



«CENERGO LLC»

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






Environmental and Social impact assessment



Non-technical resume

125-1105-ESIA

LIST OF PERFORMERS

Head, Project Coordinator	O. Vakhidova-Mordovina	
Chief sociologist	B. Mavlyanov	
Sociologist, communications specialist	M. Rasulmetov	
Ecologist/Atmospheric air specialist	N. Limankina	
Chief ecologist	G. Petraeva	
Ecologist	L. Konanyuk	

CONTENT

CONTENT	3
LIST OF FIGURES	5
LIST OF TABLES.....	6
1 TERMS AND DEFINITIONS	7
ABBREVIATIONS	9
1 INTRODUCTION.....	10
1.1 Brief description of the planned activity	10
1.2 Input data.....	11
2 PROJECT SUMMARY.....	12
2.1 Brief description	12
2.2 Location	12
2.2.1 "Zero option".....	14
2.2.2 Placement of the Facility	14
2.2.3 Technological solutions	14
2.3 Status and land use	15
4.2.1 Water supply.....	15
4.2.2 Water disposal	17
4.2.3 Heat and power supply	18
4.2.1 Transport support	18
2.4 Associated facilities	18
3 CONSULTATIONS WITH STAKEHOLDERS.....	20
3.1 Consultations and Disclosure of Information on ESIA	20
3.1.1 Consultations planned during the project implementation period	21
3.1.2 Programs for the involvement of the local population and the asset of the local population.....	21
3.2 Project Grievance Mechanism	22
3.2.1 Confidentiality and anonymity.....	22
3.2.2 Complaint reporting and resolution.....	22
3.2.3 Appeals handling and reporting.....	22
4 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT	24
4.1 Environmental Impacts	24
4.1.1 Impact on atmospheric air quality	24
4.1.2 Assessment of climate change.....	25

4.1.3	Acoustic Effects.....	26
4.1.4	Impacts associated with waste generation	27
4.1.5	Impact on surface waters	28
4.1.6	Impact on soil cover	29
4.1.7	Impact on the flora.....	30
4.1.8	Impact on terrestrial wildlife	30
4.2	Social Impact	31
4.2.1	Impact on the labor market.....	31
4.2.2	Impact on economic development.....	32
4.2.3	Impact related to training, professional development	33
4.2.4	Land acquisition, economic relocation.....	34
4.2.5	Labor influx and population change.....	34
4.2.6	Child and forced labor	35
4.2.7	Access to Transport Infrastructure	36
4.2.8	Supply chain impacts	36
4.2.9	Cultural heritage	38
4.2.10	Workers' rights, safety and labor protection	39
4.2.11	Health, safety and wellbeing of the population	41
5	ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING.....	43
5.1	Environmental protection and monitoring measures.....	43
5.2	Measures to protect and monitor the social environment.....	43
6	CUMULATIVE IMPACTS.....	46
7	IMPACT ON HUMAN RIGHTS	47
8	CLIMATE CHANGE-RELATED IMPACTS.....	48
9	CONTACT INFORMATION	50
10	CONCLUSION	51

LIST OF FIGURES

Figure 1 Area of planned activities.....	10
Figure 2 Industrial site and adjacent facilities	13
Figure 3 Drainage channel of the Jizzakh reservoir	16

LIST OF TABLES

Table 1 Main technical characteristics of a combined-cycle gas power plant	15
Table 2 Information Disclosure Measures.....	21
Table 3 Community Liaison Officer	22
Table 4 Greenhouse gas emissions from the company's activities, thousand tons of CO2 equivalent/year [2, 3].....	26
Table 5 The impact of the project on employment of the population, ppl.	32
Table 6 Environmental requirements for suppliers of Cenergo LLC.....	37
Table 7 Results of the impact assessment of the planned activity on the natural and social environment	51

1 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	«CENERGO» LLC
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)
Zone of influence of pollutant emissions into the atmosphere	The territory formed by the isoline of concentration equivalent to 0.05 MPC for all sets of sources of chemical pollution of atmospheric air for all pollutant emissions
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; (iii) sites that are critical for the survival of migratory species and(or) schooling species with global significance; (iv) 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 recognized 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 legitimized 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 - "Construction of 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: the natural environment and its individual components; population, individual social groups, objects of cultural heritage, etc.
Territories with normalized indicators of the quality of the human habitat	Territories in which hygienic standards of atmospheric air should be provided for chemical, biological and physical indicators of the quality of the human habitat: any residential development; educational and children's institutions; sports facilities and playgrounds; playgrounds; recreational areas; therapeutic-preventive and healing facilities of common use resorts, sanatoriums, rest houses; horticultural associations, collective or individual suburban and gardening plots
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
RES	Renewable energy sources
ICO	International credit organizations
MRCC	Mechanism for receiving and considering complaints
IFC	International Finance Corporation
ESIA	Environmental and social impact assessment
ACI	Assessment of cumulative impacts
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
MPD	Maximum permissible discharges
PSW	Project environmental standards for the generation and disposal of waste
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
RCM	Resolution of the Cabinet of Ministers
RUz	The Republic of Uzbekistan
SanR&N	Sanitary rules and norms
PS	Performance standards
SPZ	Sanitary protection zone
CLO	Community Liaison Officer
TNIQ	Territories with normalized indicators of the quality of the human habitat
Uzhydromet	Center of the Hydrometeorological Service of the Republic of Uzbekistan
AACI	Accelerated assessment of cumulative impacts
VESC	Valuable environmental and social component
ECA	Export credit agencies

1 INTRODUCTION

1.1 Brief description of the planned activity

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 CENERGO LLC (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 MWh per year.

The territory of the 550 MW combined-cycle gas power plant includes an industrial site in Sharaf-Rashidov district (Jizzakh region), the main technological divisions of the enterprise are located at the site in the eastern city of Jizzakh (5.5 km) (*Figure 1*).

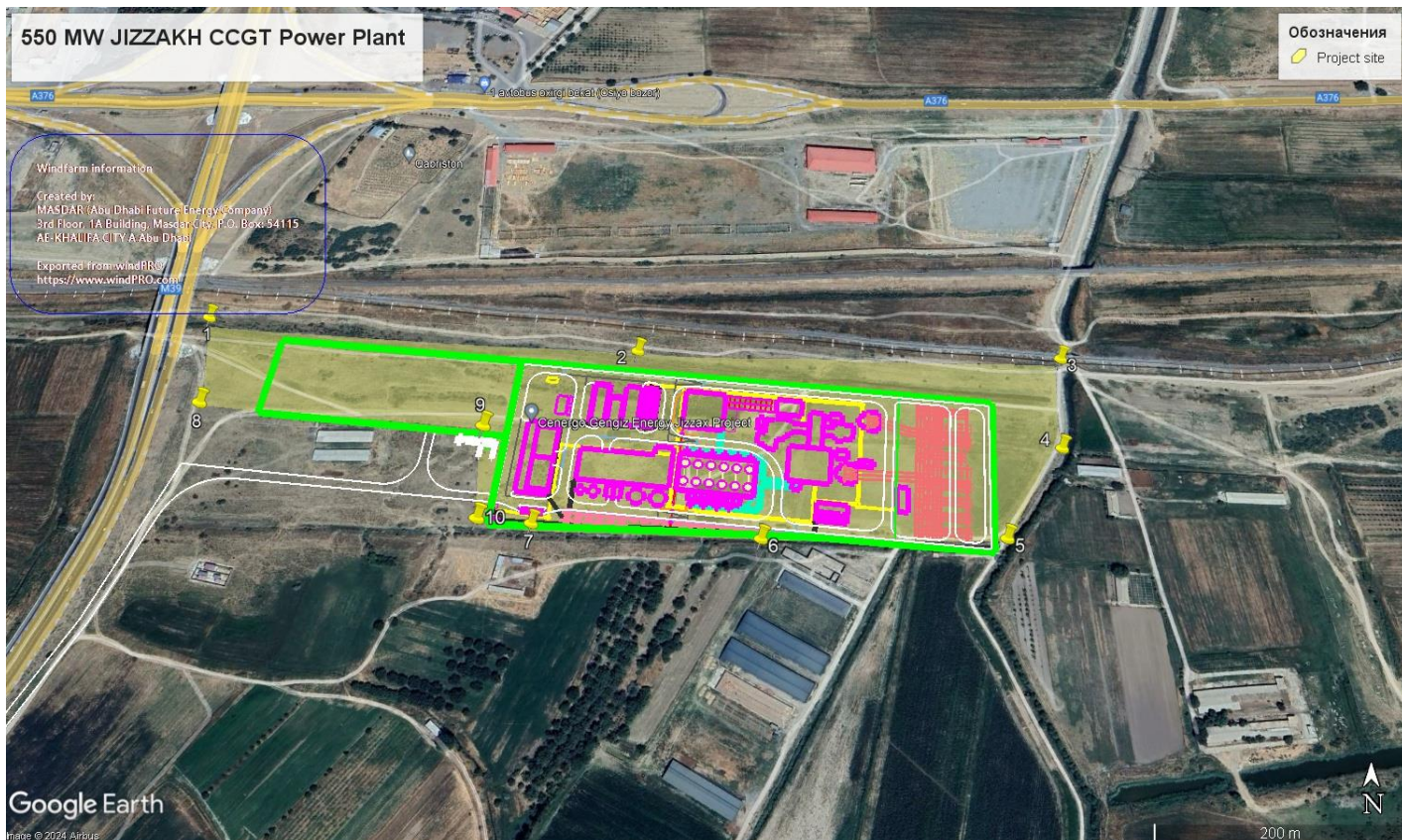


Figure 1 Area of planned activities

The impacts of the following power plant facilities are considered within the framework of the ESIA:

- gas turbine unit (GTU) "Siemens SGT5-4000F V10", with a capacity of 365.3 MW (50 Hz)
- steam turbine (ST) "Siemens SST-700/900", with a capacity of 185.3 MW
- water treatment plant;
- waste heat boiler
- water-cooling condensers
- transformers

Associated objects of the Project at the time of the ESIA studies are at the discussion and design stage:

- a new driveway road to the power plant with the length of about 90 meters – displayed on the general master plan;
- 2 power lines with a length of approximately 8 and 10 km from the project area to the existing 220 kV overhead lines L-20-D and L-Z-C. – a draft scheme for the power output of a thermal power plant with possible connection options has been developed.
- Gas pipeline – design has not been started, at the discussion stage.
- Water supply route - design has not been started, at the discussion stage. Preliminary surface water intake has been determined - the Jizzakh reservoir.

In this regard, the ESIA studies on associated facilities were carried out taking into account the limitations of the available data.

1.2 Input data

The following initial data were used to prepare the ESIA materials.

- Project documentation:
- 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.
- "Power distribution scheme in connection with the construction of a new 550 MW thermal power plant (TPP) in the Jizzakh region No. 2310-2;
- conclusions of the State ecological expertise and authorized bodies in the field of environmental protection;
- technological schemes of production, description of technology, technological regulations;
- Report of the preliminary assessment of the ground and geotechnical characteristics of the construction site;

Technical proposal of NEM Energy B.V for equipment supply

- Siemens Energy technical proposal for the supply of equipment.
- statistical socio-economic information (Uzstat data);
- other documentation;
- the results of background studies conducted within the framework of the ESIA in the spring, summer and autumn of 2024;
- the results of work with stakeholders (focus groups, etc.).

2 PROJECT SUMMARY

2.1 Brief description

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 MWh 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 shown in the figure below.

The project provides for the construction of off-site facilities: a new access road with a length of about 90 meters, and 2 power lines of 220 kV (overhead lines, power lines) with a length of about 7 and 9 km from the designed power plant to the existing substations, the route of the gas pipeline and water supply has not been determined for the period of environmental design.

2.2 Location

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. Figure 2 shows the location of the construction site.

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.

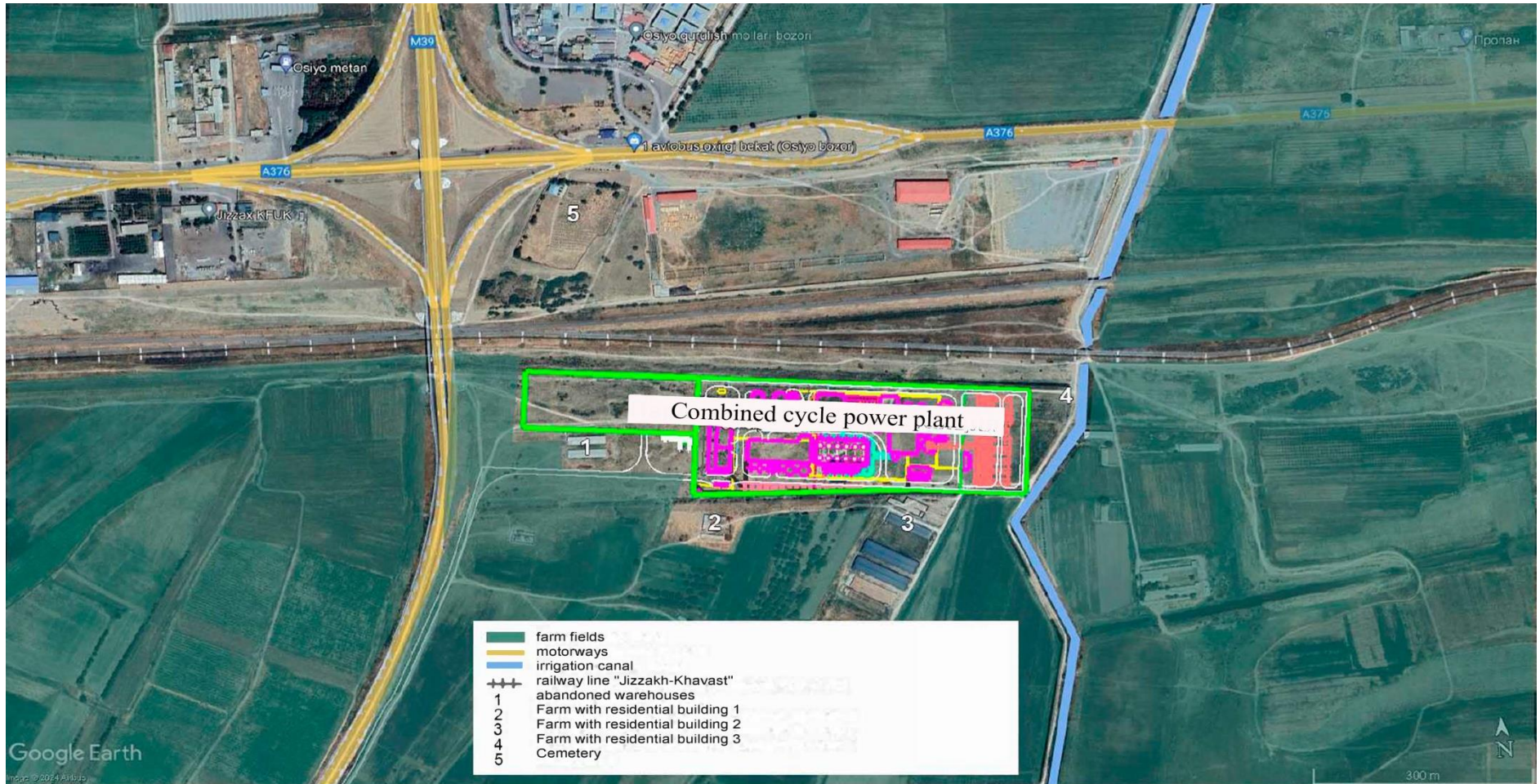


Figure 2 Industrial site and adjacent facilities

2.2.1 "Zero option"

The conclusion that it is preferable to consider the construction and operation of a combined-cycle power plant in comparison with the "zero option" was made at the stage of preliminary environmental and social assessment, a detailed consideration of the "zero" option is not carried out.

2.2.2 Placement of the Facility

The construction of the project at the designated industrial site will be accompanied by:

- the need to get rights to new land plots, namely, to the site of the facility and infrastructure facilities;
- the seizure of land for the power plant 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 planned industry is less preferable.

2.2.3 Technological Solutions

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

The total production of electrical energy at the power plant will be 4.000.000 MWh per year. The operating mode of the new combined cycle 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 1 Main technical characteristics of a combined-cycle gas power plant

Characteristics	Description/value
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 g.s.f/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

Based on the totality of the technical characteristics of the main (electricity generation) and auxiliary (water supply, treatment of polluted wastewater, organization of recycling cycles) equipment of the project considered during the ESIA, it can be concluded that the planned activities mainly involve the use of the best available technologies.

2.3 Status and 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.

4.2.1 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

- 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.

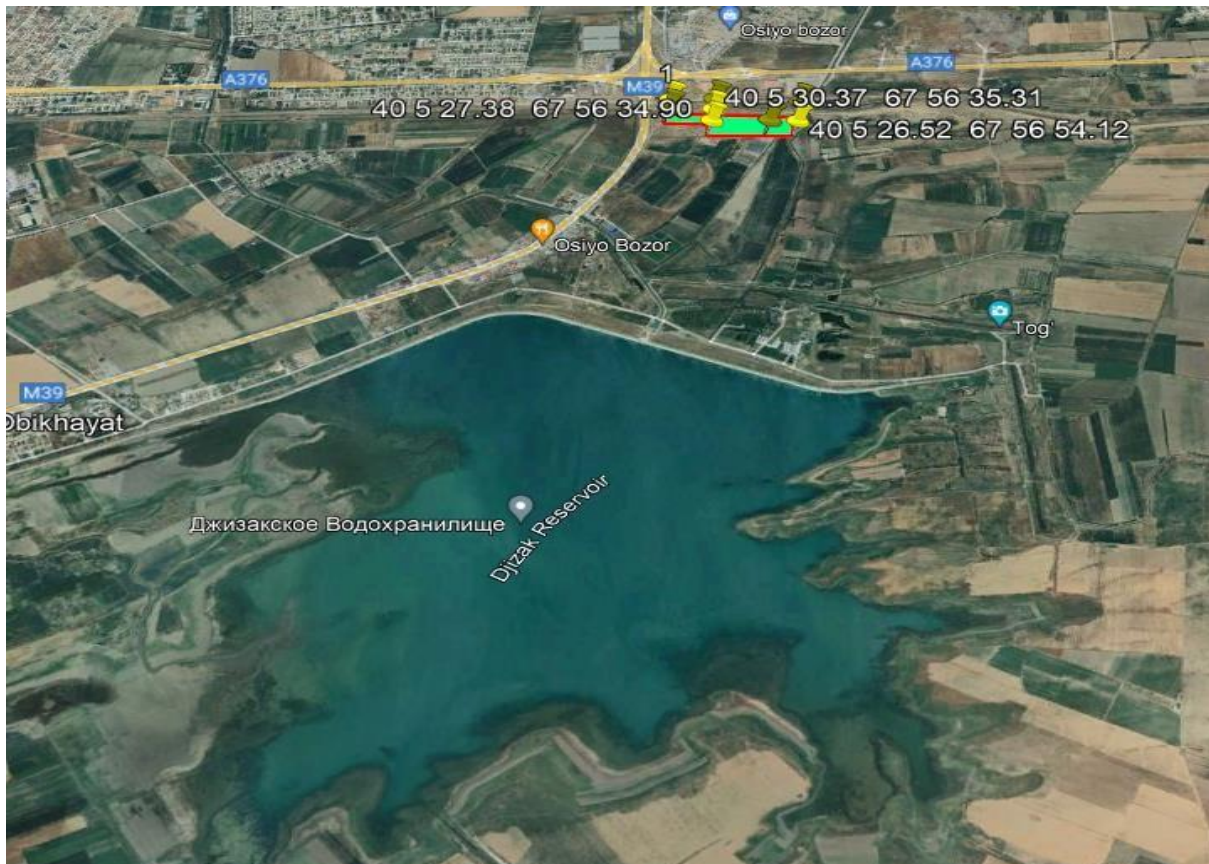


Figure 3 Drainage channel of the Jizzakh reservoir

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 clean. After purging, the water, being relatively clean, is planned to be discharged through water pipes into an irrigation canal next to the construction site.

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.

4.2.2 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 clean. 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

conditionally clean 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 domestic waste water will be transfer to the 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.

4.2.3 Heat and power supply

Heat supply to the facility will be provided by an autonomous boiler house with an installed boiler with a capacity of 22 MW with a total gas consumption of 800,000 Nm³/h per year.

The power supply will be provided by electricity of its own generation.

4.2.1 Transport support

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.

2.4 Associated facilities

Associated objects of the project are:

- a new driveway road to the power plant, length about 90 meters – displayed on the general master plan;
- power lines with a length of approximately 8 and 10 km from the project area to the existing 220 kV overhead lines L-20-D and L-Z-C. – a draft scheme

for the power output of a thermal power plant with possible connection options has been developed.

- gas pipeline – design has not been started, at the discussion stage.
- water supply route - design has not begun, at the stage of discussion, previously the beginning from the surface water intake, the drainage channel of the Jizzakh reservoir.

In accordance with the Project Agreement, all connection points and the construction of linear facilities must be provided by local government agencies, gas and water supply organizations, and National electric networks.

As of the end of 2024, the associated objects are under discussion and primary design.

Thus, for associated facilities, the ESIA materials provide information that reflects only the current status of projects.

3 CONSULTATIONS WITH STAKEHOLDERS

3.1 Consultations and Disclosure of Information on ESIA

The identification of the Project's stakeholders was initiated at the stage of preparation of the Preliminary Environmental and Social Assessment Report (Scoping report) based on the results of site and adjacent territories inspection, desk research and initial consultations with regional and local authorities and local governments. In October 2021, a series of consultations were held with the following Project stakeholders:

- Khokimiyat of Jizzakh city;
- Khokimiyat of Sharaf Rashidov district, Jizzakh region;
- Department of Ecology and Environmental 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, Chalkobad, Sukokli and Olmachi.

Consultations are used to disclose information about the Project, explain the ESIA procedure, request baseline data, identify related projects, stakeholders and their interests, and understand concerns about the Project. The health and safety of the population are of concern, providing vulnerable and unprotected segments of the population with the opportunity to take advantage of the positive effects of the Project.

The Preliminary Environmental and Social Assessment Report (Annex 1) provides an overview of the dates, participants and key issues raised during the pre-consultation process. All these events were carried out in the form of personal meetings with the participation of representatives of the Customer and Project consultants.

The second phase of consultations took place in June 2024 during the baseline social research, in particular:

- Focus groups (women, youth, residents of the project area) with representatives of Gozgontepa, Chalkobad, Sukokli and Olmachi makhallas. These makhallas were identified at the stage of initial assessment of the project during consultations with the administrative bodies and responsible representatives of the Customer, as populated areas within 1000-2000 m from the borders of the complex (8 groups);
- In-depth interviews with farmers affected by the project, during construction (checking procedures for land alienation, compensation payments);

It was established that at the focus group stage concerns were raised about the health and safety of the population, employment, and providing vulnerable and unprotected groups with the opportunity to benefit from the positive effects of the Project.

Information disclosure measures implemented in April-July 2024 are presented in table 2.

Table 2 Information Disclosure Measures

Measures	Result
Publication of the Report	Project documents are published in Russian and English. Disclosure was made on the website of the Customer, within ten days from the date of publication of the Scoping Report. The website provides contact information for the Customer's responsible representative (e-mail, address, telephone number). The Scoping Report has also been sent to the chairmen of makhalla committees in printed form.
Receiving comments and suggestions on the Scoping Report	The collection of comments and suggestions lasted until May 30, 2024. The customer has confirmed to the Consultant that there were no comments or suggestions from stakeholders during the disclosure period.
Publication of the SEP report	Project documents are published in Russian and English. Disclosure of information will be made on the Client's website within thirty days from the date of publication of the SEP report. The website provides contact information for the Customer's responsible representative (e-mail, address, telephone number).
Receiving comments and suggestions on the SEP report	The collection of comments and suggestions will last until September 2, 2024. The customer confirmed in writing to the Consultant, about the presence of comments or suggestions from stakeholders during the period of disclosure of the report.
Public presentation of the final results of the ESIA	The Client, with the assistance of the Consultant, provided information on the Project and the results of the ESIA, as well as proposed mitigation measures to mitigate potential negative impacts. At public presentations, a feedback box was installed and feedback forms were provided, allowing participants to comment and make suggestions, including anonymously.

3.1.1 Consultations planned during the project implementation period

The SEP considers continuous interaction with stakeholders throughout the entire life cycle of the project, including the stages of construction and operation.

Activities include consultations as needed with makhalla representatives, disclosure of information to the local population at key stages of the project, such as the start and end of construction, regular website and social media updates, SEP updates, and annual project reporting.

3.1.2 Programs for the involvement of the local population and the asset of the local population

Currently, the project promotes sustainable engagement with local communities to align their interests and turn the community into a direct stakeholder.

To build the potential for interaction with the local community, Cenergo LLC is recommended:

- communicate the most complete information about the project activities in a timely manner to all Stakeholders.
- develop and implement training programs, a transparent recruitment procedure among residents of the region (including women, youth, representatives of vulnerable groups).

- prepare and implement a social investment program based on regular consultations with stakeholders.
- provide assistance to the participation of small and medium-sized businesses in the project's activities and implement social partnership measures in the region of presence.

3.2 Project Grievance Mechanism

As a general policy, Cenergo LLC will actively work to prevent the causes that lead to complaints by implementing mitigation measures (as defined in the ESIA and ESMP) and constantly interacting with community relations specialists.

Anyone will be able to file a project activity grievance if they believe that a practice has a negative impact on them, the community, the environment, or the quality of life. Stakeholders can also submit their comments and suggestions.

3.2.1 Confidentiality and Anonymity

The Client will take measures to ensure confidentiality (upon request) and guarantee anonymity in the preparation of annual reports. Disclosure of personal data of individuals will be carried out only with their consent.

Investigations will be conducted with respect for the injured party and confidentiality. The injured party will have to recognize the need to disclose personal data in certain situations, and the Customer's representatives will identify such situations and request appropriate consent to continue the investigation and resolve the situation.

3.2.2 Complaint Reporting and Resolution

The Grievance Redress Mechanism, detailed in the SEP, is a formalized tool for receiving, recognizing, investigating and addressing complaints, grievances and concerns from affected communities and individuals, as well as other stakeholders.

The purpose of this mechanism is to offer predictable, transparent and credible processes for all parties that produce relatively inexpensive, fair and efficient results. It also aims to ensure a gender sensitive, inclusive and culturally appropriate process that will be accessible to all members of the community.

Effective stakeholder engagement aims to build trust and maintain a constructive relationship with communities and stakeholders, foster a positive perception of the Project and contribute to its successful development and implementation.

3.2.3 Appeals handling and reporting

The Client has its own Internet resource <https://cengizenerji.com.tr/?lang=en/> and a separate page for disclosing information about the Project <https://cenergo.uz/environment-and-social/>, as well as a tool through which the population can file complaints and appeals. Complaints and appeals can also be sent directly to a Community Liaison Officer (CLO). The CLO's contact details are listed in Table 3

Table 3 Community Liaison Officer

To	Galeeva Galina
Phone	+998 88 330 00 20
Email	nailya.galeyeva@cenergo.uz

The main stages of work with complaints and appeals include: receiving and registering, categorizing, investigating, preparing a response, demands / appeals, providing a response and closing a complaint / appeal.

Receipt/registration: Complaints and appeals will be recorded in a formal complaint registration system maintained by the CLO.

Complaints can be submitted in writing by filling out a special form (provided in the SEP Annex), by contacting the CLO directly, through a local government representative, or electronically through the Customer website.

CLO will report on the activities of the treatment of appeals on a monthly basis in the preparatory stage, weekly during construction and twice a year during the operational phase, excluding personal data of applicants in order to protect confidential information and guarantee anonymity.

This procedure will be free of charge and excludes any prosecution of persons affected by the Project or other stakeholders. The proposed procedure for dealing with appeals is schematically presented in the Annex to the SEP.

Galina Galeeva, a quality assurance/control engineer, has been appointed responsible for reviewing appeals from citizens and other stakeholders. Comments and requests should be sent to the address above.

4 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

4.1 Environmental Impacts

4.1.1 Impact on Atmospheric Air Quality

The sources of pollutant emissions at the construction stage of the power plant will be construction machinery and vehicles:

- welding and painting works;
- concrete and mortar assembly;
- earth-moving equipment (bulldozers, excavators);
- assembly equipment (truck cranes, caterpillar cranes);
- construction machines and vehicles, forklifts.

Sources related to construction emit 15.435 tons of pollutants of 17 types into the atmosphere per year. The ejection power will be 5,584 g/s.

The calculations were performed on a site of 4200 x 7000 m, covering the territory of the sanitary protection zone of the enterprise and the nearest residential development of Sharaf Rashidov district. The step of the calculated grid on the site is assumed to be equal to 100 meters. Additionally, 19 measurement and monitoring points were selected in the residential areas of Sharaf Rashidov district, the height of which corresponds to the level of respiration – 2 m.

The assessment of atmospheric pollution at the construction stage showed that there were no exceedances of the maximum permissible concentrations established in the Republic of Uzbekistan [2] in residential areas of Sharaf Rashidov district.

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

In addition to the main equipment, the following equipment, installations and equipment will be used, as a result of which pollutants will also be released into the atmospheric air:

- diesel generator;
- hot water boiler;
- gas welding machines;
- electric welding machines;
- operation of metalworking machines;
- oil storage tanks;
- storage tanks for motor fuel;
- express laboratory;
- battery charging stations.

The main source of emissions of pollutants is the Siemens SGT5-4000F series gas turbine unit, which uses a new generation of technology, providing higher efficiency due to better aerodynamics of the compressor and turbine.

According to the "Environmental Impact Statement (EIS project)", taking into account the requirements for design solutions of a combined-cycle power plant, 20 pollutants are projected to be released into the atmosphere from the sources of emissions of the projected enterprise. The total emission of pollutants will be:

- the maximum one-time emission is 92.3693 g/s;
- the gross emission is 3046.52 tons/year.

The maximum concentrations of pollutants at the border of the SPZ and residential areas will not exceed the established [2] standards for atmospheric air quality, taking into account the requirements [3] for the permissible content of pollutants in the surface layer of the atmosphere.

As calculations have shown, the commissioning of the projected enterprise will not lead to a significant (more than 0.1 MPC) increase in atmospheric pollution in the territories adjacent to the combined-cycle power plant.

4.1.2 Assessment of Climate Change

The impact is determined by emissions of greenhouse gases into the atmosphere. In accordance with the global standard for accounting for greenhouse gas (GHG) emissions, the Greenhouse Gas Protocol, 1 GHG emissions of the following "levels" can be accounted for/scope"(scope):

- Level 1 (Scope 1) – direct GHG emissions produced by an organization: as applied to an enterprise. – emissions associated with fuel combustion, with freon emissions.
- Level 2 (Scope 2) – indirect GHG emissions associated with electricity purchased from third-party producers.
- Level 3 (Scope 3) 2– indirect emissions associated with the extraction and production of purchased materials, fuel and services, including transportation on vehicles not owned by the enterprise. Emissions of this category are the result of the company's activities, but originate from sources that do not belong to it, and, accordingly, are not controlled by the enterprise. Scope 3 is optional for accounting and reporting³, but it gives the company the opportunity to become one of the leaders in the field of GHG management;

The quantitative determination of GHG emissions is carried out by the calculation method for individual sources, groups of sources or the organization as a whole using the formula:

$E_{ghg} = EF * FC$, where:

- E_{ghg} - emissions of CO₂ (and other GHGs), t CO₂;
- FC - fuel consumption, thousand m³, (for level 1), volume of consumed (purchased) electricity, MWh (for level 2);
- EF is the coefficient of CO₂ emissions from fuel combustion, tons of CO₂/thousand m³ of gas (for level 1), from purchased electricity, tons of CO₂/MWh.

² It was not considered in the framework of this study. In the future, it is advisable to assess level 3 emissions based on an analysis of the procurement and supply chains, a set of activities (based on the impact on the business and the amount of reliable information).

³ A joint project of the World Resources Institute and the World Business Council for Sustainable Development. <https://ghgprotocol.org/>

The calculation uses data provided by the Customer: consumption of natural gas, motor fuels, freons, electricity consumption, and other design data.

The results of the assessment of greenhouse gas emissions as a result of the plant's activities are presented in the table 4.

Table 4 Greenhouse gas emissions from the company's activities, thousand tons of CO2 equivalent/year [2, 3]

Characteristics	Emissions of 1st and 2ng coverage
Emissions related to the combined cycle power plant construction project	1430

Greenhouse gas emissions generated as a result of the company's activities are significantly lower than the industry average due to the use of the latest combined cycle gas plant for electricity generation. 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).

Since the estimated emissions of coverage 1 and 2 exceed 100,000 tons of CO2 equivalent per year, the company should consider ways to further reduce the formation of greenhouse gases generated from the company's activities.

4.1.3 Acoustic Effects

The main sources of noise at the construction stage of the enterprise will be construction machines, auxiliary mechanisms and vehicles.

The peculiarity of the considered noise sources is their operation in an open space with constant movement on the construction site, while each piece of equipment can operate in different operating modes, which causes the variability, both in time and in space, of the sound energy emitted into the environment. Thus, the noise during the operation of machinery and mechanisms will be characterized by non-constant sound levels in time.

External noise sources include:

- earth-moving equipment (bulldozers, excavators);
- assembly equipment (truck cranes, caterpillar cranes);
- mobile air compressors;
- construction machines and vehicles, forklifts
- automobile and rail transport (delivery of construction materials, equipment and construction waste).

To assess the impact of noise, the noise level from noise sources from construction machinery and mechanisms was simulated. The solutions of the analog object, the construction stage, were used as initial data.

The calculation area measuring 4760 m by 6450 m, covering the adjacent residential development, was adopted with a step of the calculation grid of 50 m, height of 1.5 m.

Taking into account the location of noise sources, their acoustic characteristics, radiation direction, as well as the planning situation and regulatory requirements, the design points RT-001 – RT-033, 050, 051, located in residential areas adjacent to an industrial site, railway tracks and a highway, were selected.

The results of the calculated assessment show that the noise level at the design points and at the border of the SPZ of the enterprise during the construction period complies with the national sanitary standards SanPiN 0267- 09 [2] and WHO Recommendations [3], which indicates compliance with the requirements of the IFC [4].

The following significant noise sources were taken into account when predicting the acoustic situation:

- sources of technological noise penetrating from the premises to the territory;
- sources of ventilation noise emitted by the open ends of the ducts;
- sources of traffic noise, determined by the movement of road and rail transport near the territory of the enterprise.

The results of the calculated assessment show that the noise level at the settlement points and at the border of the terminal SPZ at the operational stage meets the selected criteria: national sanitary standards (SanR&N 0267-09 [2]) and WHO Recommendations [3], which indicates compliance with the requirements of the IFC [4], taking into account the implementation of noise protection measures.

4.1.4 Impacts associated with waste generation

During the construction period, the formation of the following waste is predicted at the construction site and at the construction camp site:

- waste of building materials (concrete and reinforced concrete products, building bricks, crushed stone, cement, wood, bitumen, insulating materials, paints and varnishes);
- waste of soils, including possibly contaminated (with petroleum or hydrocarbon products products);
- construction waste;
- electrode stubs;
- scrap of ferrous metals;
- cleaning rags;
- worn-out special clothing;
- food waste;
- solid household waste.
- sweeping garbage.

Calculations have shown that during the construction of the facility, waste is generated in the amount of 9 items in the amount of 22.684,72 tons/year.

The temporarily generated waste includes:

- waste of the soil and vegetation layer - 22,500 tons/year (hazard class 5);
construction waste – 2.5 tons/year (hazard class 4);
- ferrous metal scrap – 5.5 tons/year (hazard class 5);
- electrode stubs – 0.45 t/year (hazard class 5);

- cleaning rags – 1.95 tons/year (4 hazard classes);
- worn workwear - 1,267 tons/year (4 hazard classes);
- food waste – 3.0 tons/year (hazard class 5);
- solid waste – 32.5 tons/year (hazard class 5);
- the estimate - 139.5 tons/year (4 hazard classes).

According to the draft Environmental Management System, a total of 21 types of waste are expected to be generated during the operation of the enterprise's facilities, 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).

4.1.5 Impact on surface waters

During construction work, water is used to prepare mortar, irrigate the territory in order to reduce dusting, as well as for the household needs of builders. Water supply during construction works will be carried out at the expense of borehole and imported water supply. Imported water tanks will be filled from the sources of the district water supply network.

Imported bottled water, purchased independently by a construction contractor, is partially used for the drinking needs of builders.

During the construction of the power plant, about 650 builders and employees (50 people including ETP) will work on the territory of the construction site.

The construction period is 36 months, about 950 days per year.

During the construction of a combined-cycle power plant, the water consumption rate per day is determined according to KMK⁴ 2.04.01.98 g, where it is 25 liters per worker and 12 liters for ETP.

The total estimated water consumption during the construction of the power plant will be 79.80 m³/day. or 44.133,0 m³/year, of which:

- for production needs - 20.56 m³/day. or 2.540,0 m³/year;
- for household and drinking needs – 59,24 m³/day. or 41.593,0 m³/year.

Industrial effluents are not formed during construction. The water used for the preparation of mortar, irrigation of the territory in order to reduce dusting is irretrievably lost.

Household wastewater generated during construction is planned to be sent to a temporarily installed storage tank (sewage tank) with subsequent export to the nearest treatment facilities.

The total wastewater disposal (effluents) of household effluents during the construction of a combined-cycle power plant will amount to 59,24 m³/day. or 41.593,0 m³/year (excluding water consumption for production needs (irrevocable) and irrigation of the territory).

⁴ Building codes and regulations applicable on the territory of the Republic of Uzbekistan

According to the data provided by the Customer, 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.

Then, further water intake for the needs of chemical water purification (primary sand filter, demineralization site, chemical preparation site, primary and secondary reverse osmosis and others) for production purposes will amount to (4.800×350) 1.680.000, m³/year or 1.680,0 thousand m³/year.

Calculations of industrial water consumption after chemical water treatment:

- for the needs of cooling, recharge of the steam–water cycle of the cooling tower – 80,5 m³/ hour, 1,932 thousand m³ / day. or 676,200 thousand m³/year;
- for the needs of a gas turbine (recharge, purge, flushing, cooling); – 35,5 m³/hour, 0,852 thousand m³/day. or 298,2 thousand m³/year;
- to recharge technologies with process water – 40.0 m³/hour, 0.960 thousand m³ /day. or 336.0 thousand m³/year;
- other consumption to the production needs (water treatment, preparation of solutions, etc.) – 44.0 m³/hour, 1,056 thousand m³/day. or 369.6 thousand m³/year.

Then, the total water consumption for the production needs of the power plant will amount to 200.0 m³/hour, 4,800 m³/day. or 1680,0 thousand m³/year.

The total water consumption (water consumption) for household, drinking and irrigation needs of the power plant is 174,665 m³/day. or 21.072,95 m³/year.

4.1.6 Impact on soil cover

The impact on the soil cover of the enterprise site is predicted during leveling and planning work on the construction site.

Airborne contamination of soils in areas adjacent to the enterprise is also not predicted due to the incomparable levels of impact of natural factors (natural transfer of suspended matter with wind currents) and levels of impact of sources associated with construction work (ground excavation, earthworks, etc.).

Contamination of soil-forming rocks can only be associated with improper practice of temporary accumulation of waste, storage and handling of fuels and lubricants, spills of fuels and lubricants, use of faulty construction machinery, equipment and vehicles.

The impact on the soil cover of the power plant territory is not predicted due to its future absence (the territory will be concreted).

The only type of impact on the soil cover characteristic of the stage of operation of the enterprise is aerogenic pollution of the territory adjacent to the power plant.

The intensity of this indirect impact is determined by airborne contamination of soils, associated not so much with the operation of the enterprise, but with the influence of other

municipal and industrial facilities and transport, and with the influence of natural wind transfer of suspended matter.

Pollution of soil-forming rocks, as at the construction stage, at the operational stage can only be associated with improper practices of temporary accumulation of waste, storage and handling of fuels and lubricants, spills of fuels and lubricants, the use of faulty equipment, machinery and vehicles.

4.1.7 Impact on the flora

The Project Area contains only transformed habitats, which according to the IUCN Habitats Classification Scheme (Version 3.1) belong to type 14 Artificial – Terrestrial (Anthropogenic terrestrial habitats), subtypes 14.1 Arable Land (arable land), 14.2 Pastureland (pastures) and 14.4 Rural Gardens (rural gardens) and type 15 Artificial – Aquatic (Anthropogenic aquatic habitats), subtype 15.9 Canals and Drainage Channels, Ditches (Irrigation and drainage channels, ditches). There are no natural habitats in the Project area. At the time of the survey, construction work was underway on the site, and vegetation had already been destroyed throughout the western half of the site, and several dirt roads run through the central and eastern parts, along which heavy machinery continuously moves.

As a result of botanical research, it was established that the landscapes and vegetation cover of the Project area were completely transformed as a result of human economic activity, and the territory contains transformed habitats (agricultural irrigated lands, residential buildings, farms, infrastructure) with communities of cultural and weed synanthropic vegetation. There are no natural biotopes in the Project area. The species composition of the plants of the Project area is represented by species widely distributed in the developed plains and foothill regions of Uzbekistan. A significant proportion in the species composition and a high abundance in the vegetation cover of synanthropic, weedy plants, including adventitious ones, is an indicator of the anthropogenic transformation of the ecosystems of the studied territory. The survey showed that there are no vulnerable rare and endemic plant species and critical habitats in the Project area that meet the criteria set out in the Performance Standard 6 of IFC.

4.1.8 Impact on terrestrial wildlife

As a result of zoological research, it was established that in the area of the planned activity, transformed habitats predominate (irrigated agricultural lands, settlements, industrial enterprises, infrastructure facilities).

The fauna of terrestrial vertebrates has undergone significant changes and is currently represented by a rather meager variety and mainly species capable of coexisting with humans – synanthropic species such as house mouse, gray rat, common pipistrelle, myna, magpie, etc.

Birds are represented by a wide variety due to the proximity of the project area to the Jizzakh reservoir, which attracts a large number of birds both during migration and for wintering.

During the survey of the planned area, we selected 7 observation points that most characterize the composition of the local fauna of terrestrial vertebrates. 34 species of terrestrial vertebrates have been recorded in the studied territories, of which 2 species belong to amphibians, 5 species to reptiles, 24 species to birds, 3 species to mammals. Of these, 1 bird species (white stork *Ciconia ciconia*) is included in the national Red Book

It has been established that the existing impact on the animal world of the territory is associated mainly with population growth, expansion of settlements, and agriculture.

4.2 Social Impact

4.2.1 Impact on the labor market

During the peak period during the construction phase, the need for labor will be about 650 people.

The construction of the projected facilities will be carried out by personnel working mainly on a shift basis and living in a construction camp built by the Contractor⁵, or Jizzakh, since the city is located next to the construction site.

The contracting company will attract qualified personnel from other regions of Uzbekistan, citizens of the Republic of Uzbekistan who have gained the necessary experience and qualifications at previous facilities and China.⁶

It is assumed that some of the construction workers hired from among the residents of Sharaf-Rashidov district and Jizzakh city will be unskilled labor.

Given the total number of people employed in the construction industry of the district, the involvement of labor resources in the construction of the facility may cause short-term positive changes in the labor market.

The combined-cycle power plant will be put into operation in 2027.

The total demand of the project for labor resources for the period of operation is 70 people, of which 65 people are workers and 5 managers, specialists and employees. The total number of workplaces created under the combined-cycle power plant project is 70 units.

The maximum number of permanent production staff will be reached in 2027, when the facility will be put into operation.

It is assumed that, as in the case of construction workers, local residents (i.e., residents of Sharaf-Rashidov district and Jizzakh city) will be involved as production (if there is a special technical education) and maintenance personnel.

As of January 2024, the average monthly salary in Sharaf-Rashidov district amounted to 2.743.000 UZS.

It is assumed that due to the implementation of the project, the average nominal wage level will increase at the regional level and rise to the level of wages in Jizzakh city.

Due to the implementation of the project, a positive indirect impact on the activities of power plant suppliers and electricity consumers is predicted, as well as the formation of an induced effect (consumer expenses of employees and companies of suppliers and customers).

The effect is manifested in the indicators of workplaces created in related industries, according to international estimates (World Steel Association), the indicator for power plants is 14.7 workplaces.

This means that the implementation of the project will ensure the creation of new workplaces in related industries for more than 1000 people.

⁵ The land plot for the construction of the Contractor's camp was not allocated by the Khokimiyat of the district at the time of the assessment, so the exact location is not known.

⁶ At the time of the event, a contract was signed with the contractor China Energy ZTPC

Additional jobs are mainly for enterprises in the energy and transport sectors of the economy.

The emergence of jobs at the enterprise will create new workplaces in the service sector (for example, in catering or retail enterprises).

Taking into account the fact that one workplace in industry creates, on average, 3 jobs in the service sector, additional employment of about 210 people is projected

Table 5 The impact of the project on employment of the population, ppl.

Employment of the Units	Number
Employment at the power plant	70
Employment in related industries	1000
Employment in the service sector	210
Total employment opportunities in the result of project implementation	1280

Thus, as a result of the project implementation, it is expected to provide jobs for at least 1280 people, which will increase the employment rate of the working-age population.

When compared with the number of unemployed (8.5 thousand people in Sharaf-Rashidov district, see Table 16, 125-1105-ESIA-PE-0, Book 2), providing jobs can potentially reduce the unemployment rate by 15%.

4.2.2 Impact on economic development

The scale of the project will provide electricity to a number of districts of Jizzakh region and Jizzakh city.

Construction companies and subcontractors, transport and service organizations will be involved in the construction, construction materials, finished reinforced concrete products and structures, etc. will be purchased on the local market.

Participation in the project will provide additional income, preservation of existing or creation of new workplaces, tax payments to budgets (VAT, income tax, etc.).

Income growth will stimulate the subsequent consumption of goods and services.

The main factors contributing to GDP growth (gross domestic product per employee) are labor productivity growth and employment growth. The project assumes simultaneous growth of employment and labor productivity.

An increase in labor productivity will ensure the creation of more efficient and, accordingly, higher-paying workplaces.

During the period of operation, it is necessary to provide for contributions to the social development of the region /charity in the amount of 2% of net profit in the design calculations.

The implementation of the project will also create an opportunity for socially significant investments and charity. Improving the infrastructure of the Sharaf Rashidov district and through repairs, reconstruction of highways, as well as the construction of additional facilities to provide electricity.

Additional tax revenues to the budget during the operation of the power plant will increase budget financing for education, health, culture, and social policy, including state benefits and compensation payments to the population at the local, regional, and national levels.

Thus, the wages of those employed in the public sector are increasing, new jobs are being created in social sectors, which affects the level and quality of life of the population: the situation on the labor market is improving and employment income and social transfers to the population are increasing, the availability and quality of social services are increasing.

The project activities will make a significant contribution to increasing income and raising the level of internal solvency of the population of the Sharaf-Rashidov district, as well as the Republic of Uzbekistan as a whole. The growth of household incomes and the expansion of effective demand are the result of paying for the work of those employed in the workplaces created at the projected facilities and the development of current production.

The implementation of the project will give an additional incentive to the development of the energy industry of Uzbekistan, through the implementation and contribution to the development of the "Concept of providing the Republic of Uzbekistan with electric energy for 2020-2030"

4.2.3 Impact related to training, professional development

At the construction stage, contractors will involve specialists of construction professions based on the requirements and qualifications necessary for the implementation of the construction process.

Professional development and training of personnel will be carried out on occupational safety and health at construction sites.

There will also be awareness-raising activities and training on the risks of socially-related diseases and ways to control them, interaction with the population of the project area and the Code of Conduct for Contractor Employees.

Already at the construction stage, the training of project personnel for the operational stage will begin.

Providing training is required not only for the launch of production, but also in the future, since improving qualifications, improving management, and replenishing personnel (for example, due to employees retiring and leaving their positions) is a continuous process.

Training program will include:

- theoretical internship;
- internship at a similar enterprise;
- internship at the facility site.

At the final stage of installation and during the commissioning period, a practical internship on equipment designed and supplied by Siemens will be conducted for the staff.

The positive impact of training and advanced training will also be exerted on newly recruited project personnel selected from the residents of Sharaf-Rashidov district and Jizzakh.

The implementation of the project will create a demand for skilled labor. This means that the implementation of the project, by presenting a demand for highly qualified labor, will ensure an increase in the educational and qualification level of the labor force and reduce the scale of unskilled labor in the region.

The improvement of professional qualification requirements for employees is an incentive for the development of the vocational education system at the levels of the region and the republic as a whole.

4.2.4 Land acquisition, economic relocation

According to the cadastral department of Sharaf-Rashidov district, the project affected a land plot, the lands of the "Donabek Sano" farm enterprise.

According to the results of the social audit, it was determined that before the start of construction work, the Khokimiyat of Sharaf-Rashidov district conducted an independent assessment to determine the amount of damage caused to the farm enterprise. Compensation according to an independent assessment has been paid in full, while the farm is satisfied with the result of the assessment in relation to the damage caused.

Thus, the construction of project facilities had an impact related to the alienation of land (temporary and permanent land acquisition), the consequences of which are expressed in the loss of rainfed areas and the demolition of farm buildings.

At the operational stage, the project does not provide for additional land acquisition and/or economic relocation. Production activities are carried out on the territory of the allocated site without expanding the boundaries of the enterprise.

4.2.5 Labor influx and population change

The well-being of local communities and their social context may deteriorate due to the influx of outside labor. The lack of qualified labor resources will contribute to labor migration from other regions of Uzbekistan, possibly from abroad.

The potential beneficial effect of such migration may be to increase demand for locally produced products and services, which may create advantages for small businesses and farms in Jizzakh city and Sharaf-Rashidov district.

Of course, it is preferable to involve local labor, as this has many advantages; not only in terms of reducing the need for housing, but also because it increases direct and indirect benefits for the local population, the approach is supported in all aspects by the EBRD and IFC. However, the requirements for the qualification of personnel, the calendar schedule of the construction stage made it necessary to use the option with the use of shift personnel.

At the initial stage of the project, the question of whether housing for employees is required at all was considered. In this regard, the needs for labor, including skills and likely numbers during the project cycle, were analyzed, and an assessment of the capabilities of the local population to meet these labor needs was carried out.

The influx of labor can lead to conflicts between newcomers and local residents. It is highly likely that these conflicts will be local in nature and will not lead to a significant decrease in the level of security of the population.

An increase in the incidence of socially-related diseases is also possible due to the influx of labor. The risk of this impact can be reduced by implementing within the Project its own program of medical examinations and a management system in the field of protection of employees' health, as well as by conducting systematic information and explanatory work to inform employees about the risks of infection with socially conditioned diseases and ways of controlling these risks.

It is necessary to provide mitigating measures in the form of the development and implementation of social assistance programs for vulnerable groups of people. The implementation of these programs will significantly reduce the likelihood of adverse consequences.

At the operational stage, the total number of new workplaces under the project will amount to 70 people, of which 65 (92%) workers and 5 (8%) managers, specialists and employees, including administrative and managerial personnel.

The work and rest schedule of key workers, duty personnel, managers and specialists employed in shifts is adopted in accordance with the operating schedule of the main process equipment - continuous, three-shift, 8-hour, for managers, specialists not employed in shifts, as well as for some repair personnel - a single-shift work schedule with two days off.

The influx of labor in connection with the implementation of the project will lead to a slight increase in the load on social infrastructure facilities such as hospitals and other medical institutions, schools, leisure and recreation facilities, housing, public transport and others.

The analysis carried out at the stage of basic socio-economic research showed that the population of Jizzakh city and Sharaf-Rashidov district is adequately provided with hospitals and polyclinics.

Despite the fact that in the short term, the influx of labor will lead to some increase in the burden on social infrastructure, it can be expected that an increase in demand will lead to infrastructure development, which will provide an additional positive effect.

Based on the assessment provided in 125-1105-ESIA-P0-Book 2, Sections 7.4 and 7.5, it was determined that the average school occupancy in Sharaf-Rashidov district is 585 pupils, which indicates a sufficient number of schools in the district.

At the same time, it is unlikely that the increased burden on social infrastructure in connection with the implementation of the project will lead to a decrease in the welfare of the population. Providing assistance to potentially vulnerable groups of people who may be directly affected by negative impacts will be key.

An increase in inflation, in particular, food and housing prices, can also be caused by an influx of labor and a change in the level of demand. It is unlikely that this impact will actually lead to a decrease in the overall well-being of people, since demand will stimulate additional production and an increase in the number of services provided to the population, but it is necessary to understand that this impact may affect vulnerable groups.

At the stage of operation, there may be unsatisfied expectations of the able-bodied population in the field of employment, as well as dissatisfaction of the local population - those employed within the framework of the project, and those whose applications turned out to be unsuccessful.

4.2.6 Child and forced labor

Project task – to prevent any form of child and forced labor in the supply chain and project activities.

Uzbekistan has ratified eight fundamental ILO conventions that address the "basic labor standards", including provisions on child and forced labor (for more information, see 125-1105-ESIA-PE- Book 1, Section 2).

The main impacts of the planned activities at the construction stage are related to the provision of services by contractors and the supply of products by suppliers using child and forced labor.

In order to prevent any forms of child and forced labor at the stage of construction of a combined cycle power plant, it is necessary to develop procedures for screening contractors

and include provisions on child and forced labor in contracts with suppliers and contractors, and to determine measures of influence for their violation.

The risk and impact of any form of child or forced labour during the operational phase of the power plant is unlikely, as the HR Policy will ensure that the project as a whole does not involve the use of child or forced labour, and will also reflect in the policy national and international requirements for personnel and supply chain workers who are not in an employment relationship.

A grievance mechanism available to all project workers, including contract and subcontractor workers, as well as supply chain workers (discussed in Section 10.8) they will also help to minimize this risk.

4.2.7 Access to Transport Infrastructure

The following aspects of the project could potentially have an impact on social facilities and transport infrastructure:

- carrying out work on moving soil/excavation, transportation of bulky equipment may inadvertently damage existing infrastructure.

During peak periods of construction and commissioning of the facility in 2026-2027, traffic intensity is projected to increase by approximately 30% of the current level (see Table 10.7.1, 125-1105-ESIA-PE-Book 2).

Potential impacts:

- road surface wear/degradation – when using the road network to access the project area;
- traffic jams and delays (road closures), especially during periods of delivery of oversized and/or heavy goods.

No significant impact on access to infrastructure and its deterioration during the operational phase is expected.

4.2.8 Supply chain impacts

The social and environmental risks and impacts of the project supply chain are associated with suppliers of goods and services necessary for the implementation of the project. One of the objectives of the IFC PS-2 is to ensure the protection of workers, including vulnerable categories such as children, migrant workers, workers employed by third parties, as well as workers in the customer's supply chain.

The supply chain extends to equipment, materials, components, goods or products used in current activities.

The supply chain of goods may include suppliers of raw materials and suppliers of parts and components for assembly and production.

The term "primary supplier" refers to those suppliers who provide goods and materials required for the project's core business processes.

The supply chain of the Project can be complex and consist of a large number of suppliers of different levels. It is difficult to assess the full supply chain of a project, and areas of risk and impact are usually identified.

Supplier activity monitoring will be integrated into the overall Project management system. This will help determine if mitigation procedures and measures are being implemented correctly, and provide feedback on new areas of risk and hazard.

The IFC PS-2 chain of custody requirements do not apply to materials and components used during the construction phase of the project.

The main social and environmental impacts and risks associated with the supply chain during the construction phase may include child and forced labour in the provision of services by contractors and the delivery of products by suppliers, in addition to where there is a high level of risk to the safety of workers in the supply chain. "Cenergo" LLC will introduce procedures and take measures to reduce the level of risk, ensuring that key suppliers and contractors take measures to prevent or eliminate situations that pose a threat to life.

The ability to completely eliminate these risks will depend on the level of administrative control or degree of influence over key suppliers and contractors. Where corrective actions are difficult to implement, "Cenergo" LLC will, over time, reorient the chain to suppliers and contractors who can demonstrate that they are capable of meeting the requirements of IFC PS-2.

The table below examines the main environmental requirements of "Cenergo" LLC for contractors and suppliers.

Table 6 Environmental requirements for suppliers of Cenergo LLC

Requirements for contractors and suppliers of raw materials, equipment, services	
Groups of requirements	Requirements for contractors
General requirements	Availability of a certified environmental management system and/or a certified integrated management system (HSE) Availability of an environmental management system and/or an integrated management system (HSE) availability of standards and procedures in the field of HSE
Requirements to construction contractors	Maximum possible use of local raw materials for construction work, emergency preparedness, availability of the treatment system in dangerous materials and substances (if necessary, their use), elimination of objects of temporary infrastructure in consideration with the possibility of reuse
Preventing climate change	Availability of a GHG management system accounting for fuel and energy consumption, and transmission of this data to Cenergo LLC for climate reporting purposes on a regular basis the use of technologies, equipment and practices involving the use of renewable energy sources, the use of electric, hybrid, biofuel and/or gas vehicles
Resource conservation	Use of water efficiency measures in contractors/suppliers' operations (reduction of water consumption and conservation of water resources, for example, through the use of rainwater harvesting and use, as well as the introduction of recirculating water systems)

Waste management	<ul style="list-style-type: none"> • availability of a waste management system • application of technologies and materials involving the use of recycled materials and the use of complexes for the processing of solid household and biological waste use of waste-free and low - waste technologies in construction, the presence of a separate waste collection system • availability of waste composting solutions waste management in the field of consumer services, nutrition and cleaning • liquidation of objects of temporary infrastructure taking into account the possibility of reuse, availability of equipment (technologies) for recycling waste that meet environmental requirements, availability of vehicles for transporting waste that meet environmental requirements, availability of waste disposal facilities that meet environmental requirements
Requirements for equipment, materials and raw materials	
Use of hazardous/toxic substances	refusal to use materials/raw materials that are considered dangerous or toxic to humans or polluting the environment (if reasonable alternatives are available) refusal to use ozone-depleting substances
Energy efficiency and resource conservation	- Use of certified technologies (equipment) in the field of energy, heat and water conservation

As determined by IFC PS-2, Cenergo LLC must conduct due diligence in its supply chain to avoid receiving benefits or financial gain from such practices.

The project will make special efforts and conduct additional due diligence where such practices are widespread or known to exist at certain levels of the supply chain in specific industries or regions.

The financial benefit of child and forced labor is a specific risk where labor cost is one of the project competitiveness factors.

The project will make the most of its influence to eliminate child and forced labor in its supply chain. It is also necessary to take measures to prevent or eliminate life-threatening situations within the supply chain.

Implementation procedures, such as procurement procedures, will ensure that child and forced labor requirements and labor safety issues are included in orders and contracts with suppliers.

4.2.9 Cultural heritage

The impact associated with construction work on the designated site is considered.

Since the construction site is located on an agricultural territory that has been developed for many decades, the impact on the archaeological and cultural heritage on the territory of the construction site is considered to be minimal.

When studying the project documentation and holding a consultation meeting with the head of the Agency for Cultural Heritage of the Jizzakh Region, an answer was received about significant cultural and archaeological heritage sites located in this area.

The agency has provided information on the location of 3 cultural heritage sites located at a distance of over 5 kilometers from the construction site.

Impact on cultural heritage at the operational stage is not predicted (excluded).

4.2.10 Workers' rights, safety and labor protection

It is expected that during the peak construction period, at least 650 workplaces will be created within the framework of the project, the duration of which is directly related to the construction period of the power plant. The majority of the workers will be engaged by the Contractor and will consist of unskilled and skilled labor.

Expected impacts include the operation of heavy machinery and transport, working at height, construction work, the use of electrical equipment, the handling of hazardous materials and other hazardous activities.

Due to the nature of the activities carried out during the construction phase, the safety of personnel is a key risk with the possibility of accidents that can lead to injury and death, as well as loss of working time.

Occupational Health and Safety Plans and Procedures (OHS) will be prepared by the Contractor prior to commencement of construction work.

The Contractor will ensure strict implementation of the OHS plan through its occupational safety and health officer.

In addition, the Contractor will conduct a series of training courses and safety meetings.

The Contractor will regularly inspect, test and maintain all security equipment (including fire-fighting equipment), scaffolding, fencing, work platforms, lifts, stairs and other means of access, lifting, lighting, marking and security equipment

Employees (before the work starts) will be provided with appropriate PPE free of charge suitable for performing electrical work, such as protective boots, harnesses, helmets, gloves, protective clothing, goggles and protective headphones.

With regard to the rights of workers and personnel, the Contractor must ensure that the following measures are implemented:

- The provisions in the Contractors' contract should include, as far as practicable, clauses to address issues related to collective bargaining, downsizing, placement of employees and shortage of employees, to ensure compliance with the requirements of the ILO and IFC;
- development and implementation by the Contractor of a Personnel policy for hiring, training, evaluation and remuneration of the project workforce;
- the Policy should prevent all employees of any form of discrimination in the workplace and ensure fair and equal treatment;
- establishing a grievance mechanism so that employees can raise reasonable workplace issues. The contractor will inform employees about the complaint mechanism when hiring and make it easily accessible to them;
- employees will not be restricted in joining or creating workers' organizations, as well as in negotiating collective agreements, and the Contractor will not discriminate against employees who form or join collectives or conclude collective agreements;
- preparing a redundancy plan to mitigate the impact of sudden termination of employment contracts, including, for example and where appropriate, the implementation of a transparent redundancy process and labour consultation mechanisms. The contractor will explain the temporary nature of the workplaces during the hiring process and will explain to workers the need to prepare for job loss and manage their income wisely while employed.

All employees will have contracts describing their job responsibilities and working conditions, as well as explaining their content. The contractor will hire a group of occupational health and safety specialists to implement and manage the above tasks.

All subcontractors of the project will be provided with copies of the ESEMP (Environmental and Social Environment Management Plan) of the Contractor. All subcontracts will include provisions ensuring compliance with the ESEMP at all levels of subcontracting.

All subcontractors will have to appoint a safety officer who will be on the construction Site for the duration of the relevant subcontract. To implement the above points, the contractor will appoint qualified personnel for environmental protection, health and safety at work.

Occupational health and safety management will be carried out in accordance with national regulatory documents and at the operational stage of the project.

The process of improving working conditions will be carried out systematically. In order to achieve sound Health & Safety (HS) conditions, it is necessary to finance the establishment of permanent mechanisms for their review, planning, implementation, evaluation and appropriate action.

This will be achieved through the establishment of occupational health and safety management systems.

The selection and implementation of specific measures to prevent industrial injuries and diseases among workers depends on the main hazardous factors and expected injuries and diseases.

The main hazardous production factors are:

- natural gas leak and gas contamination;
- steam leakage; electric current;
- explosion and flame;
- location of work places and equipment at height.

Harmful factors of the production process, if exposed to a person over a long period of time and intensively, can lead to the development of occupational diseases in the worker. These factors include:

- thermal, ultraviolet, ionizing and other radiation;
- electromagnetic fields;
- dust and gas released into the atmosphere of the production premises;
- high level of noise and vibration, ultrasound.

The personnel of combined cycle power plant will be exposed to all of the above factors.

The probability of exposure to each hazardous factor should be assessed in accordance with the provisions of the instructions of the International Labour Organization

"Occupational safety when working with chemicals" and "Environmental factors in the workplace", or other provisions of equal or greater importance.

Activities to assess the effects of hazardous factors are carried out by competent persons in the process of certification and inspection of workplaces with the provision of information to staff about the results of the assessment.

Ensuring safe working conditions includes timely staff training and periodic monitoring of staff knowledge, training in first aid rules, and regular medical examinations of staff.

It is recommended to develop and implement a long-term training program in the field of OHS, provided by specialists in the relevant field of OHS.

The expected impact on the health, safety and labor protection of personnel at the operational stage is as follows:

- risks for employees in connection with hazardous work;
- impact on the health of personnel due to hazardous and harmful production factors;
- violation of workers' rights.

The proposed mitigation measures described will help reduce the risk of incidents.

4.2.11 Health, safety and wellbeing of the population

Potential impacts on public safety:

- conflicts between construction site and camp security and safety personnel, workers and local residents (risk of injury);
- an increase in the intensity of traffic flows on roads used by the population means – an increased risk of road accidents leading to accidents and, potentially, injuries or deaths.

Potential public health impacts:

- an increase in the number of disease vectors, such as rodents (if food/drinks are stored incorrectly and solid/liquid waste is not managed properly), with a concomitant increase in the incidence of vector-borne diseases;
- an increase in the number of cases of infectious diseases as a result of interaction between workers and the local population. With a potential peak population of 850 people (mainly men), there is a risk of infectious diseases spread (for example, tuberculosis and sexually transmitted diseases such as HIV, etc.);
- risk of water-borne diseases in case of inefficient waste management;
- increased pollution levels due to increased traffic and transportation of construction materials.

The risk of multi-mediated exposure due to aerogenic precipitation, contamination of drinking water, and food is predicted to a lesser extent.

The health of the population is interconnected with the state of the environment. Ecologically determined classes of diseases are able to vividly indicate the impact of the environment on the health of the population. The most sensitive to the effects of environmental factors are the hematopoietic, cardiovascular, central nervous, genitourinary systems, as well as the respiratory organs.

According to baseline studies (see report 125-1105-ESIA-PE-Book 2), in the area of the planned activity, classes of diseases (diseases of the respiratory system, diseases of the blood and diseases of the hematopoietic organs) are more pronounced, largely associated, among other things, with environmental conditions, in particular, with the level of air pollution and the lifestyle of the population.

Accordingly, activities to organize health monitoring of the population of the Sharaf-Rashidov district are of priority importance for the project. The main tasks of monitoring are monitoring of health impact factors (atmospheric air quality), assessment of the predicted state of health and planning of measures aimed at improving the health of the population.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING

5.1 Environmental protection and monitoring measures

The results of the impact assessment provided the basis for developing measures to prevent/reduce their level.

The justification of the measures was carried out in accordance with the hierarchy recommended by the IFC Performance IFC 1:

- impact prevention;
- impact minimization;
- restoration of affected components/ecosystems/communities – if applicable;
- compensation to affected components/ecosystems/communities – if applicable;

In the ESIA, special attention was paid to impacts, the significance of which was assessed as "High". However, the Consultant and the initiator of the planned activity have considered measures for other impacts.

At each stage of the project life cycle, mechanisms will be used to prevent, minimize, and reduce potential negative impacts.

The Environmental and Social Protection Action Plans (E&SPAPs) present measures and management measures to ensure that the project meets national requirements and the applicable requirements of the IFC.

The effectiveness of the proposed measures is determined by monitoring the state of the environmental components and its individual indicators:

- atmospheric air;
- surface and underground waters;
- ground (soils);
- acoustic environment.

In turn, the E&SPAP is an important part of the loan agreement, the implementation of the measures of the Plans is monitored during the monitoring of the implementation of the project itself by the credit institution.

5.2 Measures to protect and monitor the social environment

IFC PS 1 requires internal and external monitoring of all Category A projects (significant impact). Monitoring reports will be disclosed by Cenergo LLC every three months during the construction period, once a year during the first three years of operation.

Monitoring of social issues is extremely important, especially in relation to child and forced labor, working conditions and safety, health and employee complaints. Internal and external monitoring will have to ensure that the Project's obligations to respect workers' rights are fulfilled, in particular:

- Prohibition of child and forced labor.
- Minimum wage payments and overtime payments.
- Control of actions that prevent employees from exercising their right to association, organization, and collective bargaining.

- Exclusion of the practice of charging fees for employment within the framework of the project.
- Implementation of plans, procedures and training in the field of occupational health and safety.
- Observance of the principles of non-discrimination and equal opportunities in the employment cycle.
- The use of a mechanism for reviewing labor complaints.
- Availability of human resources policies, job descriptions, and written contracts.
- Providing information to the workforce about rights and working conditions.
- Employee training activities.

The utmost attention will be paid to monitoring the implementation of E&SPAP, occupational health and safety procedures. To ensure the effectiveness of the monitoring system, a warning system for violations and non-compliance will be created and implemented.

The project activities will be aimed at reducing the number of accidents among project employees, especially accidents that can lead to loss of working time, disability, or even death. Cenergo LLC will also conduct an audit of the contractor's work camps for compliance with the conditions of the E&SPAP.

During the construction phase and during operation, the following actions are proposed by third parties to monitor and account for mitigation measures:

- Receiving and registering complaints through the employee complaint review mechanism, the complaint log will be reviewed monthly by the Human Resources Department of Cenergo LLC to identify patterns or areas where actions can be taken to prevent repeated problems. Complaints related to land allotment and restoration of livelihoods will be accepted and recorded through a project-wide grievance mechanism, and the journal will be reviewed monthly by the CLO.
- Maintaining records of occupational health and safety training, especially in relation to:
 - OHS trainings;
 - security personnel training;
 - raising awareness about infectious diseases (e.g., tuberculosis and sexually transmitted diseases such as HIV, etc.);
 - emergency exercises.
- Maintaining logs of accidents, incidents and diseases to monitor OHS of Project employees in accordance with the Occupational Health and Safety (OHS) Plan.
- Maintaining confidential health records of project employees, including HIV/AIDS test results, medical outcomes, and data on occupational injuries or illnesses. These records will be recorded and checked anonymously by external auditors.
- Annual reporting on the audit of the supply chain, including in relation to child and forced labor as part of mandatory reporting on Loan agreements.
- Maintaining personal files for each employee of the project, including: contact details of the next of kin in case of an accident or emergency, social security number, copy of

identity card, certificates and qualifications, internal and external training, vacation records, records of past abuse/ criminal records for security personnel.

- Maintaining security records that record the entry of non-employees into the Project area and any incidents related to security or security personnel.

The acceptance and registration of complaints from the public is carried out through a general project grievance mechanism, described in detail in the SEP. The CLO will conduct an analysis to identify and resolve common or recurring problems and complaints.

The company's management and contractors will work on these issues in order to identify the causes and take measures to prevent further repeated complaints.

All of the above will be regularly monitored during the construction and operation stages by the company's social, occupational safety and industrial safety specialists and their teams.

Monthly reports on social issues will be provided to the company's management during the construction phase and will be available to external auditors upon request.

6 CUMULATIVE IMPACTS

CEC – recipients and factors (elements) of the social environment, the consideration of which is advisable as part of the CIA.

In line with the Good Practice Guidance on Assessing and Managing Cumulative Impacts: A Guide for the Private Sector in Emerging Markets (IFC, 2013), the CIA includes impacts that are considered important based on scientific concepts and/or the concerns of affected communities.

The CIA does not consider potential impacts that may occur without the project and/or independently of the project.

Identification of the CEC is carried out taking into account:

- the results of consultations with stakeholders (see Section 5 125-1105-ESIA-PE-Book1);
- results of the forecast of impacts on the social environment (see Section 10).

As mentioned above, if the impact is assessed as "negligible" or "low", then the relevant recipient is not classified as a CEC.

The main recipients include components of the social environment, such as personnel, population, infrastructure, as well as socio-economic factors (living conditions of the population, including employment, demographic shifts, social infrastructure, ethnic characteristics, etc.).

As a result of using the specified approach within the framework of the CIA, the following CEC components of the social environment were considered:

- labor market;
- transport infrastructure;
- social infrastructure.

It was found that the cumulative impact of the planned activity on the labour market at both stages is assessed as moderate. Residual impacts are also assessed as moderate, which is associated with changes in the way of life and quality of life of communities on a long-term basis, and a decrease in unemployment.

The environmental and social policy of the project creates the basis for the implementation of subsequent plans of the enterprise for the priority employment of the working population of Jizzakh city and the Sharaf-Rashidov district. It is expected that all combined cycle power plant development projects will be implemented taking into account mitigation measures.

The cumulative impact on transport infrastructure is associated with an increase in traffic intensity and the volume of freight transport. Residual impacts on transport infrastructure are assessed as moderate. Mitigation of the consequences associated with the impact on traffic and road infrastructure is ensured by the preparation and implementation of a Traffic Management Plan (TMP), ensuring the smooth and safe movement of traffic along alternative routes.

The impact on social infrastructure is assessed as moderate, the residual impact as low.

In order to prevent negative consequences of cumulative impacts on the social infrastructure of the district, within the framework of the implementation of social and environmental policy, it is recommended to provide for:

- participation of the project in the shared development of infrastructure of the Sharaf-Rashidov district;
- development and implementation of social assistance programs for vulnerable groups of the population.

7 IMPACT ON HUMAN RIGHTS

According to the EP4 Guideline: "Conducting an assessment of human rights in accordance with the Equator Principles," the general methodology for assessing the impact on human rights includes the following key processes:

- identification of potentially affected groups (rights holders) and selection of potential/actual adverse risks to human rights at the project level
- Analysis of the identified human rights risks associated with the project, including any aggravating contextual factors
- Categorization of actual and potential impacts for each potentially affected group in the project's area of influence (workers, affected communities, or other stakeholders), with special attention to vulnerable individuals and groups
- A description of the proposed actions (or actions recommended by external consultants) to prevent or mitigate such impacts.

The human rights assessment was not included in the Consultant's terms of reference and can be performed as part of a separate terms of reference.

8 CLIMATE CHANGE-RELATED IMPACTS

Most of the current climate risks are determined mainly by the trend of global warming.

For the environmental and social assessment of the planned activities, the World Bank has created and maintains a special website on the Internet – a Portal of knowledge about climate change.⁷ The portal uses CMIP5 (Coupled Model Inter-comparison Project Phase 5) models of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC/AR5 IPCC) as initial data.

These models provide an assessment of changes in temperature and precipitation. The forecast includes four main representative concentration trajectories (RCP/RTK) – RTK2.6, RTK4.5, RTK6.0 and RTK8.5, determined according to the level of total radiation exposure (cumulative GHG emissions from all sources) by 2100. The main focus is usually on RTK2.6 and RTK8.5 – variants of the "lowest" and "highest" GHG emissions, where RTK2.6 represents an effective scenario for mitigating the negative effects of GHG emissions, and RTK8.5 assumes a "business as usual" scenario. Other scenarios are also being considered, for example RTK1.9 is an option that limits global warming to below 1.5°C, the target parameter of the Paris Agreement.

Climate forecasts based on CCKP materials for the Republic of Uzbekistan are presented in [14]. These datasets are the results of simulations performed using various General Circulation (GCM) models.

Due to differences in how GMCS represent key physical processes and interactions in the climate system, the results can vary greatly, especially with regard to precipitation forecasts on a national and local scale.

For the Republic of Uzbekistan, CMIP5 models show a trend of steady warming, regardless of GHG emission scenarios, while precipitation forecast varies greatly, despite the absence of statistically significant changes over the past decades [14].

An increase in the intensity of extreme precipitation seems very likely.

A timely assessment of climate risks will allow the company to adapt to the effects of climate change in advance, in particular, to provide for the allocation of necessary resources to prevent and/or minimize the negative impact of climate change, or, conversely, to maximize changes that can positively affect the company's activities, in particular, have a long-term impact on its financial position.

Identification and assessment of climate risks should be carried out in accordance with the applicable requirements of the standards:

- ISO 14090:2019 Adaptation to climate change – Principles, requirements and guidelines;
- ISO 14080:2018 Greenhouse gas management and related activities – Framework and principles for methodologies on climate actions;
- TCFD manuals.
- Development of the enterprise's corporate climate strategy and definition of climate goals

The definition of reasonable goals and the introduction of appropriate metrics will clearly demonstrate to the company's staff and stakeholders how and how the company

⁷ World Bank Group's Climate Change Knowledge Portal (CCKP), <https://climateknowledgeportal.worldbank.org/>

carries out activities in the field of regulating greenhouse gas emissions, as well as implements measures to minimize the negative effects of climate change. Setting specific measurable goals creates the basis for effectively achieving emission reductions within a specific time frame.

The development of a climate strategy and enterprise policy should be based on the study (assessment) of the context of the organization, production processes and risk factors.

The main elements of the company's climate strategy:

- risks associated with climate change;
- requirements for reducing the "carbon footprint";
- monitoring and evaluation of the effectiveness of implemented measures;
- reporting and external communication.
- monitoring and reporting

On a regular (annual) basis, it is recommended to assess greenhouse gas emissions of 1, 2 and 3 coverage in accordance with the requirements of the GHG Protocol, Carbon Disclosure Project and IPCC to monitor the achievement of relevant targets.

9 CONTACT INFORMATION

Actual address of Cenergo LLC, contact person and phone number:

Republic of Uzbekistan, 27a, 2nd passage, Buzbazar street, Mirzo Ulugbek district, Tashkent

Galeeva Galina

+998 88 330 00 20

nailya.galeyeva@cenergo.uz

<https://cenergo.uz/environment-and-social/>

The contact details of Cenergo LLC for public appeals, public inquiries related to environmental or social issues:

Community Liaison Officer, Quality Assurance/Control Engineer,

Galeeva Galina

+998 88 330 00 20

nailya.galeyeva@cenergo.uz

Link to disclose information about the Project: <https://cenergo.uz/environment-and-social/>

Consultant's contact information

Name: Encompass (Alfa Line LLC)

Republic of Uzbekistan, 100115, 31-37, 17 Chilanzar district, Tashkent

+998 93 924 33 33

Email: info@encompass.uz

<http://www.encompass.uz>

10 CONCLUSION

Environmental and social impact assessment for the project

"Construction of the combined-cycle gas turbine power plant with a capacity of 550 MW" was completed in accordance with national requirements and applicable requirements of the International Finance Corporation to attract project financing.

The work within the framework of the integrated ESIA of the project was carried out by the company "Encompass".

The results of the impact assessment of the combined-cycle gas turbine power plant construction project on the environment and social environment indicate the fundamental possibility and admissibility of implementing the planned activity, taking into account the implementation of the proposed measures and recommendations for monitoring.

1. Possible alternatives to the implementation of technical solutions (including the location of the facility, the choice of technologies and /or others) do not have fundamental differences in terms of environmental impact. There are no grounds for abandoning the planned activity.
2. Based on the totality of the considered technical characteristics of the main (electricity production) and auxiliary (water supply, wastewater treatment, organization of recycling cycles) equipment of the project, it can be concluded that the planned activity, in general, complies with the requirements of EU BAT.
3. As a result of the studies, the characteristics of the expected impacts of the planned activity on the natural and social environment have been determined, which are characterized mainly by medium or moderate significance, local scale.
4. An overview of the impact assessment results for the planned activities for the construction and operation stages of the project is presented in Table 7.

Table 7 Results of the impact assessment of the planned activity on the natural and social environment

Item	Impacts	Stage	Orientation	Scale	Significance 58
1.	IMPACT ON ATMOSPHERIC AIR QUALITY	C	–	Local	Negligible
		O	–	Domestic	Low
2.	Impacts related to GHG emissions	C	–	Regional	Low
3.	Acoustic and vibration effects	C	–	Local	Negligible
		O	–	Local	Low
4.	Impacts associated with waste generation	C	–	Local	Negligible
		O	–	Domestic	Low
5.	Impact on surface waters	C	–	-	-
		O	–	Domestic	Low
6.	Impact on soil cover	C	–	Local	Low
		O	–	Domestic	Negligible
7.	Impact on the flora	C	–	Local	Negligible
		O	–	Local	Negligible
8.	Impact on terrestrial wildlife	C	–	Local	Low
		O	–	Domestic	Low

9.	Impact on the labor market	C	+	Regional	Moderate
		O	+	Domestic	Moderate
10.	Impact on economic development	C	+	Domestic	Moderate
		O	+	Regional	Moderate
11.	Impact related to training, professional development	C	+	Domestic	Moderate
12.	Land acquisition, economic relocation	O	–	Domestic	Low
13.	Labor influx and population change	O	–	Domestic	Low
		C	–	Domestic	Low
14.	Child and forced labor	C	–	Domestic	Low
		O	–	Domestic	Low
15.	Impact on access to transport infrastructure	C	–	Domestic	Low
		O	–	Domestic	Low
16.	Supply chain impacts	C	–	Regional	Low
		O	–	Regional	Low
17.	Impact on cultural heritage	C	–	Local	Negligible
18.	Impacts on workers' rights, safety and labor protection	C	–	Local	Negligible
		O	–	Local	Low
19.	Impacts on public health, safety and welfare	C	–	Domestic	Negligible
		O	–	Domestic	Low
20.	Cumulative impacts	C	–	Domestic	Moderate
		O	–	Domestic	Moderate

53 The significance of residual effects is given (assessment after the implementation of recommended measures, if applicable).

5. The Project for the combined-cycle gas turbine power plant construction belongs to Category A according to the requirements of the IFC:
 - the project has the potential to cause significant negative impacts on the environment and social conditions;
 - 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.
6. The majority of greenhouse gases are produced by the use of natural gas in production processes and energy generation.
7. Air pollution in the residential area does not exceed permissible levels for any indicator; the impact of the power plant is acceptable.
8. Cumulative impacts on the social environment are also predicted – impacts on employment and the local economy, impacts on infrastructure. The implementation of the Project will have a positive impact at the local level through the creation of jobs, the purchase of goods and services by workers during the construction phase and the improvement of the infrastructure of the Sharaf-Rashidov district. During the operational phase, positive impacts are expected at the national level (increase in the country's gross domestic product, increase in government revenues and taxes). Given that most socio-economic adverse impacts are assessed as moderate or low, the project has a limited contribution to the cumulative adverse impacts.
9. The results of the impact assessment provided the basis for developing measures to

prevent/reduce their level. The justification of the measures is carried out in accordance with the hierarchy recommended by IFC Performance Standard 1: avoid impacts, minimize impacts, restore affected components/ecosystems/communities (if applicable), compensate affected components/ecosystems/communities (if applicable). Particular attention is paid to impacts whose significance is assessed as “High”, but measures for other impacts are also considered.

10. The environmental protection solutions proposed in the ESIA include:
 - set of measures to protect atmospheric air;
 - prevention of waste generation and/or reduction of waste generation volumes;
 - measures to reduce water consumption (use of drainage water in the production cycle).
11. Solutions to ensure favorable living environment for the population include:
 - organization of a sanitary protection zone;
 - measures regarding the acoustic environment, which provide for a set of planning, organizational and technical solutions to reduce the level of noise impact.
12. As a result of the assessment, a set of measures in the area of social responsibility, interaction with stakeholders, working conditions, health and safety of personnel and the population was substantiated, including:
 - adoption of the Personnel Policy;
 - elimination of child and forced labor;
 - training and professional development of personnel;
 - Traffic Management Plan
 - creation of an effective grievance mechanism.
13. Based on the results of the ESIA, an Environmental and Social Action Plan (ESAP) will be prepared. The plan sets out the activities and management measures to ensure that the project complies with national requirements and applicable IFC requirements.
14. The effectiveness (efficiency) of the implementation of the proposed measures is determined as a result of monitoring the state of environmental components and/or its individual indicators (atmospheric air, surface and ground water, soils, acoustic environment), as well as social aspects.
15. ESAP is an important part of the loan agreement; the implementation of the Plan's measures is monitored during the project implementation monitoring.
16. The environmental and related socio-economic consequences of the planned activity are assessed as acceptable, provided that the recommendations substantiated by the ESIA study materials are fully implemented.
17. As part of the ESIA, Stakeholder Engagement Plan (SEP) was prepared. The SEP provides for continuous interaction with stakeholders throughout the entire project lifecycle.
18. Activities include consultations with community representatives, disclosure of

information to local communities at key project milestones such as construction start and end, regular updates on the website and social media, updating of the SEP and annual project reporting.

19. Preliminary results of public information have shown the absence of public concerns and public preferences that require consideration when the customer makes decisions regarding the planned activity. The information and discussion processes continue.