JSC NC QAZAQGAZ
Climate Report

Astana, 2025

Content

Introduction

JSC NC QazaqGaz is a national gas company with vertical integration, covering the entire production cycle: from gas exploration and production to transportation and sale of final products. The company manages a centralized infrastructure, providing transportation of commercial gas through main pipelines and distribution networks, as well as international transit. The sole shareholder of the Company is JSC Samruk-Kazyna, which fully owns JSC NC QazaqGaz and provides strategic management of its activities.

The Company is aware of the scale of climate change and its possible impact on business sustainability, and is actively implementing decarbonization measures as part of its corporate development strategy until 2032. The main focus is on reducing greenhouse gas emissions, switching to renewable energy sources and introducing low-carbon technologies. To increase transparency and manageability of climate aspects, JSC NC QazaqGaz conducts systematic monitoring of energy consumption, including fuel from both renewable and non-renewable sources, as well as the total amount of energy consumed.

In 2024, the Company continued its consistent work in the field of climate responsibility, making significant progress in the international assessment system CDP Climate Change - according to the results of the assessment, the Company received a B rating, which reflects a high level of transparency, maturity of climate management practices and integration of climate factors into operational activities.

Based on the results of the previous period, work was strengthened to integrate climate risks into the corporate risk management system, as well as an assessment of indirect emissions (Scope 3) with a focus on updating categories and improving methodologies in accordance with international recommendations, including CDP Technical Note: relevance of Scope 3 categories by sectors[1].

The key element of climate planning in 2024 remains the Climate Risk Management Program, which includes scenario analysis in accordance with the Samruk-Kazyna Foundation National Strategy for Achieving Carbon Neutrality and the Concept of Low-carbon Development. As part of this agenda, the Company plans to develop a low-carbon development program that includes a set of measures to decarbonize its operations.

To ensure consistency and openness in the implementation of climate initiatives, JSC NC QazaqGaz plans to continue monitoring key climate indicators and submit a separate report in accordance with international standards for disclosure of information on climate risks and their impact, including TCFD and IFRS S2.

1.1. About this report

1.1.1. Purpose

Climate change is a major global challenge affecting all aspects of life, from extreme weather events to changes in ecosystems and economic impacts on various industries, including the oil and gas sector. Recognizing the scale and significance of this problem, QazaqGaz has carried out extensive work to identify and manage climate risks and is implementing adaptation measures to changing climate conditions. The Company has prepared this climate report for the purpose of disclosing information about its environmental impact and efforts to reduce it. The report aims - to provide transparency about climate indicators and strategies to combat climate change.

Previously, the Company made partial disclosures in accordance with the TCFD recommendations. QazaqGaz has now prepared its first IFRS S2 report, which is aligned with the TCFD recommendations and takes into account the principles of other entities, such as the GHG Protocol and the Sustainable Development Accounting Standards Board (SASB). The IFRS S2 report provides a comprehensive and transparent view of how the Company manages climate risks and opportunities that affect operational and financial stability, including a detailed analysis of their potential impact on the Company's development strategy. The report describes measures and approaches developed to manage risks and adapt to climate change, and also covers the Company's efforts to reduce its carbon footprint and improve energy efficiency, which are included in its long-term goals.

1.1.2. Reporting boundaries

[1] CDP-technical-note-scope-3-relevance-by-sector.pdf

JSC NC QazaqGaz financial statements cover 14 affiliated subsidiaries (hereinafter referred to as AS), 10 of which are fully owned by the Company, and in four companies the ownership share is 50%. In this climate report, only five affiliated subsidiaries were considered, which are the main business segments and form the value chain - from gas exploration and production to its final sale.

The reporting includes the following affiliated subsidiaries:

- Asian Gas Pipeline (AGP)
- Beineu-Shymkent Gas Pipeline LLP (BSGP)
- Intergas Central Asia JSC (ICA)
- QazaqGaz Aimaq JSC (QGA)
- Exploration and production LLP (EP)

The inclusion of data on affiliated subsidiaries provides an accurate and complete picture of the Company's environmental impact. Subsidiaries play an important role in implementing climate and environmental initiatives for Kazakhstan. As the main participants in programs to reduce emissions, optimize energy consumption and introduce technologies for sustainable development, their inclusion in the reporting boundaries demonstrates the Company's commitment to achieving the sustainable development goals.

1.1.3. Double materiality assessment

In 2024, JSC NC QazaqGaz conducted a comprehensive Double Materiality Assessment (DMA), which became an important step towards integrating sustainable development into the system of corporate governance, strategic planning and non-financial reporting. The assessment was carried out in accordance with the requirements of the CSRD Directive and taking into account new approaches proposed by the International Sustainability Standards Board (ISSB).

DMA is an analytical procedure aimed at identifying priority topics of sustainable development that are important for both business and the external environment. This process combines two views on materiality:

- impact materiality, which reflects the company's impact on environmental and social processes.
- financial materiality, which assesses how external factors affect the company's financial position, risks, and strategy.

Thus, DMA allows us not only to identify key topics of sustainable development, but also to build appropriate management approaches based on them, reflecting the dual nature of ESG factors – both threats and opportunities.

Previously, the Company consistently applied the materiality impact assessment approach (impact materiality), revealing significant topics in integrated reports based on GRI standards for several years. This was in line with internationally recognized best practices and allowed us to take into account the Company's most important impacts on the environment, society and the economy.

However, with the entry into force of the ISSB standards – first of all, IFRS S1 and S2 – the approach to disclosure of information has undergone significant changes. The new standards focus on the financial materiality – the ability of climate and other ESG factors to have a significant impact on the financial position, results of operations and sustainability of the business.

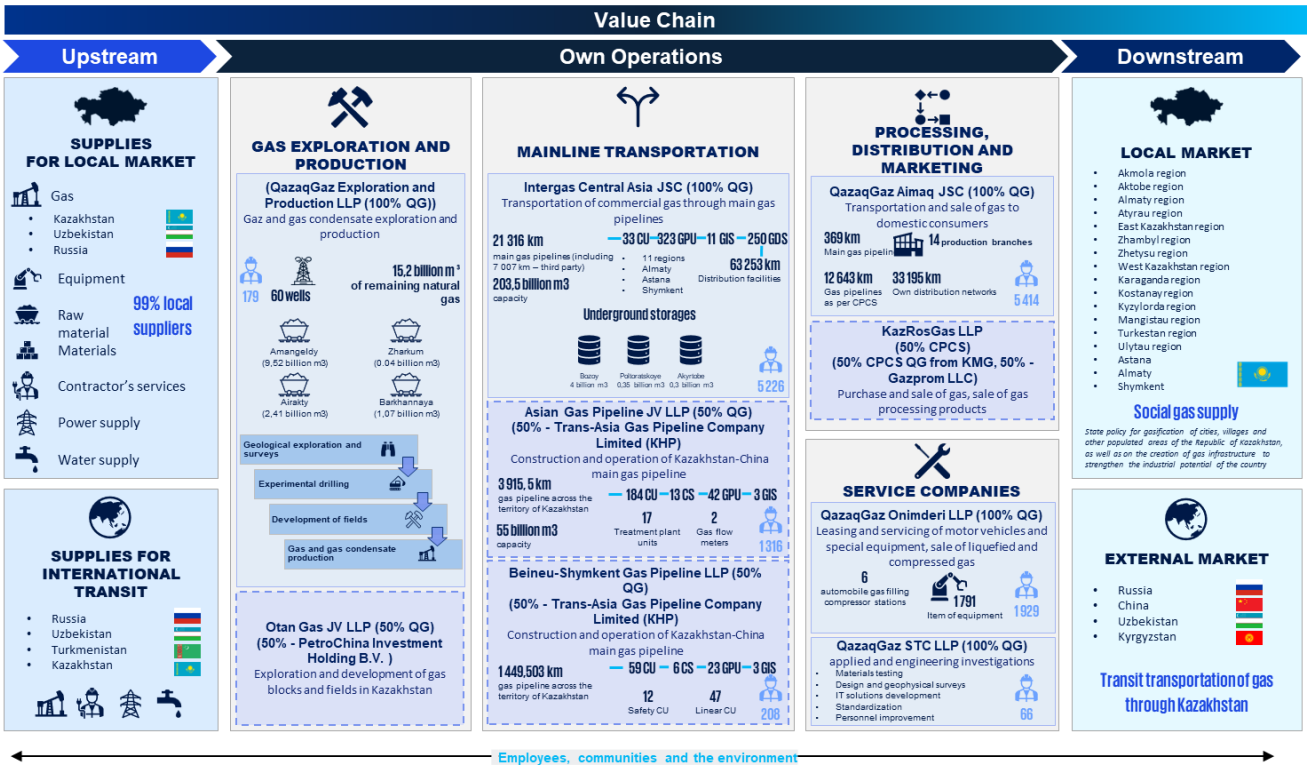
Understanding the need to move to a new disclosure model, the Company decided not to abandon the results of many years of impact materiality practice, but to combine the two approaches in a single analytical process by conducting the double materiality assessment (DMA). This approach is in line with current ESG trends and the requirements of the CSRD Directive, which provides for the application of both financial and impact materiality. This allowed us to maintain continuity in the impact assessment, additionally reflecting potential financial risks and opportunities.

The assessment was carried out using a multi-stage methodology, including:

- value chain mapping;
- identification of impacts, risks and opportunities (IRO);
- engaging internal stakeholders;
- prioritization and construction of the materiality matrix;
- internal consolidation of results.

DMA first stage is mapping the value chain. It allowed us to systematically reflect the key parts of the Company's production process and business interactions, including suppliers, partners, consumers, and end markets. Based on mapping, a preliminary list of relevant sustainable development topics was formed, selected taking into account industry specifics, internal context and international standards (GRI, SASB).

Figure 9. JSC NC QazaqGaz value chain



At the next stage, each topic was evaluated according to two complementary criteria: impact materiality and financial materiality. As a result, 17 priority topics were selected. For each of them, the corresponding impacts, risks, and opportunities (IRO) were identified – a total of 75 items distributed in ESG categories: environmental (6 topics), social (6 topics), and managerial (5 topics).

Table 18. Example of identified impacts, risks and opportunities for JSC NC QazaqGaz

Aspect	Essential topics	Name of Impact, Risk or Opportunity (IRO)	Category (risk / opportunity / impact)	IRO definition	Description
Ecological	Climate strategy	Energy efficiency	Financial opportunities	Investments in energy efficiency can reduce the cost of services and operations, reduce GHG emissions, and gain access to green finance, government subsidies, and incentive measures. It also enhances the company's reputation and competitiveness in international markets.	Improving energy efficiency allows QazaqGaz to reduce operating costs, increase the return on assets and extend the service life of technological equipment. In addition, it opens up access to international grants and green bonds, especially in the framework of gas transportation infrastructure modernization projects. Energy-efficient projects can be integrated into the emission compensation system, as well as contribute to compliance with Kazakhstan's climate obligations, strengthening the company's market position in foreign markets.
Ecological	Greenhouse gas emissions	GHG emissions	Financial risk	High GHG emissions increase the company's vulnerability to increased climate regulation: carbon taxes, reduced quotas, rising emission prices, new reporting requirements. This can lead to additional costs, lower margins, lower investment attractiveness, and restrictions on entering international markets.	QazaqGaz is one of the largest GHG emitters in the gas industry of Kazakhstan, primarily due to methane emissions from compressor stations, leaks through gas transmission systems and flaring. Tighter regulation of GHG emissions, a reduction in the country's carbon budget (-1.5% per year until 2030), as well as the potential introduction of CBAMS and stricter requirements in international markets create risks of significant increases in the cost of purchasing quotas, paying environmental fees and technical modernization. In addition, a high level of emissions can affect the ESG rating and reduce the interest of international investors.
Ecological	Management of water resources and wastewater	Access to water	Impact (Negative)	Excessive water abstraction or contamination of sources in arid regions impairs access to water for the population and ecosystems, reduces the level of ground water, affects agricultural farms and biodiversity. This increases social tensions and environmental vulnerability the region.	Although the company claims that it does not have a significant negative impact on water bodies, the volume of consumption (more than 900 million liters per year) and discharges (about 317 million liters) can cause local stress in ecosystems, especially in areas where competition for water is high. Overconsumption or discharge, even when regulated, can reduce access to quality water for local populations and farmlands, especially in arid areas.
Ecological	Biodiversity	Impacts of industrial facilities on protected areas	Impacts	The construction and operation of facilities near protected areas violates the integrity of ecosystems, fragments animal habitats, leads to soil degradation, water pollution and noise exposure. This weakens the natural functions of biosphere zones and threatens the extinction of rare species.	QazaqGaz's gas transportation and exploration activities may affect steppe, desert and wetland ecosystems, including habitats of rare and endemic species. If objects are located near protected areas, there may be a violation of the integrity of natural territories, soil degradation, disruption of animal migration routes, and environmental pollution (in case of accidents, discharges, or noise exposure). This worsens the state of local biodiversity, increases pressure on ecosystems and can cause protest sentiments in the regions of presence.

Ecological	Waste management	Waste (including hazardous and non-hazardous)	Impact	Waste, especially if stored or disposed of improperly, can pollute soils, water bodies, and the atmosphere and negatively affect public health and flora/fauna. Hazardous waste increases the toxic burden on ecosystems, and the accumulation of solid household and construction waste without processing leads to land degradation.	Storage and disposal of hazardous waste (oils, filters, oil sludge, etc.) Without proper control, they contribute to soil and groundwater contamination, which threatens ecosystems and potentially the health of workers and nearby residents. Even with the transfer of waste to a licensed recycling facility, accounting errors or delays in installation can lead to site waste accumulation and secondary contamination A growing concern is widespread failures in waste management practices at gas facilities
Management	Anti-corruption	anticorruption efforts	Financial risk	Corruption offenses bribery, collusion, misuse of funds and abuse of authority-can lead to a significant increase in the number of waste direct financial losses, termination of contracts, fines, ban on participation in tenders and serious damage to reputation, especially in the public sector.	As a national company, QazaqGaz is subject to high attention from the state, society and international partners, especially in the run-up to the IPO. Any cases of corruption can not only lead to criminal prosecution and millions of tenge of losses, but also jeopardize the license to operate and access to sustainable finance. Maintaining an anti-corruption policy, internal audit, and anonymous notification channels is critical to reducing these risks and strengthening corporate ethics.
Management	Economic performance	Payment practices	Financial risk	Failure to meet payment deadlines for suppliers can lead to deterioration of relationships with counterparties, disruptions in supply chains, contract penalties, and reduced trust on the part of small and medium-sized partners.	QazaqGaz is a strategic company whose timely payment discipline directly affects the sustainability of supply chains and the financial stability of contractors, especially in the regions. Violations of payment schedules can destabilize contractors, increase compensation costs, and worsen the company's reputation profile.
Management	Product quality/safety control	Supply chain traceability Impact (Positive)	Impact (positive)	A high degree of traceability of the supply chain helps to increase transparency, reduce operational and reputational risks, and ensure compliance with quality, environmental and ethical standards at all stages of delivery. This builds trust among investors, customers, and regulators, and promotes sustainable and responsible business practices.	For QazaqGaz, the development of supply chain management systems (including through the Samruk Procurement platform) increases quality control, reduces dependence on unstable suppliers, and supports the group's strategic sustainability.
Social	Countering discrimination and equal opportunities	Diversity and inclusion	Financial opportunities	Diverse and inclusive teams help improve the quality of management decisions, encourage innovation, help attract a wide range of talent, and strengthen the company's reputation in the market as a socially responsible employer.	By creating an inclusive corporate culture and an equal opportunity policy, QazaqGaz can expand its talent pool to include women, youth, and employees with special needs. This reduces recruitment and training costs, especially in technical and remote departments.
Social	Occupational safety and industrial safety	Health and safety	Financial risk	Insufficient attention to occupational health and safety can lead to accidents, shutdowns of production processes, fines from supervisory authorities, lawsuits and increased costs of compensation and medical care.	Failure to comply with HSE (Health, Safety & Environment) standards, especially in remote and production branches, can result in accidents, accidents, fines from supervisors, and increased costs for compensation and downtime. For example, without a separate HSE service and regular inspections, the risk of a repeat incident increases, which can lead to serious operational consequences.

Social	Human capital development	Training and development	Financial opportunities	Investing in employee training increases their skills, productivity and managerial potential, which in the long run reduces the cost of hiring external specialists, contributes to the internal talent pool and supports the sustainability of business processes.	QazaqGaz systematically develops staff competencies through the ESG Academy, digital training platforms and industry internships, including in scientific and international centers. In 2024, the company introduced individual development paths for engineering and management personnel, which contributes to the preparation of a sustainable talent pool for long-term infrastructure projects. This strengthens the corporate culture, reduces dependence on the external labor market, and increases innovation potential.
Social	Employment practice	Social integration	Impact	Involving socially vulnerable groups — young people, veterans, and people with disabilities- in the workplace contributes to the formation of an inclusive and just society. This enhances the company's social sustainability and corporate reputation as a responsible employer.	Through cooperation with trade unions and collective agreements, QazaqGaz supports the involvement of different groups of employees and guarantees them equal working conditions, payments and social benefits. This helps to strengthen a cohesive team and maintain social balance in the company's environment
Social	Local communities	Dialogue and engagement of local communities	Financial risk	Insufficient dialogue with local communities can lead to social tension, protests, blocking of infrastructure projects, construction delays, additional compensation and reputational losses. Such situations can seriously affect the timing of projects and increase unforeseen costs.	If the company does not actively involve local communities in the implementation of gasification and infrastructure projects (construction of main gas pipelines and gas processing plants), delays, protests or compensation costs may occur — all this leads to disruption of schedules and significant additional costs. For example, the construction of the Sarsha gas pipeline required investments of 31 billion tenge in 2024 and was accompanied by public discussions confirming the need for consultations.
Social	Interaction with stakeholders	Public consultation and participation in legislative initiatives	Financial opportunities	Active participation of the company in public consultations and relevant legislative initiatives allows influencing the formation of the regulatory environment, ensuring that industry interests are taken into account and reducing the regulatory burden, which can reduce future costs, increase investment predictability and simplify access to sustainable financing.	Participation in formal initiatives through its Rules of Initiative Communication and participation in specialized meetings and forums allows the company to influence legislation, adapting regulations to the realities of the gas industry and reducing future regulatory costs.

According to the results of the analysis, the following topics accounted for the largest number of IRO:

- climate strategy (12% of the total);
- corporate ethics (11%);
- anti-corruption compliance (11%).

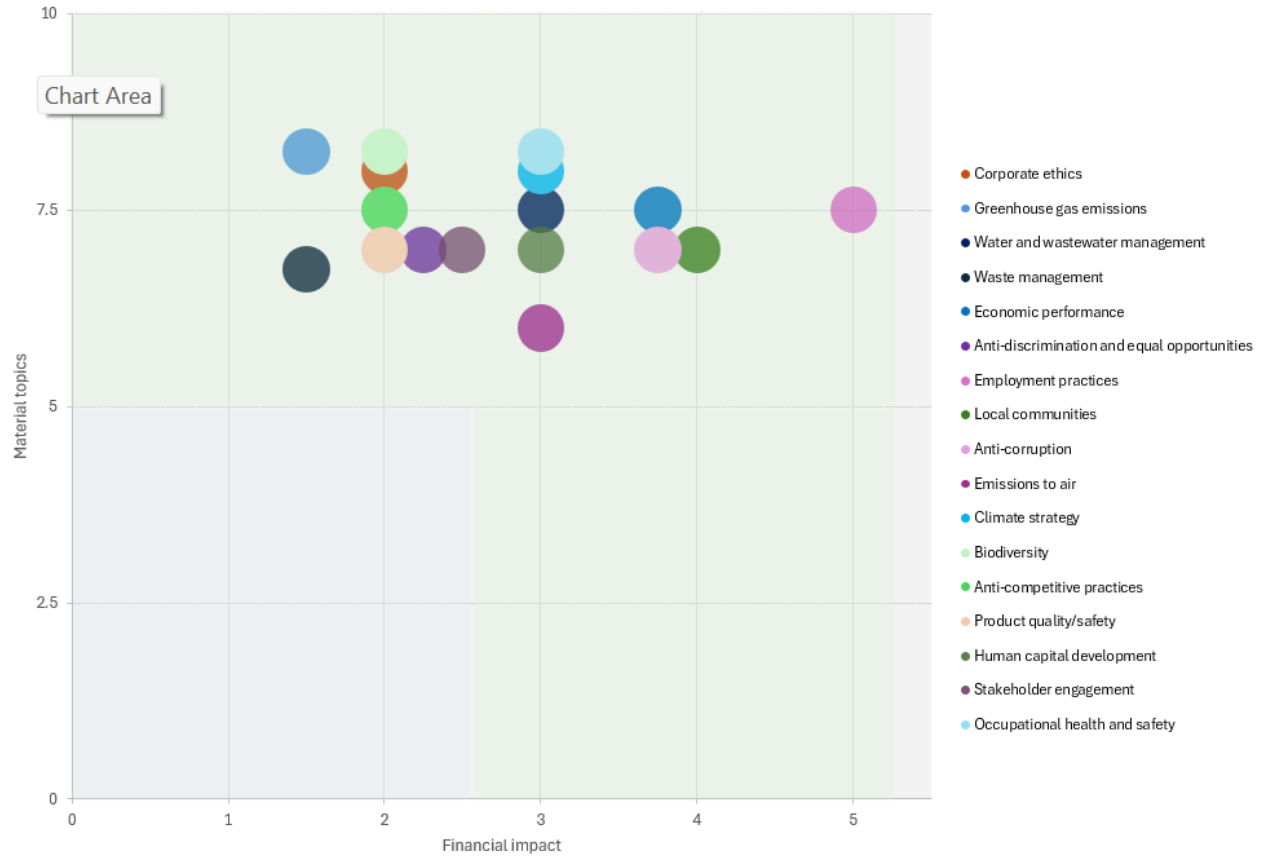
The climate issues are one of the priorities in the assessment process and are both quantitatively dominant and strategically important for the Company. It covers a wide range of management and operational aspects, including regulatory changes, physical risks, emission control, and business model sustainability.

The assessment identified 9 significant impacts, risks and opportunities (IROs) directly related to the climate strategy. These IROs cover physical risks (rising temperatures, extreme weather events, water stress), transition risks (increased regulation, changes in demand, investor expectations), and opportunities such as improving energy efficiency and reducing costs. Most of them have high or medium relevance and a significant impact scale, which underlines the need for systematic integration of climate aspects into the Company's strategy.

Additionally, 3 other significant IROs related to greenhouse gas (GHG) emissions were identified, which are also directly related to the implementation of the climate strategy. These impacts, risks, and opportunities include:

- need to switch to low-carbon technologies in the context of increasing regulation;
- potential reputational and financial losses if there is no progress in reducing emissions;
- ability to use decarbonization tools (e.g. CCS, energy efficiency improvement, emission monitoring) as a competitive advantage.

Thus, a total of 12 significant IROs under the environmental aspect reflect the systemic impact of the climate agenda on the activities of JSC NC QazaqGaz. Their nature and nature highlight the importance of actively managing both the risks and opportunities associated with climate and GHG emissions.



Part of the DMA was a survey of key stakeholders – through anonymous expert questionnaires and consultations with relevant departments. This ensured that the evaluation was applied and linked to the Company's operational practices and strategic priorities. The final evaluation materials-the methodological description, the double materiality matrix, the list of significant topics and the IRO map - are documented in the explanatory note and are used both in the preparation of ESG reports and in the strategic assessment of sustainable business solutions.

This work has confirmed that climate change and reducing greenhouse gas emissions are key topics on the Company's ESG agenda, affecting both the Company's external business profile and its internal sustainability and prospects. These topics will continue to be the focus of climate strategy development and related management decisions.

1.1.4. Differences from the Integrated Annual Report 2024

In 2024, JSC NC QazaqGaz presented an Integrated Annual Report prepared in accordance with the GRI international standards for sustainable development, in particular the GRI 11 industry standard for the oil and gas sector. Along with it, the Company has released a separate climate report, characterized by a deeper and more specialized study of climate aspects in accordance with the requirements of international financial reporting standards, CDP Climate change.

Unlike the Integrated Annual Report, which covers a wide range of topics -from corporate governance to operational performance, the climate report focuses exclusively on issues related to climate change. The document provides a detailed analysis of climate risks and opportunities, as well as their impact on the Company's long-term sustainability. Special attention is paid to scenario analysis, including models SSP1-2.6, SSP2-4.5, IEA APS and IEA NZE, which allows assessing the strategic sustainability of a business in various climatic conditions.

The report presents specific goals and metrics for reducing greenhouse gas emissions in the areas of Scope 1, 2 and 3, as well as describes key mechanisms for achieving these goals, including technological, organizational and compensatory measures. This level of detail is beyond the scope of a traditional integrated report.

The disclosure of information in accordance with the requirements of IFRS S2 reflects the Company's desire to ensure transparency and compliance with modern international standards of climate reporting, as well as to strengthen trust on the part of stakeholders.

Table 1. Structure of the IFRS S2 climate report

Environmental report structure		
	Management	Purpose of the management disclosure is to describe the management processes, controls, and procedures that the Company uses to monitor, manage, and oversee climate risks and opportunities..
	Strategy	Purpose of the strategy disclosure is to describe the Company's strategy for managing climate risks and opportunities..
	Risk management	Purpose of risk management disclosure is to provide an opportunity to understand the processes that a Company uses to identify, assess, prioritize, and monitor climate risks and opportunities, including whether and how they are integrated into the Company's overall risk management process.
	Metrics and goals	Purpose of disclosing information about climate indicators and goals is to describe how a Company manages its climate risks and opportunities. This includes progress towards achieving climate goals that it is required to achieve by law or regulatory requirements..

1.1.5. Key findings

1 Management

In 2024, JSC NC QazaqGaz continued to support a systematic approach to climate risk management, which was consolidated at the level of the Management Board and the Board of Directors. In this approach, the climate agenda is an integral part of the company's strategic management. Meetings of the Board of Directors and the Management Board regularly discuss climate risk management, achieving the Sustainable Development Goals, and assessing progress on climate goals. During the year, 16 meetings were held, of which 5 were devoted to the approval of internal documents, climate goals and participation in ratings, including CDPs. For decision-making, the competencies of the members of the Board of Directors in relevant matters were taken into account, and external experts were involved to ensure quality and objectivity.

2 Strategy

JSC NC QazaqGaz strategy includes the assessment of climate risks and opportunities, reflecting their impact on the business model, priorities and financial planning. Significant physical risks are associated with rising temperatures and changes in precipitation, which are more likely to occur in EP, ICA and AGP. The SSP126 scenario assumes that these risks will stabilize by 2035, while in the SSP245 scenario, the impact will increase until 2040, which requires long-term consideration in the strategy.

Transition risks include higher costs for implementing decarbonization technologies and lower profits due to falling gas demand. In the short term (2023-2024), companies face the greatest financial pressures, especially in the IEA NZE scenario. In the medium term (2025-2029), the impact is reduced by offsetting the costs of implementing strategies, and in the long term (2030-2040), the key challenge is falling gas demand, especially for export-oriented divisions. However, opportunities are emerging related to the sale of carbon units and the development of carbon capture and storage (CCUS) technologies.

3 Risks management

In 2024, the company continued to adhere the Climate Risks Management Program, which describes a three-step system: identification of risks and opportunities, their qualitative assessment to determine their significance and priorities, and quantitative assessment to calculate potential financial impact.

4 Metrics and goals

In the reporting year, JSC NC QazaqGaz conducted an annual assessment of greenhouse gas emissions in the areas of Scope 1, 2 and 3 in accordance with international and national methods. In 2024, the Low-carbon Development Program for the period 2025-2033 was approved, which includes a set of measures aimed at decarbonizing operational activities.

Under the Program, four development scenarios are considered, taking into account different growth rates of production capacities and the degree of implementation of climate initiatives. Emission targets are estimated for each scenario, which allows us to develop a sustainable strategy for reducing the carbon footprint and adapting to changing climate conditions.

2. Management

JSC NC QazaqGaz pays high priority to climate change issues, integrating a responsible attitude to the environment into its corporate strategy. Recognizing the importance of global climate challenges, the Company not only actively develops and implements measures to reduce its impact on the climate, but also strives to effectively manage potential climate risks and opportunities. Top management, as key corporate governance figures, is responsible for integrating climate issues into strategic planning and decision-making, contributing to the Company's sustainable and responsible development.

The Company has an effective и принципcorporate governance structure and principles that ensure the ethical business conduct and long-term success. JSC NC QazaqGaz continuously improves its strategy in the field of sustainable development, striving to ensure responsible management and minimize the impact on the environment. In support of this approach, the Company adheres the climate risk managementой programs aimed at identifying, assessing, and minimizing potential climate change-related risks that may affect its operations, financial stability, and business sustainability.

2.1. Defining the role of the supreme governing body on climate change

JSC NC QazaqGaz Board of Directors is the highest governing body responsible for managing climate issues and monitoring the functioning of the climate risk management system. The Board of Directors focuses its activities on ensuring the Company's sustainable development, strictly following the ESG principles. The competencies and responsibilities of employees in managing issues related to climate change are set out in corporate documents, including:

- JSC NC QazaqGaz Board of Directors Regulations;
- Regulations on the Strategy and Sustainable Development Committee of the Board of Directors;
- Job descriptions.

JSC NC QazaqGaz Board of Directors oversees the implementation of climate measures and monitors progress under the approved Climate Risk Management Program. In 2024, 16 face-to-face meetings were held, at which 141 issues were considered, of which five meetings were devoted to assessing progress on climate goals, including reducing greenhouse gas emissions.

The documents are aimed at implementing strategic goals, including reducing the carbon footprint, improving energy efficiency, and introducing methods for calculating greenhouse gas emissions. The monitoring is carried out through the Strategy and Sustainable Development Committee, which analyzes and reviews key metrics before approving them.

The Board of Directors meets at least 8 times a year in accordance with the approved Work Plan. The climate issues are regularly reviewed on the basis of reports and presentations prepared by relevant departments, including the HSE Department. The Strategy and Sustainable Development Committee, as an advisory body, makes recommendations to the Board of Directors on измененияclimate change issues.

To ensure effective management of sustainable development and climate change issues, the management structure of JSC NC QazaqGaz includes specialized committees attached to the Board of Directors:

- Strategy and Sustainable Development Committee plays a key role in defining the Company's strategic goals, setting sustainable development priorities, and setting long-term targets. The Committee also monitors the implementation of the Company's strategy, including its climate goals, and reviews its KPIs;
- Audit Committee and the Nomination and Remuneration Committee monitor the transparency of management and the consistency of motivational mechanisms with ESG-oriented goals.

Executive-level roles in climate management

Under JSC NC QazaqGaz climate risk management, a clearly structured system of interaction at the level of executive management has been implemented. Each of the key managers and specialized departments has certain responsibilities in the field of sustainable development, which ensures a comprehensive approach to achieving the Company's climate goals. The focus is on coordinating strategic development, reducing the carbon footprint, managing environmental initiatives, and integrating climate risks into operational activities.

- JSC NC QazaqGaz Management Board, under the leadership of the Chairman, is responsible for monitoring the implementation of programs and activities in the field of sustainable development, including the implementation of the climate agenda. The Chair coordinates strategic development and is responsible for the decision-making process and management of major capital expenditures, related to climate change;

- The First Deputy Chairman of the Management Board coordinates environmental initiatives at the operational level, including the implementation of programs for the modernization of the gas transmission system, environmental protection and digital transformation;

- The Deputy Chairman of the Management Board for Strategy and Investment is responsible for coordinating and monitoring the implementation of sustainable development principles, including по decarbonization. The Deputy Chairman of the Management Board ensures the creation of a sustainable development management system, including the development, updating and improvement of systems and processes for accounting, analysis and reporting in the field of sustainable development.

- HSE (Health, Safety & Environment) Department plays a key role in the implementation of climate policy, including the development and implementation of programs for managing climate risks, water resources, and biodiversity, as well as reporting on the inventory of greenhouse gas emissions for quota entities;

- Strategy and Sustainable Development Dept. coordinates sustainable development issues at the strategic and operational levels, ensuring the implementation of ESG initiatives.

Organization of work of specialized groups and committees

In order to effectively implement the climate policy and manage environmental aspects, JSC NC QazaqGaz has organized the work of specialized committees and groups. These structures provide a systematic approach to solving problems related to environmental safety, reducing the carbon footprint and integrating climate initiatives into the Company's operations. Their activities are aimed at monitoring, analyzing and implementing advanced international standards in the field of sustainable development and climate management, which allows them to ensure compliance with regulatory requirements and strengthen the Company's position within the framework of the climate strategy.

- Committee for Industrial Safety, Labor Protection and the Environment oversees environmental safety and integration of climate initiatives at the level of subsidiaries and affiliates;
- Working groups within the HSE Department are responsible for calculating greenhouse gas emissions, analyzing climate risks, and implementing recommendations of international standards such as IFRS S2 and IPCC.

Table 1 below presents the competencies of positions and committees at the level of the Board of Directors and the Management Board, as well as the frequency of meetings and reporting.

Table 1. Competencies of positions and committees at the level of the Board of Directors and the Management Board in the field of climate change and sustainable development

Competencies at the level of the Board of Directors		**Frequency of meetings**
Board of Directors	• Formation of corporate goals; • Approval of key corporate policies and climate strategies; • Creation of a sustainable development system and its integration at all levels of management This includes implementing sustainable practices in the supply chain; • Monitoring compliance with government policies and предsubmittingставление quarterly reports on emissions and tax issues; • Monitoring the budget, including compliance with capitalx expenditures of projects related to sustainable development; • Overseeing the implementation of the climate transition and ensuring that investments meet the Company's commitments in the future sustainable developments; • Assess progress on climate goals, including reducing emissions; • Oversee and guide the risk management process.	at least 8 times a year
Strategy and Sustainable Development Committee	• Supports the strategic activities of the Board of Directors; • Monitors the implementation of the Strategy of JSC NC QazaqGaz, including reviewing short-and long-term key performance indicators (KPIs) in the field of sustainable development and climate; • Reviews internal documents, annual non-financial reporting and other issues in the field of sustainable development and climate change before the stage of their approval at the meetings of the Board of Directors of JSC NC QazaqGaz.	
Responsibilities at the Management Board level		**Frequency of reporting to the Board of Directors**
Chairman of the Management Board	• Management of the organization and coordination of environmental protection activities, including climate change, in the Company's structural divisions; • Direction of the Company's strategic development, taking into account environmentalx and sustainablex goals; • Coordination of work to combat climate change, protect the environment and water resources, and ensure occupational health and safety, as well as reducing the level of occupational injuries in structural divisions, subsidiaries and affiliated companies; • Internal control over employees ' compliance with the requirements of regulatory documents on occupational health and safety and the environment.	more often than quarterly

The First Deputy Chairman of the Management Board	• is responsible for implementing the Company's development strategy; • Integrating environmental initiatives into the Company's operations; • Coordinating environmental protection and R & D projects; • Making decisions to improve the organization of production and management; • Participating in the implementation of the Comprehensive Gas Industry Development Plan of the Republic of Kazakhstan.	annually
Deputy Chairman of the Management Board for Strategy and Investment	• Coordination of ESG orientation and implementation of sustainable development principles, including decarbonization direction; • Responsibility for the Low-carbon Development Program responsible for creating a sustainable development management system development management systemм; • Ensuring awareness of current environmental issues through a reporting system, including monitoring of key environmental indicators and external reports; • Interaction with government agencies, portfolio companies and internal divisions.	more often than quarterly
HSE Director	• Calculation and verification of greenhouse gas (GHG) emissions; • Carbon disclosure as part of the CDP Global Initiative; • Development of a Climate Risk Management Program, a Water Resources Management Program, and a Biodiversity Conservation Program; • Identification of key decarbonization directions by the Company's business segments in accordance with the scenarios of the Samruk-Kazyna Fund's Low-Carbon Development Concept; • Preparation of a report on the assessment of the possibility of reducing energy consumption and studying the feasibility of using renewable energy sources; • Conducting quantitative analysis and assessment of climate transition risks and opportunities in accordance with IFRS S2 (TCFD); • Scenario analysis based on IPCC scenarios: SSP126 and SSP245.	annually

Climate goals monitoring mechanism

The Company applies a systematic approach в управлениито managing climate risks andи achieving sustainable development goals, ensuring a comprehensive integration of climate issues into corporate governance processes. One of the key elements of such a system is the implementation плана of the action plan, the preparation of annual reports and briefings prepared by the HSE Department and provided to the Chairman and members of the Management Board, including data on climate risks, the dynamics of achieving key KPIs and progress in implementing climate measures. The consolidated information is submitted for further review at the level of the Board of Directors.

The climate risks are fully integrated into the Company's overall risk management system. They are taken into account in the process of financial planning, investment evaluation and capital expenditure analysis, which ensures that long-term business goals are consistent with the Company's sustainability commitments. This approach makes it possible to take into account environmental and economic aspects when making key decisions. Decision-making is based on both internal reports, including HSE Department data, results of scenario analysis and energy efficiency assessments, and external reports that disclose climate information through platforms such as CDP and comply with international standards GRI, IFRS S2 and IIRC.

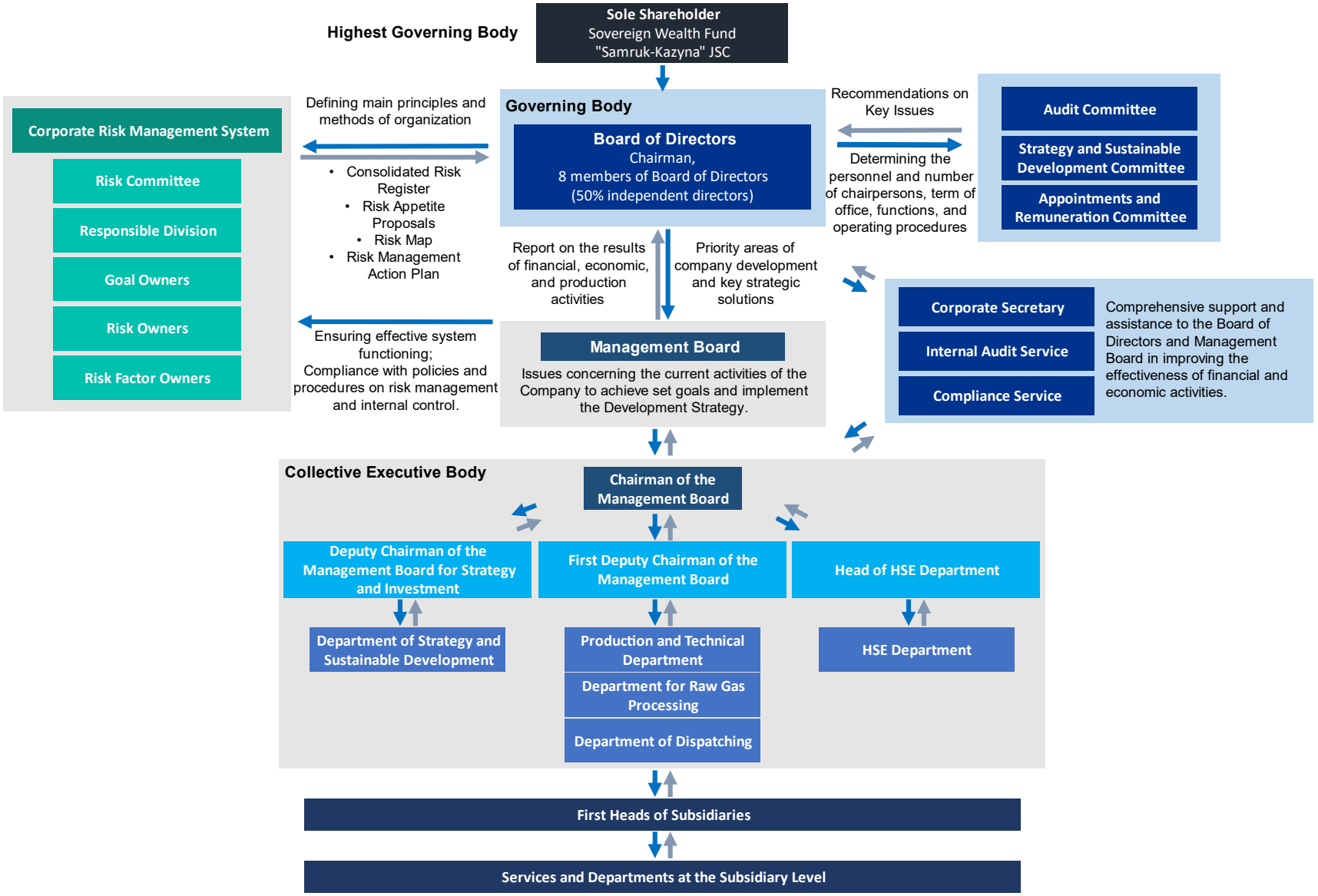
Remuneration based on the results of work for the reporting period (year) is paid to members of the Management Board based on the results of evaluating their performance, which motivates them to achieve strategic and priority goals expressed in measurable, interrelated, logically constructed and balanced KPIs. A Nominating and Remuneration Committee has been established under the Board of Directors for preliminary consideration of issues related to the formation of an effective and transparent remuneration system.

JSC NC QazaqGaz includes climate goals in its remuneration policy. In particular:

- A quarter of the annual bonus of the Deputy Chairman of the Management Board depends on the results of the ESG rating;
- In ICA and AGP, the annual bonus awarded членовто Board members depends on the achievement of carbon footprint reduction goals, in particular, 15% and 5% of the remuneration, respectively, depends on the achievement of GHG emission reduction targets.

The terms and procedure for payment of remuneration to members of the Board of Directors are determined by the decision of the Sole Shareholder. Below is a diagram of the organizational structure for managing climate change and sustainable development issues of JSC QazaqGaz Group of Companies.

Figure 2. Organizational structure of the management of sustainable development and climate change issues of JSC NC QazaqGaz



3. Strategy

JSC NC QazaqGaz pays special attention to improving the strategy and sustainable development, integrating climate factors into business processes and implementing measures to adapt to climate change.

In 2023, the volume of transportation reached more than 88.4 billion cubic meters, including 51.8 billion cubic meters of transit, which underlines the key role of JSC NC QazaqGaz in the energy transition. According to the IEA, natural gas will remain an important part of the global energy system, ensuring the transition to low-carbon energy sources. Given the natural decline in hydrocarbon reserves and resources, the Company considers it necessary to continue investing in the development of new fields and modernization of gas transmission infrastructure.

As part of the Climate Risk Management Program, the Company conducts a comprehensive analysis of climate risks and opportunities, covering both physical and transient risks. This analysis allows us to predict the impact of climate factors on all stages of the value chain: from production and exploration to sales to end users. International standards and scenarios are used for risk assessment, including IPCC (SSP126 and SSP245) for physical risks, as well as IEA NZE and IES APS for transition risks, to take into account the short-term (up to 2030) and long-term (up to 2050) prospects for the impact of climate factors on the Company's operations. To accurately understand the impact of climate change on the Company's operations, a financial assessment of climate risks and opportunities was conducted. During the assessment process, potential financial losses from climate risks were identified, as well as possible economic benefits from the realization of climate opportunities.

JSC NC QazaqGaz sees significant prospects in the development of the gas industry as a key element of the transition to a low-carbon economy.

3.1. Scenario analysis

The Company evaluated physicalx and transition risks, based on two climate scenarios of the Intergovernmental Panel on Climate Change (IPCC) from the Shared Socioeconomic Pathways (SSP) series: SSP1-2.6 and SSP2-4.5. These scenarios are based on the latest scientific developments in the field of climatology and include qualitative forecasts of social and environmental impacts. social characteristics, quantitative indicators of economic development, and climate data. They reflect potential changes in global greenhouse gas emissions, energy use, air pollution control, land use, and other related factors. SSP simulations provide an estimate of how a 2–2,5°C increase in global temperatures by 2050 and increased precipitation could affect the company's infrastructure and operations.

For the analysis of transition risks and opportunities, the Company used the International Energy Agency's (IEA) climate scenarios, namely the Announced Policies Scenario (APS) and the Net Zero Emissions by 2050 scenario (NZE). These scenarios provide a detailed analysis of the different levels of effort countries are making to transition to a low-carbon economy, and help assess the impact of policy changes, carbon pricing, and market trends on businesses.

Table 2. Climate scenarios used in assessing the climate risks and opportunities of JSC NC QazaqGaz

Климатические сценарии	**SSP126**	**SSP245**	**IEA APS**	**IEA NZE**
Temperature rise by 2100	1.8ºC	2.8ºC	1.6ºC - 1.9ºC	1.5°C
Scenario description	• Low need for mitigation and adaptation to climate • change Gradual and widespread transition to sustainable development. • Commitment to the UN Sustainable Development • Goals Focus on smart consumption, consumption of goods with a low carbon footprint • Reducing inequality both at home and in the world • Shifting the focus from purely economic growth to human well-being.	• Medium level of challenges related to mitigation and adaptation to climate • change Slow achievement of the SDGs by national and international institutions. • Ecosystem degradation is observed • Uneven development of countries • Gradual decrease in the intensity of resource use, including energy • Income inequality persists or decreases slowly • Vulnerability of the population to social and environmental changes	• Peak emissions in the mid-2020s, reduction to 12 Gt by 2050 • Reducing demand for all types of fossil fuels by 2030 • Increased investment to meet climate commitments, significantly increased by 2030 • Reduced demand for all fossil fuels by 2030, coal and gas begin to	• Rapid reduction of emissions to 0 Gt by 2050 • Rapid decline in demand for fossil fuels, reaching zero levels by 2050 • Triple investment in clean energy and infrastructure, especially in developing countries • Rapid reduction in the use of fossil fuels, transition to fully renewable energy sources
Assumptions and constraints in the scenario	• Impact on energy demand, production and exports, especially in the oil and gas sector. • GDP growth of 3.5% per year until 2030. • Increase in energy demand by 20% by 2035, due to urbanization and the need to modernize infrastructure. • Modernization of the gas transmission system is required, including the overloaded Beineu-Bozoi-Shymkent gas pipeline. • Delays in biogas and hydrogen projects are up to 5 years due	• A 2-2. 8°C temperature increase by 2050 and a 15% increase in precipitation will increase the demand for cooling, the risk of flooding and damage to gas pipelines. • Changes in land use (reforestation) can affect gas projects. • Delays in integrating low-carbon technologies until 2030 due to infrastructure problems. • Possible gas shortage in 2023-2025 due to insufficient capacity at the Kashagan and Karachaganak plants. • Resistance from fossil fuel-	• Kazakhstan aims for carbon neutrality by 2060, following the APS scenario. • A 2-2. 5°C temperature increase in Southern Kazakhstan by 2050 will increase the demand for cooling. • Carbon pricing will increase operating costs by 3-5% annually. • Extreme weather conditions can reduce the efficiency of compressor stations by 15-20% and disrupt the operation of gas pipelines. • Kazakhstan's economy is	• In the scenario of achieving carbon neutrality with no or minimal temperature excess, net greenhouse gas emissions should be reduced by 43 % by 2030 compared to 2019 levels. • Strict environmental regulations and support for low-carbon technologies are aimed at reducing emissions, especially in the oil and gas sector. • Global natural gas demand is projected to decline by 55 % by 2050 compared to 2020. • Increase global улавливание, хранениеcarbon capture and storage (CCS) capacity from ~40 million tons (Mt) of CO_2 per

	to regulatory and infrastructure issues. • Investment in CCUS technologies to capture 1-2 million tons of CO2 annually by 2035. • The share of renewable energy sources in the energy mix will increase to 20-25% by 2030 (from 10% in 2022). • Reduction of gas production by 3.18% annually until 2031. • Gas shortage between 2023-2025 due to rising demand and delays in the Kashagan and Karachaganak projects. • 70% of the gas comes from three megaprojects, which causes resource instability. • Introduction of a carbon tax ($10-20 per ton by 2025, $50-70 by 2035) to reduce emissions. • Low gas prices limit QazaqGaz's ability to upgrade its infrastructure without reforms.	dependent industries and communities could slow policy adoption and investment in clean energy. • Increased risk to pipelines and facilities due to permafrost thawing, temperature fluctuations, and extreme weather events. • Water shortages in Kazakhstan may limit the feasibility of producing hydrogen and cooling power plants.	heavily dependent on fossil fuel exports, which limits the available financing for the transition to low-carbon technologies. • Gas demand is peaking until 2030 worldwide, but willт снижатьdecline more slowly in developing regions such as Central Asia. • Countries may delay or weaken their commitments due to geopolitical tensions or domestic priorities. • The unpredictability of the regulatory framework can lead to changes in the order and timing of carbon pricing policiesю or methaneю emissions management.	year in 2020 to 7.6 giga tons (Gt) per year by 2050. • In accordance with the Green Economy Concept of Kazakhstan, 50% of electricity will be produced from alternative or renewable sources by 2050. • The scenario assumes that by 2030, the price of carbon in advanced economies will exceed $ 130 per ton of CO_2. • Global gas demand growth (3-4% per year until 2030) in China and South Asia can support revenues.

3.2. Climate risks

3.2.1. Physical risks

Under the production processes of JSC NC QazaqGaz and its subsidiaries, various risk factors can lead to different consequences, including both sudden events and long-term changes. For example, interrupting processes by factors such as abnormal precipitation, strong winds, changes in the average annual precipitation amount, and so on. The changes in precipitation can lead to subsidence of the ground due to its softening, which affects the stability of the infrastructure. Reduction in the efficiency of production processes due to an increase in average and maximum temperatures, which leads to a decrease in equipment efficiency in the processes of compression, cooling and power supply. Increased resource consumption in the water supply process due to rising temperatures, which require more water consumption for household needs. Increased resource consumption in the water supply process due to rising temperatures, which require more water consumption for household needs.

The close proximity of ICA facilities to the Caspian Sea makes relevant the factor of sea level reduction, which may affect the process of Gas Compression and Cooling in Mangistau and Atyrau regions. Lowering sea level exposes the coast with fine material, including salt crystals, which are carried by the wind, and they clog the filters, forming a lime scale. In addition, in these regions, frequent snowfall can cause сбою equipment failure due to snow, which makes it difficult to quickly repair and maintain, interrupting the gas compression and purification processes. The risks associated with interrupting processes and reducing their efficiency that are relevant to BSGP are evenly distributed, meaning that the company is equally susceptible to sudden shutdowns due to extreme weather conditions and a gradual decrease in productivity due to climate change. For the AGP, the most significant risk factor is the "Change in the average annual precipitation", since the AGP has more dangerous river crossings. This increases the risk of subsidence and damage to infrastructure due to changes in precipitation levels.

For QazaqGaz Aimaq, the main production processes exposed to physical risks are gas pressure regulation and transportation via gas distribution pipelines. One of the significant risk factors is abnormal heat, which leads to a decrease in the efficiency of these processes due to the deformation of equipment parts under the influence of high temperatures. In addition, the abnormal precipitation is also a significant risk factor, which can lead to interruption of production processes due to damage or deformation of equipment. Floods, flood flows, subsidence, mudslides and landslides can significantly disrupt the operation of the gas distribution network, creating additional difficulties for ensuring the reliability and security of gas supplies.

In EP, the physical risks arise at the stages of gas treatment and energy supply. One of the key risk factors is abnormal precipitation, which can cause flooding and flooding of infrastructure.

Table 3. Register of significant physical risks in the QazaqGaz Group of Companies

Business segment	Affiliated subsidiaries	Relevant risk factors	Risk	Risk delivery
Main gas transportation	ICA	• Snowfall • Increase in average temperature	• Interruption • of the gas transportation processC, decrease in efficiency	• Interruption of the gas cleaning and drying process due to abnormal snowfall (especially in the West Kazakhstan region and Aktobe region), as the cleaning equipment is clogged with snow and cannot be released in a short time snow protection equipment. In the forecast future, there is a decrease in the amount of snow falling, but in the listed areas, even with a decrease in this risk, this risk will be relevant • Reduction in the efficiency of gas compression and cooling due to a decrease in equipment efficiency (GPS, GPA), since the ambient temperature of the equipment affects its efficiency and increases equipment wear
Main gas transportation	AGP	• Abnormal heat	• Reduced efficiency	• Reduced efficiency of gas compression and cooling due to reduced equipment efficiency (GPS, GPA), as the ambient temperature of the equipment affects its efficiency and increases equipment wear
Gas production	EP	• Abnormal precipitation • Changes in the average annual precipitation amount	• Process	• Interruption of the power supply process due to the destruction of power lines due to icy rains caused by abnormal amounts of liquid liquids precipitation in winter (as the amount of solid precipitation in winter in the form of snow decreases) • Interruption of the power supply process due to the destruction of power lines due to falling supports, as with an increase in the average annual precipitation, corrosion processes will affect the power lines with greater force
Transportation via gas distribution pipelines	QGA	• Abnormal wind • Abnormal precipitation	• Interruption of the process	• Interruption of the gas pressure control process due to damage/ destruction of equipment, due to flooding, floods ground subsidence, mudslides and landslides caused by abnormal precipitation • Interruption of the gas distribution pipeline transportation process due to ruptures in the above-ground sections of the pipeline, as abnormal winds can cause trees and other objects to fall on the above-ground sections of the gas pipeline
Mainline gas transportation	BSGP	• Abnormal heat	• Decrease in efficiency	• Decrease in the efficiency of gas compression and cooling from-due to a decrease in the equipment efficiency (GPS,

		• Increase in maximum temperature		GPA) since the ambient temperature of the equipment affects its efficiency and increases • the wear of the equipment of gas compression and gas cooling due to a decrease in the equipment efficiency (GPS, GPA), as the ambient temperature of the equipment affects its efficiency and increases the wear of the equipment

Qualitative assessment of physical risks

The Company conducted a qualitative assessment of physical climate risks to determine their impact on the business as part of the climate risk management program. The program includes risk identification, assessment, and monitoring processes using scenario analysis.

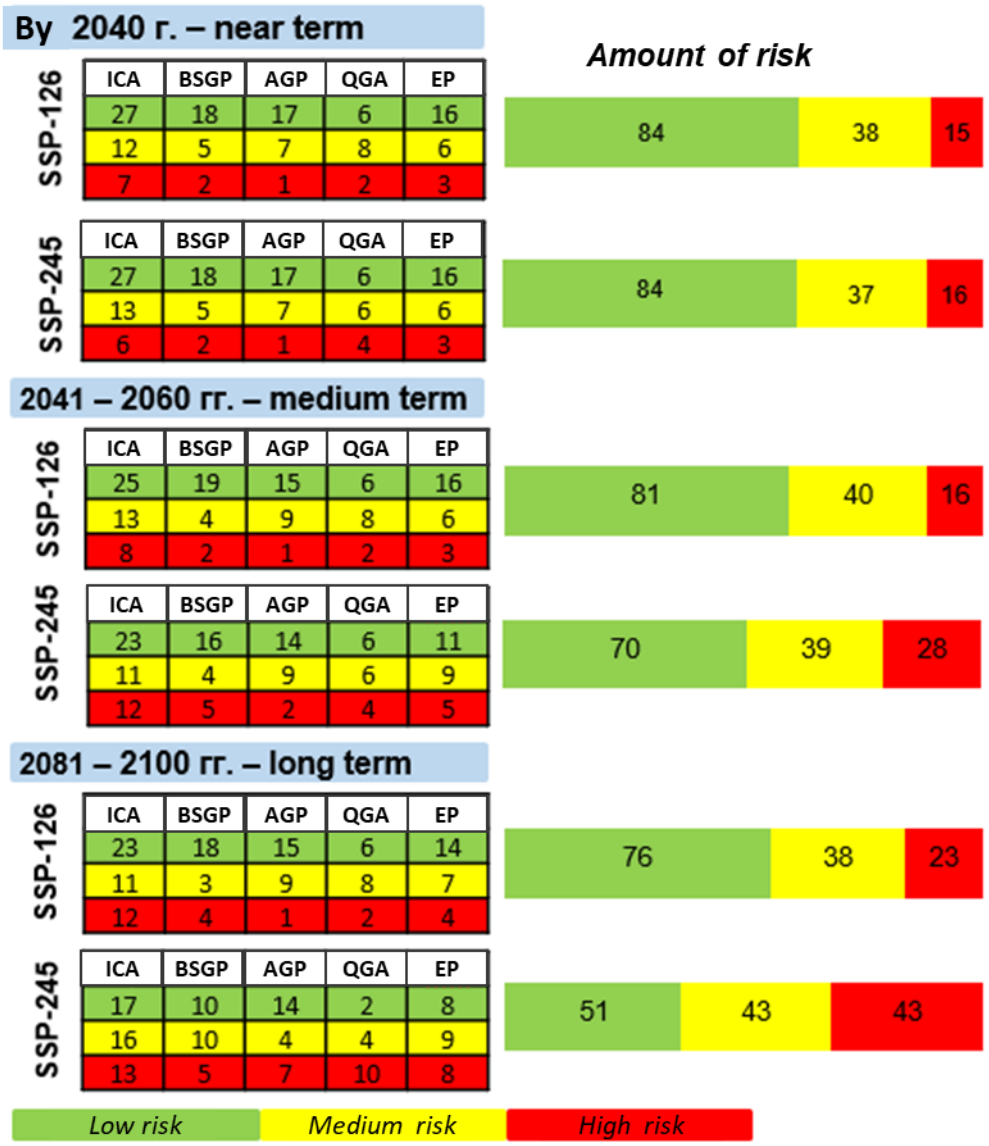
Based on the results of the qualitative assessment, several key observations can be identified. In the short term, until 2040, the number of risks remains relatively low. For example, in the SSP126 scenario, 59% of all identified risks are classified as low significance, while in the SSP245 scenario, this figure is 51%. Differences between scenarios in this horizon are minimal, which indicates that climate change will have little impact on risks in the near future.

In the medium term, from 2041 to 2060, differentiation appears. In the SSP245 scenario, the share of high and medium-magnitude risks increases, and the total number is almost twice as high as in the SSP126 scenario. The greatest increase of such risks is typical for ICA and BSGP.

The manifestation of climate change peaks in the long-term horizon. In сценарии the SSP245 scenario, a third of all identified risks are classified as high-significance, while medium-and high-significance risks account for more than 60%. In comparison, the SSP126 scenario is more forgiving, but nevertheless the number of risks with high significance increases dynamically. Climate change is most relevant for ICA, BSGP and EP.

In addition, the analysis shows that the SSP245 scenario consistently shows a higher level of risk compared to SSP126 in all time horizons. The main number of risks continues to be concentrated in the ICA and CAA. In the long run, risks increase in almost all directions, which requires detailed planning of measures to adapt and reduce the vulnerability of the company's production processes and infrastructure.

Table 1. Results of qualitative assessment of physical risks



Significance was estimated by multiplying the probability of implementation by the degree of impact, i.e. the significance values range from 1 to 25.

- Low risk - identified risks for which no further mitigation measures are required. Risk monitoring is required to prevent the risk from moving out of the green area;
- Medium risk - identified risks that are acceptable if appropriate control measures are defined and implemented. In addition to monitoring, it is recommended to carry out mitigation measures to prevent an increase in the probability of risk realization;
- High risk - refers to identified risks that require the implementation of not only mitigation measures, but also measures to adapt to climate change. According to these risks, measures should be actively implemented to prevent the impact of this risk on the Company's activities. This category is one of the most significant physical climate risks.

In the risk matrix, the high-risk category (red zone) was identified as the most significant for physical climate risks.

- Heat waves were identified as an acute risk that has a significant impact on production processes. At the upstream stage, this leads to a decrease in the efficiency of gas treatment equipment due to overheating, which can lead to a decrease in production and processing volumes. For example, overheating of compressor units reduces their productivity by 50%, which requires reserves to maintain operations. At the transportation of gas (midstream), heat waves cause wear and tear on equipment, including cooling systems and compressors, resulting in shutdowns lasting from one week to a month. Additionally, the increased temperature increases corrosion of pipelines, increasing the risk of leaks and damage;
- Temperature changes are a chronic risk affecting upstream and midstream operations. An increase in maximum temperatures reduces the efficiency of equipment at gas processing plants, especially in the summer. In the midstream stage, reduced air density degrades the efficiency of compressors and cooling units. This increases the load on the equipment and leads to additional repair and replacement costs. For example, a drop in hardware performance requires up to 6 days to recover, which leads to financial losses;
- Changes in precipitation patterns and types affect both upstream and midstream processes. Increased precipitation softens the ground, which creates a risk of subsidence and damage to infrastructure. At the upstream stage, this causes interruptions in gas treatment processes, for example, a 7-day shutdown can lead to a loss of revenue in the amount of $263 thousand. In the midstream phase, soil softening and landslides can damage pipelines and equipment, resulting in shutdowns of up to one month, as well as significant gas losses.

Quantification of physical risks

To assess physical climate risks, the Company applied quantitative methods that allow predicting economic losses, infrastructure restoration costs, and losses from failures in production processes. The analysis was based on climate modeling data, expert assessments, as well as production and financial data of the company and its subsidiaries and affiliates.

The data results show that the total amount of losses varies significantly depending on the selected scenario. In the SSP126 scenario, the projected total damage from climate risks is on average 367 thousand tenge per year for SDCs, while in the more extreme SSP245 scenario, this figure reaches 367 thousand tenge. This is due to a more dramatic increase in temperature and the intensity of climate change in the SSP245 scenario, which leads to increased exposure to risks. The largest share of climate losses falls on the EP segment in both scenarios. This is due to the high sensitivity of the gas exploration and production segment to climatic factors, such as changes in temperature and precipitation levels. The EP segment incurs significant costs for infrastructure rehabilitation and mitigation of the consequences of climate impacts, which is explained by the specifics of its activities related to working in difficult natural conditions. Compared to other segments, such as ICA or AGP, EP facilities are more susceptible to adverse climatic changes.

The main risk factors vary according to the following scenarios:

- In the SSP126 scenario, temperature changes have the greatest impact, which leads to a decrease in equipment performance, especially in the ICA and AGP segments;
- In the SSP245 scenario, increased precipitation has a significant impact, resulting in infrastructure damage, especially in EP and BSGP segments.

Each segment has its own key risk factor that contributes the most to losses:

- EP – increase in precipitation, which leads to the destruction of infrastructure and additional costs for restoration;
- ICA – temperature increase that affects the performance of compressor equipment;

- AGP – a combination of rising temperatures and precipitation that affects the operation of pipelines.

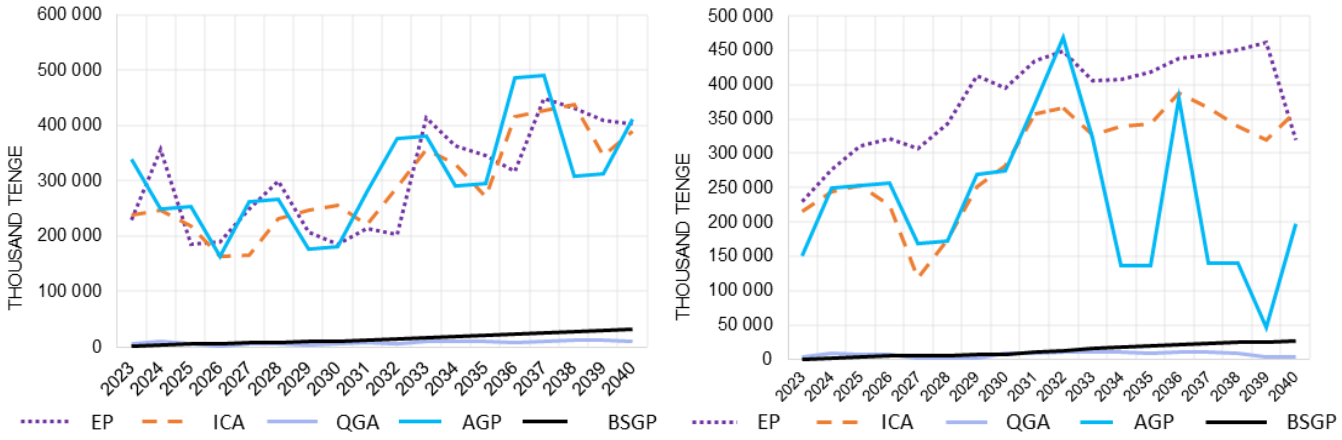
- BSGP – erosion and softening of the ground due to increased precipitation, which leads to deformation of underground utilities;

- QGA – overload of energy systems as a result of an increase in average temperatures.

The transition from the SSP126 to SSP245 scenario is accompanied by an increase in the number of high risks and their significance. In the short term (until 2040), the impact of risks is minimal, but by the medium-term horizon (2041-2060), there is a doubling of the number of high risks, especially in the SSP245 scenario. In the long-term horizon (2081-2100), the greatest increase in risks is recorded in the taxiway and AGP segments, where the combined influence of climatic factors becomes critical.

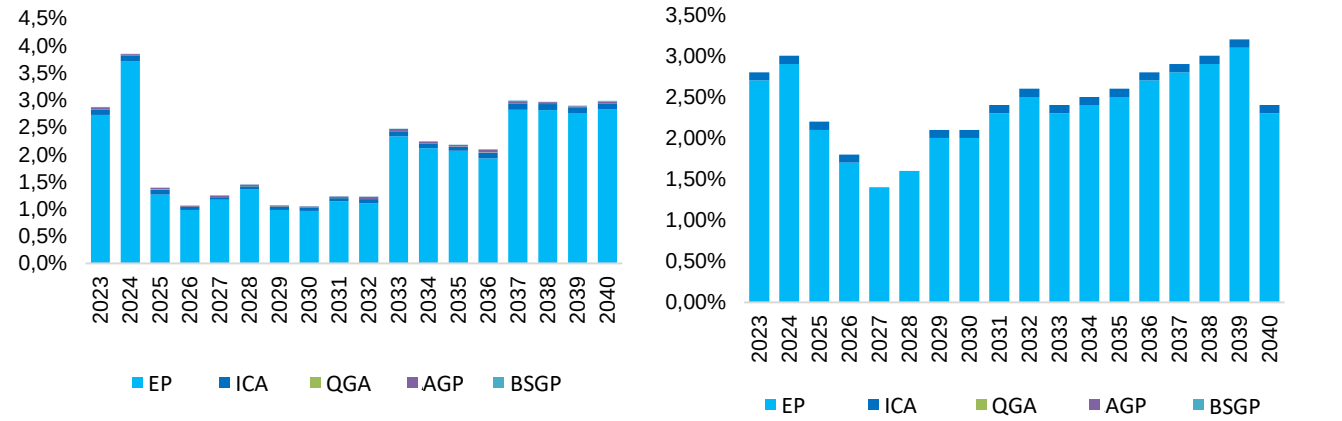
The analysis shows that the impact of physical climate risks increases as time progresses and climate change increases, especially in the SSP245 scenario. The EP and ICA segments show the greatest exposure to climate risks due to their vulnerability to changes in precipitation and temperature.

Figure 2. Total impact of climate risks, scenarios SSP126 (a), SSP 245 (b), P90-90% quantile



(а) *(б)*

Figure 3. Total impact of physical climate risks as a percentage of income, scenarios SSP126 (a), SSP 245 (b)



(а) *(б)*

The most significant climatic risks for subsidiaries and affiliates of the Republic of Kazakhstan are rising temperatures and changes in precipitation. The greatest influence of these factors was observed for such subsidiaries and affiliates as EP, ICA and AGP. According to the data, in the SSP126 scenario, losses from temperature growth amount to 205 986 thousand tenge, and from changes in precipitation – 161 287 thousand tenge. In the more intensive SSP245 scenario, losses from temperature growth amount to 210 376 thousand tenge, and from precipitation changes – 175 839 thousand tenge.

The contribution of climate risks to the Company is significant, especially in the context of key business segments. For the ICA, the main impact is caused by the risks of snowfall and abnormal winds. The costs caused by these factors are estimated at 551,833 thousand tenge in the period 2030-2040 in both the SSP126 and SSP245 scenarios, which underlines the immutability of their significance regardless of the scenario. Changes in the average annual precipitation amount and an increase in maximum temperatures remain the greatest challenges for AGP. According to the SSP245 scenario, the cost of eliminating the consequences of changes in precipitation will amount to 546 567 thousand tenge, and for overcoming the consequences of heat waves – 450 964 thousand tenge in the same period.

The cumulative impact of climate risks for all SDCs also highlights the significant contribution of these factors. In the SSP126 scenario, losses amount to about 400 000 thousand tenge per year, while in the more intensive SSP245 scenario, they approach 500 000 thousand tenge per year, which indicates an increasing threat to the company as climate change intensifies.

3.2.2. Transition risks

As part of the transition risk analysis, relevant risks covering a wide range of risk factors were identified. These risks range from regulatory changes, such as greenhouse gas emission quotas and climate disclosure requirements, to the need to introduce modern technologies, including low-carbon solutions. The analysis was based on a study of the current regulatory documentation and scenarios that take into account different levels of decarbonization efforts.

Table 2. JSC NC QazaqGaz transition risks register

No.	Risk factor	Risk	Risk description	Action by
Political and legal				
1	Allocation of GHG emissions at the national level	Increase in costs,	Increase in costs caused by the excess and the purchase of additional quotas, due to the tightening of carbon regulation in Kazakhstan, namely the introduction of a carbon tax, which involves the introduction of threshold values, valid specific GHG emissions for increasing the pace of decarbonization and the achievement of national goals 2060, as well as in connection with the reduction of quotas issued on SDCs QazaqGaz	Department of strategy and sustainable development
2	Introduction of mandatory disclosure of climate risks	Need in additional resources	Additional growth in the costs of reporting, caused by the introduction of the requirements on disclosure of non-financial information according to the standards of IFRS S1, S2.	Department of strategy and sustainable development
3	Restrictions on emissions of methane in connection with the development of a national plan of methane in the methane part of the Charter of	Increase in costs due to the imposition of government restrictions on methane emissions caused by the development of a national plan of methane in methane	Increase in costs due to the imposition of government restrictions on methane emissions (e.g., the national program for the reduction of methane emissions) in line with the Global agreement to reduce emissions of methane	Department of strategy and sustainable development

		Charter		
4	Carbon regulation in China	Increase in costs	Rising costs due to the potential introduction of the mechanism of carbon regulation in China,	Department of strategy and sustainable development
Technological				
5	Necessity of introduction of low-carbon technologies in accordance with the Strategy of achieving carbon neutrality of the Republic of Kazakhstan	Increase in costs caused by the introduction of technologies that reduce emissions and/or increase the absorption of PG	Rising costs of implementation, allowing to reduce the emissions of	Production and Technical Department
6	Development of low-carbon technologies	Increase in costs due to the purchase of certificates I-REC	Rising costs associated with the use of compensation mechanisms emissions scope 2 certificates I-REC	Production and Technical Department
7	Requirements of modernization of equipment	Increase in costs	Increased costs as a result of capital investments to modernize equipment to reduce GHG emissions and meet BAT requirements approved in BAT Oil and Gas Production reference books	
Market				
8	Changes in demand for fossil fuels	Lower profits due to falling gas demand	Lower profits due to reduced demand for natural gas due to the global trend towards de-urbanisation and abandonment of Fossil Fuels	Department of Strategy and Sustainable Development
Reputational				
9	Stigmatization of the gas industry	Decrease in investment attractiveness	Reduced investment attractiveness due to the stigmatization of the gas industry and the global priority of using renewable energy, which will lead to an outflow of key stakeholders (banks, investors, stock exchanges, etc.)	Department of Strategy and Sustainable Development

Qualitative assessment of transition risks

A qualitative assessment of transition risks for JSC NC QazaqGaz was carried out taking into account the probability of their implementation and potential impact on the business. Among all the identified risks, two key ones are identified as the most significant: technological and market risks. For their analysis, the IEA NZE and IEA APS scenarios were used, which demonstrate different degrees of decarbonization efforts and their impact on the Company's strategy.

Technological risk

Technological risk is associated with the need to switch to low-carbon technologies and products. The probability of realizing this risk is assessed as high, as Kazakhstan is actively promoting a strategy to achieve carbon neutrality by 2060, which requires the introduction of technologies such as carbon capture and storage (CCUS), the development of renewable energy and improving energy efficiency. The potential impact on the business is expressed in significant financial costs for adapting production processes and infrastructure. For example, an investment of up to US $ 107.4 million may be required to meet the requirements, which puts pressure on the company's budgets in the short and long term.

Market risk

Market risk is driven by a decline in global demand for natural gas, driven by accelerated decarbonization and the abandonment of fossil fuels. The probability of implementation is also assessed as high, especially in the context of the active introduction of renewable energy sources and the transition of consumers to low-carbon alternatives. In the IEA NZE scenario, gas demand is projected to decline by

5.32% annually until 2050, which could lead to losses exceeding US $ 108.5 million. In the less strict IEA APS scenario, the decline will be 1.66% per year, which will have a more moderate impact on financial performance.

Table 3. Results of assessing the significance of transition risks in the context of two scenarios

No.	Risk factor	Risk	Significance of risk in SSP-126			Significance of risk in SSP-245		
Political and legal			**Short term**	**Medium term**	**Long term**	**Short term**	**Medium term**	**Long term**
1	GHG emission quotas at the national level	Rising costs	**5**	**5**	**0**	**5**	**5**	**5**
2	Introduction of mandatory disclosure of information on climate risks	Need for additional resources	**5**	**5**	**5**	**5**	**5**	**5**
Technological								
3	Need to introduce low-carbon technologies according to the Strategy of achieving Carbon Neutrality of the Republic of Kazakhstan	Rising costs caused by the introduction of technologies to reduce emissions and/or increase GHG uptake	**6**	**20**	**0**	**6**	**15**	**4**
4	Development of low-carbon technologies	Increased costs due to the purchase of I-REC certificates	**5**	**5**	**0**	**5**	**5**	**5**
Market								
5	Change in demand for fossil fuels	Decrease in profits due to falling demand for gas	**10**	**25**	**0**	**10**	**20**	**25**
Reputational								
6	Stigmatization of the gas industry and	Reduction of investment attractiveness	**12**	**15**	**0**	**6**	**8**	**15**

Significance was estimated by multiplying the probability of implementation by the degree of impact, i.e. the significance values range from 1 to 25.

- Low risk - identified risks for which no further mitigation measures are required. Risk monitoring is required to prevent the risk from moving out of the green area.
- Medium risk - identified risks that are acceptable if appropriate control measures are defined and implemented. In addition to monitoring, it is recommended to carry out mitigation measures to prevent an increase in the probability of risk realization.
- High risk - refers to identified risks that require the implementation of not only mitigation measures, but also measures to adapt to climate change. According to these risks, measures should be actively implemented to prevent the impact of this risk on the Company's activities. This category is one of the most significant transitional climate risks.

Quantification of transition risks

To assess transition risks, the Company applied an economic impact modeling approach, including forecasting potential losses and adaptation costs. The analysis was based on scenarios of the International Energy Agency (IEA NZE and IEA APS), which take into account changes in gas demand, rising costs of implementing low-carbon technologies, and the development of carbon regulation. Key risks and their economic impact:

1) Increased costs caused by the introduction of technologies to reduce emissions and increase

greenhouse gas uptake[2]

- In the short term (2023-2024), the average annual costs will amount to 42 069 – 43 272 million tenge in both scenarios, which is estimated at 4 points;
- In the medium term (2025-2029), costs will decrease to 10 036 – 10 373 million tenge per year, which is due to the implementation of most measures at an early stage;
- In the long term (2030-2040), costs will decrease to 5 597 – 7 832 million tenge per year, reflecting stabilization after the implementation of major decarbonization projects.

Table 4. Impact of falling gas demand on profit in different time horizons under the IEA NZE and IEA APS scenarios

Time horizon	**Impact in IEA NZE scenario**	**Impact in IEA APS**
Short-term: 2023, 2024	Averaged per year: • 2023 г: 42 069.32 million tenge • 2024 г.: 43 018.26 – 43 272.40 million tenge Total over the entire time horizon: • 2023 г: 42 069.32 million tenge • 2024 г.: 43 018.26 – 43 272.40 млн тенге	Averaged per year: • 2023: 42 069.32 million tenge • 2024: 42 949.21 - 43 203.35 million tenge Total over the entire time horizon: • 2023: 42 069.32 million tenge • 2024: 42 949.21 – 43 203.35 million tenge
Medium-term: 2025 – 2029 гг.	Averaged per year: • 10 036.79 – 10 373.96 million tenge Total over the entire time horizon: • 50 183.93 – 51 869.81 million tenge	Averaged per year: • 9 708.77 – 9 967.16 million tenge Total over the entire time horizon: • 48 543.85 – 49 835.78 million tenge
Long-term: 2030 – 2040 гг.	Averaged per year: • 5 597.57 – 7 832.48 million tenge Total over the entire time horizon: • 61 573.30 – 86 157.27 million tenge	Averaged per year: • 47.28 - 78.80 million tenge Total over the entire time horizon: • 520.10 - 866.84 million tenge

2) Lower profits [3] due to falling gas demand

- According to the IEA NZE scenario, short-term losses (2023-2024) amount to 402-403 million

[2] Financial indicators were calculated through the assessment of capital expenditures for measures such as equipment modernization, emission recovery, energy efficiency improvement and construction of renewable energy facilities. The costs were distributed over time horizons (short, medium, and long-term) based on Company data, market prices, and retrospective data on similar projects, taking into account inflation and market conditions.

[3] The Company's data on the volumes of production, sale and transit of natural gas and gas condensate were taken into account. For each scenario, an annual decrease in demand was modeled, affecting transaction volumes, taking into account assumptions about price stability. The projected revenues at current volumes and revenues adjusted for reduced demand in the APS and NZE scenarios were compared. The final profit figures were calculated for short-, medium- and long-term horizons as the product of volume changes and current prices, taking into account the proportional change in transit.

tenge per year. In the long term (2030-2040), the decline in profit will reach 41 054 million tenge per year.

- In the IEA APS scenario, the drop in gas demand will be less significant: in the long term, losses will amount to 21 593 million tenge per year. This is due to more moderate assumptions about lower gas demand in this scenario

Table 5. Assessment of impact of decrease in gas demand on profits under IEA NZE and IEA APS scenarios in different time horizons

Time horizon	**Impact in IEA NZE scenario**	**Impact in IEA APS**
Short-term: 2023 г, 2024 г	Averaged per year: • 2023 г: 402.52 million tenge • 2024 г.: 220.03 million tenge Total over the entire time horizon: • 2023 г: 402.52 million tenge • 2024 г.: 220.03 million tenge	not assessed
Среднесрочный: 2025 – 2029 гг.	Averaged per year: • 22 983.83 million tenge Total over the entire time horizon: • 114 919.16 million tenge	Averaged per year: • 13 924.98 million tenge Total over the entire time horizon: • 69 624.90 million tenge
Долгосрочный: 2030 – 2040 гг.	Averaged per year: • 41 054.82 million tenge Total over the entire time horizon: • 451 603.07 million tenge	Averaged per year: • 21 593.09 млн тенге Total over the entire time horizon: • 237 523.96 million tenge

Metrics and data such as the cost of carbon allowances and gas demand forecasts were used to assess transition risks. In both scenarios, the additional costs of carbon compliance were estimated, including the costs of carbon quotas and the introduction of carbon capture technologies (CCUS). Gas demand forecasts in the IEA NZE scenario showed that gas production and sales will decrease by 3.18% by 2031 and by 5.32% by 2050. The IEA APS scenario predicts a more moderate decline: 0.5% by 2031 and 1.66% by 2050.

The greatest economic impact of transition risks is expected in the short term, which is associated with the costs of implementing decarbonization programs. In the long run, the main risks are associated with a decrease in gas demand, which will require adaptation of the company's business model. The results obtained will help direct investment in projects aimed at improving energy efficiency, developing alternative sources of income, such as biogas and hydrogen, as well as implementing initiatives to transport and capture carbon.

3.3. Climate opportunities

Climate opportunities - are activities that enable a company to reduce costs, increase efficiency, and adapt to climate change. They provide guidance for future initiatives and schematic projects, rather than a concrete plan of action.

3.3.1. Identified climate opportunities

As a result of the analysis, key climate opportunities relevant to the company's activities were identified, covering a wide range of areas, including improving resource efficiency, developing energy sources, introducing low-carbon technologies, and increasing the company's investment attractiveness. The process of identifying climate opportunities included several stages and was based on various categories that reflect aspects of the Company's activities that can benefit from adaptation and implementation of sustainable practices.

Table 6. JSC NC QazaqGaz register of climate opportunities

No.	Factor	Effect	Oppportunity
Effective use of resources			
1	Availability of energy-efficient solutions	Decrease costs	Reduce costs by improving efficiency of production and marketing processes through the introduction of energy efficient solutions
Sources of energy			
2	Subsidies and state support for the use of renewable energy technologies,	Reducing costs	Reduction of costs of implementation of renewable energy through subsidies
3	Growing demand for low-carbon products to	Revenue increase	Increase revenue from the production and sale of renewable energy
Products and services			
4	Growth in the demand for low-carbon products	Revenue increase	Increase revenue from the production and sale of "green and blue hydrogen"
5	Implementation climate projects in accordance with article 6, paragraph 4, and international cooperation under article 6, par. 2 of the PS	Revenue increase	Revenue increase from the sale of carbon credits, obtained in the framework of climate projects
6	Development of low-carbon technologies	Revenue increase	Increase revenue from the provision of services for the transportation, captured CO2 in the development of systems that capture, storage and transport carbon (CCUS), as well as transportation of biomethane and biogas. QazaqGaz» can transport biomethane/biogas to end users as a low-carbon alternative to traditional natural gas.
Sustainability			
7	Using the green financing mechanism	Growth of investment attractiveness	Increasing in investment attractiveness through obtaining green financing (obtaining green loans) in the implementation of decarbonization projects (RES, modernization of buildings and equipment, introduction of energy-efficient equipment)
8	Changing the availability of capital	Growth of investment attractiveness	Increase in investment attractiveness of the Company in connection with obtaining the GGCS (Green Gas Certification Scheme) certificate
9	Temperature rise	Cost reduction	Reduction of costs due to rising temperatures, as the cost of heating structures and equipment will be reduced.
Markets			

10	Increased demand for gas	Revenue increase	Increase in revenue due to increased gas demand caused by: replacing coal with gas as part of the energy transition; switching coal -fired thermal power plants to gas in all major cities of the gasified regions of the Republic of Kazakhstan (according to the action plan for the implementation of the Concept for the Transition of the Republic of Kazakhstan to a "green economy" for 2021-2030); need to maintain a balance in energy systems with an increasing number of RES (RES are non-permanent sources of energy, they need backup generation from fossil-fuel power plants fuel)

3.3.2. Qualitative assessment of climate opportunities

Based on the identified climate opportunities, the Company identified two significantopportunities that support strategic development and provide new sources of growth. These areas focus on creating a sustainable business model that meets the requirements of the global energy transition.

- **Increase in revenue from the sale of carbon units generated under the climate projects**

  The Company considers and evaluates the potential of implementing the mechanisms provided for in Article 6 of the Paris Agreement for generating and selling carbon units on the international markets. The scenario analysis assumes the implementation of a forest climate project to protect forests from fires, which may begin in 2029. The first carbon units (CS) can be generated one year after the start of the project, with subsequent implementation on voluntary carbon markets. The possibility of implementing two forest climate projects within the framework of this approach is also being studied:

  - A project for planting white acacia trees on an area of 1000 hectares, starting in 2030. Generation of the first CS will begin five years after landing;
  - Forest fire protection project similar to the scenario analysis will be launched in 2029.

  The generation of carbon units will allow them to be sold on voluntary carbon markets.

- **Increased revenue from transportation services, captured CO, biomethane and biogas.**

  It is expected that carbon capture, storage and transportation (CCUS) technologies will be introduced in the Republic of Kazakhstan starting from 2040. The capture volume in the scenario analysis will be 1 476 190,5 t CO_2-eq. per year until 2060. According to the official information resource of the Prime Minister of the Republic of Kazakhstan, by 2060, 31 million tons of CO_2 will be compensated through carbon capture and storage technologies. As part of the scenario analysis, it is assumed that Kazakhstan's carbon neutrality will be achieved by 2050. Accordingly, the volume of capture will amount to 2 818 181.8 tons of CO_2 per year until 2050. It is assumed that in both scenarios, the entire captured volume of CO_2 at the national level will be transported by QazaqGaz. The second part of the opportunity concerns the transportation of biogas. It is assumed that biogas production in Kazakhstan is growing at the same rate as global energy consumption from biogas - according to data for scenario analysis. Demand for such services is expected to grow, especially in the context of the global transition to decarbonization. This segment allows the company to diversify revenues and reduce the risks associated with falling demand for natural gas.

Table 7. Results of assessing the significance of climate opportunities in the context of two scenarios

No.	**Factor**	**Effect**	**Significance of opportunities in SSP-126**			**Significance of opportunities in SSP-245**		
Efficient use of resources			**up to 2040**	**2041-2060**	**2081-2100**	**up to 2040**	**2041-2060**	**2081-2100**

1	Availability of energy efficient solutions	Cost reduction	5	0	0	5	0	0
Sources of energy								
2	Subsidizing and government support for se of renewable energy technologies	Cost reduction	3	5	0	3	5	4
3	Growing demand for low-carbon products	Revenue increase	0	5	5	0	4	5
Products and services								
4	Growing demand for low-carbon products	Revenue increase	3	5	0	3	5	0
5	Implementation of climate projects in accordance with article 6, par. 4 and international cooperation under article 6, par. 2 of the PS	Revenue increase	3	4	25	2	3	12
6	Development of low-carbon technologies	Revenue increase	20	25	0	15	20	25
Sustainability								
7	Using the green financing mechanism	Growth of investment attractiveness	4	5	0	2	4	3
8	Changing the availability of capital	Growth of investment attractiveness	6	12	15	4	8	10
9	Temperature rise	Cost reduction	5	5	5	5	5	5

Significance was estimated by multiplying the probability of implementation by the degree of impact, i.e. the significance values range from 1 to 25.

- Low risk - identified risks for which no further mitigation measures are required. Risk monitoring is required to prevent the risk from moving out of the green area.
- Medium risk - identified risks that are acceptable if appropriate control measures are defined and implemented. In addition to monitoring, it is recommended to carry out mitigation measures to prevent an increase in the probability of risk realization.
- High risk - refers to identified risks that require the implementation of not only mitigation measures, but also measures to adapt to climate change. According to these risks, measures should be actively implemented to prevent the impact of this risk on the Company's activities. This category is one of the most significant climate risks

3.3.3. Quantification of climate opportunities

The Company conducted a quantitative assessment of climate opportunities aimed at predicting the long-term economic impact of implementing climate initiatives. The assessment identified two key opportunities: increasing revenue from the sale of carbon units and providing carbon, biomethane and biogas transportation services.

1) Revenue from the sale of carbon units generated by climate projects[4].

- IEA NZE scenario predicts the implementation of a forest climate project aimed at planting white acacia starting in 2030, with the generation of carbon units in the first year. The average annual income in the long term (2030-2040) will amount to 41.48 million tenge, and the total effect for the entire period is estimated at 456 33 million tenge;
- Under the IEA APS scenario, a similar project to protect forests from fires will provide an average annual income of 7.04 million tenge, and the total income for the long-term period will be 77.4 million tenge.

Table 8. Estimation of revenue from the sale of carbon units in climate projects under IEA NZE and IEA APS scenarios in the long term

Time horizon	Impact in IEA the IEA NZE scenario	Impact in IEA APS scenario Long
Long-term: 2030 – 2040 rr.	Average per year: • 41.48 million tenge Total over the entire time horizon: • 456.33 million tenge	Average per year: • 7.04 million tenge Total over the entire time horizon: • 77.40 million tenge

2) Revenues from transportation of captured carbon, biomethane and biogas[5].

- In the IEA NZE scenario, carbon capture is expected to reach 2 818 181.8 tons of CO_2-equivalent per year by 2050. The average annual income in the long term will amount to 323.22 million tenge, and the total effect for 2030-2040 will reach 3555. 41 million tenge.
- In the IEA APS scenario, carbon capture will be 1 476 190.5 tons of CO_2 equivalent per year by 2060. The average annual revenue will be 8.34 million tenge, and the total effect for the long-term period will be 1 946.79 million tenge.

Table 9. Estimation of revenues from transportation of captured carbon, biomethane and biogas under the IEA NZE and IEA APS scenarios in different time horizons

Time horizon	Impact in the IEA NZE scenario	Impact in the IEA NZE scenario
Mid-term: 2025 – 2029 rr.	Average per year: • 1.74 million tenge Total over the entire time horizon: • 8.70 million tenge	Average per year: • 1.67 million tenge Total over the entire time horizon: • 176.98 million tenge

[4] Volumes of carbon units generated within the framework of forest-climatic projects (forest protection from 2029 and planting of white acacia from 2030 in the NZE), as well as projected prices for carbon units for NBS projects on voluntary markets, were taken into account. The calculations were based on the assumption that the Company sells all produced carbon units starting from the moment of their generation, which makes the opportunity relevant only in the long-term horizon (from 2030).

[5] Volumes of CO_2 captured and transported, as well as the projected growth rates of biogas production in Kazakhstan, were taken into account. It is assumed that QazaqGaz will transport all the captured CO_2 and produced biogas from 2030. The calculations were based on current data on transportation costs and volume forecasts, as well as on the assumption that transportation will begin after the introduction of CCUS technologies and the growth of biogas production in the country.

Long-term: 2030 – 2040	Average per year: • 323.22 million tenge Total over the entire time horizon: • 3 555.41 million tenge	Average per year: • 8.34 million tenge Total over the entire time horizon: • 1 946.79 million tenge

The implementation of climate opportunities will significantly increase the company's revenue through the sale of carbon units and the provision of carbon and biogas transportation services. In the IEA NZE scenario, the long-term economic effect will total more than 4 billion tenge only for the period 2030-2040. In the IEA APS scenario, the benefits will be more moderate, due to lower carbon capture volumes and sales of carbon units.

3.4. Climate risk management program

The climate risk management program of JSC NC QazaqGaz is designed to reduce the impact of climate risks and realize potential opportunities. It is aimed at increasing the business resilience to climate change, as well as adapting to global climate challenges and commitments made by Kazakhstan under international agreements.

The climate aspects are currently being integrated into the corporate risk management system (CRMS) to ensure that they are systematically integrated into risk identification, assessment and management. The measures include:

- Monitoring of greenhouse gas emissions (Scope 1, 2 and 3) using national and international methodologies;
- Optimization of processes of energy consumption and decarbonization of production operations;
- Investing in technological solutions such as carbon capture and storage, as well as the use of renewable energy sources.

The regular monitoring of climate risks is carried out at all levels of the company. The Board of Directors, committees, and departments conduct annual and quarterly KPI that comply with international standards, including TCFD and IFRS S2. The main focus is on analyzing the physical and transient impact of climate factors on the Company's business. The climate risk management includes:

- The Board of Directors and the Strategy and Sustainable Development Committee, which approve the climate strategy and regularly review it;
- HSE Department is the main division responsible for calculating, verifying emissions and preparing carbon reporting reports;
- Production and Technical Department is responsible for implementing measures in the field of energy conservation and energy efficiency.

The program uses advanced climate risk assessment and management techniques, including:

- Models and scenarios (for example, SSP and RCP) for predicting the effects of climate change;
- Automated systems for monitoring emissions and energy consumption;
- International standards, such as ISO 14001, to ensure integrated environmental management.

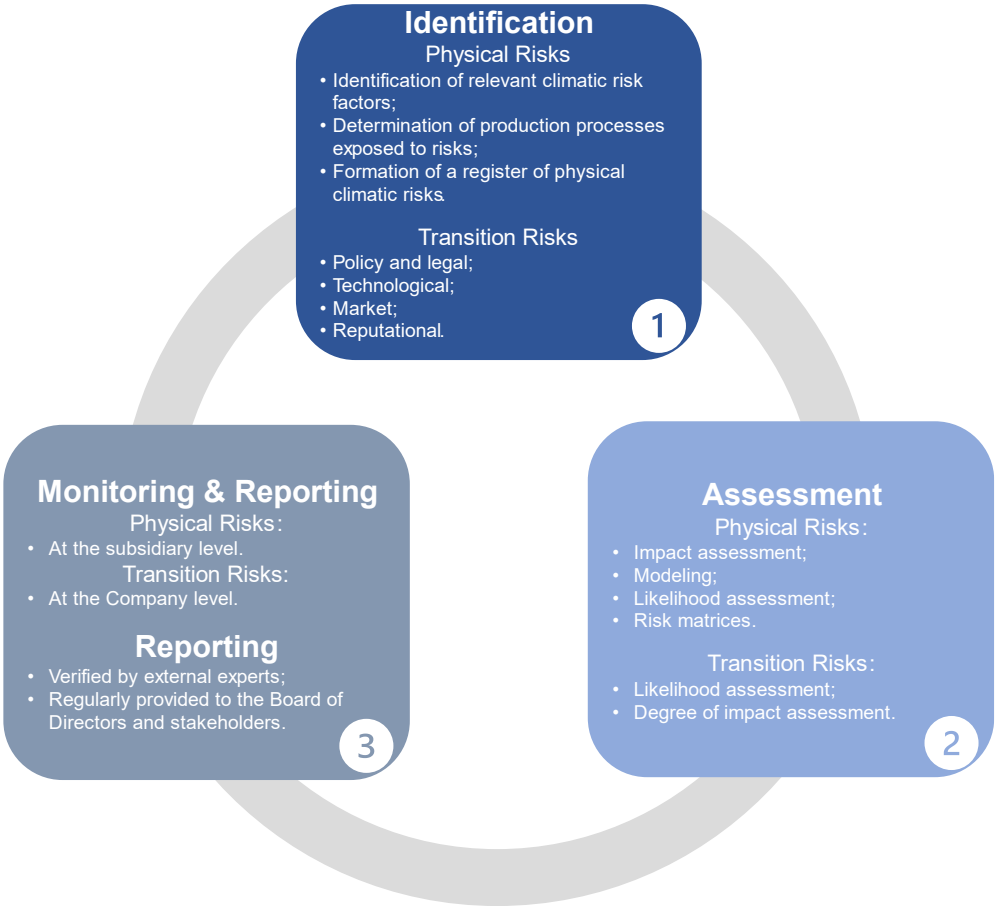
The program takes into account national and international obligations, such as the Paris Agreement and the Environmental Code of Kazakhstan.

4. Risks management

The climate risks are being integrated into the overall risk management system, with a particular focus on identifying and assessing physical and transient risks, as well as opportunities associated with them. The process of managing climate risks and opportunities is based on the use of scenario analysis methods, которые that allowюus to identify vulnerabilities, assess their impact on the short, medium and long-term prospects, and develop strategies to ensure the Company's sustainable development.

The Company applies a three-step approach to managing climate risks, which covers key aspects of their identification, assessment, and monitoring and reporting.

Figure 4. Climate change risk management process of JSC NC QazaqGaz



4.1. Approaches to climate risk identification

4.1.1. Identification of physical risks

JSC NC QazaqGaz implements the process of identification of physical climate risks, aimed at analyzing the stability of infrastructure and production processes to the effects of climate events. The main goal is to minimize their impact on the Company's operations and prevent possible financial losses.

The climate risk identification is carried out within the corporate risk management system (CRMS) using ENVID 11 (Environmental Hazard Identification) methodology. The approach includes three key stages: identification of relevant climate risk factors, identification of production processes exposed to risks, and formation of a register of physical climate risks.

The identification of relevant climate risk factors is based on a retrospective analysis of changes in climate parameters, such as an increase in average and maximum temperatures, an increase in the number of extremely hot days, a reduction in snow cover, an increase in precipitation intensity and surface

wind speed. The analysis uses historical data on climate change since the beginning of the industrial period using an ensemble of CMIP6 models.

The definition of production processes is carried out in order to identify points where climate events can have the greatest impact. The following key processes are identified for the Company's subsidiaries and affiliates:

- Transportation, purification, drying and compression of gas (ICA, BSGP, AGP);
- Gas pressure regulation and transportation via distribution networks (QGA);
- Collection, preparation and transportation of gas (EP).

The climate risk register is formed through a detailed assessment of the impact of climate factors on the company's infrastructure and production processes. For each risk, the regions of Kazakhstan where the probability of its implementation is highest are determined. For example, in the north-west of the country, a significant increase in average and minimum temperatures is recorded, while in the southern regions there is an increase in the number of extremely hot days. During the assessment of physical climate risks QazaqGaz, a register of relevant risks was developed for JSC NC QazaqGaz, covering the company's subsidiaries and affiliates. This register takes into account the specifics of production processes and the geographical location of objects, which allows you to more accurately determine the impact of climate change. The identified risks are classified by key areas of activity: main gas transportation, gas distribution and gasification, as well as exploration and production.

The risk identification process is supplemented by holding risk sessions with the participation of representatives of the Production and Technical Department (PTD) and subsidiaries and affiliates. The result of this work is a structured register of physical climate risks, which makes it possible to systematize and effectively manage identified threats.

Table 10. Physical climate risk register for ICA subsidiaries and affiliates (sample)

No.	Production process	Risk factor	Risk	Description implementation description of the risk implementation	Region
1	1 – Gas transportation	3-Abnormal precipitation	Interrupting the process	Interruption of the gas transportation process due to the destruction of the supporting parts of the pipeline by mudslides, landslides, and floods, which can occur due to large amounts of precipitation, especially in foothill areas and river crossings	Zhambyl region
2	1 – Gas transportation	3-Abnormal precipitation	Interrupting the process	Interruption of the gas transportation process due to the destruction of the supporting parts of the pipeline by mudslides, landslides, and floods, which can occur due to large amounts of precipitation, especially in foothill areas and river crossings	Turkestan region

3	1 – Gas transportation	9 - Change in the average annual precipitation	Interrupting the process	Interruption of the gas transportation process due to subsidence of the soil in the pipeline locations, which is caused by softening of the soil due to an increase in the average annual precipitation	Zhamby region

For subsidiaries and affiliates involved in **main gas transportation**, the key risks are related to climate changes affecting the processes of gas compression, cooling, and power supply:

- ICA - lowering of the Caspian Sea level causes the formation of fine material (salt crystals), which reduces the efficiency of filters in the processes of Gas Compression and cooling;
- GDSP - a significant probability of interruption of processes and reduced efficiency due to the impact of acute climatic factors, such as abnormal precipitation and wind;
- AGP - risk of ground subsidence due to changes in the average annual precipitation is especially significant in areas with river crossings.

Regional gas distribution and gasification (QGA):

The main production processes, such as "Gas Pressure Regulation" and "Gas Distribution Pipeline Transportation", are subject to risks associated with abnormal precipitation. These phenomena increase the likelihood of flooding and flooding, which can lead to damage to equipment and disruption of processes.

Gas exploration and production (EP):

Gas exploration and production processes are subject to climate threats affecting gas treatment and energy supply. Flood flows and flooding of infrastructure due to abnormal precipitation significantly increase the likelihood of interruptions in production processes.

4.1.2. Identification of transition risks

JSC NC QazaqGaz actively identifies transitional climate risks, which are an important component of strategic risk management and sustainable development. This allows the Company to respond in a timely manner to global and local trends, such as the transition to a low-carbon economy, changes in consumer preferences, stricter climate legislation, and the introduction of new technologies. The approach is aimed at ensuring preparedness for the challenges and opportunities associated with climate change.

Transition climate risks are classified into four categories:

- political and legal aspects;
- technological;
- marketconditions;
- reputational issues.

The identification methodology is based on the analysis of key factors for each category. Unlike physical risks, which are more tied to geographical location, transition risks are assessed at the level of the entire Company without detailing them for subsidiariesand affiliates. Specialized sources and approaches were used for each category.

Political and legal risks

The assessment focused on the analysis of the regulatory framework and policy trends. The political

and legal transition risks for JSC NC QazaqGaz are caused by changes in national and international legislative acts. At the national level, tougher carbon regulation and the introduction of a carbon tax are key challenges. These measures are aimed at accelerating decarbonization and achieving carbon neutrality in Kazakhstan by 2060. In particular, the introduction of thresholds for greenhouse gas emissions and new restrictions on methane emissions provided for by the national emission reduction program require additional efforts from the Company. At the international level, the risks associated with the possible introduction of cross-border carbon regulation in China remain relevant, which may affect the company's costs in export-oriented areas. In addition, the introduction of IFRS S1 and S2 requires disclosure of non-financial information, which entails additional costs for preparing financial statements.

Technological risks

The technological changes were evaluated in terms of their impact on the Company's operations. The technological risks of JSC NC QazaqGaz are related to the need to modernize production processes in the context of the transition to a low-carbon economy. To meet the new requirements, a significant upgrade of equipment is required, which is associated with capital investments. For example, upgrading to best available technologies (BAT) for oil and gas production involves developing new solutions to reduce greenhouse gas emissions. An additional burden on the budget is the costs associated with the implementation of emission compensation systems, such as the purchase of I-REC certificates. The development of low-carbon technologies, including renewable energy sources (RES), requires investment in research and development.

Market risks

The market risks reflect changes in demand for the company's products caused by growing consumer preferences for low-carbon solutions and changes in the structure of fossil fuel consumption. Lower demand for natural gas can significantly affect the company's revenue. The influence of competitors actively adapting their strategies to climate challenges also poses a threat to the market position of JSC NC QazaqGaz. An increase in the cost of production due to an increase in the cost of raw materials or changes in regulatory requirements further increases the pressure on competitiveness. Effective monitoring of market trends and flexibility in adapting the strategy will help minimize these risks.

Reputational risks

The company's reputational risks are related to the perception of its activities on the part of interested parties. In the context of the global climate agenda, the gas industry faces criticism, which may lead to a decrease in investment attractiveness. The lack of significant progress in decarbonization can negatively affect the confidence of shareholders, investors and the company. To maintain a positive image of the company, it is important to demonstrate measures aimed at reducing the carbon footprint and commitment to sustainable development. Stakeholder engagement and a transparent disclosure policy play an important role in managing these risks.

4.2. Approaches to climate risk assessment

4.2.1. Assessment of physical risks

Qualitative assessment

Qualitative risk assessment was carried out using the ENVID methodology, which provides an analysis of the probability of occurrence of risks and their impact. Based on the obtained data, risk matrices are formed, which makes it possible to identify the most significant climate risks for the company and develop approaches to their minimization.

The process of assessing physical climate risks in JSC NC QazaqGaz is based on modern methodologies and includes an analysis of the probability of implementation and the degree of risk impact.

Impact assessment

Assessment of the degree of impact of climate risks for JSC NC QazaqGaz is carried out on the basis of the analysis of their impact on key operational and support processes. To do this, use parameters

that reflect the severity of the consequences of implementing the risk:

- Duration of shutdown of production processes-measures the time required to restore normal operation after the impact of a climate event.
- Impact on ancillary processes-assesses the impact of risks on the supply chain, including water, energy, and supplies.
- Resource consumption growth-takes into account the increase in water and energy costs caused by changes in climatic conditions.
- Reduced equipment efficiency-analyzes the decrease in equipment performance associated with abnormal temperatures, precipitation, or other climatic factors.

A five-point rating scale was formed for each parameter, where:

- 1 point - minimal impact;
- 5 points - critical impact with significant consequences for production processes.

The result of this assessment is a physical climate risk exposure matrix that helps identify priority risks for subsequent analysis and management.

The impact assessment is carried out for two climate scenarios:

- SSP126 is a deep decarbonization scenario that assumes an increase in the global average temperature by 1.8°C by 2100. This scenario is the main one for JSC NC QazaqGaz and corresponds to the strategy of low-carbon development of the shareholder of JSC Samruk-Kazyna;
- SSP245 is a moderate decarbonization scenario that assumes a 2.8°C temperature increase by 2100. This scenario is used as an alternative to account for more severe climate changes.

For each scenario, the analysis is performed in three-time horizons: short-term (until 2040), medium-term (2041-2060), and long-term (2061-2100).

Table 11. Gradations of the degree of exposure to physical climate risks

Minor damage	**Light damage**	**Local damage**	**Serious damage**	**Mass impact**
1 point	2 points	3 points	4 points	5 points
Minimal impact on major processes	Shutdown for less than 1 day	Termination of work for a period of 1 day to 1 week	Termination of work for a period of 1 week to 1 month	Termination of work for a period of 1 month to 1 year
No impact on auxiliary processes	Short-term shutdown of the auxiliary process (less than 1 hour), which does not entail a production shutdown	Short-term shutdown of the auxiliary process, elimination is possible by staff specialists (up to 12 hours)	Stopping the main equipment and troubleshooting is impossible without the involvement of external specialized services (up to 24 hours)	Business shutdown. The need to replace an object of equipment/element of industrial buildings and structures

No increase in resource intensity	Increasing the resource intensity of the process to the upper level of the average annual standard value	Increase in the resource intensity of the process is greater than the upper level of the average annual standard value, but without the need to attract additional resources	Using internal backup resources	Attracting external resources
No impact, no decrease in efficiency	Reduction of auxiliary equipment efficiency by less than 50%	Reduction in the efficiency of auxiliary equipment by more than 50%	Reducing the efficiency of the main equipment by less than 50%	Reducing the efficiency of the main equipment by more than 50%

Risk modeling

The assessment was based on CMIP6 climate modeling data using the SSP126 and SSP245 scenarios. Two scenarios allow for possible variations in climate change, including the deep decarbonization scenario (SSP126) and the less severe scenario (SSP245). The analysis was performed over three time horizons:

- Near term (until 2040 года);
- Medium term (2041-2060);
- Long term (2081-2100).

Models take into account specific changes in climate indicators, such as rising temperatures, changes in precipitation, and extreme weather events that are relevant for the regions where the company operates.

Figure 5. Uploading values for climate risk factors based on the specified coordinates (for example, Atyrau region).

Assessment of the probability of risk realization

Based on climate modeling data, we normalized climate changes to translate them into a unified probability scale (from 1 to 5 points). Both positive and negative dynamics of changes were taken into account (for example, a decrease in precipitation in certain regions or an increase in temperature). The probability value was calculated using the normalization formula, which allowed us to objectively assess how often this risk can be realized in the future. The impact of risk on operational processes was assessed

by four main parameters:

- Duration of stopping production processes.
- Influence on auxiliary processes.
- Increased consumption of resources (water, energy).
- Reduced equipment efficiency.

These parameters were analyzed in the context of subsidiaries and affiliates specifics, for example:

- In the ICA, the risks associated withо сбоем equipment failure due tooго fine materialacaused by a decrease in the Caspian Sea level are of high importance.
- For AGP, the risk is ground subsidence due to changes in precipitation levels.
- QGA faces risks of equipment deformation due to abnormal heat.

Each parameter was evaluated on a five-point scale, where 1 corresponds to the minimum exposure, and 5 - to the maximum.

Table 12. Gradations of the probability of realization of physical climate risks

Risk factor	1 point	2 points	3 points	4 points	5 points
Abnormal heat, days	from 2 to 8	from 8 to 17	from 17 to 27	from 27 до 37	from 37 до 42
Abnormal cold, days	from -50 to -46	from -46 to -37	from -37 to -29	from -29 до -20	from -20 до -16
Abnormal precipitation, %	from 4.37 to 7.33	from 7.34 to 13.26	from 13.27 to 19.19	from 19.20 до 25.12	from 25.13 до 28.09
Snowfall, mm / day	from -0.14 to - 0.13	from -0.12 to -0.09	from - 0.08 to -0.06	from -0.05 до -0.03	from -0.02 до -0.01
Abnormal wind, %	from -2.64 to -1.47	from -1.48 до 0.85	from 0.86 to 3.18	from 3.19 до 5.52	from 5.53 до 6.69
Increase in average temperature, ℃	from 2.03 to 2.37	from 2.38 до 3.03	from 3.04 to 3.70	from 3.71 до 4.37	from 4.38 to 4.70
Minimum temperature rise, ℃	from 1.93 to 2.33	from 2.34 до 3.13	from 3.14 to 3.93	from 3.94 до 4.73	from 4.74 to 5.13
Maximum temperature rise, ℃	from 1.90 to 2.23	from 2.24 до 2.88	from 2.89 to 3.53	from 3.54 to 4.18	from 4.19 to 4.50
Change in the average annual precipitation, %	from 2.94 to 5.56	from 5.57 до 10.79	from 10.80 to 16.02	from 16.03 to 21.24	from 21.25 to 23.86
Change in the SPI-6 index, %	from 68.30 to 76.09	from 52.71 to 68.29	from 37.12 to 52.70	from 21.53 to 37.11	from 13.72 to 21.52
Lowering of the Caspian Sea level, in meters	from -29 to -31.25	from -31.26 to -35.75	from -36.76 to -40.25	from -40.26 to -44.75	from -44.76 to -47

Risk matrices

Based on the product of the probability and degree of impact, a risk matrix was formed for each of the two scenarios (SSP126 and SSP245) in the context of time horizons. Matrices are constructed based on the product of the probability of risk realization and the degree of its impact, with a significance rating from 1 to 25.

The matrices corresponding to the ENVID approach have a dimension of 5x5, since zero influence was not considered. For example:

- High risks require implementation of adaptation measures, such as upgrading equipment or strengthening infrastructure.
- Medium risks involve constant monitoring and preparation of control measures.
- Low risks require minimal intervention, but also remain under surveillance.

Figure 6. Quality assessment matrix

	Probability				
Degree of impact	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Low risk | Medium risk | High risk

A more detailed description of the risks is provided in the physical risk register in the climate risk management program.

Quantitative assessment

As part of the quantitative risk assessment, the SSP126 and SSP245 climate scenarios were used, which included such key risk factors as abnormal heat, changes in precipitation, an increase in maximum temperatures and extreme weather events (abnormal wind, snowfall). The company used the MPI-ESM climate model to model climate risks with detailed time series describing climatic variables such as daily average temperature, maximum temperature, wind speed, and precipitation. The methods of quantitative analysis included the following steps:

• Monte Carlo simulation of risk: A set of scenarios for the impact of climate factors on the company's operations was calculated, with an assessment of the probability of risk realization and their impact on key economic indicators;

- Loss forecasting: Possible production losses are calculated, such as:
  - gas and condensate losses due to process shutdown.
  - financial costs of restoring compressors, cooling systems, and other key infrastructure elements.
  - direct costs of dealing with the consequences of infrastructure damage caused by precipitation and wind.
- Time horizon analysis: Loss estimates were made for the medium-term (2023-2029) and long-term (2030-2040) prospects.
- Economic modeling: The analysis was supplemented with VAR90 calculations (90th percentile),

which allowed us to estimate the worst-case scenarios of financial consequences

4.2.2. Assessment of transition risks

Qualitative assessment

The conducted stage of identification of transitional climate risks allowed us to identify a wide range of factors that can have a significant impact on the activities of JSC NC QazaqGaz. The data obtained and their qualitative assessment became the basis for a more in-depth analysis of the significance of each risk. This assessment includes determining the probability of implementation and the degree of impact of risks in the context of two climate scenarios (IEA NZE, IEA APS) and three-time horizons (short-, medium - and long-term). The results of the assessment will be used to develop strategies for managing transition risks, developing adaptation measures, and long-term planning.

Estimating the probability of implementation

The probability of occurrence of scenarios and associated risks was evaluated on a scale from 1 (less than 5%) to 5 (>80%) to take into account the differences between the IEA NZE and IEA APS scenarios, as well as time horizons (up to 2040, 2041-2060, 2081-2100).

Impact degree assessment

The impact of these risks was reflected in financial losses, including regulatory compliance costs, lower revenue, and higher operating expenses. For each risk, a five-point rating scale was developed, where the significance is determined by the amount of damage. These ranges correspond to the corporate-wide risk assessment methodology of JSC NC QazaqGaz. The impact assessment took into account:

- development of a methodological approach for calculating the financial damage caused by the implementation of transitional climate risks. Individual calculation method is established for each risk due to the unique features and factors that determine the risk.
- determine the necessary indicators for calculation, including factors and quantitative metrics that affect the risk.
- conducting a top-level quantitative assessment based on various scenarios and time periods, which allows you to take into account various scenarios and damage dynamics over time.

The degree of risk that JSC NC QazaqGaz is willing to take in order to achieve its strategic and operational goals is determined by risk appetite, which should not exceed 10% of consolidated EBITDA. Thus, the amount of risk appetite in 2023 is 49.5 billion tenge.

Table 13. Gradations of the degree of impact of transitional climate risks

Point	Description	Quantitative assessment	
		% of risk- appetite	billion KZT billion
1	Absence of any consequences in case of risk realization	25%	< 12,375
2	Consequences of realizing the risk are not significant	50%	12,375–24,75
3	Consequences of realizing the risk are not significant and can be completely corrected	75%	24,75–37,125
4	Consequences of realizing the risk are very significant, but they can be corrected to a certain extent.	100%	37,125–49,5
5	If the risk is realized, the Company will practically not be able to recover from the consequences associated with this risk.	above the risk appetite level	>49,5

Thus, a specialized assessment method is developed and applied for each risk, taking into account its specific characteristics and impact:

Table 14. Methods for assessing transient climate risks

Risk	Indicators for calculating the financial burden
Political and legal	
Increases in costs caused by excess and purchase of additional quotas, due to the tightening of carbon regulation in Kazakhstan, namely the introduction of a carbon tax, which involves the introduction of thresholds for permissible specific GHG emissions to increase the rate of decarbonization and achieve the national goal 2060, as well as due to the reduction of amount of quotas issued to subsidiaries and affiliates of NC JSC QazaqGaz	• Greenhouse gas emissions in 2023 • Number of greenhouse gas emission quotas for 2023 according to the National Greenhouse Gas Emission Quota Allocation Plan for 2023 • Average cost of a carbon unit at auction in 2023 in the Republic of Kazakhstan • Percentage of reduction in the number of quotas issued in accordance with the national goals of the Republic of Kazakhstan to reduce greenhouse gas emissions
Increase in additional reporting costs caused by the introduction of non-financial disclosure requirements in accordance with IFRS S1, S2 standards.	• Average salary of an ecologist in Kazakhstan per year in tenge • Percentage increase in real wages in Kazakhstan • Number of required staff
Technological	
Rising costs of implementing technologies to reduce emissions	• Market value of the construction of large infrastructure facilities of renewable energy sources, such as: wind power plant, solar power plant and hydroelectric power plant
Increased costs associated with the use of Scope 2 emission compensation mechanisms with I-REC certificates	• Scope 2 emissions for 2023 in thousand tons of CO2-eq. • Target value of Scope 2 emissions by 2032, subject to the implementation of recommended reduction measures • Global average price of I-REC certificates
Market	
Lower profits as a result of reduced demand for natural gas due to the global trend towards decorbanization and abandonment of fossil fuels	• Lower profits as a result of reduced demand for natural gas due to the global trend towards decorbanization and abandonment of fossil fuels
Reputational	
Reduced investment attractiveness due to the stigmatization of the gas industry and the global priority of using renewable energy, which will lead to an outflow of key stakeholders (banks, investors, stock exchanges, etc.)	• Reduced investment attractiveness due to the stigmatization of the gas industry and the global priority of using renewable energy, which will lead to an outflow of key stakeholders (banks, investors, stock exchanges, etc.)

Quantitative assessment

The methodology of quantitative assessment of transition risks and opportunities for JSC NC QazaqGaz is based on a systematic analysis of data, application of international standards and integration of a scenario approach. The assessment was based on the use of TCFD standards TCFD (IFRS S2), which provide a framework for analyzing climate risks and opportunities, ensuring reliability and comparability of results. International Energy Agency (IEA) scenarios such as IEA NZE (deep decarbonization) and IEA APS (moderate decarbonization) were applied. These scenarios reflect different levels of efforts to reduce emissions and adapt to climate change.

Several types of data were used for the assessment:

- Internal data of the company, including consolidated figures for gas production and transportation,

capital expenditures and operating expenses, as well as decarbonization action plans;

- Data from external sources, such as global and national gas demand forecasts, scenarios of changes in the energy sector from the IEA, as well as data from national agencies in Kazakhstan.

Key analysis tools:

- Models for calculating capital expenditures and operating expenses for the implementation of low-carbon technologies, such as LDAR, modernization of gas pumping equipment and construction of renewable energy facilities.
- Financial modeling of changes in revenue from the sale of carbon units and the transportation of biogas.
- Scenario modeling of changes in gas demand, including analysis of retrospective data and forecasts based on international standards.

The evaluation process consisted of several stages. At the first stage, significant transition risks and opportunities were identified. This included identifying the risks of increased costs caused by the introduction of technologies to reduce emissions, and lower revenues due to falling gas demand. Among the opportunities highlighted was the potential increase in revenue from the sale of carbon units, as well as from the transportation of captured carbon and biogas.

At the next stage, a scenario analysis was performed. The IEA NZE scenario, which focused on deep decarbonization, took into account extensive activities such as the construction of solar and wind power plants, the repair of compressors, the use of carbon capture systems (CCUS), and the conversion of motor vehicles to natural gas. The IEA APS scenario included a more limited list of activities with less intensity of changes. Capital expenditures and operating expenses were estimated for each scenario, as well as revenue changes were forecast.

Evaluation results are integrated into the company's business strategy, and risks and opportunities are reassessed annually.

4.3. Approach to identifying and assessing climate opportunities

Under the climate risk management program, JSC NC QazaqGaz is identifying climate opportunities aimed at increasing the company's sustainability and competitiveness in the context of the transition to a low-carbon economy.

Initially, a comprehensive analysis of current market and technological trends related to the global transition to a low-carbon economy is carried out, includingая the study of the regulatory framework, international agreements, national strategies to reduce greenhouse gas emissions, as well as an assessment of consumer preferences and demand for environmentally friendly products. Special attention was paid to technological innovations in the field of decarbonization, such as the production of “green” and “blue” hydrogen, biomethane, as well as the introduction of carbon capture, use and storage (CCUS) technologies.

The methodology for identifying climate opportunities for JSC NC QazaqGaz is based on an in-depth analysis of market and technological trends, as well as on identifying specific areas for innovation, improving energy efficiency and switching to renewable energy sources. The implementation of these opportunities will allow the company not only to reduce its carbon footprint, but also to strengthen its market position in the context of the global transition to sustainable development.

The result of identification is a register of relevant climate opportunities for JSC NC QazaqGaz. After determining the relevant climate opportunities, the process of qualitative assessment of climate opportunities for JSC NC QazaqGaz is carried out, which includes two main stages: determining the probability of realizing opportunities in the framework of two selected scenarios and assessing the degree

of their positive impact.

Qualitative assessment

Estimating the probability of opportunities being realized

The probability of realizing climate opportunities is assessed in the context of two climate scenarios similar to those used in assessing climate transition risks: SSP126 and SSP245, which includes the analysis of factors such as changes in legislation, the possibility of obtaining state support, and market trends related to the transition to sustainable practices in response to climate challenges.

Based on the analysis, each possibility is assigned a probability score on a scale from 1 to 5, where:

- 1 point corresponds to a probability of implementation of less than 5%.
- 2 points - 5-25%.
- 3 points - 25-40%.
- 4 points - 40-80%.
- 5 points - more than 80%.

Assessment of the degree of positive impact

The degree of impact of a climate opportunity reflects the level of positive impact that the implementation of this opportunity can have on the Company's operations. The indicator of additional sources of capital is used to assess the degree of impact. Given the variety of climate possibilities, the monetary assessment of the impact is individual in nature. This is due to differences in regulations, the level of technological development, and other factors that determine the unique features of each opportunity.

The impact assessment process includes the following steps:

- Develop a methodological approach for calculating the impact of each opportunity, taking into account its unique characteristics.
- Determine the necessary indicators for calculation, including factors and quantitative metrics that affect climate capabilities.
- Conducting a high-level qualitative assessment of the degree of impact based on various scenarios and time horizons, which allows you to take into account various scenarios and dynamics of impact over time.

Each opportunity is assigned a score from 1 to 5, where each score corresponds to a certain degree of positive impact in monetary terms. The gradation of the degree of impact of climate opportunities is similar to that used in the assessment of transient climate risks. Thus, for each opportunity, a specialized evaluation method is developed and applied, taking into account its specific characteristics. The results of the analysis of potential opportunities in the context of climate change are aimed at determining the degree of their positive impact and the probability of implementation.

It should be noted that not all identified climate opportunities have been qualitatively evaluated due to the lack of data and forecasts required for the assessment, for example, the possibility of increasing revenue due to increased gas demand caused by the replacement of coal with gas as part of the energy transition and the transition of coal-fired thermal power plants to gas in large cities of gasified regions of the Republic of Kazakhstan.

For the qualitative assessment, SSP126 and SSP245 scenarios were used, similar to those used in the assessment of transient climate risks. Climate opportunity analysis is a key component on short -, medium -, and long-term time horizons in various climate scenarios.

Table 15. Methods for assessing climate opportunities

Opportunity	Data for calculating the degree of impact in monetary terms
Efficient use of resources	
Reducing costs by increasing the efficiency of production and sales processes through the introduction of energy-efficient solutions	1) Action Plan for energy conservation and energy efficiency improvement of ICA LLP for 2021-2025 2) Action Plan for energy conservation and energy efficiency improvement of AGP LLP for 2023-2027 3) Action plan for energy conservation and energy efficiency improvement of KGA LLP for 2021-2025
Sources of energy	
Reducing the cost of implementing renewable energy technologies by receiving subsidies	1) Resolution of the Government of the Republic of Kazakhstan on approval of the Rules for granting investment subsidies 2) Cost of building renewable energy stations
Increase in revenue from the production and sale of renewable energy	1) Price per kWh for wind farms and SES 2) A benchmark for renewable energy projects of the reference group companies
Products and services	
Increase in revenue from the production and sale of "green and blue hydrogen"	1) Project for production and distribution of "green" hydrogen in the Mangystau region for 2 million tons by 2027-2031. 2) Cost of hydrogen
Increase in revenue from the sale of carbon units received as part of the implementation of climate projects	1) A forest-climatic project of a 1000-hectare forest stand aimed at producing carbon units 2) Cost of 1 carbon unit
Increased revenue from the provision of services for the transportation of trapped CO2 as part of the development of the carbon capture, storage and transportation system (CCUS), as well as for the transportation of biomethane and biogas. QazaqGaz can transport biomethane/biogas to end-users as a low-carbon alternative to traditional natural gas.	1) IEA forecast on the volume of international transit 2) Cost of transporting and storing CO2 3) CBM reserves in the country
Sustainability	
Increased investment attractiveness due to obtaining green financing (obtaining green loans) in the implementation of decarbonization projects (renewable energy sources, modernization of buildings and equipment, introduction of energy-efficient equipment)	1) Estimated green loan rate 2) Estimated cost of renewable energy projects
Increased investment attractiveness of the Company in connection with obtaining the GGCS (Green Gas Certification Scheme) certificate	1) Income of JSC NC QazaqGaz from financial investments 2) IEA forecast for global investments in clean energy
Lower costs due to rising temperatures, as heating costs for facilities and equipment will be reduced.	1) CMIP6 model ensemble data 2) Electricity, heating, cooling and steam purchased for consumption, GJ 3) Volume of own production of electricity, heating, cooling, GJ 4) Specific energy intensity of JSC NC QazaqGaz for 2019-2021, GJ/thousand tenge

Considering climate opportunities in both scenarios allows us to assess their significance and potential impact over different time periods, providing a deeper understanding of possible trends and opportunities related to climate change. Scenario analysis is a key tool for identifying different development prospects, regardless of the specific future scenario, which provides valuable information for making informed decisions in the field of climate policy and planning. In each of the scenarios considered, the Company can identify potential opportunities depending on future development trends. It is important to note that some of these opportunities acquire more significant benefits depending on the specific time frame. The results of the scenario analysis revealed both general trends and features that characterize the dynamics of climate opportunities for JSC NC QazaqGaz.

Quantitative assessment

Quantitative assessment of transition opportunities for JSC NC QazaqGaz was carried out within the framework of an integrated approach, which included several stages and the use of specialized tools. The main steps in conducting the assessment are:

Identification of transition opportunities

Six key opportunities were identified, of which four were quantified. These opportunities included increased revenue from the sale of carbon units, transportation of captured CO_2, use of biogas, and the introduction of low-carbon technologies.

Using scenario analysis

The International Energy Agency (IEA) scenarios - NZE (Net Zero Emissions) and APS (Announced Pledges Scenario) - were used to assess opportunities Scenario.

Both scenarios were applied in three-time horizons:

- Short-term (until 2030),
- Medium-term (2031-2050),
- Long-term (after 2050).

Data collection

Various data sources were used to evaluate opportunities. First of all, the company's internal data was used, including information on current operating processes, production costs, investments and project initiatives. Additionally, forecasts and scenarios from the International Energy Agency (IEA), as well as analytical data from national news agencies, were used. An important role was played by retrospective and forecast indicators reflecting climate and market trends, as well as long-term forecasts of energy development and changes in gas demand.

Calculating the impact of opportunities

Based on the collected data, the financial effects of transition opportunities were calculated. The capital expenditure forecast covered the costs of implementing low-carbon technologies, such as building renewable energy plants, repairing compressors, and implementing automated gas flow management systems. Revenue estimates considered revenue from the sale of carbon units (CU), biogas transportation, and the use of carbon capture and storage technologies (CCUS), while in the IEA NZE scenario, revenue from the sale of CUS was projected to be higher due to higher prices for carbon credits. Changes in consumer preferences and market demand for low-carbon energy sources, including “green” and “blue” hydrogen, biomethane and natural gas, were also analyzed.

Periodic revaluation

To meet changing conditions, opportunities are re-evaluated annually and new ones are identified, which allows the company to adapt its strategy to the dynamically changing requirements of the climate agenda.

4.4. Regular monitoring of climate risks and opportunities

JSC NC QazaqGaz has implemented a comprehensive corporate risk management system (CRMS), which provides regular identification, assessment and monitoring of climate risks. As part of the integration of climate factors into CSR, modern approaches to risk management are applied, which makes it possible to take into account both their physical and transitional aspects. The monitoring process aims to minimize the risks and opportunities associated with climate change, taking into account international standards such as IFRS S2 and the UN Sustainable Development Goals (SDG 13).

The process of monitoring climate risks in Kazakhstan includes regular analysis of key risk indicators, such asincreasing carbon footprint. The HSE Department plays a key role in coordinating and identifying climate risks. Physical risks are identified at the level of subsidiaries and affiliates, taking into account the specifics of their operations, and transition risks are analyzed at the level of the entire company.

The Board of Directors is responsible for ensuring the effective functioning of CRMS by approving measures and strategies for managing climate risks. On a quarterly basis, the sustainability and risk management committees receive reports on progress in climate risk management, which allows for timely adjustments. Annual reports are presented at meetings of the Board of Directors to ensure strategic control.

The climate risk management process is closely integrated into the company's strategic management. Climate aspects are taken into account when making decisions regarding financial and operational processes, as well as in the framework of the Net Zero strategy. Regular internal and external audits confirm the accuracy of the data and the effectiveness of the measures.

To ensure transparency, the Company regularly updates its climate risk data and disclosures to stakeholders. Emission reduction reports are reviewed by third-party experts, which allows an objective assessment of progress in achieving environmental impact reduction goals. These results are regularly presented to the Board of Directors and stakeholders, providing a comprehensive assessment of the company's sustainability. The integration of climate factors into CRMS makes the climate risk management process more systematic and strategically focused, which contributes to the company's long-term sustainability.

5. Metrics and goals

5.1. Quantitative indicators for greenhouse gas emissions

JSC NC QazaqGaz is aware of the importance of proper accounting and analysis of greenhouse gas emissions to assess the impact of its activities on the environment. As part of its efforts to reduce its carbon footprint and achieve climate goals, the Company regularly monitors and reports выбросов greenhouse gas emissions, which provides an objective understanding экологического воздействия of the Company's environmental impact. This section provides quantitative indicators of greenhouse gas emissions that serve as a basis for developing and implementing measures to их reduce and adapt to climate change. The Company has developed the climate risk management program that takes into account climate goals and promotes the integration of sustainable development measures into operational activities.

5.1.1. Methodology for calculating greenhouse gas emissions

The Environmental Code of the Republic of Kazakhstan provides for mandatory monitoring, reporting and verification of greenhouse gas emissions. The National Carbon Allocation Plan sets limits on carbon dioxide emissions of quota entities, with a threshold value of 20 thousand tons of CO_2-eq. per year. In accordance with Article 289 of the Environmental Code of the Republic of Kazakhstan, objects of individual subsidiaries and dependent organizations of JSC NC QazaqGaz are subjects of carbon quotas, and data on Scope 1 emissions are recorded in the state carbon cadastre for further disclosure in annual reports, which is part of the country's obligations under international agreements. Within the framework of the climate risk management program, an analysis of calculations of greenhouse gas emissions of JSC NC QazaqGaz in the main areas of the Company's activities (main transportation, exploration, production and distribution of gas) was carried out.

The consolidated accounting group of JSC NC QazaqGaz includes entities whose financial information is included in the annual financial statements, including the parent company and its subsidiaries. At the same time, five key subsidiaries (QazaqGaz Exploration and Production LLP, QazaqGaz, Intergas Central Asia JSC, Asian Gas Pipeline LLP, Beineu-Shymkent Gas Pipeline LLP and QazaqGaz Aimaq JSC) are the main sources of greenhouse gas emissions and have a significant impact on the Company's overall carbon footprint. The Company's approach to forming a consolidated accounting group is based on the control and ownership criteria set out in IFRS standards, with the inclusion of entities under control defined as owning more than 50% of the voting rights.

To ensure the accuracy of calculations, the Company adheres to recognized international standards, which makes it possible to account for emissions in a more comprehensive manner. Among the standards used are:

- The greenhouse gas Protocol: Scope 2 Guidance, which provides a methodology for calculating indirect emissions (Scope 2), and offers two approaches – “location-based” (geographical location method) and “market-based” (market-based) - for accounting for emissions associated with energy purchased from the grid.
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), which sets out principles and requirements for calculating Scope 1 and Scope 2 emissions, and guides companies to present their emissions data in a structured and transparent manner.
- IPCC National Greenhouse Gas Inventory Manual, 2006, which provides standardized methodologies for national emission inventory, including calculations for different sources and activities.
- The Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Standard, covering Scope 3 emissions 3 across the entire company's value chain, including suppliers and consumers.
- ISO 14064-1, which defines requirements and recommendations for measuring and reporting greenhouse gas emissions at the organization level, and focuses on estimating emissions and actions to reduce them.
- List of benchmarks in regulated sectors of the economy in accordance with the Order of the Acting Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan No. 260 dated July 19, 2021, establishing regulatory emission factors and benchmarks for the sectors of the economy

subject to GHG emissions regulation.

Methodology for calculating direct emissions (Scope 1)

For calculating direct greenhouse gas emissions (Scope 1) JSC NC QazaqGaz applies official methods approved by the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan. To ensure accurate reflection of operating conditions, calculations are based on data on the density, calorific value and composition of gas provided by subsidiaries based on gas quality certificates. To account for methane (CH_4) and nitrous oxide (N_2O) emissions, the Company follows the IPCC Guidelines for the National Greenhouse Gas Inventory (2006), applying Global Warming Potentials (GWP) according to the IPCC Fifth Assessment Report. For unorganized emissions, QazaqGaz applies the Tier 1 IPCC methodology. The changes made to Order No. 9 made it possible to standardize emission factors for all subsidiaries, especially in cases where there are no instrumental measurements during gas transportation and storage. In such cases, calculations are based on international approaches using industry-average emission factors typical of developed countries.

Methodology for calculating indirect energy emissions (Scope 2):

Starting from July 1, 2023, due to the introduction of the Single Electricity Buyer model, Scope 2 calculation is performed exclusively using the location-based approach method approach). The transition to this method is due to the lack of data from electricity suppliers on specific types of fuel used for generation, which excludes the possibility of using a market-based approach. As a result, national emission factors are used for calculations based on the country's fuel balance structure. Calculations are based on the volume of consumed electricity and heat purchased from the national grid, taking into account data provided by five subsidiaries of JSC NC QazaqGaz. Applicable emission factors: 0.484 t CO_2-eq./Gcal for thermal energy and 0.7905179051 t CO_2-eq./MWh for electricity. Kazakhstan's energy mix, which is heavily dependent on coal, affects the overall emission factor.

Methodology for calculating indirect non-energy emissions (Scope 3):

JSC NC QazaqGaz calculated Scope 3 emissions only for category 11. However, as part of the expansion of coverage, the Company added additional categories 1, 6, and 7 to the assessment, each of which requires a unique approach to calculation. These categories are identified as key sources of greenhouse gas emissions in the oil and gas industry, as they have a significant impact on total emissions according to the CDP Technical Note: Relevance of Scope 3 categories by sector. For categories 1, 6, and 7, 2023 was chosen as the base year, when a complete inventory and quantification was first performed for these categories.

1. Category 1 emission calculations (purchased goods and services) are based on an analysis of the life cycle of goods and services, including the stages of extraction, production and transportation. Emission factors and methodologies from the "Practical Guide for Calculating GHG Emissions" and the Climatiq database were used. In the absence of data for Kazakhstan, global coefficients were applied.
2. For category 6 (business trips), calculations were made based on routes and modes of transport, using methodologies and coefficients from the European Environment Agency and Statista. Data on travel routes and destinations were collected from employees, and emissions were calculated based on distance traveled and emission factors for each mode of transport.
3. In category 7 (employee commute), calculations are based on the average distance traveled and types of transport, such as cars and buses. The methodology includes the Haversine formula for estimating distances, emission factors from Statista and perevozka24, and data on average vehicle loading. The calculations used national statistics on working days for 2023.
4. For category 11 (use of products sold), the base year was 2021, when the full inventory was first taken. The methodology complies with GHG Protocol standards for "Use of Products Sold" and is based on the volumes of gas and condensate produced. Standard emission factors for CH_4 and N_2O in the GHG Protocol and IPCC guidelines, as well as GWP values from the IPCC Fifth Assessment Report, are used

to convert emissions to CO_2 equivalents.

Methodology for calculating methane leaks

In the reporting year, methanek метана (CH_4) leakage was calculated), as it is a key component of QazaqGaz Group's emissions, which has a high global warming potential. Since the main production activity of the company is related to the transportation and distribution of natural gas through a network of gas pipelines, the main methane emissions are associated with various types of leaks and technical lossesь of natural gas during the implementation of its main production activities.

According to the methodology of the Intergovernmental Panel on Climate Change (IPCC 2006 Guidelines), the following categories of fugutive emissions are included in the greenhouse gas inventory:

- natural gas flaring;
- gas production emissions;
- emissions from gas transportation;
- emissions from natural gas distribution;
- technological losses and venting of gas.

Methodology for calculating the consumption of fuel and energy resources

As part of the preparation of the Low-carbon Development Program in 2024, an analysis of the structure of consumption of fuel and energy resources (FER) of JSC NC QazaqGaz in the context of subsidiaries included in the calculated perimeter was carried out.

Conversion coefficients are used for correct comparison of different types of energy carriers. In particular, the following applies: conversion factor for natural gas (39 GJ for thousand m3 of gas), density values for gasoline and diesel fuel (1300 l/t for diesel fuel and 1370 l/t for gasoline), used in calculations of JSC NC QazaqGaz, as well as universal reference values for recalculation electricity and heat in GJ (4.1868 GJ for 1 Gcal and 3.6 GJ for thousand kWh).

The energy structure of affiliated subsidiaries consumption is mainly based on the use of natural gas, which is used both for the operation of production equipment (including gas pumping units at compressor stations) and for generating heat and electricity at their own facilities.

To avoid double counting, when determining the total energy consumption, only primary fuels were taken into account: natural gas, diesel fuel and gasoline. The amount of heat and electricity generated within subsidiaries and affiliates, as well as purchased energy and technical gas losses, were not included in the calculation.

Domestic carbon price

In addition, in order to maintain responsibility in managing emissions, JSC NC QazaqGaz is committed to proactively managing the internal carbon price in accordance with the company's climate goals and objectives, as well as with the requirements of the Kazakhstan Emissions Trading System (ETS). This process includes:

1. Annual reviews of the domestic carbon price, with additional estimates made when there are significant regulatory or market changes.
2. Accurately track greenhouse gas emissions across all business units to apply internal collection.
3. Engage with internal stakeholders to ensure that the carbon price reflects environmental and financial considerations.

The internal price covers 98% of Scope 1 emissions, which highlights the Company's strategic approach to managing its carbon footprint. As a leading gas company in Kazakhstan with operations in Amangeldy and Zharkum, QazaqGaz has significant potential to contribute to national and global decarbonization efforts. The integration of an internal carbon price has a significant impact on the

Company's key business decisions, allowing it to direct capital investment to lower carbon footprint projects such as hydrogen production, which helps reduce its reliance on carbon-intensive energy sources. In addition, this approach encourages business units to improve operational efficiency, which leads to initiatives to optimize gas compression and processing systems, as well as the introduction of energy-saving technologies.

5.1.2. Analysis of current greenhouse gas emissions Scope 1,2,3,

JSC NC QazaqGaz calculates greenhouse gas emissions in the areas of Scope 1, 2 and 3 within the framework of a systematic approach to managing the carbon footprint and climate risks. The data obtained serve as the basis for a comprehensive analysis of emissions, including detailed quantitative indicators. These results form the basis for developing targeted measures to reduce carbon intensity and integrate climate aspects into the Company's strategic planning.

The main categories of greenhouse gas emissions under Scope 1 for JSC NC QazaqGaz include stationary incineration, fugitive emissions and solid waste disposal. In the category of stationary combustion, the main sources of emissions are installations such as generators and turbo expanders used to support technological processes. Fugitive emissions occur at various stages of the production cycle. In particular, leaks and technological losses are recorded during gas transportation. The most significant contributions to this category are made by AGPS and ICAS, where leaks occur during transportation, as well as CGA, where emissions are generated during gas distribution. The category of solid waste disposal mainly refers to EP that manage landfills for waste disposal that require proper control of greenhouse emissions.

Thus, key sources of fugitive emissions include:

- gas transportation emissions,
- technological gas losses (unorganized emissions),
- gas leaks,
- emissions related to gas distribution.

Table 16. Greenhouse gas emissions Scope 1 JSC NC QazaqGaz by sources of emissions, tCO2-eq., 2024

Gas type	Stationary combustion	Flaring	Unorganized (fugitive) emissions	Other (disposal of solid waste)
CO2	2 403 123,84	0,89	1 014,25	-
CH4	42,54	0,02	45 572,24	1,85
N2O	1 121,55	0,001	-	-
Total by Scope 1	2 405 432,42	**0,91**	**1 277 151,54**	**51,84**

Table 17. Gross greenhouse gas emissions of JSC NC QazaqGaz, 2022-2024

Greenhouse gas emissions	Units	2022	2023	2024
Emissions Scope 1:	**metric tons CO2e**	**3 607 759,806**	**3 694 858,903**	**3 682 630,647**
CO2	metric tons CO2	2 205 324,1	2 218 645,53	2 404 253,66

CH4	metric tons CO2e	1 401 396,58	1 475 168,17	1 277 260,46
N2O	metric tons CO2	1 039,12	1 045,2	1 121,59
Emissions Scope 2 (geographical location method)	**metric tons CO2e**	**65 077,256**	**59 347,57**	**51 406,954**
Emissions Scope 3:	**metric tons CO2**	**614 144,232**	**625 477,276**	**868 193,04**
category 1: Purchase of goods and services	metric tons CO2e	N/A	24 832,957	225 716,14
category 6: Business trips of employees	metric tons CO2	N/A	640,685	3 039,42
category 7: Employee trips to work	metric tons CO2e	N/A	1 764,783	15 638,69
category 11: Use of products sold	metric tons CO2	614 144,232	598 238,851	623 798,80
Total emissions (Scope 1+Scope 2+ Scope 3)	**metric tons CO2**	**4 286 981,294**	**4 379 683,749**	**4 602 230,644**

In the period from2022 to 2024, the total greenhouse gas emissions of JSC NC QazaqGaz (Scope 1 and Scope 2) showed a steady upward trend, reflecting an increase in the scale of gas transportation, an increase in technological losses and an expansion of infrastructure. By the end of 2024, gross emissions amounted to 3 734 037,6 tCO_2, of which Scope 1 accounted for 3 682 630,647 tCO_2 (98.7%), and Scope 2 – 51 406,954 tCO_2 (1,3%).

Volumes of greenhouse gas emissions (Scope 1)

Direct greenhouse gas emissions make up the bulk of the company's carbon footprint. The main sources are fuel combustion at compressor stations, flare emissions and gas leaks during transportation and distribution. The increase in emissions in 2024 was due to a number of factors, including a non-linear relationship between the volume of gas transported and the level of fuel consumption. In particular, JSC QazaqGaz Aimaq and Beineu-Shymkent Gas Pipeline LLP recorded an increase in the transported volume, which led to an increase in emissions, while Intergas Central Asia JSC and Asian Gas Pipeline LLP experienced a decrease.

The increase in fugitive emissions was also recorded, especially in the distribution networks of JSC QazaqGaz Aimaq, which indicates the potential for reducing specific gas emissions per kilometer of the pipeline's length, as well as optimizing equipment operation modes and carrying out preventive measures. According to the data for 2024, the largest increase in emissions was recorded at Beineu-Shymkent Gas Pipeline LLP by +53.44% compared to 202.22, due to the transfer of the Karaozek compressor station from Intergas Central Asia JSC and a significant increase in production indicators of natural gas transportation volumes in the period 2022-2024. JSC QazaqGaz Aimaq emissions increased by 15.34% due to an increase in technological gas losses. At the same time, Asian Gas Pipeline LLP recorded a 5.23% reduction in emissions due to reduced transportation volumes and fuel consumption.

Indirect greenhouse gas emissions (Scope 2)

Indirect greenhouse gas emissions remain at a low level (1.06% of total emissions in Scope 1, 2, 3), which is explained by the high share of autonomous gas power supply to facilities. In 2024, the Scope 2 category recorded a 13,4% reduction in emissions compared to the previous period, which is due to the transition to a new location-based approach due to the introduction of a Single Electricity Buyer in the Republic of Kazakhstan from July 1, 2023.

Greenhouse gas emissions by affiliates

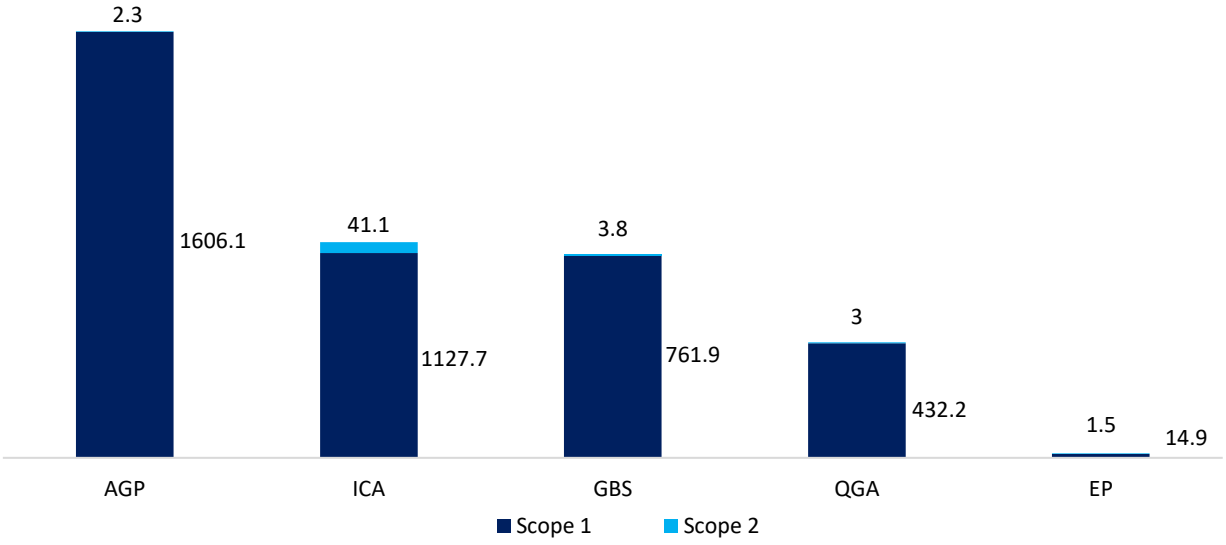
In the context of affiliates, a significant contribution to the direct and indirect emissions of JSC NC QazaqGaz is made by the operator of the Kazakhstan-China main gas pipeline – Asian Gas Pipeline LLP. The greenhouse gas emissions of this subsidiary in 2024 amounted to 1 608.2 thousand t CO_2-eq., which is 43.1% of the total emissions of JSC NC QazaqGaz. The main part of the subsidiary's emissions is accounted for by 13 compressor stations and 6 gas distribution stations, including unorganized emissions from gas transportation via the Kazakhstan-China gas pipeline.

Intergas Central Asia JSC makes the second largest contribution to the total amount of greenhouse gas emissions. This subsidiary has a significant length of gas pipelines, including two networks: the Western Pipeline Network and the Southern Pipeline Network. Along the entire length of these gas pipelines, there are 28 compressor stations and 305 gas compressor stations and many gas turbine units. Greenhouse gas emissions of this subsidiary in 2024 amounted to 813,45 thousand tCO_2-eq., which is 21.8% of the total emissions of JSC NC QazaqGaz.

The third affiliate in terms of contribution to the total amount of greenhouse gas emissions is the largest pipeline gas pipeline, which belongs to the Beineu-Shymkent Gas Pipeline LLP. The greenhouse gas emissions of subsidiaries and affiliates in 2024 amounted to 766.457 thousand tCO_2-eq., which is 20.5 % of the total emissions of JSC NC QazaqGaz. High greenhouse gas emissions from 6 compressor stations and 3 gas distribution stations, including fugitive emissions from gas transportation via the Beineu-Bozoi-Shymkent gas pipeline.

JSC QazaqGaz Aymaq and QazaqGaz Exploration and Production LLP collectively demonstrate the lowest emission values in the company's total emissions structure. The emissions of QazaqGaz Aymaq JSC – 529.267 thousand tCO_2-eq. (14,2%), and QazaqGaz Exploration and Production - only 16.66 thousand tCO_2-eq. (0,4%).

Figure 7. Volume of greenhouse gas emissions in 2024 in the context of subsidiaries and affiliates of JSC NC QazaqGaz, thousand tCO_2-eq.



Specific greenhouse gas emissions

In order to increase transparency and efficiency of climate impact management, JSC NC QazaqGaz monitors specific greenhouse gas emissions by subsidiaries, which allows identifying key sources of emissions and assessing the dynamics of the carbon intensity of operating activities in each direction. Between 2022 and 2024, ICA is experiencing a reduction in specific greenhouse gas emissions. At the same time, AGP recorded a moderate increase in the indicator for the same period. For BSGP, specific emissions show the most noticeable increase among all directions. CGA indicators remain stable with minimal deviations. In the Exploration and Production segment, the values have remained virtually unchanged for three years.

Table 18. Specific emissions of JSC NC QazaqGaz, tCO2-eq./GJ (fuel consumption)

Indicators	2022	2023	2024
Intergas Central Asia	0,042	0,044	0,033
Asian Gas Pipeline	0,146	0,132	0,135
Beineu-Shymkent Gas Pipeline	0,064	0,065	0,063
QazaqGaz Aimaq	3,266	3,307	4,610
Exploration and production	0,508	0,441	0,534

Methane leak analysis

JSC NC QazaqGaz maintains a systematic accounting and analysis of methane leaks in the context of subsidiaries, which allows you to track the most vulnerable infrastructure areas, evaluate the effectiveness of technical measures taken and form priority areas for reducing fugitive emissions.

The total methane emissions of QazaqGaz Group in 2024 amounted to 45 616,44 tons. In 2023, the indicator increased to 52 643,91 tCH_4, which corresponds to decrease of 13.35% compared to the previous year.

Figure 11. Dynamics of methane emissions of JSC NC QazaqGaz for 2022-2024, in tCN4

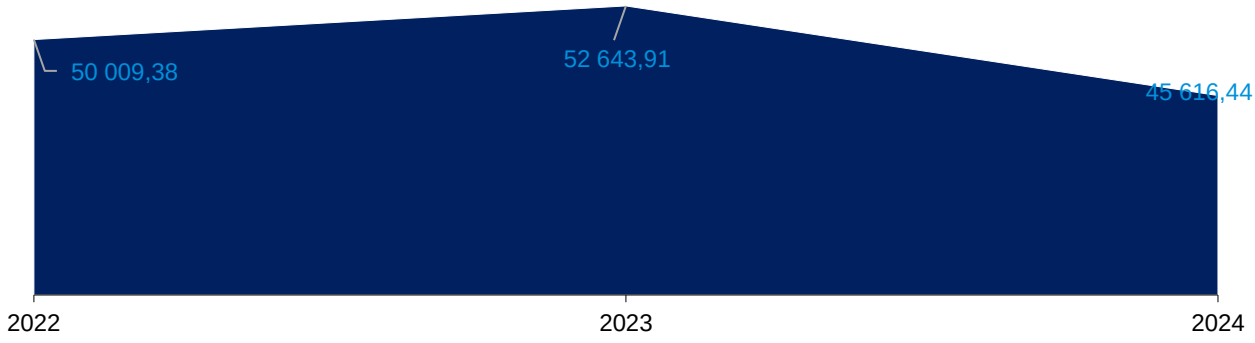
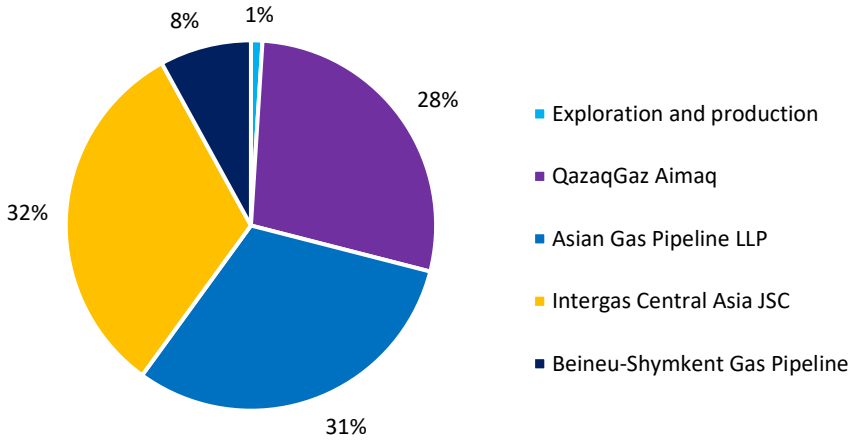


Figure 12. Structure of methane emissions by QazaqGaz subsidiaries and affiliates for 2024, in %



The largest methane emissions are generated by three companies: Intergas Central Asia JSC (17,737 tCH4), Asian Gas Pipeline LLP (17 272 tCH4) and QazaqGaz Aimaq JSC (15 200 tCH4). These organizations account for a combined 91.06% of all QazaqGaz Group methane emissions in 2024.

At ICA, increased emissions are associated with leaks during transportation and technical losses (venting of gas during repair work and maintenance). maintenance) at compressor stations due to the high technical wear and tear of the main process equipment. In AGP, methane emissions are mainly associated with technical losses from gas distribution in the main gas pipeline system. In the case of QGA, methane leaks are attributed to technological gas losses during the operation of an extended system of distribution networks that supply gas to end users.

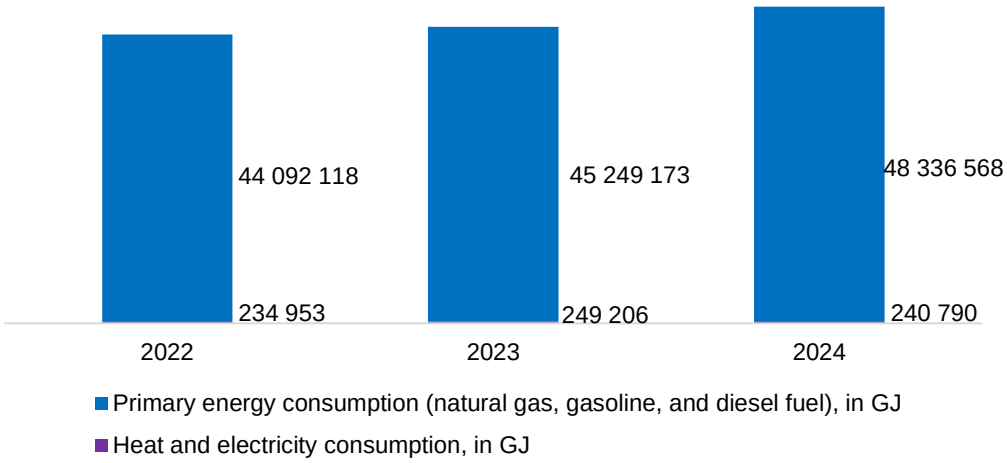
Analysis of the energy consumption structure

To ensure transparency in the management of energy resources and assess the carbon intensity of production processes, an analysis of the structure and volume of energy consumption of JSC NC QazaqGaz for 2024 was carried out, taking into account the dynamics for previous periods and in the context of the types of energy resources used.

The main share in the structure of energy consumption of JSC NC QazaqGaz is accounted for by natural gas - only 97.4% according to data for 2024. For the period of 2022-2023, the share of natural gas in the total structure of energy consumption varied in the range from 99.33% to 99.35%, that is, over the analyzed period of time, the dynamics of changes in the structure of energy consumption is insignificant and natural gas accounts for the overwhelming share of energy consumption.

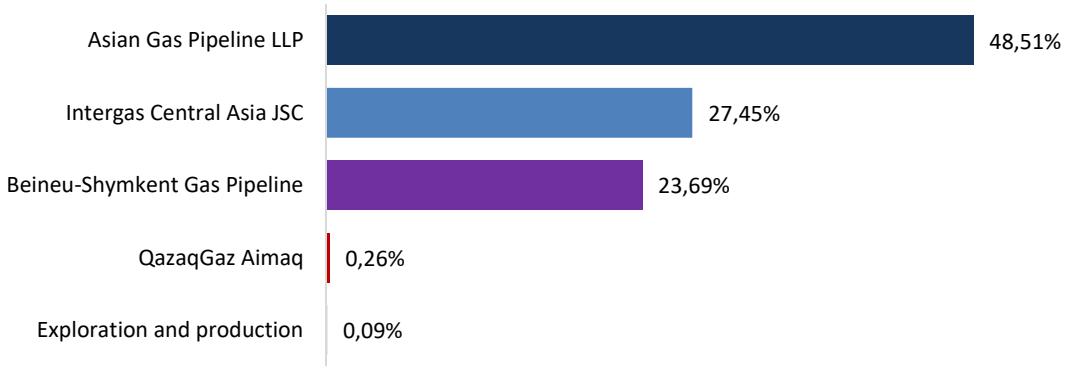
The total energy consumption of the source energy resources (natural gas, diesel fuel, and gasoline) in 2024 was 48 577 358 GJ. The increase in energy consumption in 2024 compared to 2023 was 6.77%, which is due to an increase in production volumes: the amount of gas transported increased (in ICA and AGP), and therefore the consumption of energy resources (mainly natural gas) necessary to ensure the operation of production equipment increased.

Figure 131. Dynamics of energy consumption of JSC NC QazaqGaz for the period 2022-2024, in GJ



Based on the analysis, it can be concluded that more than 99% of the energy consumption from the 5 subsidiaries and affiliates included in the scope of operation is accounted for by AGP, ICA and BSGP: 48.6%, 27.5% and 23.5%, respectively. The share of QGA and EP accounts for less than 1% of fuel and energy complex consumption in the total structure.

Figure 14. Shares of QazaqGaz subsidiaries and affiliates in the structure of energy consumption in 2024, in %



Implemented activities

In 2024, the Company implemented a number of measures that resulted in a reduction in greenhouse gas emissions. Key measures included:

- Lower temperatures at night, weekends and holidays in administrative and industrial premises (saving 637 thousand m³).
- Use of the system of flushing the flow part of the compressors of GPA No. 1, 4, 7 Opornoye (saving 3059 thousand m³).
- Overhaul of the NK-12 CT engine (3 units of GPA) DKS (savings of 1240 thousand m³).
- Replacement of leaky shut-off valves to eliminate leaks (saving 134 thousand m³).
- Optimization of compressor station loading (saving 5840 thousand m³).
- Replacement of obsolete boilers with modern energy-efficient boilers (saving 60 thousand m³), etc.

5.2. Current climate change goals

In the Development Strategy of JSC NC QazaqGaz until 2032, an important goal in the field of energy efficiency, decarbonization and combating climate change at the national level and the Samruk-Kazyna Fund is to reduce the carbon footprint, so the company aims to reduce greenhouse gas emissions (Scope 1 and Scope 2) to 10-12% by 2032 from the level of 2021, according to the Strategy for achieving carbon neutrality of the Republic of Kazakhstan until 2060, as well as the Concept of Low-carbon Development of JSC Samruk-Kazyna.

Since the Low-carbon Development Program of JSC NC QazaqGaz until 2033 is based, among other things, on the Development Strategy of JSC NC QazaqGaz until 2032, as well as on the Concept of Low-carbon Development of Samruk-Kazyna, the quantitative parameters for reducing GHG emissions for JSC NC QazaqGaz correspond to each other.

5.2.1. GHG emission reduction targets Scope 1, 2 and key tools for their achieving

As part of the Low-Carbon Development Program, the company has set targets for reducing GHG emissions by 10% by 2033 compared to the base year of 2021. Specific GHG emissions are used as targets (the ratio of direct GHG emissions in tCO2-eq. consumption of fuel and energy resources in GJ), as GHG emissions will also increase, taking into account the projected growth in energy consumption and production indicators.

Four decarbonization scenarios are envisaged to set targets for reducing greenhouse gas emissions.: "Basic scenario", "Green Development scenario", "Deep Decarbonization scenario" and "Industrial Development scenario".

The baseline scenario assumes maintaining current technological parameters without implementing climate initiatives. Development follows the "business as usual" principle-without new investments in reducing emissions, while maintaining the structure of energy consumption and dependence on fossil sources. The forecast reflects a gradual increase in emissions due to the expansion of operations and energy consumption. By 2033, direct emissions are expected to increase by 18.5% compared to 2021. At the same time, the volume of Scope 2 emissions remains at the level of 2024 due to a reduction in the carbon intensity of electricity supply.

The "green" development scenario is aimed at maintaining specific direct emissions (Scope 1) at the level of 2021, despite the increase in energy consumption. The goal is achieved through the implementation of 20 technical measures, including the modernization and repair of basic technological equipment, the introduction of more energy-efficient equipment, automation and digitalization of processes, and the introduction of renewable energy sources.

The deep decarbonization scenario reflects the most ambitious approach aligned with the goals of the Paris Agreement. It includes 22 actions of technical, organizational and compensatory measures. In contrast to the "green" development scenario, climate projects, the purchase of carbon offsets and I-REC certificates are also provided for. It is expected to reduce specific direct emissions by 10% and indirect emissions (Scope 2) – by 33% by 2033 compared to 2021.

The production development scenario is focused on infrastructure expansion: commissioning of new gas pipelines, processing facilities and fields. The forecast is based on project data, which may differ from the actual data after implementation. According to calculations, when implementing new projects, specific emissions are projected to decrease by 3.7-2% compared to the level of 2021.

Since the beginning of this year, the Company has been actively implementing measures within the framework of the set climate goals. Each affiliated subsidiary develops low-carbon development programs that are tailored to their operational needs. At the same time, a detailed plan is being developed to increase the share of renewable energy sources in the energy mix, with an emphasis on reducing greenhouse gas

emissions. The production and technical department, the procurement department and the energy Service are involved in the implementation of these measures.

Table 19. Target indicators of JSC NC QazaqGaz in the context of scenarios in relation to the levels of 2021

Scenario	Scope 1	Scope 2
Basic scenario	18,5%↑	-
Scenario of "green" development	0,39%↓	-
Scenario of deep decarbonization	10%↓	33%↓
Production development scenario	3,72%↓	

JSC NC QazaqGaz consistently improves the system of reporting and assessment of climate indicators, striving to maintain a high CDP rating and reduce specific greenhouse gas emissions. These efforts are consistent with Kazakhstan's national strategy for achieving carbon neutrality by 2060, as well as with Samruk-Kazyna Foundation's Concept of Low-carbon Development. Reducing the carbon footprint is an integral part of the Company's sustainable development strategy, which focuses on gradual decarbonization and improving environmental efficiency.

6. Finding

6.1. Index of disclosure of information on IFRS S2

Recommended disclosures under IFRS S2			
Management			
Disclose the entity's policies regarding potential climate-related risks and opportunities	a) Management body (-s) (board of directors, committee, or similar body responsible for governance) or person (s) responsible for overseeing climate risks and opportunities	1. How responsibility for climate risks and opportunities is reflected in the regulations, mandates, job descriptions and other related documents applicable to this body or person	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
		2. How does the body(s) or individual(s) determine whether appropriate skills and competencies are available or needed to oversee strategies aimed at managing climate risks and opportunities	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
		3. How and how often the authority(s) or person(s) is informed about climate-related risks and opportunities	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
		4. How this body(s) or individual(s) considers climate risks and opportunities when overseeing the organization's strategy, major transaction decision-making, and risk management and related policies, including consideration of trade-offs associated with these risks and opportunities	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
		5. How does the authority(s) or individual (s) monitor the setting of targets related to climate-related risks and opportunities and monitor progress towards achieving these targets, including whether the relevant performance indicators are included in the remuneration policy and how	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
	b) Role of management in governance processes, controls, and procedures used to monitor, manage, and oversee climate risks and opportunities.	I.Is the role delegated to a specific management-level position or committee, and how is the oversight of that position or committee	2.1. Defining the role of the supreme governing body onclimate change (on page 13)
		II. Does management use controls and procedures to support oversight of climate-related risks and opportunities and, if so, how are these controls and procedures integrated with other internal functions	2.1. Defining the role of the supreme governing body on climate change (on page 13)
Strategy			
Disclose the actual and potential impact of climate-related risks and opportunities on the organization's operations, strategy, and financial planning, if such information is material	**Climate-related risks and opportunities**		
	a) Climate risks and opportunities that may affect the Company's prospects		3.1.Scenario analysis (on page 19) **Ошибка! Источник ссылки не найден.**. Climate risks on page 22)
	b) Explain, for each climate risk identified by the organization, whether the organization considers the risk to be physical or transient		3.2. Climate risks on page 22)

	c) Specify for each climate risk and opportunity identified by the organization over which time horizons (short, medium, or long-term) the effects of each climate risk can reasonably be expected to occur climate risk and opportunities		3.2. Climate risks on page 22)
	d) Explain how the organization defines " short-term," "medium-term," and "long-term" perspectives, and how these definitions relate to the planning horizons used by the organization to make strategic decisions.		3.2. Climate risks (page 18)
	Business model and value chain		
	a) Describe the current and expected impacts of climate risks and opportunities on the organization's business model and value chain.		3.2. Climate risks (page 18) 3.3 Climate opportunities (page 33)
	b) Description of where climate risks and opportunities are concentrated in the organization's business model and value chain		3.2. Climate risks (page 18) 3.3 Climate opportunities (page 33)
	Strategy and decision-making		
	a) Information about how the organization has responded and plans to respond to climate risks and opportunities in its strategy and decision-making, including how the organization plans to achieve any climate goals it has set and any goals it is required to achieve under law or regulation	I. Current and expected changes in the organization's business model, including the allocation of its resources, to address climate risks and opportunities	3.4 Climate Risk Management Program (page 33)
		II. Current and expected direct mitigation and adaptation efforts (e.g., through changes in production processes or equipment, relocation of facilities, workforce adjustments, and changes in product characteristics)	
		III. Current and expected indirect mitigation and adaptation efforts (e.g., through customer and supply chain engagement)	3.4 Climate Risk Management Program (page 33)
		IV. Any climate change transition plan that the organization has, including information about the key assumptions used in developing its transition plan and the dependencies on which the organization's transition plan is based.	
		V. How does the organization plan to achieve its climate-related goals, including goals to reduce greenhouse gas emissions	3.4 Climate Risk Management Program (page 33)

	(b) Information on how the organization provides resources and plans to provide resources for the activities disclosed in accordance with paragraph (a)		Not available
	(c) Quantitative and qualitative information on progress in implementing plans disclosed in previous reporting periods in accordance with paragraph (a)		Not available
	Financial position, financial results and other relevant information. cash flows		
	a) The impact of climate-related risks and opportunities on the entity's financial position, financial performance and cash flows for the reporting period (current financial implications).		3.1.1.2. Quantification of physical risks (p. 23) 3.2.2.3. Quantification of transitional risks (p. 27) 3.3.3. Quantification of climatic opportunities (p.32)
	b) The expected impact of climate-related risks and opportunities on the financial position, financial performance and cash flows of the organization in the short, medium and long term, taking into account how climate-related risks and opportunities are integrated into the organization's financial planning.		3.1.1.2. Quantification of physical risks (p. 23) 3.2.2.3. Quantification of transitional risks (p. 27) 3.3.3. Quantification of climatic opportunities (p.32)
	c) How the organization expects its financial position to change in the short, medium and long term, taking into account its climate risk and opportunity management strategy.		3.1.1.2. Quantification of physical risks (p. 23) 3.2.2.3. Quantification of transitional risks (p. 27) 3.3.3. Quantification of climatic opportunities (p.32)
	Resilience to climate change		
	a) Entity's assessment of its resilience to climate change as of the reporting date:	I. Implications, if any, of the organization's assessment for its strategy and business model, including how the organization will have to respond to the impacts identified in the analysis of the climate-related scenario;	3.1.1.2. Qualitative assessment of physical risks (p. 21) 3.2.2.2. Qualitative assessment of transitional risks (p. 26) 3.3.2. Qualitative assessment of climatic opportunities (p. 30)
		II. Significant areas of uncertainty considered when assessing the entity's resilience to climate change;	3.2.1. Physical risks (p. 18) 3.2.2. Transitional risks (p. 25) 3.3. Climatic opportunities (p. 29)

		III. Organization's ability to adapt its strategy and business model to climate change, including the availability of financial resources to respond to climate impacts, the ability to redistribute and modernize assets, and the impact of investments on climate change mitigation, adaptation, and sustainability;	3.1.1.2. Quantification of physical risks (p. 23) 3.2.2.3. Quantification of transitional risks (p. 27) 3.3.3. Quantification of climatic opportunities (p.32)
	b) How and when was the climate scenario analyzed:	I. scenarios and their sources, the variety of scenarios, their relation to transitional or physical risks, compliance with international climate agreements, justification of their relevance for sustainability assessment, time horizons and coverage of operations included in the analysis	3.1. Scenario analysis (page 15)
		II. the main assumptions of the organization, including climate policy in the jurisdictions where it operates, macroeconomic trends, national and regional variables, energy structure and use, and technology development;	3.2.2. Transitional risks (page 25)
		III. the reporting period during which the climate scenario was analyzed.	3. Strategy (page 15)
Risks management			
Describe how the organization identifies, evaluates, and manages potential climate-related risks	a) Processes and related policies that the organization uses to identify, evaluate, prioritize, and monitor climate-related risks, including information about:	I. Inputs and parameters used by the organization (such as information about data sources and the volume of operations covered by processes);	4. Risks management (page 29) 5.3. 4.1.Approaches to identification of climate risksApproaches to climate risk identification (page 39)
		II. Does the organization use climate scenario analysis to inform about climate-related risks and how;	4.1.1. Identification of physical risks (page 30) 3.4. Climate Risk Management Programon page 38)
		III. How the organization assesses the nature, probability, and extent of the impacts of these risks	4.1. Approaches to climate risk identification (page 30)
		IV. Does the organization prioritize climate-related risks over other types of risks, and how;	4.2.1. Physical risk assessment (page 34) 4.2.2. Transitional risk assessment (page 38)
		V. How does the organization monitor climate-related risks;	4.4. Process of regular monitoring of climate risks and opportunities (p. 47)
		VI. Has the organization changed the processes it uses compared to the previous reporting period and how;	Not available

	b) processes that the organization uses to identify, evaluate, prioritize, and monitor climate-related opportunities, including whether and how the organization uses scenario analysis to inform climate opportunities.;		4.2.1.Physical risk assessment (page 34) 4.2.2.Transitional risk assessment (page 38)
	(c) extent to which and how the processes for identifying, assessing, prioritizing and monitoring climate-related risks and opportunities are integrated into and informed by the organization's overall risk management process.		4.4. Process of regular monitoring of climate risks and opportunities (p. 47)
Metrics and goals			
Expand the metrics and objectives used to assess and manage potential climate-related risks and opportunities, if such information is material	**Climate-related indicators**		
	a) Greenhouse gases - the subject must:	I. Absolute gross greenhouse gas emissions generated during the reporting period, expressed in metric tons of CO2 equivalent of CO2 equivalent, classified as: (1) Scope 1 emissions; (2) Scope 2 emissions; and (3) Scope 3 emissions;	5.1.2. Analysis of current greenhouse gas emissions Scope 1, 2.3.(p. 51)
		II. Compliance with the Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard (2004);	5.1.1. Methodology for calculating greenhouse gas emissions (page 48)
		III. Approach to measuring greenhouse gas emissions, including the methodology used, data and assumptions, reasons for their choice, as well as changes made in the reporting period, and their justification;	5.1.1. Methodology for calculating greenhouse gas emissions (page 48)
		IV. For disclosed greenhouse gas emissions in Scope 1 and Scope 2 (absolute gross emissions), divide emissions between: (1) the consolidated accounting group; and (2) other excluded investments;	5.1.1. Methodology for calculating greenhouse gas emissions (page 48) 5.1.2. Analysis of current greenhouse gas emissions Scope 1, 2.3 (p. 51)
		V. For category 2 greenhouse gas emissions disclosed in accordance with paragraph 29 (a) (i)(2), disclose category 2 greenhouse gas emissions using the geographical location method and provide information on any contractual instruments that are necessary to inform users of the organization's category 2 greenhouse gas emissions;	5.1.2. Analysis of current greenhouse gas emissions Scope 1, 2.3 (p. 51)
		VI. for disclosed Scope 3 emissions: the categories included in the Scope 3 emissions calculation, according to the categories described in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011).	5.1.1. Methodology for calculating greenhouse gas emissions (page 48) 5.1.2. Analysis of current greenhouse gas emissions Scope 1, 2.3 (p. 51)

	b) transitional climate risks - the volume and percentage of assets or activities vulnerable to transitional risks;		Not available
	c) physical climate risks - the volume and percentage of assets or activities vulnerable to physical risks;		Not available
	d) climate-related opportunities - the volume and percentage of assets or activities related to climate-related opportunities;		Not available
	e) capital allocation - the amount of capital expenditure, financing or investment directed at climate-related risks and opportunities;		Not available
	f) internal carbon prices - the organization must disclose:	I. whether and how the organization applies a carbon price in decision-making (for example, investment decisions, transfer pricing, and scenario analysis);	5.1.1. Methodology for calculating greenhouse gas emissions (page 48)
		II. the price for each metric ton of greenhouse gas emissions that the organization uses to estimate the cost of its greenhouse gas emissions;	5.1.1. Methodology for calculating greenhouse gas emissions (page 48)
	g) remuneration - the organization must disclose:	I. whether climate aspects are included in the system of remuneration of managers, and how they are taken into account;	2.1. Defining the role of the supreme governing body on climate change (page 9)
		II. share of remuneration of managers accrued in the current period, which is related to climate aspects;	2.1. Defining the role of the supreme governing body on climate change (page 9)
	Climate-related goals		
	Quantitative and qualitative climate-related goals		
	a) metric used to set the goal		5.2. Current climate change goals (page 54)
	b) purpose of the target (e.g. mitigation, adaptation, or compliance with evidence-based initiatives);		5.2. Current climate change goals (page 54)

	c) part of the organization to which the goal applies (for example, whether the goal applies to the organization as a whole or only to a part of it, for example, to a specific business unit or a specific geographical region);		5.2. Current climate change goals (page 54)
	d) period during which the target is applied;		5.2. Current climate change goals (page 54)
	e) base period against which progress is measured;		5.2. Current climate change goals (page 54)
	f) any control points and intermediate goals;		5.2. Current climate change goals (page 54)
	g) if the goal is quantitative, is it an absolute goal or an intensity goal;		5.2. Current climate change goals (page 54)
	h) How the latest international agreement on climate change, including the jurisdictional obligations arising from this agreement, has affected the achievement of the goal.		5.2. Current climate change goals (page 54)
	Approach to setting and reviewing each goal, as well as monitoring progress towards each goal		
	a) has the purpose and methodology of its establishment been confirmed by a third party;		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	b) the entity's processes for reviewing the goal;		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	c) indicators used to monitor progress towards achieving the goal;		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	d) any changes to the purpose and an explanation of these changes.		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	Results for each climate-related target and analysis of trends or changes in the organization's performance		
	a) which greenhouse gases are covered by this purpose.		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	b) whether the target covers greenhouse gas emissions in Scope 1, 2 or 3.		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	(c) Whether the target is a gross greenhouse gas emissions target or a net greenhouse gas emissions target. If an organization discloses		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)

	a net greenhouse gas emissions target, the organization must also separately disclose its associated gross greenhouse gas emissions target.		
	d) whether the target was achieved using the sectoral decarbonization approach.		5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
	(e) Organization's planned use of carbon credits to offset greenhouse gas emissions in order to achieve any net greenhouse gas emissions target. When explaining the planned use of carbon credits.	I. to what extent and in what way does the achievement of any net greenhouse gas emissions target depend on the use of carbon credits;	5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
		II. which third-party scheme(s) will verify or certify carbon credits;	5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
		III. type of carbon credit, including whether the underlying compensation will be based on nature or technological carbon removal, and whether the underlying compensation is achieved through carbon reduction or removal.;	5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)
		IV. any other factors that users of general-purpose financial statements need to understand the reliability and integrity of the carbon credits that an organization plans to use (for example, assumptions about the persistence of carbon offsets).	5.2.1.GHG emission reduction targets Scope 1, 2 and key tools for achieving them (page 55)

6.2. Sustainability Accounting Standards Board (SASB) Standard information disclosure index

Theme	Indicator	Unit of measure	Indicators values
Efficiency for end users	Saving gas by consumers through efficiency measures by market*	million British Thermal units (MMBtu)	not available
Integrity of the gas delivery infrastructure	Number of incidents on gas pipelines, orders for corrective actions and violations of safety standards.	quantity	352 incidents per year
	Proportion of distribution pipelines that are (1) cast iron and/or forged and (2) unprotected steel	percentage (%) of length	(1) Steel and polyethylene g/s are used, (2) There are no unprotected steel g/s
	Proportion of (1) transportation and (2) distribution pipelines that have been tested	percentage (%) of length	(2) 100%
	Description of efforts to manage the integrity of the gas delivery infrastructure, including safety and emissions risks	description	not available
Activity indicators	Number of (1) residential, (2) commercial and (3) industrial consumers	quantity	(1) 2 300 324, (2) 57 732, (3) 4070
	Volume of natural gas supplied to: (1) residential consumers, (2) commercial consumers, (3) industrial consumers, and (4) transferred to third parties	million British thermal units (MMBtu)	not available
	Length of gas pipelines for (1) transmission and (2) distribution	kilometers (km)	(2) 68 699,19

Glossary

Abbreviations	Decoding
APS	Announced Pledges Scenario
CCUS	Carbon Capture Utilization and Storage
CDP	Carbon Disclosure Project
ENVID	Environmental Hazard Identification
GGCS	Green Gas Certification Scheme
GHG	Green House Gases
HSE	Health Safety and Environment
IEA	International Energy Agency
IFRS	International Financial Reporting Standards
LDAR	Leak Detection and Repair
NZE	Net Zero Emissions
SPI	Standardized Precipitation Index
SSP	Shared Socioeconomic Pathways
TCFD	Task Force on Climate-related Financial Disclosures
JSC	Joint stock company
RES	Renewable energy sources
BSGP	Beineu-Shymkent Gas Pipeline LLP
AS	Affiliated subsidiaries
ICA	Intergal Central Asia JSC
QGA	JSC QazaqGaz Aimaq»
KPI	Key performance indicator
IPCC	Intergovernmental Panel on Climate Change
GHG	Greenhouse gases
EP	QazaqGaz Exploration and Production LLP
LLP	Limited Liability Partnership
CCS	Carbon capture and storage
EGPU	Electric-driven gas pumping units