country's population has increased by more than 10%, mainly due to natural growth, although the republic has maintained a negative migration balance over the past 20 years. Approximately 50.1% of the population lives in cities. On average, a family in Uzbekistan consists of five people. The average age of Uzbek residents is 27.8 years.¹³ (Figure 12).

¹³ Reports of the State Committee of the Republic of Uzbekistan on Statistics

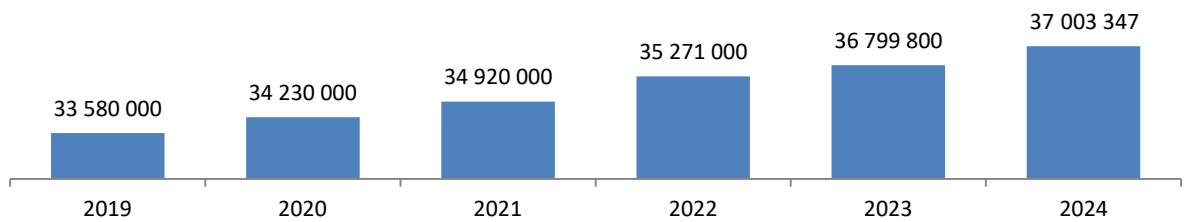


Figure 12 Population of Uzbekistan as of the beginning of the year, people.

Source: <https://stat.uz/en/open-data>

There are 1 507 400 people living in Jizzakh region (beginning of 2024), with 47% of the population being urban residents. The population in Jizzakh city is growing and at the beginning of 2024 reached 165 036 people. According to available data, the population of Sharaf Rashidov district is 243 100 people.

In 2024, according to <https://countrymeters.info/ru>, the life expectancy of residents of Uzbekistan was estimated at 72.5 years. According to this indicator, the republic ranks 100th among 228 countries in the world. For comparison: Tajikistan ranks 113th in this ranking (life expectancy is 70.8 years), and the UK is in 22nd place (81.4 years). Life expectancy for men is 69.5 years, for women - 75.7 years.

8.5 Health

There are 2062 hospitals in Uzbekistan (according to data for 2024), including 1497 private clinics. Since 2018, 60 new public hospitals have been opened. On average, there are 45.2 hospital beds per 10 000 inhabitants, which is less than in Russia or Kazakhstan.

There are 226 polyclinics in Jizzakh region, of which 81 are located in Jizzakh city, in Sharaf Rashidov district -20. The number of polyclinics decreased by 34 compared to 2016, despite the population growth in the region. The number of hospitals in Jizzakh region is 55 units, of which 25 hospitals operate in Jizzakh city, and 4 in Sharaf Rashidov district.

During initial consultations, the Regional Public Health Authority requested data on morbidity and mortality in Sharaf Rashidov district, in particular respiratory, cardiovascular, and infectious diseases (tuberculosis).

8.6 Ethnic composition of the population and the indigenous population

The peoples of Turkic (Uzbeks, Kazakhs, Karakalpaks), Semitic (Bukharian Jews) and Iranian (Tajiks) origin traditionally live on the territory of Uzbekistan, as well as representatives of other peoples who arrived here during the reign of the Russian Empire and the USSR (Russians, Crimean Tatars, Meshketian Turks, Koreans and a small number of Ashkenazi Jews).

The Autonomous Republic of Karakalpakstan occupies 37% of the entire territory of the country. At the same time, ethnic Karakalpaks make up about one third of the population of Karakalpakstan, and their share in the total population of Uzbekistan is very small (2.2%).

It is widely believed that the number of ethnic Tajiks is much higher than reported in official statistics. This is because many

Tajiks and Tajik speakers may position themselves as Uzbeks to improve career opportunities.

The largest ethnic group in Uzbekistan are the Uzbeks. The last population census was carried out in 1989, but according to an updated official estimate published in 2022, the Uzbek population is just over 26.9 million (83.8% of the country's population), and the Tajik population is 1 544 700 (4.8%).

According to national statistics, the national composition of the population has changed slightly since 1991. [bookmark139](#) Between 1991 and 2022, the share of Uzbeks increased by 11% and reached 84%, against the background of a noticeable decrease in the share of Russians (by 5.4%), Kazakhs (by 1.6%), Tatars (by 1.4%) and Ukrainians (by 0.5%) as a result of emigration of representatives of these ethnic groups (Table 19).

Table 19 Ethnic composition of the population of Uzbekistan, %

Ethnic group	1991	2022	Ethnic group	1991	2022
Uzbeks	72.8	83.8	Tatars	2,0	0.6
Karakalpaks	2.1	2,2	Turkmens	0.6	0.6
Tajiks	4.8	4.8	Koreans	0,9	0.6
Kazakhs	4.1	2.5	Ukrainians	0.7	0,2
Russians	7.7	2.3	Others	3.4	1,5
Kyrgyz	0,9	0,9			

Source: <https://stat.uz/en/open-data>

The Uzbek population predominates in the project area. Based on the results of the study of documents, consultations and interviews, indigenous peoples or groups (i.e. Kyrgyz, Tatars, Turkmens), having a collective attachment to a geographically defined habitat, traditional lands or ancestral territories in the project area, as well as to natural resources in this habitat and in such territories have not been identified.

In addition, in the context of the IFC PS-7 definitions, the existing minority groups are assimilated and do not have any socio-economic or political characteristics that would distinguish them from the dominant groups living on the territory of the project implementation. In this regard, the requirements of PS-7 of the IFC in relation to indigenous peoples are not applicable to the project and are excluded from further evaluation.

8.7 Language and Religion

The state language of the Republic of Uzbekistan is the Uzbek language. The second most important language – Russian, which is spoken by a significant part of the population and which is widely used in the country. In addition to the Uzbek language, which has the status of an official state language, other languages are also used in several regions. In the Autonomous Republic of Karakalpakstan, the second official language is Karakalpak.

The native language of most of the city's population is Uzbek. Consultations with representatives of local governments in the Project implementation area (makhalla) were conducted in Uzbek, the native language of most representatives of the affected population groups.

The main religions in Uzbekistan – Sunni Islam, Orthodoxy and Judaism. For the republic as a whole, the distribution by confessions is as follows: Muslims – 79% (mostly Sunnis of the Hanafi madhhab; the Shiite minority does not exceed 1% and is concentrated mainly in the Bukhara and Samarkand regions), Orthodox – 4% (the share of Orthodox is decreasing, which is caused by the emigration of Russians, Ukrainians, Belarusians, etc.), other denominations of Christianity – 3% (Roman Catholics, Korean Christians, Baptists, Lutherans, Seventh Day Adventists, Evangelical Christians and Pentecostals, Jehovah's Witnesses), as well as Buddhists, Baha'is, Hare Krishnas and Atheists.

8.8 Economy and employment

. According to official World Bank data, Uzbekistan gross domestic product (GDP) in 2019 amounted to 57.92 billion US dollars, which corresponds to 0.05% in the structure of the global economy.

The working-age population of Uzbekistan is almost 56% (as of the end of 2023). About 66% of this number is actually employed in the country's economy. 602 700 people of working age live in Jizzakh region, 89% of whom are currently employed.

The official unemployment rate in Uzbekistan is 10.5% (at the beginning of 2022), which is almost twice as high as in 2016. Similar figures are given in the reports of the Khokimiyat of Jizzakh region: 9.3% of the inhabitants of the region, in Jizzakh city - 8.7% (7,400 people) have the status of unemployed in 2023.

According to the clarification of the Ministry of Employment and Labor Relations of the Republic of Uzbekistan, unemployment figures in 2018 increased significantly (by 3.5%) compared to 2017 data, mainly due to the introduction of improved methods of collecting data on job seekers, and are not a consequence of sharp changes in the labor market.

It should be noted that the actual unemployment rate, especially in rural areas, may differ from official statistics, since not all local residents are registered with employment agencies. Thus, the real unemployment rate may be higher. There are also cases of underemployment, when citizens work part-time, but would prefer full-time employment and are able to work full-time.

Before the pandemic (in March 2020), the average nominal salary in Jizzakh region was 1 770 405 UZS. The average nominal monthly salary at the district level – Jizzakh city – is below average.

In December 2020, the Federation of Consumer Protection Societies of Uzbekistan estimated the minimum consumer basket at 2 157 000 UZS (approximately 201 US dollars).

During the consultations, representatives of the makhalla reported on the high unemployment rate of the local population, especially among women and youth. Young people, despite their specialized education, have little chance of earning an independent income or getting a qualified job.

8.9 Industry

Jizzakh region, with its high economic potential, natural and human resources, and developed transport communications, occupies one of the leading places in Uzbekistan.

In 2022, Jizzakh region produced products worth almost 11.150 billion soums, an increase of 7.8%. But this is below the national average.

In the period under review, the share of this sector in the gross regional product (GRP) was 13.1% (Figure 13).



Figure 13 Share of the region in the gross regional product

The volume of industrial output per capita amounted to 7 639 thousand UZS (10th place) and the growth rate of 105.4% (7th place).

The highest industrial production per capita is observed in Zafarabad (21 237 thousand UZS), Jizzakh city (20 210 thousand UZS) and Dustlik (12 668 thousand UZS) districts. The manufacturing industry accounts for 94% of all industrial production.

The share of the mining industry is 2%, the share of electricity, gas, steam and artificial climate is 3%, the share of water supply, sewerage, waste collection and disposal is 1%.

The production of textiles (31%), motor vehicles, trailers and semi-trailers (19%), other non-metallic mineral products (16%) and food (13%) have the largest share in the manufacturing industry.

The total number of operating industrial enterprises amounted to 4 469 or 15.8% of the total number of operating enterprises.

8.10 Agricultural industry

The total area of agricultural land in the region is 489 262 hectares, the total sown area is 603 420 hectares.

In total, there are 4 agrologistic centers, 25 agro-cluster enterprises in Jizzakh region, of which 6 cotton and textile, 7 grain and 12 fruit and vegetable clusters.

There are 7 719 farms and 3 190 dekhkan farms in the region. The land area of 94 hectares is distributed among farms for greenhouse farming. 4 702 hectares of land have been allocated for intensive gardens in the region.

In January-December 2022, the total volume of products (services) of agriculture, forestry and fisheries of Jizzakh region amounted to 23 999.6 billion UZS, or 103.4% compared to the corresponding period last year. The share of this region in the total volume of products (services) of agriculture, forestry and fisheries of the republic amounted to 6.6%. (Figure 14)

The volume of agricultural production per capita amounted to 5 247.8 thousand UZS (3rd place).

Dustlik (9539.9 thousand UZS), Mirzachul (8997.9 thousand UZS) and Arnasay (8311.5 thousand UZS) districts have the highest, Jizzakh city (874.8 thousand UZS), Sharof Rashidov (3687.6 thousand UZS) and Zaamin (4673 thousand UZS) regions observed the lowest indicators of agricultural production per capita.

Animal husbandry accounts for 70.4% of agricultural products, agriculture — 29.6%.

During the reporting period, 89.7 thousand tons of live meat were produced in the amount of 3 545 billion UZS, 291.8 thousand tons of milk in the amount of 1 232 billion UZS, eggs in the amount of 119 billion UZS, silk in the amount of 10 billion UZS and other livestock products in the amount of 271 billion UZS.

Dekhkan farms have grown 19.9% of the crop crop and 95.8% of livestock products.

The total number of enterprises operating in the field of agriculture has reached 22 988, which is 51.6% of the total number of operating enterprises.

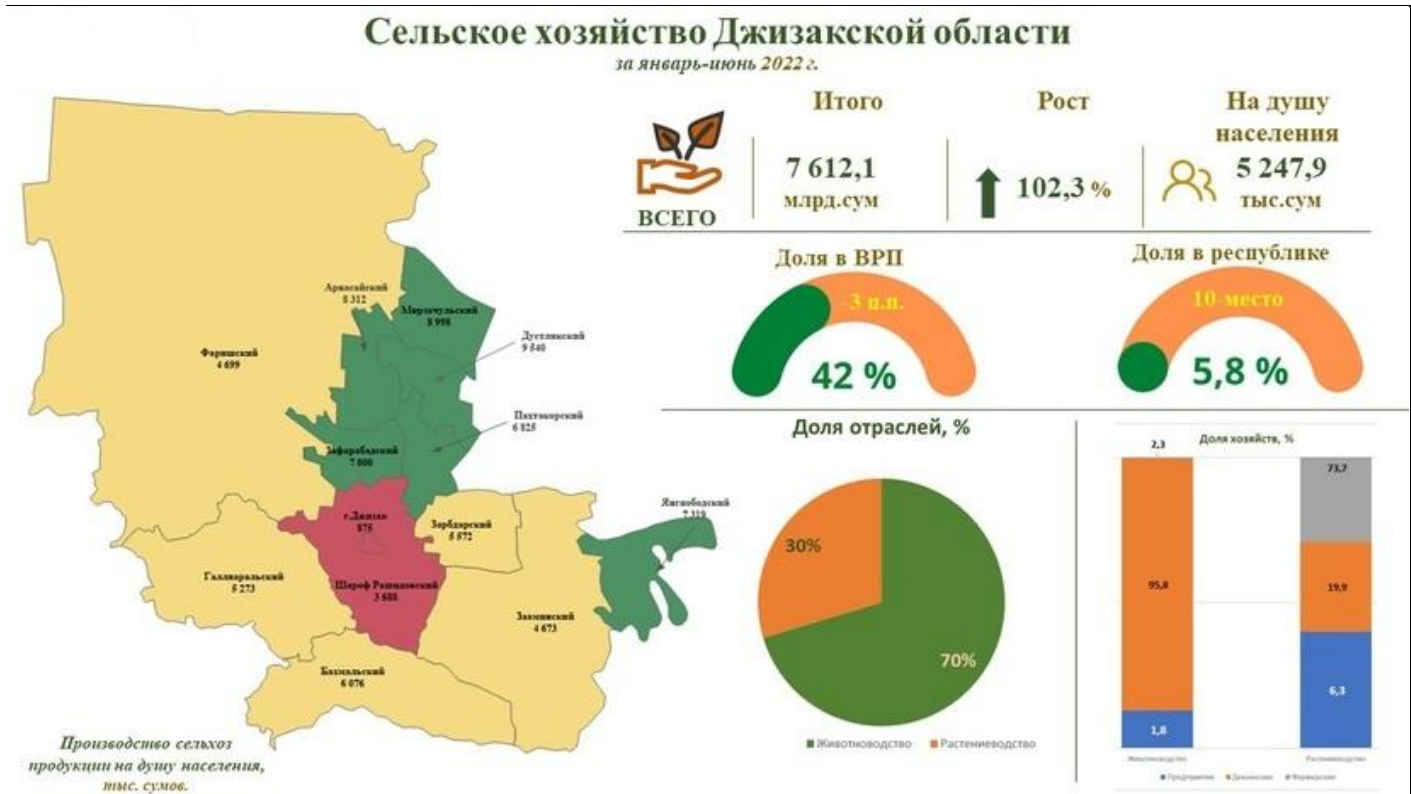


Figure 14 The main indicators of agricultural development in Jizzakh region

8.11 Transport

The country's medium-sized territories and high population density, the disunity of industrial and agricultural centers, as well as remoteness from world markets make the possession of a developed transport system vital for Uzbekistan.

The Republic of Uzbekistan has a developed network of railways and highways, a complex of international airports, as well as air routes that cross the territory of the state lengthwise and across and meet the needs of the country both in international and, first of all, in transit traffic.

All types of transport are developed in the Republic of Uzbekistan. To date, the total length of the country's railways is 6.5 thousand kilometers. According to the density of railways, the republic occupies a leading place in Central Asia. Road transport also plays a significant role in the transportation of goods and passengers. Over the years of reforms, more than 43.5 thousand kilometers of highways have been built and put into operation in the country, 97% of which are paved.

There are about 4000 km of roads in operation in Jizzakh region, of which 200 km are of international importance. At the same time, the length of the railway tracks is 217.8 km.

The main highway from Tashkent to Jizzakh city is the M–39 route, with a length of 203 km.

The Jizzakh-Khawast railway line passes through Jizzakh. Numerous canals, roads and railways divide the territory into separate neighborhoods.

8.12 Housing and communal services and infrastructure

According to national statistics for 2020, 87.6% of households in rural areas of Uzbekistan have access to drinking water supply services at a basic level. The vast majority of rural settlements (90%) do not have sewage systems (Table20).

Table20 Percentage of the Uzbek population with access to safe drinking water

Category	2016	2017	2018	2019	2020
Households receiving basic drinking water services, urban areas	93,9	94,1	91,1	91,4	92,8
Households receiving basic drinking water services, rural areas	83,2	80,4	81,2	81,2	81,9
Households receiving basic drinking water services	88,8	87,6	86,4	86,6	87,6
Households with access to safe drinking water, urban settlements (% of households in cities)	99,8	99,1	98,8	99,1	98,8
Households with access to safe drinking water, rural settlements (% of households in rural settlements)	96,1	97,2	96,7	98,0	98,7
Households with access to safe drinking water (% of households)	98,0	98,2	97,8	98,6	98,7

Source: <https://stat.uz/en/open-data>

In Jizzakh region, more than 74% of households in rural settlements have access to drinking water supply services, in Jizzakh city 91.8% of households are connected to drinking water supply services. All settlements of the region are connected to the power supply network.

According to information received during consultations with representatives of the makhallas, the settlements are fully gasified and connected to the electricity network, but local residents complain of periodic power outages.

Households in the affected area of the project mostly do not have centralized sewerage.

8.13 Cultural heritage

It should be noted that in total in Jizzakh region 427 cultural heritage sites have been taken under state protection, including 100 shrines of historical areas, 268 archaeological sites, 59 monumental monuments.

The main areas rich in monuments of cultural and archaeological heritage are Firish and Bakhmali.

There are a number of archaeological sites in the Farish district:

- cemeteries of Etimtau (I millennium BC),
- Khanbandi Dam (X century),
- Karatash (I—II century),
- Chorbog Abdullakhan (XVI century).

Osmat city, the center of the Bakhmal district, is called Uzbek Switzerland. Shrines "Usmat ota", "Novka ota", "Bogimozor", "Khoja kundalan", "Terakli ota", "Machitli ota" in the Bakhmali district attract many tourists.

One of the most ancient places and at the same time, the most mysterious shrines of the Bakhmal district is the "Novka ota", located on the slopes of the Turkestan ridge. Archaeologists have repeatedly found fragments of household items and cultural monuments of people who lived here more than two thousand years ago - at the dawn of our era.

The remains of a stone clock were also found on the territory of the "Novka ota" shrine. This historical monument is another evidence that there once existed a settlement in which enlightened people who were interested in astronomy, mathematics, and physics lived. Another evidence of this is the tombs decorated with elegant patterns, which could only be created by talented artists and true masters of stone carving. Scientific searches led scientists to the conclusion that this settlement was called Naukat, and was a summer inn for pilgrims, merchants and military leaders. It was wiped off the face of the earth during the Mongol invasion in the XIII century. Later, in the XIV—XV centuries, life resumed here, but the city was never rebuilt.

The shrine, spread over 2.52 hectares, is framed by a pond in which there are many fish. Locals believe that these fish are sacred, and therefore no one catches them, but on the contrary, they are fed with bread.

A striking example of a pilgrimage site located in the center of the Bakhmali district, at the foot of the historical hill "Kurgontepa" is the shrine "Usmat-ota".

As a result of consultations with representative of the Department of Cultural Heritage of Jizzakh region, the nearest monument is located at a distance of 5.5 kilometers from the project area.

Currently, a request has been sent to the Department of Jizzakh region to obtain data on significant cultural heritage sites located near the facility under construction.

Based on data and maps, as well as the conclusion of the Department of Cultural Heritage of Jizzakh region, a further assessment will be carried out in accordance with the requirements of the IFC PS-8, which will also include a study of the impact of associated facilities, upon receipt of data on the location and extent.

Based on the initial assessment of the initial data, it is necessary, at a minimum, to include in the Environmental and Social Management Plan the Procedure for detecting accidental finds.

8.14 The zone of influence of the planned activity on socio-economic conditions

Any planned economic or other activity has a direct or indirect impact on socio-economic conditions, both positive and negative.

The main objects of these influences include components of the social environment: enterprise personnel, the population within the impact zone, infrastructure, as well as the socio-economic living conditions of the population, including employment, demographic shifts, social infrastructure, ethnic characteristics, etc.

In chapter 9 of this report, the impacts on the social environment will be discussed in more detail.

9 IMPACTS OF THE PROPOSED ACTIVITY

9.1 Impacts of the proposed activity on the social environment

The objective of this phase of work has been to identify the main potential impacts of the project and associated facilities as required by IFC PS1. A detailed assessment of potential impacts and the identification of measures to manage them will be undertaken as part of the ESIA.

A brief description of the key impacts is presented in the subsections below, a summary Table 9.1.1 of the potential impacts of the planned activities identified at this stage of the work is provided.

9.1.1 Positive and negative impacts

Positive socio-economic impacts

The positive impacts of the project on the social environment include the deduction of tax payments from planned activities, the creation of new jobs, the volume of work for contractors providing services and performing work within the framework of Project activities, as well as the implementation of socio-economic programs of the combined power plant.

9.1.2 Obtaining land titles

According to the results of the reconnaissance survey of the project area, it was found that the main part of the right-of-way passes through the territory of one farm. The locals use these lands mainly for planting fruit trees and grazing livestock. Data on associated objects has not been provided by the Customer.

The Land Code of the Republic of Uzbekistan provides for the possibility of seizure of land plots for state and public needs. In this context, it means the withdrawal of a plot from private ownership for public needs, by decision of the Government, with the consent of the landowner, in compliance with the provisions of legislation regarding the right of the State to compulsory alienation of property, which provides for immediate and adequate compensation.

According to the results of the visit to the Project implementation area at the stage of determining the ESIA research program, the alienation of the land was carried out and compensation was paid.

The nearest residential buildings are located at a distance of about 100 m from the boundaries of the enterprise. Within the framework of the ESIA, a detailed assessment of the social impact will be carried out in accordance with the requirements of PS-1 and PS-5 of the IFC and measures to reduce it will be proposed.

The impacts associated with the physical movement and alienation of a land plot require a social audit and verification of compensation payment procedures.

As part of the further stages of the ESIA, in-depth interviews will be conducted with farmers affected by the project in order to obtain information about the owners and land plots allocated (on a permanent and temporary basis), separately for each farm (the amount of payments, verification of estimated and applied national legislative procedures, as well as assessment of compliance with the requirements of PS-5 IFC).

The exact number of affected farms will be determined based on the results of the ESIA. To manage this impact, the Project will carry out a social audit procedure in accordance with applicable international requirements.

9.1.3 Labour and working conditions

The implementation of the planned activity involves the involvement of a significant number of employees both at the construction stage (about 650 people) and at the operation

stage (70 people will be involved in production, 65 of them workers and 5 managers, specialists and employees), the implementation of project activities will create 70 new jobs. The main risks associated with labor relations and working conditions in accordance with the IFC PS-2 include:

- risks associated with the involvement of (sub)contractors and their potential non-compliance with the requirements in the field of labor relations (for example, in terms of concluding employment contracts, overtime, employee compensation);
- possible violations of the requirements and norms in the field of occupational safety and health;
- risks associated with the living conditions of the Project employees (including issues of providing housing facilities of appropriate quality, etc.);
- risks in the demobilization of workers upon completion of the construction stage(s) and related issues related to violation of workers' rights, etc.

These risks will be considered in the ESIA process; appropriate measures to minimize them will be proposed.

9.1.4 Public health and safety

The composition of emissions from a combined power plant is typical for enterprises in this industry. In terms of emissions (tons/year), carbon monoxide, nitrogen dioxide and other substances of hazard class 3 and 4 prevail among the 20 substances.

The contribution of pollutants during the operation of the combined-cycle power plant will be: carbon monoxide – 2369.607 t/year (77.7%); nitrogen dioxide – 566.316 t/year (18.5%); nitrogen oxide - 92.061 t/year (3.0%); sulfur dioxide -18.463 t/year (0.6%); others – 0.073 t/year (0.2%).

The nomenclature of pollutants entering the atmospheric air indicates both potential significant chronic non-carcinogenic effects and carcinogenic effects. Non-carcinogenic effects (according to primary qualitative estimates) are determined by emissions of nitrogen and sulfur oxides, suspended solids (mainly fine). Carcinogenic effects are determined by emissions of manganese, iron, benz(a)pyrene.

The height of the highest chimney of the power plant will be 60 m. The results of a number of studies confirm the fact that the maximum opening of the pipe flare is approximately at a distance of up to 20 pipe heights, which in this case is about 1.2 km from the source of emissions. Residential buildings of a number of makhallas, as well as kindergartens, schools, and medical institutions are located at the specified distance. It seems likely that the concentrations of pollutants created by emissions from sources in residential areas, as well as in the surrounding area, are slightly higher than in the immediate vicinity of the enterprise.,

The experience of designing and assessing the impact of enterprises of a similar profile indicates that the health risk is determined mainly by inhalation exposure to various groups of the population., The risk of multi-mediated exposure due to aerogenic precipitation, contamination of drinking water, and food is predicted to a lesser extent.,

Based on the results of the assessment of the levels of risk to public health in accordance with the requirements of PS-4 of the IFC, additional measures to reduce emissions may be proposed. It should be noted that for enterprises of the considered profile, emission reduction can be achieved by widely tested methods. Accordingly, the level of risk can be minimized.

9.1.5 Impacts on the indigenous population

The Uzbek population predominates in the Project area. Based on the results of studying documents, consultations and interviews, indigenous peoples or groups with a collective attachment to a geographically defined habitat, traditional lands or ancestral territories in the Project area, as well as to natural resources in this habitat and in such territories have not been identified.

In addition, in the context of the definitions in PS-7 of the IFC, existing minority groups are assimilated and do not have any socio-economic or political characteristics that would distinguish them from the dominant groups living in the project area. In this regard, the requirements of PS-7 of the IFC in relation to indigenous peoples are not applicable to the project and are excluded from further evaluation.

9.1.6 Impacts on cultural heritage

In general, in the territory under consideration, cultural heritage monuments are located at a fairly remote distance from the project area.

It is not necessary to exclude the potential risk that artifacts may be located on the construction site of associated facilities, and construction work related to the installation of supports (during the construction of power lines) may lead to damage and/or destruction of such cultural heritage sites.

In this regard, it is necessary, at least, to include in the Environmental and Social Management Plan the Procedure for detecting accidental finds, as well as to obtain the conclusion and instructions of the Department of Cultural Heritage of Jizzakh region.

9.1.7 Other impacts

9.1.7.1 *The work of construction machinery, equipment and existing production facilities*

Existing construction sites and production facilities pose a man-made risk if public access to them is not properly controlled.

The site of the power plant construction site is located at a distance from the road, so the work of construction machines and the production facility will not pose an immediate threat to residents permanently residing in the nearest makhallas. Nevertheless, the construction of associated facilities (power lines, gas pipelines) may pose a risk if the period of construction and installation of supports is associated with harvesting by farmers or, conversely, the sowing period.

The risks outlined above will be analyzed in the ESIA materials in accordance with the requirements of the IFC PS-4, which will also identify measures to mitigate them.

9.1.7.2 *Traffic*

During the implementation of the project, it is planned to use cars and trucks to move workers, goods and equipment. It is also possible to transport large equipment necessary for the implementation of the Project. Thus, the impact on the health and safety of the population can be exerted in connection with the movement of vehicles on public roads. There are risks of accidents involving other road users, including pedestrians. These risks are also typical for rural areas, where local residents may leave children unattended on the street.

In addition, the impacts of planned activities related to the movement of vehicles may relate to a deterioration in the quality of the roadway.

The risks under consideration will be particularly characteristic during the construction phase, but they may also manifest themselves during the operation phase. They will be reviewed within the framework of the ESIA in accordance with the requirements of the IFC PS-4, which will result in the development of measures to minimize risks. These activities will be summarized in the Road Safety Management Plan for the construction phase.

9.1.7.3 *Influx of labor and construction camps*

The implementation of the planned activities will be associated with the influx of a large number of employees, which will be especially characteristic during the construction phase. Along with employees hired directly by the Company, employees will also be attracted by (sub-) contractors, including from outside Jizzakh region.

The risks associated with the influx of labor may be related to the emergence of conflicts between visiting workers and local residents. Exposure may be associated with the risk of spreading infectious diseases, including sexually transmitted diseases.

Certain impacts may also be associated with an increase in the load on existing infrastructure (including social).

These risks and impacts, as well as the mitigation measures provided for by the project, will be considered in the ESIA materials in accordance with the requirements of the IFC PS-2 and IFC PS-4, as well as in the Public Health and Safety Plan for the construction and Operation phases. Additional measures to reduce impacts will be proposed if necessary.

9.1.7.4 Human rights

During the initial assessment, the Consultant conducted a limited screening of the company's activities on human rights-related impacts based on national legislative and regulatory requirements.

Screening was conducted on the following issues identified on the basis of the UN Guidelines and relevant recommendations:

1. The presence of business partners (for example, joint venture partners) who have previously been involved in human rights violations.

Conclusion: As a result of the analysis (mass media screening), business partners previously involved in human rights violations have not been identified.

2. Precedents with non-governmental organizations (NGOs), human rights groups and other informants in the form of expressing concern about the human rights implications arising from the combined power plant.

Conclusion: As a result of the analysis (mass media screening), no publications were identified regarding concerns about the human rights consequences arising from the Customer's activities.

3. Availability of high-impact and high-risk project activities.

Conclusion: The project will be implemented in the territory allocated by the Khokimiyat in the context of activities determined by the relevant decree of state bodies.

4. The project or activities are or will be located on protected lands or territories occupied by vulnerable populations (for example, areas near indigenous communities, protected rainforests or refugee camps)

Conclusion: The project is being implemented on the site allocated by the Khokimiyat for construction, protected lands or territories occupied by vulnerable groups of the population (indigenous communities, protected forest areas or refugee camps) have not been identified in the project area.

5. A project or business activity may affect shared property resources used by the entire community (for example, groundwater, pastures, or fishing waters).

Conclusion: The project will be implemented on a site allocated by the Khokimiyat and will not affect the resources of the common property.

6. Cases of entering a new market or industry that may put consumers at risk.

Conclusion: The project is part of a government program and will not be able to put consumers at risk.

The main conclusions of the primary analysis:

The consultant did not identify a reasonable need for an assessment of the impact on human rights within the framework of the project based on the above conclusions.

The Consultant's terms of reference, formed and approved by the Customer, does not contain requirements for conducting a human rights impact assessment.

9.1.8 Conclusions on impacts on the social environment

At the present stage of the ESIA, a preliminary identification and assessment of the impacts of the planned activities on the social environment has been carried out. The project provides for the formation of an organizational structure with a description of the main functionality and hierarchy, including the allocation of those responsible for the implementation of the environmental and social action plan.

Table 18 provides a description of the predicted impacts according to the methodology set out in section 3, and possible solutions for measures aimed at preventing and/or minimizing negative consequences are presented.

Table 21 Preliminary assessment of the impact of planned activities on the social environment

Item	Aspects	Impacts and risks	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
1.	Economic benefits	Tax deduction	C, O	+	Not applicable (positive impact)	Regional	Not required
		Creation of additional jobs	C, O	+	Not applicable (positive impact)	Regional	Development of a procedure for stimulating, training and attracting local workers
		Involvement of local organizations	C, O	+	Not applicable (positive impact)	Regional	Development of a procedure to stimulate the involvement of local organizations
		Implementation of socio-economic programs	C, O	+	Not applicable (positive impact)	Local/ Domestic	Development of a Community Development Plan
2.	Labour relations and working conditions	Risks of violation of labor relations	C, O	-	High	Domestic	-Development of Personnel policy and inclusion of its requirements together with socio-environmental requirements in contracts with (sub)contractors -conducting briefings with employees - monitoring compliance with the requirements in the field of labor relations
		Risks of violations of labor protection requirements	C, O	-	High	Domestic	- Regular monitoring of the health status of employees, including staff of (sub) contracting organizations, at the health center - provision of necessary personal protective equipment - development of procedures and instructions on the requirements of OT and PB, training and testing of workers' knowledge - ensuring optimal temperature and humidity levels in residential and work buildings - agreements on emergency medical evacuation and provision of medical care with medical institutions of Jizzakh city and, if necessary, Sharaf Rashidov district; - the functioning of the Mechanism for filing and reviewing appeals and complaints, and other measures
		Risks associated with the living conditions of employees	C, O	-	High	Domestic	- Development of Personnel policy and inclusion of its requirements in contracts with (sub)contractors - development of a management Plan for shift camps/employee accommodation - conducting briefings with employees - monitoring compliance with the requirements in the field of employee accommodation
		Risks in the demobilization of workers	C	-	Moderate	Domestic	Development Employee Demobilization Plan

Item	Aspects	Impacts and risks	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
3.	Public health and safety	Impacts related to noise, atmospheric emissions and vibration	C, O	–	High	Domestic	<ul style="list-style-type: none"> - Installation of noise protection screens and fences (if necessary) - environmental monitoring at the borders of settlements - functioning of the Mechanism for filing and reviewing appeals and complaints
		Risks associated with the work of construction machinery, equipment	C, O	–	Moderate	Domestic	<ul style="list-style-type: none"> - Installation of protective barriers and fences equipped with warning signals on construction sites (in particular, when carrying out work near the territory of residential development) - installation of signs during hazardous work (the place and time of such work should be displayed on the signs) - security service functioning - informing local residents in advance about the time and place of construction work - functioning of the Mechanism for filing and reviewing appeals and complaints
		Traffic-related impacts	C, O	–	High	Domestic	<ul style="list-style-type: none"> - Development of a Traffic Management Plan - conducting briefings with drivers - functioning of the Mechanism for filing and reviewing appeals and complaints - implementation of other measures (if necessary)
		Risk of conflicts between visiting workers and local residents	C, O	–	Moderate	Local	<ul style="list-style-type: none"> - Development of a Employee Code of Conduct - development of a management Plan for shift camps/employee accommodation - developing procedures to encourage the involvement of local workers and organizations - functioning of the Mechanism for filing and reviewing appeals and complaints
		Risks the spread of infectious diseases due to the influx of workers	C, O	–	Moderate	Local	<ul style="list-style-type: none"> - Development of a Employee Code of Conduct - conducting briefings with employees - development of a management Plan for shift camps/employee accommodation - development of procedures to stimulate the involvement of local enterprises and organizations - vaccination, mandatory preliminary and periodic medical examinations
		Risks connected with inappropriate behavior of security employees and the corresponding consequences for local residents and employees	C, O	–	Low	Domestic	<ul style="list-style-type: none"> - Development of rules of conduct/ job descriptions of guards - conducting briefings with security personnel - functioning of the Mechanism for filing and reviewing appeals and complaints

Item	Aspects	Impacts and risks	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
4.	Impacts on infrastructure	The risk of increasing the load on existing infrastructure (including social)	C, O	–	Moderate	Local/ Domestic	<ul style="list-style-type: none"> - Development of procedures to stimulate the involvement of local enterprises and organizations - functioning of the Mechanism for filing and reviewing appeals and complaints - development of additional measures (if necessary)
5.	Allocation of land plots	Impacts on owners and/or users of land plots	C, O	–	Moderate	Local/Regional	<ul style="list-style-type: none"> - Conducting a social audit of land allotment procedures and compensation payments - conducting in-depth interviews with farmers to get feedback - functioning of the Mechanism for filing and reviewing appeals and complaints
6.	The indigenous population	Impacts on the economic practices of indigenous minorities	C, O	Not applicable	Not applicable	Not applicable	Not applicable
		Impacts on intangible cultural property of indigenous heritage of indigenous peoples	C, O	Not applicable	Not applicable	Not applicable	Not applicable
7.	Cultural heritage	Impacts on tangible objects of cultural heritage	C	–	Moderate	Domestic	<ul style="list-style-type: none"> - Implementation of security measures for the preservation of objects - development of a Procedure for handling accidental finds of cultural value - conducting briefings with employees performing excavation and construction work
		Impacts on intangible cultural heritage	C, O	Not applicable	Not applicable	Not applicable	Not applicable

9.2 Impacts of the planned activities on the environment

9.2.1 Conclusions on environmental impacts

At the present stage of the ESIA, a preliminary identification and assessment of the impacts of the planned activity on the components of the natural environment has been carried out.

Table 19 provides a description of the predicted impacts according to the methodology set out in section 3, and possible solutions for measures aimed at preventing and/or minimizing negative consequences are presented.

Table22 Preliminary assessment of the environmental impacts of planned activities

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
1.	Seizure of land plots for the placement of objects of planned activities	Impacts on biodiversity: - removal of biotopes and/or their fragmentation - the anxiety factor - the death of terrestrial animal species (power lines, gas pipeline) - attracting synanthropic species	C ¹⁴	–	Low	Domestic	<ul style="list-style-type: none"> - Minimizing the area of the seized plots - the use of previously developed sites for the placement of objects of planned activities - consideration of sensitive periods of the animal life cycle (nesting, etc.) when planning work - reclamation of sites that were disturbed during the construction phase - instructing the Customer's staff and contractors on biodiversity conservation measures - landscaping and landscaping of sites and SPZ
2.	Seizure of land plots for the placement of objects of planned activities	Impact on soils: removal of soils or their individual horizons	C	–	Low	Local	<ul style="list-style-type: none"> - Minimizing the area of the seized plots - the use of previously developed sites for the placement of objects of planned activities - control of the boundaries of construction works - reclamation of sites that were disturbed during the construction phase - landscaping and landscaping of sites and SPZ
3.	Seizure of land plots, placement of objects of planned activity	Changes in the visual characteristics of the landscape as a result of the placement of objects of the planned activity	C	–	Low	Local	<ul style="list-style-type: none"> - Optimization of coloristic solutions (coloring of buildings and structures); - landscaping and landscaping of sites and SPZ
4.	Excavation and movement of soils, formation of embankments, excavation, reclamation, construction work	Impacts on the geological environment: - transformation of engineering and geological elements - activation of dangerous exogenous geological processes (flooding, planar and linear erosion)	C	–	Low	Local	<ul style="list-style-type: none"> - Minimizing the area of the seized plots - the use of previously developed sites for the placement of objects of planned activities - engineering preparation of the relief - monitoring of the groundwater level - reclamation of sites that were disturbed during the construction phase

¹⁴ Here and further in the table: C – construction, E – exploitation.

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
5.	Emissions of pollutants into the atmospheric air, operation of vehicles, construction and special equipment, installation, welding, painting, excavation	Chemical pollution of atmospheric air and related indirect effects on the population, flora and fauna, soils	C	–	Low	Local	<ul style="list-style-type: none"> - Proper construction technology, including the use of vehicles and low-emission construction machinery - timely performance of routine maintenance and repair work of vehicles and construction machinery, including control of toxicity of emissions of vehicles and construction machinery - dust suppression (irrigation) at loading/unloading sites and at excavation sites - monitoring of the level of atmospheric air pollution in the nearest residential area
6.	Emissions of pollutants into the atmospheric air, transportation of materials, including bulk materials	Chemical pollution of atmospheric air and related indirect effects on the population, flora and fauna, soils	C	–	Moderate	Domestic	<ul style="list-style-type: none"> - Shelter of bulk materials during transportation - dust suppression (irrigation) at loading/unloading sites - watering roads - monitoring of the level of atmospheric air pollution in the nearest residential area
7.	Emissions of pollutants into the atmospheric air, the work of the main technological and support units	Chemical pollution of atmospheric air and related indirect effects on the population, flora and fauna, soils	E	–	Moderate	Domestic	<ul style="list-style-type: none"> - Justification of the size of the SPZ, implementation of measures for the organization of the SPZ - the use of burners of gas-burning devices with low emissions - conducting the technological process in strict accordance with technological and technical solutions (carrying out work in accordance with good practice) - use of serviceable equipment – scheduled maintenance and repair of technological equipment and ventilation installations - heat recovery (reduction of fuel consumption) - conducting regular monitoring of emissions into the atmosphere - recruitment of personnel with the necessary qualifications for the production of works - equipping priority sources of pollutant emissions with automatic sampling and analysis stations at sources of atmospheric air pollution in accordance with paragraph 2 of Resolution No. 737 of the Cabinet of Ministers of the Republic of Uzbekistan dated September 5, 2019 - production control at the sources of pollutant emissions - monitoring of the level of atmospheric air pollution in the nearest residential area

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
8.	Exploitation of sources of constant (compressors, generators, etc.) and non-constant noise (vehicles, machinery)	Acoustic pollution (vibration, noise) and related indirect effects on the population and wildlife	C	–	Low	Local	<ul style="list-style-type: none"> - A ban on the production of noisy types of work (for example, the production of tracked vehicles during excavation and drilling, pile driving) in the period from 23.00 to 7.00 - limitation of the time of use of the most noisy construction equipment in the working budget - choosing less noisy machinery for work - the use of noise-proof shelters for compressors and electric generators - monitoring of noise levels in the nearby residential area during construction work
9.	Transportation of materials, equipment, and vehicles.	Acoustic pollution (vibration, noise) and related indirect effects on the population and wildlife	C	–	Moderate	Domestic	<ul style="list-style-type: none"> - Loading/ unloading should be carried out during the daytime, if possible - speed limit for vehicles and equipment traveling through a residential area up to 20 km/h, for railway transport up to 10 km/h - monitoring of noise and vibration levels in nearby residential buildings - monitoring of noise levels in the surrounding area
10.	Exploitation of the main technological and auxiliary units	Acoustic pollution (vibration, noise) and related indirect effects on the population and wildlife	E	–	Moderate	Domestic	<ul style="list-style-type: none"> - The use of noise silencers on the most noisy systems - application of screens for cooling towers; - compressor shelter - installation of mufflers to relieve the overpressure of the compressor, - monitoring of noise levels in the nearby residential area

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
11.	Water intake from the Jizzakh reservoir, water intake	Impact on surface water resources	C, E	–	Low	Domestic	<ul style="list-style-type: none"> - Preparation of the consolidated water balance of the enterprise to develop and implement measures to improve the efficiency of water resources use (taking into account water consumption for the needs of the project) - the use of industrial storm drains for the technological needs of the project) - implementation of water-saving technologies on the territory of the enterprise (use of treated wastewater for irrigation instead of industrial water, etc.)
12.	Wastewater disposal, construction work	Impact on surface water quality and related indirect effects on aquatic organisms	C	–	Low	Domestic	<ul style="list-style-type: none"> - Monitoring of the groundwater level - purification of industrial stormwater generated on the construction site to the standards of permissible discharge for specific substances of industrial stormwater runoff - regular monitoring of the quality of industrial stormwater from the territory of the object
13	Wastewater disposal, technological and support units	Impact on surface water quality	E	–	Low	Domestic	<ul style="list-style-type: none"> - Reducing the volume of wastewater and drainage water discharge due to their use in the enterprise - equipment of wastewater disposal facilities with metering devices - construction of rain sewers and storm water treatment facilities from the entire territory of the enterprise - achieving regulatory targets for all wastewater releases

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
14.	Waste management, construction work, provision of living conditions for staff	Impacts during the operation of waste accumulation and disposal/recycling facilities, depletion of existing waste disposal facilities	C	-	Moderate	Domestic	<ul style="list-style-type: none"> - Organization of waste storage sites on construction sites equipped with special containers and containers, depending on the type of waste, hazard class and aggregate state of waste - development and implementation of management plans in the field of occupational safety and health environmental protection (pollution prevention and control plan during the construction phase, Waste Management Plan)
15.	Waste management, technological and support units	<ul style="list-style-type: none"> - Impacts on atmospheric air, surface and groundwater and related indirect impacts on the population and wildlife, soils during the operation of waste accumulation and disposal/recycling facilities - exhaustion of existing waste disposal facilities 	E	-	Moderate	Domestic	<ul style="list-style-type: none"> - Recycling of waste by recycling - organization of temporary waste storage sites equipped in accordance with environmental safety requirements - conclusion of contracts with specialized organizations for the transfer of waste for use as secondary raw materials or processing - control over the timely collection, storage and disposal of production and consumption waste - development of a schedule for waste collection, storage and disposal

Item	Aspects/sources	Impacts	Stage	Orientation	Preliminary assessment of significance	Distribution	Possible activities
16.	Greenhouse gas emissions (hereinafter referred to as GHG)	Climate change: - increased risk of occurrence of dangerous meteorological phenomena (strong winds, rains and thunderstorms, etc.) - climate changes related to direct emissions (from burning fuels) and indirect GHG emissions (heat and electricity consumption)	C, E	–	Moderate	domestic	- Increasing the energy efficiency of the enterprise - reducing fuel consumption through the use of advanced industry technologies
22.	Emergency situations: - spills of hazardous substances or hazardous waste; - steam explosion in water-cooled elements - steam emissions - explosion - fire - etc.	Pollution of atmospheric air, surface and groundwater, grounds, soils	C, E	–	Low/Moderate	Local/ Domestic	- Preventive measures to prevent spills/leaks of hazardous substances or hazardous waste, including during their storage and transshipment - development of Action Plans for the localization and elimination of oil spills, etc. - preventive measures to minimize the risk of explosions and fires - implementation of emergency shutdown systems - the use of analyzers/detectors and automatic fire extinguishing systems

9.3 Cumulative impacts

According to the definition of PS-1 of the IFC, cumulative impacts are changes resulting from additional impacts on the scope of activities or resources used in the project or directly affected by the impact of the project, as a result of other existing, planned or realistically determined circumstances during the process of determining risks and impacts; generally recognized as significant based on scientific opinion and/or based on the concerns of the affected communities.

When assessing cumulative impacts, recipients should be studied – valuable environmental and social components (VEC), in relation to which the planned activity itself is assessed as a source of significant impacts. At the same time, the ESIA should also take into account non-project-related activities that are being carried out, planned or can be reasonably predicted (PS-1 IFC).

The ESIA provides for accounting for the activities of third parties that may lead to cumulative impacts:

- activities of Sharaf Rashidov district landfill;
- operation of railway infrastructure (Jizzakh-Khawast railway line);
- operation of the road transport infrastructure of Jizzakh and Sharaf Rashidov district.

The following potential cumulative impacts are predicted at the current stage of the ESIA studies:

- chemical and acoustic pollution of atmospheric air;
- impact on the water quality of the irrigation canal;
- public health impacts;
- impacts on employment and the local economy.
- impacts on local infrastructure.

9.4 Transboundary impacts

The implementation of project solutions according to the preliminary assessment will not be accompanied by a transboundary impact on the environment and social environment.

According to PS-1 (IFC Guidance Note 36), transboundary impact means any impact, not only of a global nature, in an area under the jurisdiction of a party caused by a planned activity, the physical source of which is located entirely or partially within the area under the jurisdiction of another party.

The projected facilities are located on a dedicated site, Sharaf Rashidov district, Jizzakh region.

10 MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ASPECTS

10.1 Management structure

The requirements for managing and reducing impacts on the social sphere, health, safety and the environment will be defined in the ESIA and summarized in the Environmental and Social Management Plan (hereinafter referred to as the ESMP).

The ESMP will include the following:

- general information on applicable requirements;
- the powers and responsibilities of the Customer in the field of environmental protection, labor protection and social management, including the identification of persons responsible for the implementation of the ESMP, assessment of the potential and competence of personnel responsible for these issues;
- basic requirements for the Environmental and Social Management System (ESMS);
- framework plan for environmental and social management and monitoring;
- the procedure for monitoring, reviewing and updating the ESMP;
- a mechanism for filing and reviewing complaints and appeals.

The ESMP will be used by the general contractor of the Project as a basis for ensuring effective management of environmental and social issues in accordance with applicable international standards and best practices in the field of environmental protection, occupational safety and social management.

Guided by the general requirements of the framework ESMP, the general contractor and the operator of production facilities will develop a more detailed ESMP that meets a specific scope of work.

The ESMP, developed during the ESIA process, establishes a framework for achieving the following objectives:

- compliance with applicable requirements – work at all stages of the project life cycle must ensure that the environmental requirements of national legislation and applicable international environmental requirements are met;
- minimization of environmental and social risks – special procedures developed in relation to the Project will assist in identifying environmental and social risks and meeting management requirements;
- achieving the best possible environmental and social indicators – any type of work within the Project should be focused on preventing pollution and social conflicts, minimizing adverse environmental and social effects, and rational use of materials in accordance with best practices.

10.2 Interaction with contractors in the field of HSE protection

As part of the Project implementation, the Consultant recommends that the Customer develop a standard contract with the requirements for contractors included in it in terms of HSE protection and regulation of social and environmental issues. The selection of suppliers and contractors should be based on the possibility of providing services in accordance with these obligations.

In particular, contractors must meet the following requirements in accordance with the provisions of the IFC PS-2:

- comply with the norms of current legislation and applicable internal procedures and requirements of the Company in the field of HSE protection, timely obtain the necessary licenses, permits and other documents in the field of environmental protection necessary for the implementation of activities;
- identify risks and hazards to the health of personnel (including third parties involved), environmental and social aspects, develop and implement appropriate management measures to reduce/eliminate risks to an acceptable level;
- to train their employees in the application of internal regulatory documents of the Customer in the field of HSE related to the types of work carried out;
- to ensure the implementation of applicable measures for occupational safety, fire and industrial safety, environmental protection and social protection, in accordance with the management plans of the environmental and social aspects of the contractor;
- to ensure the constant presence of qualified full-time labor protection and environmental protection specialists at construction sites;
- immediately inform the Customer about all incidents and, if necessary, organize their investigation in accordance with the requirements of the current legislation of Uzbekistan, as well as the requirements of the Customer.

10.3 Environmental and Social Protection Action Plan

As part of the formation of an environmental and social management system, the Customer needs to develop management procedures in the field of HSE protection in order to ensure compliance with all applicable IFC requirements during the implementation of the Project.

The Customer will coordinate and control the construction and operation of the Project – from design to operation stage. At each of these stages, mechanisms will be used to prevent, minimize, and reduce potential negative impacts, as well as measures to enhance positive effects, including:

- conducting an environmental and social impact assessment in accordance with national and international requirements, including taking into account the opinions of stakeholders based on the results of public discussions;
- preparation of design assignments in accordance with the best international industry practices and internal expertise of design solutions;

- selection of qualified contractors who are ready to ensure compliance with the requirements applicable to the Project, and monitoring the fulfillment of these requirements by contractors throughout the duration of the contractual relationship;
- purchase of modern equipment and materials that meet advanced environmental requirements and safety standards;
- current management and control of construction activities at the site and the production of works using modern technologies;
- organization of training for employees of the Company and contractors on HSE issues;
- current and long-term management of risks and impacts on the environment, the health and safety of personnel and the local population, and the social sphere within the framework of project activities.

Taking into account the natural, man-made and socio-economic characteristics of the initial state of the territory and potential impacts on the environment and the social sphere, the Consultant will develop the main measures for the prevention and reduction, monitoring and control of impacts, and prepare on their basis a Management Plan for environmental and social aspects.

As part of the ESIA procedure, in order to meet the applicable requirements and obligations assumed by all Project participants, special documents should be prepared providing for management measures aimed at improving the effectiveness of environmental and social activities.

These documents should be used for the development of the company's environmental management system, and contain procedures, rules and plans designed to ensure systematic integrated management of all environmental and social aspects of the Project.

The Environmental and Social Protection Action Plan (ESAP) should include measures and management measures to ensure that the Project meets the requirements of international financial organizations, designed to successfully obtain financing. The ESAP is an integral part (annex) of the loan agreement, and its implementation is monitored during independent monitoring of the Project implementation by credit institutions.

10.4 Environmental and social management plan

The environmental and Social Aspects Management Plan is a document with prescribed approaches to the management and monitoring of environmental and social impacts, the structure of interaction with contractors and the distribution of management functions and responsibility for meeting applicable requirements.

If necessary, a Framework Plan and thematic plans for it are developed.

Given the dynamic nature of the Project development, the environmental and social management plan(s) should include both activities in regular situations and the ability to respond promptly to changing circumstances, unforeseen events, as well as taking into account the results of monitoring and analysis of project activities.

11 ESIA AND STAKEHOLDER ENGAGEMENT TIMING

11.1 ESIA timing

ESIA research, disclosure of information, discussion of planned activities with stakeholders and preparation of Action Plans in accordance with the requirements of the IFC PS-1 for the project is planned for the period from April 2024 – June 2024.

The schedule for assessing the environmental and social impact of the project in accordance with IFC standards is presented in Table 23.

Table 23 ESIA timing

No Stage	Stage name	Beginning	Ending	Stage Results
1.	Organization of work	04.2024		
2.	Preliminary Environmental and Social Assessment	05.2024	05.2024	Report on the preliminary assessment and work program ESIA (Scoping report)
3.	Baseline studies	04.2024	05.2024	Baseline sections
4.	Environmental and social assessment of the project in accordance with the approved Task	05.2024	06.2024	Final Drafts ESIA Report /NTS /SEP
5.	Informing and engaging with stakeholders	06.2024	07.2024	- 30 day Disclosure Period - ESIA Exhibition Event & comments - Comments review to inform the final ESIA Report - Finalise ESIA Package
9.	Development of Action Plans in the field of environmental protection, social responsibility, safety and health	06.2024	06.2024	Drafts ESMPs Company review - Final ESMPs

11.2 Preliminary deadlines for disclosure of information and measures for interaction with stakeholders

11.2.1 A work plan for interaction with stakeholders.

Any project financed by international credit institutions should ensure the continuity of the process of interaction with stakeholders, starting from the early stages of project preparation, including meaningful consultations and disclosure of significant information about the planned economic activities.

The Stakeholder Engagement Plan (SEP) is a strategic document helping plan an informative and adequate engagement of the key stakeholders of the Project.

The SEP is being developed to effectively manage arrangements for organizing consultations with stakeholders and disclosing information in the period before the completion of the ESIA procedure, as well as during the construction and operation stages of Project facilities.

In particular, the SEP defines a strategy for conducting consultations in connection with the implementation of the Project, which is aimed at achieving the following goals:

- compliance with national legislation and international requirements for public awareness and consultation;
- providing all interested and affected parties with up-to-date information about the Project;
- involvement of all groups of stakeholders in the planning of the planned economic activity, in order to optimize design solutions and effective implementation of the Project and its monitoring;
- maintaining an open dialogue with affected populations in the Project area;
- providing the affected population groups with an effective mechanism for filing and reviewing complaints and appeals related to the implementation of the Project.

The grievance redress mechanism (GRM) for external stakeholders will be included in the SEP and will allow anonymous grievances and will protect confidentiality of information about complainants

Information about the GRM will also be brought to the attention of the affected population at the earliest stages of the Project, the Customer and the Consultant will ensure that the local population has access to the complaint reception and review mechanism and that local residents understand where and how they can file a complaint or appeal. This mechanism will ensure proper consideration and settlement of incoming requests.

During the period of project activity, it is necessary:

- to carry out a periodic assessment of the effectiveness of the GRM and make the necessary adjustments to its work, if necessary;
- to appoint a local community relations manager;
- to ensure regular interaction between this person and local residents;
- to provide the contact details of the local community relations manager to contractors, local communities and residents of nearby settlements in order to simplify the possibility of filing complaints and appeals to the Company.

Within the framework of the ESIA, ongoing information disclosure work will be carried out, which will inform local residents and key stakeholders about the Project and its components, as well as provide an opportunity for the public to familiarize themselves with the ESIA materials and express their opinions on the planned activities.

Information disclosure and consultation activities will be summarized in the Stakeholder Engagement Plan (SEP), developed in accordance with the requirements of the IFC PS-1.

The following documents will be submitted to the public for consideration:

- A stakeholder engagement Plan that should be available to the public throughout the duration of the Project, during which the Plan will be regularly reviewed;
- The report on the preliminary assessment and determination of the scope of work on the ESIA (this report) – the report is developed for the purpose of preliminary analysis of information about the Project, the conditions of its implementation, as well as to identify the main impacts that should be considered in the ESIA process. The scoping report will be available to interested parties in accordance with the procedure contained in the SEP and will be used for consultations at the early stages of the Project.;
- ESIA Report – Among other issues, the ESIA Report will provide a detailed description of the Project, an overview of the international requirements applicable to the Project and the requirements of the Republic of Uzbekistan, a description of the main characteristics of the environment and social environment, possible impacts, as well as measures to minimize or prevent negative impacts and enhance the positive impacts of the Project. In addition, a Non-technical Summary (a separate document summarizing the main results of the ESIA Report) will be developed based on the ESIA Report.

The ESIA documentation package is subject to discussion in consultation with stakeholders.

11.2.2 Time frame

The schedule for the preparation of the ESIA materials and the provision of information to the public is given below:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Provision of a Preliminary Assessment Report and a preliminary Stakeholder Engagement Plan (SEP) for public discussion | <ul style="list-style-type: none"> • May, 2024 |
| <ul style="list-style-type: none"> • Provision of a package of documents on the ESIA for discussion with interested parties, including: <ul style="list-style-type: none"> • ESIA Report • Non-Technical Resume • Updated SEP | <ul style="list-style-type: none"> • June y. 2024 |
| <ul style="list-style-type: none"> • Preparation of the final version of the package of documents on ESIA based on the results of discussions with interested parties | <ul style="list-style-type: none"> • July y. 2024 |

ANNEX. REGISTER OF PARTICIPANTS, MINUTES, PHOTO-REPORT OF STAKEHOLDER CONSULTATIONS

GENERAL REGISTER OF PARTICIPANTS IN THE CONSULTATION

	Full name	Name of the organization	Position	Contacts (tel., e-mail)	Signature
1.	Galeeva Nailya	"CENERGO" LLC	Quality Control Specialist	(88) 330-00-20	+
2.	Yirmibeshoglu Mustafa	"CENERGO" LLC	Account executive	(97) 186-30-03	+
3.	Kamil Erken	"CENERGO" LLC	Water Purification Specialist	(97) 475-15-40	+
4.	Fakhri Balji	"CENERGO" LLC	Construction Specialist	(95) 239-90-09	+
5.	Ismail Uschilik	"CENERGO" LLC	Leading topographer	(97) 491-90-09	+
6.	Karabaev S.	The Agency of Cultural Heritage of Jizzakh region	Head of the Agency	(99) 554-95-27	+
7.	Abidov Turgun	Khokimiyat of Jizzakh city	Khokimiyat of Jizzakh city	(97) 132-00-86	+
8.	Egamov B.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Deputy Head of the Department	(90) 229-98-49	+
9.	Kuvondikov A.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Head of the Atmospheric Air Department	(90) 311-37-03	+
10.	Akhadov K.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Head of the Waste Education and Disposal Department	(93) 302-84-00	+
11.	Sultanov R.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Head of the Water Management Department	(95) 777-68-47	+
12.	Togaev N.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Head of the Biodiversity Department	(99) 775-22-87	+
13.	Adilbaev S.	Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region	Head of the District Inspection	(94) 676-65-55	+
14.	Tazhiev Z.	Department of Sanitary and Epidemiological welfare and Public Health of Sharaf Rashidov district	Sanitary doctor of the SES	(94) 192-55-33	+
15.	Rashidov D.	Sharaf Rashidov District Employment and Poverty Reduction Agency	Head of the Agency	(99) 557-26-45	+
16.	Umarov A.	Khokimiyat of Sharaf Rashidov district	Deputy Khakim for Investment Issues	(93) 300-15-00	+

	Full name	Name of the organization	Position	Contacts (tel., e-mail)	Signature
17.	Akhadov A.	Khokimiyat of Sharaf Rashidov district	Specialist	(94) 571-65-88	+
18.	Ummatov D.	Mahalla Pastki Sulok	Chairman	(94) 348-25-77	+
19.	Shermankulova G.	Mahalla Pastki Sulok	Women's Council	(91) 891-25-85	+
20.	Yuldashev D.	Mahalla Pastki Sulok	Youth Union	(91) 630-91-99	+
21.	Kosimov S.	Makhalla Olmachi	Chairman	(91) 591-77-66	+
22.	Bekmurzaev A.	Gazgon Tepa Makhalla	Chairman	(99) 554-63-06	+
23.	Pirnazarova K.	Makhalla Khalkabad	Chairman	(99) 201-06-60	+
24.	Muminov N.	Khokimiyat of Sharaf Rashidov	Deputy Khokim for makhallas	(94) 344-95-44	+

MINUTES 1
Construction of a combined-cycle gas turbine power plant
The Agency of Cultural Heritage of Jizzakh region

04/22/2024
Jizzakh region

The Consultant's experts:

- 1. Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
- 2. Turgunov Rustamali Abdulkhashimovich - Specialist in environmental issues**

Participants:

- 1. S. Karabaev - Head of the Agency for Cultural Heritage of Jizzakh region**
- 2. Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
- 3. Fakhri Balji - CENERGO LLC Construction Specialist**

For the representative of the Agency for Cultural Heritage of Jizzakh region, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

After the presentation, the issues of the availability of archaeological and cultural heritage sites in the territory allocated for construction and within a radius of 5 kilometers from the project area were discussed. The head of the Agency replied that there are no protected cultural heritage sites in this radius, the nearest archaeological site is located at a distance of more than 5.5 km. The Consultant asked a question about the protected territory of the cemetery, which is located in the north direction from the construction site through a railway crossing. The head of the agency replied that this cemetery belongs to an organization for landscaping and this cemetery is called Yangi Khayot and has a protected area of 50 meters.

It was agreed to send a shift request to the agency indicating all the coordinates of construction sites, the presence of protected areas and cultural heritage sites and the protected area of these facilities. The head of the Agency assured the participants of full support in this matter and the provision of necessary information.

MINUTES 2
Construction of a combined-cycle gas turbine power plant

Khokimiyat of Jizzakh city

04/22/2024
Jizzakh city

The Consultant's experts:

- 1. Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
- 2. Turgunov Rustamali Abdulhashimovich - Specialist in environmental issues**

Participants:

- 1. T. Abidov - Deputy Khakim on construction issues of Jizzakh city**
- 2. Galeeva Nailya - LLC "CENERGO" Quality control Specialist**

For the representative of Jizzakh city Khokimiyat, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

It was said that the Contractor is a Chinese company and issues of possible employment of the local population for the construction period were discussed, 600 people will work during this period, 550 of whom are construction workers. The Consultants offered to cooperate with CENERGO LLC on this project, as the project area is 4.5 km from Jizzakh.

The Deputy Khokim for Construction Issues expressed full support on his part for providing the necessary statistical documentation and information necessary for the implementation of the project and also clarified the construction dates.

MINUTES 3

Construction of a combined-cycle gas turbine power plant

Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region

04/23/2024

Jizzakh region

The Consultant's experts:

1. **Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
2. **Turgunov Rustamali Abdulkhashimovich - Specialist in environmental issues**

Participants:

1. **Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
2. **Egamov B. - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Deputy Head of the Department)**
3. **Kuvondikov A. - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Head of the Atmospheric Air Department)**
4. **Akhadov K. - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Head of the Department for Waste Education and Disposal)**
5. **Sultanov R. - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Head of the Department of Water Management)**
6. **Togaev N. - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Head of the Department for Biodiversity)**
7. **S. Adilbayev - Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region (Head of the District Inspection)**

For the Department of Ecology, Environmental Protection and Climate Change of Jizzakh region, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district with a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

It was also determined that within the framework of the EIA, an assessment of the

initial state of the environment will be carried out, in particular, measurements of atmospheric air quality (using the Zephyr installation), coordinates of soil and water sampling, coordinates of noise and vibration measurements were shown on the Google map, and the boundaries of the construction site and the SPZ of the future enterprise were also discussed.

The Consultants asked questions about whether there are protected areas or forestry in the territory or in the nearest radius, to which they received the answer that at a distance of 2 km there is a territory of Almazar forestry, a nursery where fruit and ornamental trees are planted.

On the part of the Department of Ecology, a number of questions were asked regarding the receipt of an environmental expert opinion on the draft environmental assessment, additional landscaping is planned by the project. Issues were discussed regarding the need to relocate small farms with residential extensions in connection with the location of these houses in the SPZ of the future enterprise and compensation will be paid to them by the district khokimiyat. Also, according to the district inspector, trees and shrubs were damaged during the clearing of the construction site, and the issue of compensation payments in connection with the felling and further preservation of trees during construction was raised.

On the north-eastern side of the construction site there is a garbage collection site in Jizzakh city (operating), which has received repeated complaints from the population about an unpleasant smell. The Regional Department of Ecology asked a representative of the Company to remove soil when digging a pit for construction to the territory of a garbage-assembly landfill for partial reclamation of this site.

When discussing environmental issues, the Deputy Head of the Department for Ecology, Environmental Protection and Climate Change expressed their full support for the provision of documentation and information for the implementation of the EIA.

MINUTES 4

Construction of a combined-cycle gas turbine power plant

Department of Sanitary and Epidemiological welfare and Public Health of Jizzakh region,
Sharaf Rashidov district

04/23/2024
Jizzakh city

The Consultant's experts:

- 1. Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
- 2. Turgunov Rustamali Abdulkhayimovich - Specialist in environmental issues**

Participants:

- 1. Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
- 2. Z. Tazhiev - Department of Sanitary and Epidemiological Welfare and Public Health of Sharaf Rashidov district (Sanitary doctor of the SES)**

For the Department of Sanitary and Epidemiological Welfare and Public health of Sharaf Rashidov district, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

The Consultant asked questions about whether there are any restrictions related to the construction of this facility, whether there are complaints from the local population about air quality, which diseases are most common among the local population, whether measurements of the quality of atmospheric air, soil, water were previously carried out, whether there are animal burial grounds and other burials on the territory.

One question was asked by the management of the district SES, what is the capacity of the combined-cycle power plant.

It was agreed to send a written request to the SES indicating all coordinates of construction sites, the presence of cattle burial grounds and other restrictions for construction, data on previously conducted measurements of air, water and soil, as well as data on the morbidity of the population of the area. The Chief physician assured the participants of full support in this matter and the provision of necessary information.

MINUTES 5

Construction of a combined-cycle gas turbine power plant Sharaf Rashidov District Employment and Poverty Reduction Agency

04/23/2024
Jizzakh region

The Consultant's experts:

- 1. Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
- 2. Turgunov Rustamali Abdulhashimovich - Specialist in environmental issues**

Participants:

- 1. Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
- 2. Rashidov Z. - Sharaf Rashidov district Employment and Poverty Reduction Agency Sharaf Rashidov district (Head of the Agency)**

For the Agency for Employment and Poverty Reduction of Sharaf Rashidov district, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

It was said that the Contractor is a Chinese company and issues of possible employment of the local population for the construction period were discussed, 600 people will work during this period, 550 of whom are construction workers. The Consultants offered to cooperate with CENERGO LLC on this project, as the project area is 4.5 km from Jizzakh.

The Consultant asked questions about whether there are statistics on unemployment among the population and what specialists are available in the labor market in the area.

One question was asked by the employment agency, what would be the wages for the workers.

The head of the employment agency offered to participate in the fair of entrepreneurs in order to recruit qualified specialists for the implementation of the project.

The head of the Agency expressed full support on his part in providing the necessary statistical documentation and information necessary for the implementation of the project and also specified the construction dates.

MINUTES 6
Construction of a combined-cycle gas turbine power plant
Khokimiyat of Sharaf Rashidov district

04/23/2024
Jizzakh region

The Consultant's experts:

- 3. Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
- 4. Turgunov Rustamali Abdulkhovich - Specialist in environmental issues**

Participants:

- 3. Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
- 4. Umarov A.- Khokimiyat Sharaf of Rashidov district (Deputy Khokim for Investment issues)**

For the Khokimiyat of Sharaf Rashidov district, information was orally presented on the ongoing project for the construction of a combined-cycle gas turbine power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

It was said that the Contractor is a Chinese company and issues of possible employment of the local population for the construction period were discussed, 600 people will work during this period, 550 of whom are construction workers. The Consultants offered to cooperate with CENERGO LLC on this project, as the project area is 4.5 km from Jizzakh.

On the part of the Consultant, questions were asked about the provision of alienation documents for the project of a farm land plot located next to the construction site and documents for the payment of compensation to the farmer. The Consultant also asked for a passport from Sharaf Rashidov district.

The khokim of Sharaf Rashidov district is familiar with this project and had no questions about its implementation.

The Deputy Khokim for Investment Affairs expressed their full support for providing the necessary documentation.

MINUTES 7

Construction of a combined-cycle gas turbine power plant

Citizen's gathering of village: Pastli Sulok, Olmachi, Gazgontepa, Khalkabad

04/23/2024

Jizzakh region

The Consultant's experts:

1. **Vakhidova-Mordovina Olga Nikolaevna - Specialist in social issues)**
2. **Turgunov Rustamali Abdulkhovich - Specialist in environmental issues**

Participants:

3. **Galeeva Nailya - LLC "CENERGO" Quality control Specialist**
4. **Ummatov D. - Chairman of Pastli Sulok**
5. **Yuldashev D. - Youth Union representative of Pastli Sulok**
6. **Shermankulova G. - Women's Council of Pastli Sulok**
7. **S. Kosimov - Chairman of Olmachi**
8. **Bekmurzaev A. - Chairman of Gazgontepa**
9. **Pirnazarova K. - Chairman of Khalkabad**
10. **N. Muminov - Deputy Khakim for makhallas of Sharaf Rashidov Khokimiyat**

For the chairmen of the Village citizens' gathering: Pastki Sulok, Olmachi, Gazgontepa, Khalkabad, information was orally presented on the ongoing project for the construction of a combined-cycle gas-fired power plant on the territory of Sharaf Rashidov district on a total area of 9.43 hectares.

It was also indicated that the implementation of this project is carried out by "CENGIZ ENERJI SAN. VE TIC A.Ş." (Republic of Turkey, investor), and this project is funded by international background institutions, in accordance with the environmental and social requirements of the International Finance Corporation, for which an Environmental and Social Impact Assessment is a prerequisite for financing projects.

It was said that the Contractor is a Chinese company and issues of possible employment of the local population for the construction period were discussed, 600 people will work during this period, 550 of whom are construction workers. The Consultants offered to cooperate with CENERGO LLC on this project, as the project area is 4.5 km from Jizzakh.

The Consultant asked questions about any complaints from the population about the quality of atmospheric air, to which representatives of the makhallas of Gazgontepa, Khalkabad and Pasli Sulok replied that there were complaints about the smell from the landfill. Makhalla Olmachi complains about gas fumes from hydraulic fracturing near the project area.

A number of questions were asked from the makhallas, such as where this facility is being built, when construction will begin, whether there will be employment quotas for unemployed residents.

When discussing environmental issues, the chairmen of the Village citizens' gatherings expressed their full support for the provision of documentation in the form of

makhalla passports.

Photos of project consultations



Regional Department for Ecology, Environmental Protection and Climate Change of Jizzakh region



Khokimiyat of Sharaf Rashidov district



Makhallas of Village citizens' gathering Pastki Sulok, Olmachi, Gazgontepa, Khalkabad



Makhallas of Village citizens' gathering Pastki Sulok, Olmachi, Gazgontepa, Khalkabad