

Appendix  
to the decision of the Board of Directors  
Kazakhtelecom JSC  
No. 15 of 19 September 2024

**ESG Strategy of Kazakhtelecom JSC for 2024-2032**

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### Glossary

Abbreviation	term
JSC	Joint Stock Company
OHaS	Occupational Health and Safety
HIV	Human Immunodeficiency Virus
SUBSIDIARIES AND AFFILIATES	Subsidiaries and dependent organisations of Kazakhtelecom JSC
ITD	Information Technologies Division - branch of Kazakhtelecom JSC
DITS	Department of Innovative Technological Solutions of Kazakhtelecom JSC
DCG & SD	Department of Corporate Governance and Sustainable Development of Kazakhtelecom JSC
CBD	Corporate Business Division - branch of Kazakhtelecom JSC
NPDD	New Products Development Department of Kazakhtelecom JSC
DTK	Telecom-Komplekt Directorate - branch of Kazakhtelecom JSC
RM&ICD	Risk Management and Internal Controls Department of Kazakhtelecom JSC
IS	Information security
ICT	Information and communication technologies
Company	Kazakhtelecom JSC
CSR	Corporate social responsibility
CU	Corporate University - branch of Kazakhtelecom JSC
MDDIA	Ministry of Digital Development, Innovation and Aerospace Industry
NDA	Association "Network Division" - branch of Kazakhtelecom JSC
UN	United Nations
OH&S	Occupational health and safety
PS	Operational Safety
GG	Greenhouse Gases
UNDP	United Nations Development Programme
RK	Republic of Kazakhstan
SS	Security Service of Kazakhtelecom JSC
S&LPS	Safety and Labour Protection Service of Kazakhtelecom JSC
ROES	Remuneration and Operational Efficiency Service of Kazakhtelecom JSC
BD	Board of Directors
CS	Compliance Service
MEDIA	Media
AIDS	Acquired Immunodeficiency Syndrome
LQMS	Loyalty and Quality Management Service
EEMS	Employee Experience Management Service
SF	Service Factory - branch of Kazakhtelecom JSC

LLP	Limited Liability Partnership
FROD	Fraud
TA	Target Audience
DATA CENTRE	Data centre
SDGS	Sustainable Development Goals
EMERGENCY	Emergency situation
EDS	Electronic Digital Signature
CRM	Customer Relationship Management (Customer Relationship Management)
D&I	Diversity & Inclusion (Diversity & Inclusion)
ENPS	Employee Net Promoter Score (Internal User Satisfaction)
ESG	Environmental, Social, Governance (Environmental, Social, and Corporate Governance)
EX	Employee Experience
FTTx	Fiber To The X (Optical fibre to point X)
GPON	Gigabit Passive Optical Network (Gigabit Passive Optical Network)
HR	Human resources (Human resources management)
HSE	Health, Safety & Environment (Health, Safety & Environment)
IT	Information Technology
JRUN	Jastar Run
LTIF	Lost Time Injury Frequency (Lost Time Injury Frequency)
NPS	Net Promoter Score (Net Consumer Loyalty Index)
SRS	Samruk Research Services (Samruk Research Services)
TCFD	Task Force on Climate-related Financial Disclosures (Task Force on Climate-related Financial Disclosures)
UKCGC	UK Corporate Governance Code (UK Corporate Governance Code)

## **Introduction**

Kazakhtelecom JSC is the leading company in Kazakhstan providing a wide range of telecommunication services. The Company covers the spheres of fixed telephony, broadband Internet access, information technologies, local and international telephony, playing a key role in improving the quality of communications and ensuring the availability of communications for state institutions, population and business sector of Kazakhstan.

With the growth of the global economy, public institutions have recognised the importance of implementing ESG principles. ESG agenda is based on the management of three main aspects: environmental factors, social responsibility and effective corporate governance. The quality of ESG management is a determining factor in the level of risk faced by the Company.

In today's world, the telecoms industry places significant emphasis on ESG principles, focusing on efficient energy management, e-waste management, supporting digital inclusivity and protecting data privacy. ESG aspects are becoming an integral part of the telecoms industry's role in combating climate change.

According to the World Broadband Association, the telecoms industry's carbon footprint currently accounts for about 2 per cent of global emissions. Influenced by government and climate programmes, telecoms companies are facing demands to reduce energy consumption. A study by French think tank The Shift Project, shows that by 2025, the digital industry could be a carbon emitter of between 5% and 6% of global greenhouse gas emissions. This depends on various factors such as the growth of internet traffic, shorter average lifespan and increased energy intensity of equipment. For example, the introduction of 5G technology is accompanied by an increase in the number of cell towers required to increase transmission speeds and data capacity, resulting in increased e-waste, higher energy consumption, negative impacts on animal life and pollution of nature due to increased thermal effects<sup>1</sup>.

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<sup>1</sup> Environmental impacts of 5G, European Parliament, 2021.

The Company is committed to ethical and inclusive business conduct by implementing sustainable practices and reducing the environmental impact of its business activities. An important step is the introduction of energy saving measures such as the use of LED lighting, energy efficient appliances and smart building systems, as well as active campaigning among employees for energy saving practices. In addition, an important aspect is the introduction of programmes to reduce waste generation, as well as its efficient recycling and disposal.

At the same time, demands from stakeholders in the social aspect are intensifying. Requests to improve working conditions, eliminate technical faults and improve the quality and confidentiality of services emphasise the need for active stakeholder engagement as part of the Company's social responsibility. Resolving conflicts and responding to stakeholder requests not only contribute to maintaining a favourable working climate, but also promote ESG principles.

Kazakhtelecom JSC, as a supporter of ESG principles, emphasises the Due Diligence process of human rights compliance assessment. The process management includes comprehensive verification of potential and actual negative impacts, as well as response actions taken to address them on human rights. As a result, this process provides a comprehensive approach to assessing risks, opportunities for human rights compliance and enables the Company to decide how to mitigate business impacts on stakeholders and identify areas for improvement within the ESG approach.

The integration of ESG approaches in the supply chain is becoming a key element of the Company's efforts to reduce its environmental impact, improve social responsibility and ensure long-term economic sustainability. Sustainable supply chain companies contribute to decent working conditions and minimise environmental impact, which enhances the Company's global reputation. In particular, the Company shall analyse security systems at each stage of the supply chain to prevent potential risks of data leakage and take measures to prevent them in order to build sustainable and reliable business relationships with suppliers and partners. In addition, compliance with security standards in the ICT sector ensures adherence to the principles of social responsibility.

In turn, the Company faces corporate governance challenges within ESG. Inertia due to the large scale and complex governance structure, lack of a Board succession plan, lack of gender balance in governance and difficulties in engaging with shareholders require attention and action.

The Republic of Kazakhstan endeavours to actively implement the global ESG agenda. A number of regulatory documents and initiatives, such as control over non-financial reporting, investment in green finance and assessment of companies for compliance with ESG standards, have already been adopted in the country. Increasing requirements from regulators and investors in the field of ESG pose responsible tasks for Kazakhtelecom JSC. The Company realises that implementation of ESG principles not only meets international requirements, but also is an integral part of successful business. In order to successfully adapt to the new norms and requirements, the Company took into account ESG principles in determining its development course for 2024-2032 and decided to create a separate document reflecting the sustainable development strategy. This approach includes a focus on environmental

responsibility, supporting social initiatives and improving corporate governance standards, which helps strengthen the Company's position in the market and create a responsible business model that meets stakeholder expectations.

## **1. Analysing the strategic direction of the Company's development**

The Kazakhstan-2050 Strategy<sup>2</sup> has defined a model of Kazakhstan's development based on the principles of responsibility, efficiency and functionality. Its main goal is to build a society based on a strong state, a developed economy and equal opportunities for all stakeholders, with the prospect of including Kazakhstan among the thirty most developed countries in the world. Economic growth integrated with environmental sustainability is a key strategic direction oriented towards achieving sustainable development. Stimulating and ensuring innovative development is central to this approach, as defined in the Development Plan of the Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan<sup>3</sup>.

ICRIAP cooperates with UNDP, activating the processes of digital transformation contributes to innovative and efficient economy, improving the quality of life of citizens and strengthening the international position of the country.

The National Welfare Fund "Samruk-Kazyna" (hereinafter - the Fund) is the main regulator for the implementation of the set tasks. The Fund actively supports and implements the Strategy "Kazakhstan-2050", focusing on the main National priorities, such as stimulating economic growth, development of non-resource industries, improving competitiveness and reducing carbon emissions. The Fund implements responsible business principles centred on ESG principles, economic diversification and carbon neutrality.

Kazakhtelecom JSC in its development is guided by the Development Strategy of NWF Samruk-Kazyna JSC<sup>4</sup>, which is the driving force of the Company's development and determines the long-term development plan of the country. Within this framework, the Company has developed the JRun Strategy (Jastar Run)<sup>5</sup>. JRun includes four key areas of development - (J)aqyn, Bi(R)lik, Ala(U) and Orke(N), which express the Company's aspiration to increase the Company's value through meeting the needs of external and internal stakeholders, development of the business model, technologies and infrastructure. (J)aqyn focuses on providing communications and telecommunications facilities to the remotest regions. Bi(R)lik emphasises social aspects in the context of the employee experience, seeking to support the development of professionals. Ala(U) focuses on the use of data, IT infrastructure modernisation, cybersecurity and innovation, which is also in line with the ESG principles of technological development. Orke(N) is reflected in the Company's commitment to operational efficiency, low carbon development and carbon footprint reduction.

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<sup>2</sup> Message of the Head of State to the people of Kazakhstan dated 14 December 2012 "Strategy "Kazakhstan-2050": a new political course of the established state"

<sup>3</sup> Development Plan of the Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan for 2023-2027

<sup>4</sup> Development Plan of NWF Samruk-Kazyna JSC for 2023-2032

<sup>5</sup> JRun. Development Strategy of Kazakhtelecom JSC for 2023-2032

In light of the growing focus on sustainability, companies are disclosing performance in their annual reports, demonstrating their focus on investors, customers and employees, and integrating ESG risks and opportunities into their business strategies. The current JRun business strategy does not fully cover Kazakhtelecom JSC's ESG activities. In this regard, the development of the ESG strategy emphasises the need to highlight key aspects of sustainable development and provides a more systematic and targeted approach to integrating ESG factors into business processes.

The ESG Strategy therefore forms part of JRun's wider business strategy, which takes into account the Company's role in delivering government programmes in the areas of IT, education, infrastructure and low carbon development, and contributes to the more effective delivery of its financial wellbeing and competitiveness objectives.

## **2. Analysing the current development of ESG practices**

To identify key ESG directions, Kazakhtelecom JSC was guided by modern methods of analysing the current situation and developing ESG-strategy, as well as relied on the dual materiality assessment approach. This approach made it possible to identify more accurately the important aspects of sustainable development and to focus on the most significant areas of the Company. This section presents a comprehensive analysis of the current state of Kazakhtelecom JSC's ESG practices based on a combination of the following methodologies:

- ESG diagnostics for compliance of the Company's current ESG practices with ESG requirements/standards/recommendations of international exchanges, rating agencies and financial institutions;

- analysing the impact of the Company's activities on the achievement of the SDGs;

- conducting a PTE analysis;

- double assessment of materiality;

- interview sessions with key employees of the Company's competent divisions to identify the most significant ESG aspects;

- benchmarking with leading companies in the telecoms industry to identify key ESG practice development activities;

- facilitation session with members of the Board of Directors and the Company's management.

As a result of the analysis, specific areas for improvement were identified, which will ensure the development of an improved and tailored ESG strategy aligned with the Company's overall business strategy and in line with stakeholder expectations.



## PESTE analysis

PESTE-analysis was conducted to gain a deep understanding of the Company's external environment and identify microeconomic risks and opportunities. In the context of ESG strategy development, based on the analysis, the Company identified factors affecting environmental, social and governance components, which, in turn, facilitates the development of effective measures to minimise risks and integrate ESG approaches into the Company's business strategy. The PESTE analysis also took into account the impact factors from JRun's business strategy:

### **Political factors (Political):**

sanctions against constituent entities of the Russian Federation;  
a number of requirements established by the legislation of the Republic of Kazakhstan;

The government's policy and strategy for the digitalisation of the country;  
national security and data monitoring of the country's population;  
geopolitical challenges and barriers to market entry;

disruption of supply chains;

the volatility of world markets;

falling solvency of the population, migration of the population;

programme for privatisation of state assets;

new trade and economic relations;

President's programme of political reform;

reforming the Fund;

Strengthening the role of public institutions and the media-

### **Economic factors (Economic):**

economic growth and market demand;

infrastructure investments;

cost structure, supply and demand dynamics, pricing regulation;

tax policy and changes in the regulatory framework;

weakening of the tenge;

a sharp rise in the inflation rate;

significant contribution of SMEs to the development of the economy.

### **Social Factors (Social):**

growth of the RK population;

Increasing the level of urbanisation in the country;

increased use of online channels;

Increasing the level of cyberattacks on legal entities and individuals;

workplace injuries;

growth in the number of specialists among the local population and from abroad.

### **Technological factors (Technological):**

pent-up demand for equipment and microelectronics;

lack of capacity to produce microelectronics components;

development of green technologies;

growth in the number of entrepreneurs relying on new technologies (AI and global digitalisation of business processes);

The rise of crypto transactions, buying digital artefacts (NFTs);

"Compensatory shopping", lust for life (travelling, health, etc).

**Ecological factors (Ecological):**

e-waste generation;

increase in electricity consumption;

increase in greenhouse gas emissions;

climate change;

transition to low-carbon fuels;

environmental management.

In the process of analysing the external environment, it was revealed that climate change and public attention to environmental issues are increasing. To adapt to these challenges, ESG strategy will emphasise the reduction of greenhouse gas emissions, as well as the improvement of energy efficient equipment. In the area of social responsibility, priorities have been prioritised to include the development and implementation of privacy, data protection and human rights policies. These aspects play an important role in building a responsible corporate culture that meets modern standards.

The PESTE analysis identified various macroeconomic risks that could potentially affect the Company's operations. Thus, the identified factors were taken into account to formulate a long-term strategy, in the context of ESG strategy development. Taking these factors into account in planning provides a deep understanding of the external environment and allows the adaptation of strategies to variable conditions, taking into account the requirements of sustainable and responsible business.

## **2.1 ESG diagnostic results**

ESG ratings are becoming a key tool for companies to attract investors interested in sustainable financial instruments and to promote green or social bonds in the market. The rating score reflects the current development of a company's ESG practices, and encourages improvement by analysing competing companies in the telecommunications industry. Having a rating emphasises the company's commitment to sustainable development, strengthening its image in the market. A comprehensive ESG diagnostic was carried out in order to carry out an assessment of compliance with the criteria of the most sought-after ESG ratings. This practice made it possible to identify strengths and weaknesses based on the analysis of actual data of Kazakhtelecom JSC, and specific recommendations in terms of ESG-development were developed. To ensure more effective management of ESG risks and minimise gaps in information disclosure, a Roadmap for the period from 2023 to 2028 was developed. This map includes a broad list of activities categorised by timeframe, implementation complexity and budgetary parameters to implement the necessary changes.

**Environmental aspect.** The diagnostics showed that Kazakhtelecom JSC manages issues in the field of environmental protection, but the identification of climate risks and

opportunities, as well as their integration into business strategy is underdeveloped. These areas are key for the telecommunications industry according to international ESG practices. At the same time, the methodology for calculating emissions and categorising emissions partially meets ESG criteria. The Company discloses GHG emissions for Scopes 1 and 2 in accordance with the national methodology for calculating emissions and IPCC 2006 guidelines. However, the Company does not estimate greenhouse gas emissions under Scope 3. Greenhouse gas emissions under Scope 3, although apparently minor, represent a significant share of total company emissions. According to CDP analysis<sup>6</sup> this category contributes on average 75 per cent of total emissions.

As a result of the diagnostics, in 2023, the Environmental Policy of Kazakhtelecom JSC was updated in accordance with the requirements of ISO 14001 and ESG criteria. In addition, in 2023, Kazakhtelecom JSC carried out a comprehensive assessment and monitoring of the impact of its activities on biodiversity, land and water resources, as well as physical impacts in six regions of the Republic of Kazakhstan: Aktobe, Kyzylorda, Turkestan, Zhambyl, East Kazakhstan and Kostanay regions. According to the research results, the Company's telecommunication equipment has no negative impact on the environment. There are no abnormalities in the development of plants and animals in the territories where the equipment is located. Comparative analysis of pollutant concentrations at Kazakhtelecom's facilities did not reveal any differences from background indicators. Given that biodiversity conservation plays a key role in sustainable development, the recommended measures for the management of biodiversity, land and water resources have been highlighted. The implementation of these measures will allow the Company to continue operating in compliance with ESG principles.

**Social aspect.** The analysis of social relations, occupational health and safety (OHS) and customer data privacy for compliance with social criteria revealed a number of non-compliances. The Company has poorly developed areas of employee diversity and human rights, while higher compliance with ESG criteria - HSE and HR management practices - was noted.

**Based on the diagnostic results, the following were developed:** Kazakhtelecom JSC's Human Rights Policy and Kazakhtelecom JSC's Policy on Equal Opportunities, Inclusion and Diversity, which guarantee compliance with the culture of equal opportunities, including people with disabilities. The Company introduces digital communication technologies everywhere and has developed such services as digital signature, certified e-mail and digital identification services to ensure accessibility of digital resources. And the Policy of Kazakhtelecom JSC on interaction with local communities, which regulates relations between the authorities, public organisations and local communities in the regions where Kazakhtelecom JSC operates, has been developed. The Company also pays attention to ensuring safety of workplaces. The current priority of Kazakhtelecom JSC is the introduction of Vision Zero (zero injuries) indicator. The Company is aimed at maintaining fair labour conditions based on the efficiency of performance of labour duties. Relations with employees are built on the basis of HR management strategy, with a focus on professional growth and career prospects.

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<sup>6</sup> [CDP-technical-note-scope-3-relevance-by-sector.pdf](#)

The requirements related to collection and processing of data are described in the Policy on protection of personal data of Kazakhtelecom JSC's customers. At the same time, the mechanisms of compliance realisation are unknown. Public disclosure of information on the risk management system, internal and external audits, in its turn, contributes to the establishment of trustful relations with stakeholders and enhancing the level of the Company's social responsibility.

**Management aspect.** Within the framework of ESG-diagnostics covering the areas of corporate governance, remuneration system, anti-corruption measures and sustainable development management, the results of the analysis of Kazakhtelecom JSC's activity demonstrate a high level of efficiency and competence in the area of business ethics and anti-corruption, as well as transparency in the ownership structure and shareholders' rights.

In turn, the Company has noted weaknesses in sustainability management, modern practices of the Board of Directors and supply chain management. The Company faces challenges such as inertia due to its large scale and complex governance structure; lack of a systematic approach to assessing and managing sustainability aspects and ESG risk management; dependence on government regulation and control; and lack of transparency in ESG reporting. Challenges such as the lack of a succession plan for the Board of Directors and the absence of women on the Board are observed. In addition to the list of challenges for the Company, there is a lack of transparency regarding the relations of Board members with other bodies, as well as with representatives of state bodies.

In addition, the Company has integrated sustainable development targets. This includes assessment and incentives for achieving specific targets, such as reducing pollutant and greenhouse gas emissions. This approach not only encourages active participation of management in the sustainable development process, but also ensures specific and measurable environmental results. As a result of ESG-diagnostics, Kazakhtelecom JSC updated key documents such as the Sustainable Development Policy of Kazakhtelecom JSC and the Sustainability Guidelines of Kazakhtelecom JSC.

Table 1. Level of development of ESG practices

Environmental aspect		Social aspect		Management aspect	
Topics	Evaluation	Topics	Evaluation	Topics	Evaluation
Environmental Management	Low	Confidentiality of customer data	Low	Corporate governance	Average
Risks and opportunities	Low	Personnel management	Above average	SR and Management Practices	Average
Business strategy	Average	Staff diversity	Average	Ownership structure and shareholder rights	High
Targets and performance	Above average	Human rights	Average	Rewarding Practices	Average
Methodology for calculating emissions	High	Local communities	Low	Business ethics and anti-corruption	Above average

Emissions data	Average	Occupational health and safety	Above average	Political influence	Low
Categorisation of emissions	High			Tax payment and transparency	Average
Energy	High			Sustainable development management	Low
Verification	High			Supply chain	Low
Carbon price	Low				
Interaction	Low				
Biodiversity	Average				
<b>E - average</b>		<b>S - above average</b>		<b>G - above average</b>	

As a result of the diagnostics, key growth areas were identified by ESG aspects. The managerial and social aspects are rated above average, while the environmental aspect is at an average level. To meet the environmental criteria, the Company needs to develop a systematic approach to environmental management and implement an effective climate risk management system in accordance with TCFD recommendations (IFRS S2). In the context of social criteria, the Company needs to develop a systematic approach to assessing human rights risks and impacts, as well as develop a mechanism for the effective implementation of a privacy policy aimed at protecting customer data.

In the area of corporate governance, it is worth emphasising the formation of a systematic approach to ensuring diversity on the Board of Directors, including increasing the proportion of women. It is also important to put in place procedures to ensure the effective implementation of the company's supplier ESG programmes to identify and address material risks and impacts.

These areas became the basis for defining strategic directions and priorities within the framework of ESG strategy development, which, if implemented, will enable the Company to meet international sustainable development ratings and effectively integrate into the changing economic and social environment, increasing competitiveness and creating long-term value for all stakeholders.

## 2.2 Relationship to SDGs

The ESG Strategy assessed the effectiveness of efforts aimed at achieving the United Nations Sustainable Development Goals (hereinafter UN SDGs). In 2022, UNDP RK together with the Institute of Economic Research (hereinafter IER) analysed the progress of the Republic of Kazakhstan in achieving the 17 Sustainable Development Goals set in accordance with the Strategy "Kazakhstan-2050". The object of the study was the budget funds aimed at the implementation of the set objectives. In the course of the analysis it was found that the main part of the objectives for achieving the SDGs are reflected in the state planning documents. Thus, the most coordinated structure in public administration is demonstrated:

SDG 2 "End hunger";  
SDG 3 "Good health and well-being";  
SDG 4 "Quality Education";  
SDG 7 "Affordable and Clean Energy";  
SDG 8 "Decent Work and Economic Growth";  
SDG 9 "Industrialisation, innovation and infrastructure";  
SDG 10 "Reducing Inequality."  
SDG 11 "Sustainable cities and human settlements";  
SDG 12 "Responsible Consumption and Production";  
SDG 16 "Peace, Justice and Effective Institutions"<sup>7</sup> .

According to the results of the analysis, it was revealed that the Republic of Kazakhstan in terms of achieving the progress of the UN SDGs identifies three most priority SDGs for itself until 2030: SDGs 1, 4, 9<sup>8</sup> .

Kazakhtelecom JSC also recognises the importance of all 17 SDGs, however, in accordance with the specifics of activities in the telecom industry, the most relevant for the Company are nine SDGs (4, 8, 9, 10, 11, 12, 15, 16, 17) that make a positive contribution to progress at the country level. As part of the process of prioritisation of a certain set of UN SDGs that contribute to the improvement of the Company's operational performance in terms of ESG aspects, Kazakhtelecom JSC carried out a benchmark analysis of companies of telecom industry peers. As a result of the analysis, the following priority UN SDGs were established, to which the Company's contribution is the most significant and corresponds to the strategic priorities of Kazakhtelecom JSC and the country - SDGs (8, 9, 10, 12, 16).

Taking into account the specifics of Kazakhtelecom JSC's activity as one of the largest infrastructure companies of the RK, the Company participates in the implementation of country SDGs - ensures maximum contribution to achievement of SDG 9. The contribution to achievement of SDG 9 consists in development of reliable, sustainable ICT infrastructure. The Company supports economic growth and people's well-being by focusing on providing affordable and equitable access to telecommunication services for all. In addition, Kazakhtelecom JSC contributes to the modernisation of industrial infrastructure by increasing the efficiency of resource use and wider application of clean and environmentally friendly technologies and industrial processes. To this end, the Company has developed the Low Carbon Development Programme.

The UN SDGs serve as an important tool for creating a sustainable, equitable and prosperous future for all and are designed to balance the ESG dimensions.

However, successful achievement of one objective can have both positive and negative impact on others, and creates dynamics of influence and interconnections between different aspects of sustainability. In view of this, Kazakhtelecom JSC conducted a correlation analysis

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<sup>7</sup> Issues of implementation of Sustainable Development Goals in Kazakhstan and voluntary national review of the RK, JSC "Institute of Economic Research Institute"

<sup>8</sup> Striving for Progress: Kazakhstan's Path to the Sustainable Development Goals, UNDP

of the above priority SDGs for synergies and negative impacts by using the analytical tool of the Joint Research Centre's SDG correlation tool.<sup>9</sup> (Table 2)

Table 2. Relationship between SDGs

Aspects	SDGS	Synergy	Negative impacts
Environmental aspect	12	CSD 2, 6, 15	TSUR 3, 7, 8, 15
Social aspect	8	TSUR 1, 2, 3, 4, 6, 7, 8, 9, 10, 16	TSUR 6, 12, 14, 15
	9	TSUR 1, 2, 3, 4, 6, 7, 8, 10, 11, 13, 14	TSUR 2, 6, 8, 14, 15
	10	TSUR 1, 2, 3, 4, 6, 8, 9,	SDGS 6, 8, 13
Governance and ethics	16	TSUR 2, 3, 6, 7, 9, 11, 14	SDGS 6, 14

According to the ESG diagnostic results above, the identified 5 prioritised SDGs contribute to the improvement of the Company's ESG practices in terms of progress towards achieving them.

The planned activities under SDG 8 - "Decent Work and Economic Growth" are aimed at continuous improvement of the network infrastructure. Measures to increase productivity through the introduction of innovative technologies and to protect the labour rights of employees require increased attention from the Company. The Company can provide entrepreneurs and small businesses in Kazakhstan with a platform to connect with customers, promote their products or services and conduct online transactions. Quality services and technological innovations promote innovation, support the growth of start-ups and contribute to the economic development of the state.

Kazakhtelecom JSC plays a critical role in achieving SDG 9 - "Industrialisation, Innovation and Infrastructure". The Company invests in building and maintaining networks, including broadband and mobile infrastructure, which are crucial for bridging the digital divide and ensuring communities' access to reliable communication services. At the same time, Kazakhtelecom JSC frequently receives complaints about technical failures in the services provided. Frequent software failures are a consequence of malfunctions in the functioning of telephony services. By investing in research and development, the Company introduces new services and technologies and improves network capabilities. Through innovations such as 5G networks and smart city solutions, the Company contributes to the development of cities by providing the necessary communications infrastructure and technologies. This enables the deployment of solutions for smart transport, energy management, waste management and public services. However, the development of infrastructure such as 5G can increase greenhouse gas emissions, create large amounts of waste and can increase overall energy consumption by 150-170 per cent. It is important to consider that the installation of new 5G towers and infrastructure may also have a negative impact on birds, their behaviour and migration - causing changes in reproduction and increased mortality.

<sup>9</sup> [Uncovering SDG Interlinkages: interconnectedness and policy coherence for sustainable development](#)

Kazakhtelecom JSC has extensive prospects for achieving the targets in SDG 12 - "Responsible consumption and production". The Company consumes a significant amount of energy, which presents a challenge in achieving SDG 12. Kazakhtelecom can minimise its environmental impact by reducing energy consumption in network infrastructure, data centres and office premises, and optimising cooling systems. Another important area on the way to the Company's sustainable development is the rational utilisation of e-waste. Given that e-waste contains hazardous materials that can damage Kazakhstan's ecosystems, waste management regulation is one of the solutions to the Company's sustainable development. Accordingly, the development of waste management regulations, co-operation with certified electronic equipment companies and promotion of responsible disposal and recycling of electronic devices is an important step for the Company.

SDG 10 - "Reduce inequality" and SDG 16 - "Peace, justice and effective institutions" are closely linked to each other. Kazakhtelecom JSC adheres to the principle of gender equality in providing working conditions and remuneration. The Company strives to increase diversity. Thus, in the composition of the Management Board, the share of women is 14% of the total number. Kazakhtelecom JSC actively pursues social policy aimed at enhancing social stability within the Company and in the regions of presence. Besides, as a socially responsible employer, Kazakhtelecom JSC provides support to socially vulnerable strata of the population.

At the state level, the Company plays a crucial role in ensuring access to information. The Company provides reliable and accessible internet services in remote regions of the country. Also taking into account the different needs and responsibilities of people outside of work, an inclusive work environment offers flexible policies that may include flexible working hours, telecommuting options, active promotion of paternity leave and accommodations for people with disabilities, so a clear fair system with the necessary measures to create a more inclusive corporate structure that reflects the Company's social values should be developed and implemented.

The identification and implementation of the SDGs played an important role in the development of the Company's ESG strategy. The identified key SDGs were a strategic catalyst uniting the Company's efforts in ESG development. This facilitated coordination of efforts within the Company, and ensured a centralised approach to the implementation of ESG goals.

### **2.3 Assessment of dual materiality**

According to the latest ESG trends, companies are becoming increasingly aware of the need not only to analyse the current state of their operations, but also to consider environmental and social impacts and determine financial materiality. The concept of dual materiality<sup>10</sup> will help to identify potential risks and opportunities related to material topics in the long term and determines the Company's development trajectory. The importance of dual materiality assessment is also disclosed in meeting the needs of stakeholders, including investors, customers and society as a whole. Kazakhtelecom conducted a dual materiality assessment to

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<sup>10</sup> [Double Materiality Guidelines \(efrag.org\)](https://www.efrag.org)

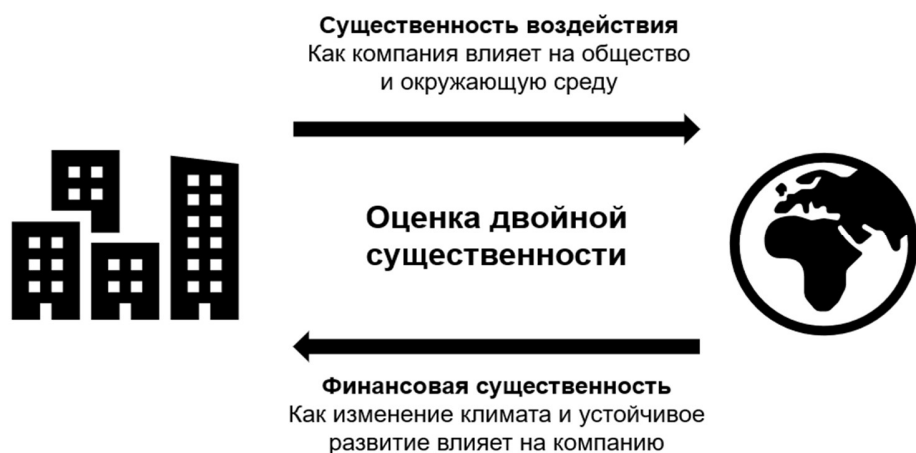


determine in which aspects the Company has the greatest impact, taking into account the current and prospective directions of its development.

The assessment of dual materiality is based on an integrated approach that encompasses two key aspects:

- 1) **Materiality of impact:** identifying sustainability issues that are material in terms of the Company's environmental and social impacts;
- 2) **financial materiality:** identification of sustainability issues that are financially material to the Company, based on evidence that these issues could have a material impact on the value of the Company.

Figure 1. Schematic of double materiality estimation.



#### **Assessment of double materiality**

##### **Significance of impact**

**How the company affects society and the environment**

##### **Financial materiality**

**How climate change and sustainability affects the company**

Kazakhtelecom JSC carried out a dual materiality assessment that takes into account the specifics of the Company's activity. It identified potentially material topics based on key ESG aspects. To understand how the Company's services affect sustainability at each stage of the value chain, the value chain was analysed to identify relevant ESG risks. Analysing engagement with key stakeholders identified material topics whose integration is most relevant to the Company's development.

The dual materiality assessment has identified a strategic vision integrated into all aspects of sustainable development. The steps carried out as part of the assessment are listed below:

- Identification of significant themes;
- Analysing the supply chain on ESG aspects;
- engagement with internal and external stakeholders;

analysis of material topics and the results of the dual materiality assessment.

### **Identifying Significant Themes.**

At the stage of identifying material topics, a comprehensive analysis was carried out, starting with an assessment of external factors affecting the Company's operations, taking into account the PESTE analysis. The results of this assessment were supplemented by an analysis of the level of development in accordance with ESG ratings, which made it possible to identify key aspects of sustainability and responsibility in corporate activities. Particular attention was paid to identifying priority SDGs, taking into account the specifics of the Company's operations and the vision of the ESG strategy. Based on the analysis, an initial list of relevant and potential material topics for the long-term sustainability strategy was formed.

Table 33. Longlist of potentially significant topics.

<b>Aspects</b>	<b>№</b>	<b>Significant topics</b>
Environmental aspect	1	Biodiversity
	2	Greenhouse gas emissions
	3	Emissions of pollutants
	4	Energy consumption
	5	Waste management
	6	Water resources management
Social aspect	7	Employee and management relations
	8	Employment
	9	Health and safety in the workplace
	10	Local communities
	11	Employee training and development
	12	Diversity and equal opportunities
	13	Remuneration and social programmes for employees
	14	Respect for human rights
Management aspect	15	Countering corruption
	16	Indirect economic impacts
	17	Economic performance
	18	Procurement practices
	19	Markets and competition
	20	Innovations and new technologies
	21	Corporate ethics
	22	Information security and data protection

### **Analysis of the value chain of Kazakhtelecom JSC.**

The Company's value chain and interaction with suppliers is to build and maintain network infrastructure, including fibre optic cables, satellite systems. Kazakhtelecom JSC in the value chain invests in creation and maintenance of network infrastructure, including fiber optic cables, cell towers, satellite systems and data processing centres, thus offering customers a wide range of telecommunications services: fixed telephony, broadband Internet access and

connection via leased lines. Interaction with suppliers is carried out in accordance with the document "Procedure for Procurement by National Welfare Fund Samruk-Kazyna JSC and legal entities, fifty or more per cent of voting shares (participatory interest) of which are directly or indirectly owned by Samruk-Kazyna JSC on the right of ownership or trust management", which regulates the Company's procurement procedures.

As part of the double materiality process, Kazakhtelecom JSC analysed the stages of the value chain in order to identify the main ESG risks. Given the large number of suppliers, Kazakhtelecom JSC identified potential risks (environmental pollution, violation of human rights, corruption), how suppliers can negatively affect the Company's activity and vice versa.

Further, Table 4 summarises the results of estimating the impact of the value supply chain by ESG aspects.

Table 4: Evaluation of the value chain

Blocks	Name	Environmental aspect	Social aspect	Management aspect
Upstream	<b>Company's infrastructure</b>	Energy consumption, which contributes to greenhouse gas emissions.	Unfair labour conditions	The risk of non-compliance with laws, regulations and licence requirements can lead to fines, legal disputes, reputational damage and business disruption.
	<b>Equipment procurement</b>	Material procurement, assembly and packaging processes contribute to waste generation throughout the production process.	Ethical labour violations by a supplier may include failure to pay decent wages, unsafe working conditions and the use of child labour.	Weak internal controls and lack of transparency lead to potential fraud and embezzlement. Affiliations in procurement processes lead to unfair sourcing and the purchase of substandard goods. Use of products from regions with human rights violations or environmental damage.
	<b>Logistics</b>	Increased GHG emissions in the logistical pathways of goods.	The supply chain may experience problems with working conditions, such as long hours for drivers and warehouse workers, which can cause social discontent.	The Company's partners do not adhere to responsible business practices.
Downstream	<b>Provision of services</b>	Increased environmental impact when services are expanded.	Unequal access to its services among different segments of the country's population, resulting in digital inequality.	Data leaks, unauthorised access and inadequate protection of customer information.
	<b>Customers: reputation and brand value</b>	Some telecoms devices may be less energy efficient, resulting in increased energy consumption and negative environmental impacts.	Ignoring the security of customer data.	Dissemination of false information about the Company's services; Work with suppliers who have been identified as having corruption cases.

Kazakhtelecom JSC's approach is to turn ESG risks into opportunities by working closely with suppliers. The Company can improve labour productivity by ensuring decent working conditions in the supply chain. For example, timely payments will allow suppliers to observe their own production and delivery schedules, as a consequence, there will be no downtime in production and related costs.

### **Stakeholder Engagement.**

Stakeholder engagement is one of the key development strategies for the Company. Within the framework of the double materiality analysis, Kazakhtelecom JSC assessed the stakeholders' interest in terms of ESG aspects. The analysis of stakeholders' expectations in the context of ESG-principles allowed prioritising and identifying the most important issues in the Company's sustainable development. The obtained results served as a basis for development of the ESG-strategy, which meets the expectations of stakeholders and contributes to increasing the attractiveness and sustainability of the business (Table 5).

Kazakhtelecom JSC distinguishes two groups on the stakeholder map: the inner circle - which includes stakeholders directly affected by the Company's decisions (employees, customers, partners, shareholders); the outer circle - which includes stakeholders indirectly affected by the Company's decisions (local communities, state authorities, suppliers, financial institutions). It is important to consider both internal materiality (impact of the company's operations) and external materiality (impact of products, services and value chain). During the analysis, the inner circle of stakeholders participated in the identification of material topics through surveys, consultations and other feedback mechanisms. The Company regularly communicates with the outer circle through Kazakhtelecom JSC's active participation in social projects and direct dialogues within the framework of joint meetings in working groups.

Table 5: Assessment of the parties' interest

Blocks	Name	Environmental aspect	Social aspect	Management aspect
Middle Circle	Employees	Reduction of greenhouse gas emissions by 13%.  Reducing the generation of e-waste.	Providing a safe and healthy work environment.  Promoting diversity, equal opportunities and a favourable working culture.  Opportunities for career growth, work-life balance, and social benefits.	Diversity in the composition of the Board of Directors.  Absence of corruption.
	Shareholders and investors	Reduction of greenhouse gas emissions by 13%.  Achieving carbon neutrality by 2060.  Attracting green investment.	Customer Satisfaction.  Labour standard, stability of employee performance.  Ethical sourcing.	Identify and mitigate financial, operational and reputational risks.  Transparency, accountability and ethical business practices.  ESG risk management.  Obtaining a high ESG rating.
	Suppliers and business partners	Ensuring environmentally responsible sourcing.  Collaborating with suppliers to improve sustainability performance and reduce environmental impact.	Ensuring fair labour practices and avoiding the use of conflicting materials.	Fair business opportunities for all suppliers (fight against monopoly and corruption).
	Clients	Offering reliable, technologically advanced and environmentally friendly products and services.	To provide affordable and accessible telecommunication services to all segments of society.  Protecting customer data and ensuring privacy protection	Diversity in the composition of the Board of Directors.  Absence of corruption.
Outer Circle	Local communities	Minimising the impact on the environment:	Participating in community development initiatives,	Improving the quality of services provided.  Attractiveness of tariffs.

		<p>reduction of greenhouse gas emissions by 13%;</p> <p>reducing the generation of e-waste.</p>	<p>supporting the local economy and addressing social issues.</p> <p>Job Creation.</p>	
	State authorities	<p>Compliance with environmental requirements for the protection of the environment.</p> <p>Responding to climate change.</p>	<p>Job Creation.</p> <p>Compliance with the laws of social policy and governance.</p>	<p>Compliance with legal requirements relating to data protection, network security and consumer rights.</p> <p>Engaging in policy discussions to promote favourable regulatory frameworks for sustainable practices in the telecommunications industry.</p>
	Non-governmental organisations (NGOs) and civil society	<p>Undertake environmental assessment and mitigation of impacts associated with network infrastructure and its operation.</p>	<p>Ensuring responsible business conduct, human rights and labour standards.</p>	<p>Engaging with NGOs and civil society organisations to address challenges and collaborate on sustainable development initiatives.</p>

As a result of the assessment of stakeholders' interest, it is important to note that stakeholders of the inner circle, such as customers and employees expect to ensure protection of their rights, and investors, shareholders and suppliers expect to ensure sustainable profits and minimise reputational risks by managing ESG risks, as well as achieving the set targets in the field of greenhouse gas reduction. Actively addressing sustainable development issues, Kazakhtelecom JSC builds trust, engages stakeholders and maintains positive relations with them. In turn, stakeholders provide valuable information, support, contributing to the long-term success and sustainability of the company.

### **Significant topics analysed and the results of the dual materiality assessment.**

Based on the results of stakeholder engagement, 12 significant topics out of 22 proposed topics were identified, which directly affect the Company's business model and economic performance. Kazakhtelecom JSC assessed potential environmental and social impacts of each ESG topic, and identified financial risks and opportunities presented in Table 6.

**In terms of the environmental aspect,** the Company does not have a significant environmental impact on the environment. The main impact is expressed in greenhouse gas emissions from electricity consumption for energy-intensive technological equipment, waste generation in the form of decommissioned telecommunication equipment, while the following factors may affect the Company's operations: introduction of energy-efficient technologies and methods may require significant investments, stricter environmental legislation requirements and liability for non-compliance with these requirements. The process of analysing the environmental aspect involved the participation of key stakeholders - UDF, DIT, NF, DKU&SD, state authorities, suppliers, local communities.

**In the social aspect,** maintaining confidentiality of customers' data is an obligation of Kazakhtelecom JSC, which prevents identity theft and fraud, contributing to the creation of a safer and more reliable social environment for customers. Ensuring equal opportunities for employees and customers contributes to the formation of a fair society and is in line with the interests of shareholders, the Board of Directors, employees and other units. Investing in the education and development of employees enhances their skills and the well-being of the community, in line with the interests of the EMS, SV&E. Caring for the health and safety of employees is important to shareholders, SB&E. Engagement with local communities, including fraud prevention, contributes to a safer social environment and is in the interests of LGSS, employees, government agencies, community organisations and the media.

**The governance aspect** identifies key areas for improvement of the ESG corporate governance system. Inclusive decision-making in terms of maintaining diversity and independence on the Board of Directors helps to mitigate reputational risks, reflecting the views of various stakeholders, including shareholders, the Board of Directors, the DCMS, the ERMS, stock exchanges and government authorities. Anti-corruption and compliance with business ethics act as important elements of business operation, emphasising the Company's commitment to high ethical standards. In a negative scenario, there may be financial risks from corrupt practices and legal disputes or litigation that require attention and resources to resolve.



These topics are most prioritised by key stakeholders - shareholders, the Board of Directors, the Management Board, DTC, SC, DKU&SD, employees, government agencies, suppliers. An important area is the effective management of ESG risks, which minimises the depletion of natural resources and ensures the preservation of biodiversity and ecosystems. If neglected, it can have an impact on reducing investment attractiveness due to insufficient disclosure of information on climate risks. ESG risk management has become a key focus for shareholders, the Board of Directors, the Management Board, SDC&VK, DCU&SD, financial institutions and government bodies.

Table 4. Estimation of double materiality.

Aspect	Essential topic	Environmental and social materiality	Financial materiality		Internal stakeholders	External stakeholders
			Risks	Opportunities		
Environmental aspect	Energy consumption	Physical effects in the form of radiation, atmospheric pollution.	The introduction of energy efficient technologies and practices may require significant investment.	Improving energy efficiency, will reduce the carbon footprint of products.	Shareholders and investors, UDF, DIT.	Public authorities, suppliers
	Greenhouse gas emissions	Negative impact on climate change, prevents achieving carbon neutrality.	Payments for exceeding pollutant emission standards. Risk of additional costs.	Implementation of climate projects that contribute to the reduction of greenhouse gas emissions. Opportunity to attract "green investment".	Shareholders and Investors, Audit and Sustainability Committee, DKU&SD.	Government agencies, local communities, international organisations, financial institutions, suppliers.
	Waste management	Hazardous waste generated by the Company's operations when transferred to a third party organisation may contaminate soil with heavy metals, mercury-containing and other toxic waste.	Non-compliance, tightening of environmental legislation requirements.	Recycling e-waste can result in cost savings compared to purchasing new tools.	Shareholders and Investors, Audit and Sustainability Committee, DKU&SD, SF.	Local communities, government agencies.
Social aspect	Confidentiality of customer data	Prevent identity theft and fraud by promoting a safer and more secure social environment for people.	Risk of leakage of sensitive customer data.	Development of new software to protect sensitive data.	Shareholders and investors, Board of Directors, SB.	Customers, government agencies.

	Diversity and equal opportunities	Equal provision of telecommunication services for different members of society.	Risk of infrastructural inaccessibility.	Entering into partnership agreements with organisations with comparable infrastructure.	Shareholders and investors, Board of Directors, Management Board, Personnel Committee, remunerations and social issues, DITR, SES, SULICS, employees.	Customers, international organisations, local communities.
	Training and education	Economic growth, development of innovative technologies and increased competitiveness in the market.	Insufficient compliance with the needs of the labour market, unequal access to educational resources, technological changes.	Increase productivity, strengthen corporate culture and reduce employee turnover.	Shareholders and investors, SORPs, SV&E, employees.	State Bodies, international organisations
	Occupational health and safety	Improving employee health and productivity .	Inadequate labour protection measures can lead to injuries, illnesses of workers, which will also entail legal consequences, including fines, lawsuits.	Increased labour productivity through reduced work-related injuries, reduced medical treatment and compensation costs.	Shareholders and Investors, SB&OT.	State agencies, local communities.
	Local communities	Digital integration to connect with remote or underserved communities.	Protests caused by negative perceptions of the community	Creation of jobs and development of the regional economy.	Shareholders and investors, SULiX, employees.	State bodies, public organisations, mass media.
Management aspect	Diversity and independence of the Board of Directors	Inclusive solutions that take into account the interests of different stakeholders, including employees, customers and local communities.	Negative attention to gender equality in management can cause reputational risks, affecting customer loyalty and employee attrition.	Maintaining gender equality and independence in management can attract investors who place value on	Shareholders and investors, Board of Directors, DKU&SD, SORP.	Exchange, government agencies, financial institutions.

				sustainability and social responsibility.		
	Fight against corruption	Increase stakeholder confidence by attracting ethical investors and partners.	Financial risk of losses from corrupt practices.	The implementation of effective anti-corruption measures can lead to cost savings by preventing financial losses associated with corrupt practices.	Shareholders and investors, Board of Directors, Management Board, DTC, SC, DCU&SD, employees.	Government bodies suppliers, international organisations, financial institutions.
	Business ethics	Raising the profile of the industry and building positive relationships with stakeholders.	Legal disputes or litigation arising that require attention and resources to resolve, particularly in the areas of antitrust and privacy.	Adhering to ethical labour standards, fair wages, safe working conditions and promoting diversity, has a positive impact on the industry's social image and creates a more inclusive working environment.	Shareholders and investors, Board of Directors, DTC, SC, DCU&SD.	Suppliers, exchange, government agencies, financial institutions.
	ESG risk management	Minimising the depletion of natural resources, preserving biodiversity and ecosystems.	Reduced investment attractiveness due to insufficient disclosure of information on climate risks.	Accounting for and assessment of transient climate risks (in line with TCFD recommendations (IFRS S2).	Shareholders and investors, Board of Directors, Management Board, DUR&VK, DKU&UR.	Financial institutions, stock exchange, government agencies, suppliers, international organisations.

### **3. Mission, Initiatives, Principles of ESG strategy**

Mission of Kazakhtelecom JSC: formation of a long-term ESG agenda at the level of an advanced telecommunications company with minimal environmental impact. The Company's sphere of activity is aimed at paramount improvement of social security that does not limit economic growth.

Based on the dual materiality assessment, the Company has identified 14 prioritised initiatives within the ESG strategy:

#### **Environmental aspect.**

The environmental aspect is important within the framework of the Company's sustainable development. Kazakhtelecom is constantly improving methods to increase energy efficiency in the field of telecommunication services, in this regard, special attention is paid to implementation of measures to reduce energy consumption and greenhouse gas emissions, as well as to improve waste management and utilisation:

- assessment and reduction of energy consumption in production activities to improve energy efficiency;
- setting targets for reduction of pollutant emissions (including greenhouse gases) in accordance with international standards;
- investing in projects to offset greenhouse gas emissions;
- waste management.

#### **Social aspect.**

Kazakhtelecom JSC is aimed at improving social conditions, solving social problems and supporting various aspects of society's well-being. The Company endeavours to provide a safe working and customer environment. Taking social responsibility, the Company has introduced a number of regulations and policies aimed at protecting personal data and human rights, within the framework of which the following measures are introduced:

- Strengthening measures to protect customer data and privacy;
- ensuring that telecommunications services are accessible to all, including people with disabilities;
- Implementing diversity and inclusion programmes in the workplace;
- providing opportunities for training and career development;
- promoting the health and safety of employees;
- supporting local communities through CSR initiatives.

#### **An aspect on governance and ethics.**

To ensure long-term and mutually beneficial relations with customers, employees and other stakeholders, the Company adheres to the principles of honesty, transparency and compliance with regulatory legal acts. Kazakhtelecom JSC strives to achieve first-class level of business conduct and raise its corporate governance rating to AA level by 2030. Implementation of ESG strategy becomes an integral part of corporate governance, where

sustainable development plays a key role in business success, which includes creation of ethical corporate culture, improvement of anti-corruption procedures, and involvement of all levels of management in the process of achieving the SDGs:

Ensuring that the Board of Directors has an inclusive and independent composition;  
Developing strict anti-corruption policies and procedures to combat corruption;  
promoting ethical business conduct and behaviour in the organisation;  
managing, identifying and mitigating ESG-related risks.

Kazakhtelecom JSC's initiatives in the field of sustainable development are reflected in the context of prioritisation. Taking into account time horizons will allow the Company to achieve the selected development directions step by step:

short-term horizon: activities that may take 1 to 2 years to complete;  
Medium-term horizon: activities that may take 2 to 4 years to complete;  
Long-term horizon: activities that may take more than 4 years to complete.

## **4. Environmental Initiatives**

### **4.1 Assessment and reduction of energy consumption in production activities to improve energy efficiency**

Kazakhtelecom JSC pays special attention to smooth transition to resource-saving technologies and energy efficiency improvement. In 2022, electricity consumption totalled 622,298 GJ, the indicator decreased by 13% compared to 2021, and in 2023, consumption decreased by 0.35% compared to 2022 and totalled 620,135 GJ. In addition, the Action Plan on introduction of the energy management system in Kazakhtelecom JSC for the period of 2023-2024 was developed as part of the Company's efforts to improve energy efficiency of its production processes.

Due to the increase in the number of subscribers and plans to build more than 300 base stations, new data centres to provide modern telecommunication services and FWA services, which will cover about 160 thousand private homes throughout the country, Kazakhtelecom JSC sets strategic goals to introduce a set of measures aimed at improving energy efficiency and reducing energy consumption on a long-term basis.

**Goal: Reduce electricity by 22% by 2032, heat by 11% by 2032.**

Achieving this goal depends on a number of economic factors:

availability of the necessary technologies for the use of climate systems;

implementation of innovative solutions to reduce energy consumption during the construction of new data centres;

availability of modern technologies for modernisation of technical equipment with high efficiency to improve energy efficiency.

A number of the following measures will be implemented to reduce energy consumption:

**Short-term horizon:**

Conducting mandatory energy audits.

**Medium-term horizon:**

Installation of motion/presence sensors for the lighting system;

setting the hibernation mode of personal computers when there is no work on them for more than 2 hours, as well as installing software for automatic shutdown of personal computers;

application of reflective film on windows;

Continued replacement of fluorescent lamps with LED lamps in administrative premises;

setting energy consumption targets;

separate metering for all data centres in terms of energy consumption.

**Long-term horizon:**

modernisation of technological equipment (switching, climatic, server, satellite, etc.) with lower specific power consumption compared to the existing ones and with a higher efficiency factor of at least 0.94-0.96;

use of climate systems that apply free-cooling technology in the construction of new data centres;

continuing deduplication of copper networks and switching subscribers to fibre-optic communication lines;

modernisation of existing data centres to improve energy efficiency, which includes such measures as implementing temperature monitoring, optimising the ventilation system, increasing temperature and relative humidity settings on machine room air conditioners, etc;

Elimination of heat losses through insulation of buildings and structures as part of measures to prepare the Company's facilities for the heating season;

Continued optimisation of the heated spaces in use is to reduce unused spaces;

**4.2 Setting emission reduction targets in accordance with international standards**

Setting emission reduction targets in accordance with international standards for Kazakhtelecom JSC is an important step to comply with environmental legislation and reduce environmental impact. In 2022, total greenhouse gas emissions are 232,567 tCO<sub>2</sub>-eq, reflecting a decrease of 8.5% compared to the data for 2021, and in 2023 - 234,853.03 tCO<sub>2</sub>-eq, reflecting an increase in greenhouse gas emissions under Scope 1 - by 17.6%, and a decrease in emissions under Scope 2 - by 1.8%.

The Company aims to reduce GHG emissions by 13% by 2032 and achieve carbon neutrality by 2060. In order to achieve GHG reduction, in 2022, the Low Carbon Development

Programme for 2022-2032 was developed. In turn, within the Company there is the Environmental Policy of Kazakhtelecom JSC, which reflects the commitment to reduce GHG emissions and compliance with international standards in the field of environmental protection and sustainable development.

The targets set out in the Low Carbon Development Programme and under the ESG Strategy will be complementary documents. In line with the strategy, the Company provides a similar target for reducing greenhouse gas emissions.

In realising this objective, it is important to consider the risks associated with reducing greenhouse gas emissions. Reducing greenhouse gas emissions involves finding more environmentally friendly and energy efficient methods of providing energy to these facilities. The Company will aim to achieve the goal of reducing greenhouse gas emissions.

**Goal: Reduce greenhouse gas emissions by 13 per cent by 2032**

To achieve this goal, the following activities will be undertaken:

**Medium-term horizon:**

estimate indirect non-energy Scope 3 greenhouse gas emissions in tonnes of CO<sub>2</sub>-eq based on the GHG Protocol Corporate Value Chain Accounting and Reporting Standard;

Identify climate opportunities according to the selected approach and TCFD classification (IFRS S2) and develop a methodological approach for identifying climate risks and opportunities;

Analyse scenarios related to climate change in accordance with TCFD recommendations (IFRS S2);

Develop a plan to adapt to the identified physical climate risks;

designation of a responsible person at the level of the Management position.

### **4.3 Investing in carbon offsetting projects**

According to guidance on the use of carbon offsets<sup>11</sup> from the Stockholm Environment Institute and the Greenhouse Gas Management Institute, carbon offsets balance the carbon dioxide (CO<sub>2</sub>) emissions the Company creates by absorbing CO<sub>2</sub> from the atmosphere. One carbon offset represents a reduction in emissions per 1 metric tonne of CO<sub>2</sub>, obtained through projects such as tree planting or the use of renewable energy. In this way, the use of carbon offsets contributes to reducing the overall climate impact, giving companies the opportunity to offset their carbon footprint and support projects aimed at sustainable resource use and environmental protection.

**Goal: To reduce the Company's net carbon footprint.**

Kazakhtelecom JSC plans to offset its carbon emissions by purchasing off-the-shelf carbon credits from other organisations that have implemented their own emission reduction

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<sup>11</sup> [Carbon-Offset-Guide\\_3122020.pdf \(offsetguide.org\)](#)



projects to manage their carbon emissions in 2029. It is important to note a number of difficulties in realising such investments. In particular, challenges can be encountered from supply to changes in equipment costs due to inflation, changing legislative requirements and the emergence of new technologies, making capital investment planning a more unpredictable and complex process. In general, in adapting to current realities, measures that can offset carbon emissions will be realised.

To achieve this goal, the following activities will be undertaken:

**Long-term horizon:**

purchase of green certificates;

building a portfolio of offset projects.

#### **4.4 Waste management**

Kazakhtelecom JSC is aimed at minimising waste generation and is actively implementing the waste reduction strategy. Documented procedures, such as "Production and consumption waste management" approved by relevant orders, establish a clear waste management procedure, including collection, temporary storage, utilisation, disposal, export and monitoring of collected waste. All these measures are implemented in strict compliance with the environmental legislation of the Republic of Kazakhstan.

To ensure transparency and accuracy of data on the amount of generated waste, the Company keeps detailed records within the Company, which are recorded in special journals and confirmed by acts, including write-off, acceptance, disposal and other necessary documents. These procedures ensure not only compliance with regulations, but also an important role in ensuring environmental responsibility and sustainability in Kazakhtelecom JSC's activities.

In 2023, the total volume of waste generation was 60.74 tonnes, with solid waste not taken into account. Annually, the Company transfers the entire volume of waste to third-party specialised organisations.

A number of activities were carried out in 2023:

**inventory of production and consumption waste in the Company;**

**development of a waste passport;**

**introduction of waste hazard class accounting.**

Given the active deduplication of copper networks and switching subscribers to fibre-optic communication lines, as well as the replacement of fluorescent lamps with LED lamps in administrative offices, the generation of scrap copper cable and fluorescent lamps is increasing. In order to reduce the negative environmental impact and ensure sustainability in the long term, it is necessary to develop a unified approach to waste management that promotes efficient use of resources, supporting the principles of the circular economy.

**Goal: Reduce hazardous waste**

**Medium-term horizon:**

development of instructions for handling production and consumption waste on the Company's territory;

Development of a waste management programme;

Contracting with certified waste collection and recycling companies;

setting targets for waste utilisation and disposal.

## **5. Climate risks and opportunities**

### **5.1 Climate Risk Management**

Kazakhtelecom JSC regularly assesses risks and opportunities in the field of sustainable development and climate. Implementation of effective climate risk management strategies and utilisation of climate opportunities are important aspects of the Company's sustainable development.

Kazakhtelecom JSC is aimed at improving the corporate system in terms of climate risk management. As part of this work, identification of climate risks and opportunities was carried out, a methodological approach for their identification was developed and climate change scenarios were analysed in accordance with the recommendations of the Working Group on Climate-related Financial Disclosures (TCFD) and IFRS S1 and S2 standards. Within the framework of the assessment carried out by Kazakhtelecom JSC, both physical and transitional risks in the medium and long term are analysed using projections of climatic variables for different scenarios of CO<sub>2</sub> RCP (Representative Concentration Pathway) and NZE 2050.

In the RCP2.6 scenario (aligned with the Paris Agreement), the risks are mainly associated with the transition to decarbonisation (regulatory, technological, market and reputational risks). This transition will also mean significant opportunities associated with cost reductions through energy efficiency improvements and a shift to renewable energy.

The RCP4.5 scenario assumes a moderate effort to implement technological changes. This will lead to an increase in the frequency and intensity of extreme weather events such as maximum wind speeds and precipitation, with significant economic costs for adapting infrastructure systems.

In the RCP8.5 ("business as usual") scenario, the main risks are associated with physical changes in climate variables, including temporary (increase in extreme weather events) and chronic (temperature rise, changes in precipitation). Rising temperatures can significantly increase electricity costs for cooling network equipment, especially in water-dependent countries.

Transition scenarios, such as the International Energy Agency's NZE 2050, provide key information for understanding development under the constraint of limiting temperature rise to 1.5°C. They describe the efforts needed to reduce greenhouse gas emissions and achieve zero emissions by 2050.

### **5.2 Climate risk categories**

The analysis of climate scenarios allows identifying the most significant risks and opportunities in terms of impact, which are outlined below. Kazakhtelecom JSC aims to take into account climate risks and opportunities at all stages of the value chain.

#### **Transition risks**

Market Risks:

Increase in electricity prices: an increase in electricity prices due to potentially new regulation in the power generation sector could affect the operating costs of energy, which would increase the cost of providing services.

#### Legal Risks:

Changes in legislation and regulation: the introduction of new energy efficiency and carbon reduction standards and regulations may require significant investment in equipment and infrastructure modernisation. Stricter regulations on the disposal of e-waste and materials may result in additional compliance costs.

#### Technology Risks:

Technological innovation to support the transition to a low carbon economy: The development and deployment of renewable energy, energy storage and other energy efficient solutions will require investment. The company will need to modernise its infrastructure to remain competitive in the market.

#### **Physical risks**

Chronic: increased electricity consumption for cooling as global temperatures rise. Possible increase in electricity prices during periods of drought.

Acute: an increase in the frequency of extreme weather events (floods and wind speeds) will increase the risk of business continuity and the cost of replacing damaged assets.

### **5.3 Opportunities related to climate change**

Kazakhstan is actively implementing measures to reduce its carbon footprint and promote sustainable development. These efforts are reflected in the national climate policy supported by key documents such as the Environmental Code of the Republic of Kazakhstan, the Paris Climate Agreement, the Strategy for Achieving Carbon Neutrality until 2060, and the Updated National Contribution of the Republic of Kazakhstan to the Global Climate Change Response (NCCR). Kazakhtelecom JSC highlights the following opportunities related to climate change:

#### **Products and Services:**

Kazakhtelecom JSC is actively introducing innovative info-communication technologies and improving the quality of services to improve people's lives. The Company strives to improve energy efficiency of its activities and use resource-saving technologies. Digitalisation will become the basis for transition to low-carbon economy, contributing to income growth due to high demand for relevant products and services of Kazakhtelecom JSC.

### **Efficiency of resource utilisation:**

For successful transition to resource-saving technologies and energy efficiency improvement, Kazakhtelecom JSC should develop measures to minimise consumption of electric and thermal energy, as well as fuel resources at its own power generating facilities.

Reduction of operating costs through energy consumption management is an important part of Kazakhtelecom JSC's strategy. By implementing the "Policy in the field of energy management", Kazakhtelecom JSC strives to ensure business growth without increasing energy consumption, which provides the company with a significant competitive advantage.

### **Transition to renewable energy sources:**

Kazakhstan has set ambitious goals to increase the share of generation and consumption of electricity from renewable sources. Kazakhtelecom JSC fully supports these goals and is ready to increase the share of energy consumption from RES. In accordance with the NREP, the company is considering the possibility of purchasing green certificates in 2032.

To achieve significant competitive advantages through the use of renewable energy sources, Kazakhtelecom JSC needs to implement a comprehensive plan including self-generation, purchase of renewable energy through green certificates. These measures will help to reduce the impact of market fluctuations and save significantly on electricity costs

Kazakhtelecom JSC strives to implement adaptive strategies that take into account risks and opportunities, which allows effectively influencing investments, modernisation on improvement of customer paths, improvement of the quality of interaction with customers and optimisation of processes in accordance with the Company's strategic goals.

Kazakhtelecom JSC actively develops projects contributing to sustainable development and improvement of the quality of life in Kazakhstan:

- deduplication of copper communication lines and replacement with LED light sources;
- purchase of green certificates ;
- measures to minimise the consumption of imported electricity, heat and fuel resources ;
- promotion of IOT projects and technologies to improve energy efficiency;
- Developing and promoting digital and telecoms services and products to reduce carbon footprints;
- purchasing alternative energy and switching to environmentally friendly fuels;
- Reducing fossil fuel consumption at stationary and mobile sources.

## **5.4 Adaptation to climate change**

Kazakhtelecom JSC recognises the strategic and operational risks associated with climate change. The Company endeavours to understand climate risks and opportunities in various scenarios, including extreme scenarios, and integrate this data into the Company's business strategy and operations. In this regard, Kazakhtelecom JSC continues to invest in network adaptation and resilience by improving its policies and aligning its internal processes with the TCFD framework.

Kazakhtelecom JSC develops and implements measures to manage climate risks and utilise opportunities within short, medium and long term horizons.

**Short-term horizon:**

- 1) Developing an adaptation plan for the identified climate risks;
- 2) more effective integration of climate risks into the company's corporate risk management system;
- 3) designation of a responsible person at the level of a senior position.

**Medium-term horizon:**

- 1) implementation of the NSRP measures;
- 2) investing in modernisation of equipment and infrastructure to improve climate resilience;
- 3) introduction of systems for monitoring climate risks and assessing their impact on the company's operations.

**Long-term horizon:**

- 1) achieving carbon neutrality by 2060;
- 2) phasing out the use of fossil fuels and switching to renewable energy sources;
- 3) investments in R&D projects to develop innovative solutions for climate risk management.

## **6. Social initiatives**

### **6.1 Strengthening measures to protect customer data and privacy.**

The Company undertakes to ensure security, confidentiality of data and personal information of customers in accordance with the requirements of the legislation of the Republic of Kazakhstan. The basic principles of data processing are defined in the Policy on Personal Data Protection of Kazakhtelecom JSC, according to which only employees with the appropriate level of access required to perform their job duties have access to personal data. Also, the Company has implemented instructions on personal data handling based on ISO 27001. To prevent dissemination of unverified, false information on the Internet, including social networks and blog platforms, as well as information for official use, the Company approved the Regulation "Procedure of work in the network".

The main internal documents regulating issues in the field of information security are:

Policy of antivirus protection of Kazakhtelecom JSC's information systems;

Policy on protection of personal data of Kazakhtelecom JSC;

Concept on information security of Kazakhtelecom JSC;

Rules of internal control over disposal and use of insider information of Kazakhtelecom JSC;

Roadmap for the development of information security of Kazakhtelecom JSC.

The Company is actively developing information security management and internal corporate data protection under the guidance of DIT. The main task of DIT is to create a modern telecom infrastructure. Thus, the Company approved the information security architecture based on the Zero Trust concept. This concept implies the absence of trust in users and requires

authentication and authorisation at each session for access to data, which ensures an increased level of information security.

Technological methods of offences involving the theft of data contained in information systems are updated and improved annually. According to Kaspersky Lab data for 2023, Kazakhstan is among the top 7<sup>12</sup> countries in the world in terms of the number of cyberattacks suffered by both private users and large organisations. The growth of digitalisation creates new opportunities and fraud tools. Compliance with the requirements of Kazakhtelecom JSC's internal documents is only a part of measures to prevent confidentiality breaches, therefore, it is proposed to introduce measures aimed at strengthening the management of confidential data. At the same time, it is important to take into account that despite the technical means of data protection, the human factor has the greatest impact on the security of personal data, accounting for up to 80% of the total level of protection. The following objective has been set for the data security of the Company's services:

**Goal: Compliance with customer privacy standards and cybersecurity measures**

By complying with the implemented policies and regulations of Kazakhtelecom JSC and monitoring the implementation of data protection standards in the rapidly growing ICT market, the Company can avoid network cybersecurity offences.

**Short-term horizon:**

introduction of mechanisms for informing clients about data privacy protection issues: the nature of the information collected, transfer of data to third parties, data retention periods in corporate files;

The Management Board of Kazakhtelecom JSC should ensure analysis and assessment of the adequacy of the Company's internal controls in terms of protection of customers' personal data received through the Company's sales channels in 2023-2024.

**Medium-term horizon:**

Kazakhtelecom JSC's Management Board to strengthen control over response to information security incidents.

**Long-term horizon:**

Consider including regular audits of insider and confidential information management processes and assessment of their effectiveness in the Safeguards Map and/or work plans of compliance, risk management and internal controls, and internal audit services.

## **6.2 Making telecommunication services accessible to all, including people with disabilities**

The Company guarantees observance of human rights and creates equal opportunities for all its employees and customers, actively preventing manifestations of any kind of discrimination. Within the framework of Kazakhtelecom JSC's Human Rights Policy and

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<sup>12</sup> Where Kazakhstan ranks in terms of cyberattacks (kursiv.media)

Kazakhtelecom JSC's Policy on Equal Opportunities, Inclusion and Diversity, each employee of Kazakhtelecom JSC is responsible for observing the culture of equal opportunities, diversity and promotes the creation of an inclusive environment, and with regard to customers guarantees non-discrimination and violation of human dignity, including on the basis of religion, gender, language, age, nationality and disability.

Kazakhtelecom JSC promotes accessibility of its telecommunications services for all, including people with disabilities. The Company introduces digital communication technologies everywhere. Within the framework of the National Project "Accessible Internet", measures for 2023-2027 were developed.

The digitalisation of the Company's service connection and service support processes has optimised the availability of telecommunications services. The Company's telecommunications services and products are customer-friendly and support voice control and text-to-speech functions. The Company provides service training to its employees aimed at raising awareness of the difficulties of communicating with people with disabilities. The most common limitations of people with disabilities are: visual, auditory, physical and speech. Further work taking into account the personal characteristics and limitations of customers helps to minimise the risks of accessibility limitations of telecom services and improve the level of the Company's service.

To make digital resources accessible, the Company has developed services such as digital signature, certified email and digital identity services. Among them are Full digital service connection process, MVP mobile application, CRM 2.0 system . EDS (electronic digital signature) - allows to confirm the authenticity of an electronic document, while digital identification and authentication services maintain the reliability of the Company. Digital services have not only contributed to the expansion of the Company's customer base, but also to the development of new digital businesses under the SERPIN transformation programme.

The transformation of ICT services in the global marketplace has seen an increase in consumer demands and preferences. According to the UN, people with disabilities account for more than 1 billion people<sup>13</sup> . At the same time, everyone has different degrees and forms of disabilities and, as a result, forms of barriers, complicating the ability to ensure the smooth use of telecom services by each user. The Company needs to co-operate with associations of people with disabilities. First of all, the Company eliminates common barriers: subtitles, voice typing. Price accessibility of the service is the second most important aspect given the observed decline in the solvency of the population, including people with disabilities. To ensure the affordability of its services, the Company continues to work towards the distribution of telecom services in the context of the growing telecommunications market. The main task of the Company becomes the improvement of Digital services introduced within the framework of existing activities, which is reflected in the following objective:

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<sup>13</sup> [Basic information | United Nations \(un.org\)](https://www.un.org/)



## **Goal: Increase the NPS customer loyalty index**

### **Medium-term horizon:**

Equipping hospitals with 5G internet networks, fibre optic cables for digitalisation of medicine.

## **6.3 Implementing diversity and inclusion programmes in the workplace**

Global companies are actively implementing programmes aimed at ensuring diversity and inclusion in the workplace. For example, Gruppo TIM is a leader in the D&I Index, reflecting the telecoms companies' commitment to increasing social visibility within their divisions. The trend of priority hiring reflects changes in the Companies' management approaches and emphasises the importance of promoting differences and creating an environment where every employee has equal opportunities.

The Company encourages the desire to form diverse teams and promote diversity initiatives, which can be seen in the implementation of the JRun Strategy Roadmap Action Plan and the development of the Company's Employee Benefits Cafeteria Concept. Mentoring programmes have been developed and implemented for new employees related to employee diversity, equal opportunities and non-discrimination.

The Company keeps records of the number of personnel broken down by gender, age, and position. The Company pays special attention to ensuring equality of men and women in the workplace and eliminating discrimination on the basis of employee's gender, which is stipulated in the Programme "Development of Gender Equality in Kazakhtelecom JSC". The Company assesses the gender gap among employees in terms of number and remuneration of labour:

- the proportion of women among employees;
- the proportion of women among managers;
- the proportion of women among junior positions;
- premiums;
- initial salary level.

In order to provide women with opportunities for development of improving their professional qualities, the Company developed the Concept of professional community of women leaders of Kazakhtelecom JSC. Also, one of the goals of the Concept is to increase the number of women in leadership positions.

The Company aims to maintain fair labour conditions, where remuneration is based on objective criteria related to the performance of work duties. Employee remuneration and other employee benefits are assessed on the basis of performance and compliance with the EX Communication Plan. The implementation of the Diversity Policy within the Company is assessed by the regulator against the SRS and ENPS indices.

The Company strives to achieve a diverse working environment by introducing measures to increase inclusion in Kazakhtelecom JSC. At the first stages of implementation of measures,

resistance to changes and lack of support from the Company's management is possible. At the same time, the manifestation of physical differences that do not allow to occupy certain positions in the Company may act as an obstacle to the achievement of D&I. The main factors, namely cultural differences and language barriers, lead to misunderstandings and further problems in work due to ineffective communication. Addressing prejudice amongst employees requires additional expenditure on education as part of building an ethical mindset on diversity and inclusion of teams. To achieve the D&I index of Kazakhtelecom JSC, the following objective is proposed:

**Objective: To foster an inclusive environment**

**Short-term horizon:**

Develop and implement a gender pay equity programme, if applicable set quantitative targets and timelines to reduce gender pay gaps.

**Medium-term horizon:**

Develop and implement due diligence practices with regard to human rights compliance.

**Long-term horizon:**

Introduce initiatives to increase staff diversity beyond the regional women's programme (e.g. hiring disabled employees beyond the local minimum, establishing employee associations/groups to discuss diversity issues).

#### **6.4 Provide opportunities for training and career development.**

Relations with the Company's employees are formed on the basis of the HR management strategy aimed at improving management methods, including opportunities for professional growth of employees with regard to career prospects.

The Company keeps records of the number of hours of employee training by gender group and employee category in accordance with the Employee Experience Strategy. The number of training hours envisaged for each employee of the Company until 2024 has been established, with the actual figure for 2022 exceeding it. The Company keeps records of employees covered by regular performance and career development assessments. At the same time, the Company's Management pays special attention to the courses for personnel aimed at improving the level of knowledge of Kazakhtelecom JSC's processes, including those related to anti-corruption and labour protection.

In order to form qualified specialists and create a culture of digital skills training in cooperation with Astana IT University, a Corporate University with 9 active directions in the field of IT, HSE, Data science, training and development of managers was established. The cooperation includes providing university students with the opportunity to undergo industrial practice and internships in Kazakhtelecom JSC.

The Corporate University also includes educational programmes for language competence and adaptation of new employees:

The Start MBA programme is designed to introduce students to managerial competencies (financial management, human resources, basics of digitalisation, basics of business analytics and personal effectiveness) and to develop communication skills in the national language;

an Advanced MBA course was introduced for line managers, also based on the development of managerial competences;

The Digital MBA programme focuses on the development of digital skills;

executive education is conducted as part of Fresh MBA;

The Mini-MBA aims to systematise thinking in digital transformation.

The Company has introduced the practice of online internships in Data Science "Telecom Data Factory", within the framework of which 35 people were trained in data analytics and building predictive models. The programme includes solving real cases of the Company and mentoring by experts in Python, SQL and BI tools. The students who showed the best results of the final assessment are included in the personnel reserve of Kazakhtelecom JSC.

Special attention is paid to training in the field of occupational health and safety. The programmes "Trainer for the course "Injury Prevention and Response IPR 3 - Level 3", "Safe Working Environment SWE 2 - Level 2", "Facilitator - Level 2" have been developed. The courses include a theoretical and practical part.

The Technical Academy developed a course "Line and Subscriber Section" for specialists of Kazakhtelecom JSC. The course is aimed at obtaining theoretical knowledge on the principles of GPON optical line operation, structure and used devices on the line from the subscriber's side. For engineers and administrators of the Company there is a course "ICND1. Introduction to IP" course is dedicated to the basics of network interaction.

Jas Academy implements projects for children of employees. The opening of the IT Summer Camp aimed to teach the children of employees skills in robotics, programming, English language skills, soft skills and Web development. In addition, the Academy runs programmes on "Play, Learn, Be safe" safety, neuroplasticity of the brain, and preparation for foreign universities.

Kazakhtelecom JSC organises online trainings for various target audiences in two formats: synchronous and asynchronous.

Coverage of Kazakhtelecom JSC's training programmes for 2023:

Academy of Leadership and Management - 1,537 trainees;

Development of EX-expert categories - 129 trainees;

Sales and Service Academy - 2,126 people;

HSE Academy - 11,888 people;

Qazaq&English Academy - 161 people;

Financial Academy - 1,670 people;  
Technical Academy - 11,913 people;  
Jas Academy - 209 people.

The OHSMS introduced practices to assess the implementation of programmes aimed at training and professional development of the Company's employees:

implementation of a comprehensive action plan to ensure social stability;  
dashboard implementation;  
SRS index;  
digitalisation of EX processes according to the Employee Journey Map (EJM) (50%);  
turnover rate in the area of digital transformation;  
IR Screening.

A systematic approach in raising awareness within the Company will ensure timely fulfilment of priority tasks. Kazakhtelecom JSC uses complex systems of employees' development and sets the following goal to increase the level of the Company's development:

**Goal: Increase the number of training areas for the Company's employees**

In its turn, Kazakhtelecom JSC may face a number of problems when increasing the areas of training within the framework of the Company's ESG development:

high costs of training and professional development of employees;  
differences in the primary level of education and receptivity to information among workers;  
information overload;  
Ineffective teaching methods;  
staff resistance;  
broken feedback loop

**Short-term horizon:**

launch a course aimed at increasing the level of knowledge of the company's processes, including those related to labour protection.

**Medium-term horizon:**

develop ESG trainings for employees;

Introduce training and development programmes that ensure employees share responsibility for creating a safe, respectful and inclusive culture;

training in compliance culture by the heads of SDCs for their employees.

**Long-term horizon:**

Training employees in lawful and value-oriented behaviour and ethical principles. Raising employee awareness of business ethics. Cascade of internal training from top management to management and employees;

to develop training courses on personnel diversity issues, in particular, on overcoming unconscious bias when hiring personnel for the top management of Kazakhtelecom JSC and structural subdivisions of the HR system (SV&EE, EMS).

## **6.5 Promoting employee health and safety**

The main objective of the Policy in the field of ensuring safety and labour protection of Kazakhtelecom JSC is to create safe working conditions at workplaces, as well as to reduce risks associated with possible damage to life and health of employees.

The Company actively implements measures to ensure healthy and comfortable conditions for its employees. Internal documents regulating occupational health and safety and industrial safety are:

Strategy for Development of the Occupational Safety Management System of Kazakhtelecom JSC for 2024-2028

Regulations on the Security Service of Kazakhtelecom JSC;

Rules for mandatory periodic medical examination of Kazakhtelecom JSC's employees;

Rules for training, instructing and knowledge testing of Kazakhtelecom JSC's employees on safety and labour protection, industrial safety, fire safety, electrical safety";

"Collection of instructions on safety and labour protection by types of works in the subdivisions of Kazakhtelecom JSC's branches";

"Collection of instructions on safety and labour protection by professions of subdivisions of Kazakhtelecom JSC's branches";

Policy on management of vehicles of Kazakhtelecom JSC;

"Standard on ensuring safe operation of vehicles of Kazakhtelecom JSC";

The organisation's health and safety standards;

Regulation "On the Labour Protection Management System" of Kazakhtelecom JSC;

Occupational Health and Safety Card Programme;

Safety and labour protection rules when working with telecommunication equipment;

"Procedure for execution of reports and collection of data in case of accidents and potentially dangerous situations related to labour activity of employees subject to investigation by Kazakhtelecom JSC";

Safety and labour protection rules on radio relay communication lines;

Rules for conducting internal investigations in Kazakhtelecom JSC and others.

The Company has defined objectives in internal security and regime.

The Company strives for high standards in the field of occupational health and safety. Kazakhtelecom JSC continuously promotes improvement of the labour safety and health system in accordance with ILO-OSH standard and ST RK OHSAS 18001-2008.

The Company has set objectives in the field of occupational health and safety aimed at reducing the rate of occupational injuries, occupational diseases and accidents. As a result of the set goals, by increasing the culture of labour safety, commitment, training and control over safe production of works, the Company has established the duration of labour without injuries - 10 months according to LTIF coefficient. The main objective of Kazakhtelecom JSC at the moment is the introduction of Vision Zero (zero injuries) indicator.

Since 2023, the Company has developed protocols for interaction with external stakeholders during emergencies, as well as mechanisms for stakeholders to report emergencies, as part of the Emergency Response Plan.

As part of achieving the HSE targets for Vision Zero, the Company needs to tighten labour regulation, irrespective of possible increases in the costs of programmes and activities to maintain the health and safety of the Company's employees.

**Goal: No injuries at the workplace**

**Short-term horizon:**

create a regulation on disclosure of information on HSE indicators among contractors (including the number of fatalities during work at the Company's facilities).

**Medium-term horizon:**

consider introducing an HIV/AIDS programme among employees.

## **6.6 Supporting local communities through CSR initiatives**

Kazakhtelecom JSC, being the largest telecommunications company, bears corporate and social responsibility to local communities. The Company seeks to minimise social and environmental risks and impact on local communities in carrying out its activities.

CSR initiatives contribute to local economic development and long-term strengthening of the customer base. Interaction with local communities contributes to strengthening the Company's reputation, as well as creating a positive social image and strengthening the Company's position in the market. Kazakhtelecom JSC is directly involved in the development of the region where it operates by providing labour employment to the local population and fulfilling tax obligations.

Measures to support local communities are developed on the basis of the Policy on interaction with local communities of Kazakhtelecom JSC, Corporate Governance Code and other internal documents of the Company in all regions of operation. The measures are developed on the basis of the Road Map on development of ESG practices in Kazakhtelecom JSC.

In addition, feedback channels provide Kazakhtelecom JSC with timely information and constructive dialogue with the local population in the regions where it operates.

At the moment, the Company is faced with the task of increasing bandwidth capacity by upgrading the existing network and expanding Internet availability in remote regions and launching an efficiency improvement programme.

The company is working to bridge the gap in the quality of communication between urban and rural areas by installing EQoldau devices in hard-to-reach areas. The Digital Partner in Rural Areas project enables the rural population to be provided with a high-speed network.

To maintain the Company's competitiveness in the market, the primary role is played by bringing the network services to modern requirements. The Company plans to reconstruct the network through deduplication of copper and FTTx infrastructure in the multi-family and private sector of cities and withdrawal of copper lines due to the transition to wireless technologies in rural areas, as well as switching subscribers in large and single-industry towns to GPON.

Population growth, population migration and urbanisation of Kazakhstan set the demand for territorial coverage of telecom services. Within the framework of the state programme "National Project "Technological breakthrough through digitalization, science and innovations", Kazakhtelecom strives to ensure large-scale distribution of telecommunications services.

Due to the observed trend of increasing the role of mass media and public institutions, the Company needs to introduce transparent systems for assessing assistance to local communities in order to increase the loyalty of the population. The following objective has been set:

**Goal: Improving the level of well-being in the regions where we operate.**

**Short-term horizon:**

Establish the Company's goals or objectives for the development of local communities (support for the regions where it operates) and the timeframe for achieving them.

Introduce the practice of monitoring local community development programmes (support to regions of operations) and charity programmes.

## **7. Governance and ethics**

### **7.1 Ensuring a diverse and independent board of directors**

The diverse and independent composition of the Board of Directors represents a variety of professional and personal characteristics, different experiences, knowledge, views and opinions. This multi-factor approach helps to broaden the range of viewpoints and approaches to addressing the Company's strategic and operational objectives, contributing to the quality of the Board's work by stimulating constructive discussions and critical thinking.

Diversity in the Board of Directors in Kazakhtelecom JSC can be assessed by different parameters, such as gender, age, nationality, education, specialisation, industry affiliation and others. As of 2023, the Board of Directors of Kazakhtelecom JSC consisted of 7 persons, all of whom are men in different professional areas such as telecommunications, strategy, implementation of decisions of a major shareholder, business planning, audit, finance and marketing. However, the lack of female representation on the Board of Directors is a significant

disadvantage. Creating an equitable and inclusive environment on the Board is critical to ensure a broad range of perspectives, experiences and opinions, which in turn contributes to more informed and competent decision-making in favour of the Company and its stakeholders.

Independent composition is the second important aspect of the Board of Directors, which is a fundamental part of quality corporate governance and represents a clear competitive advantage for Kazakhtelecom JSC. The Company complies with the criteria of directors' independence and maintains high standards of corporate governance, ensuring efficient management and transparency of the Board of Directors' activity. In the Board of Directors of Kazakhtelecom JSC 43% are independent directors. In addition, the performance of the Board of Directors is assessed both by self-assessment and independent assessments with the involvement of external consultants. The average term of service of the members of the Board of Directors is 5-7 years.

Achieving diversity and independence in the composition of the Board of Directors is a relevant trend in the context of continuous development of corporate standards and the desire to improve diversity in governance bodies. Systematic analysis of the current status and applicable actions, as well as constant attention to this issue, allow to ensure continuous development and improvement of the composition of the Board of Directors in accordance with international corporate governance requirements.

**Goal: Ensure a diverse and independent Board of Directors**

To achieve this goal, the following activities will be undertaken:

**Short-term horizon:**

increase the share of independent directors (target level of 50% of the total number of Board members according to the UKCGC (London Stock Exchange);

comply with the provisions of the declaration of independence of the members of the Board of Directors<sup>14</sup> .

**Medium-term horizon:**

Develop a board diversity policy that will consider diversity factors such as gender, age, race, ethnicity, country of origin, nationality or cultural background in the board nomination process;

Increase the share of women on the Board of Directors and in the Executive Body (target level - the share of women on the Board of Directors and in the Executive Body of the Company should be at least 20% in the medium term and the share of women among management personnel at 35% by 2027).

**Long-term horizon:**

ensure that the talent pool for the various levels of management in the Company, including BOD members and employee training plans, is kept up-to-date. In doing so, attention should be paid to factors such as current and future skills gaps, gender equality, ethnic diversity and inclusion;

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<sup>14</sup> The Declaration of Independence of the Board of Directors is presented in Appendix 1 of this Strategy



elect an independent director as the Chairman of the Board of Directors: if it is impossible to elect an independent director as the Chairman of the Board of Directors, determine a senior independent director from among the elected independent directors.

## **7.2 Developing strong anti-corruption policies and procedures to combat corruption**

Kazakhtelecom JSC is actively working on compliance with mandatory regulatory requirements and international practices in the field of sustainable development and anti-corruption. The Company works to ensure ethical and law-abiding activity, as well as takes measures to prevent corruption and conflicts of interest. To this end, the Company has established a Compliance Service and operates a hotline for confidential and anonymous feedback. In 2021, the Company analysed risks in procurement, recruitment and business processes, and in 2022, risks were categorised into two separate risks with corresponding measures and response plans.

Kazakhtelecom JSC complies with the Anti-corruption Policy, the Policy on notification of suspected unethical/illegal actions, the Policy on conflict of interest settlement, and the Codes of business ethics and corporate governance based on the following anti-corruption principles:

- the legality of the activity;
- publicity and openness;
- carrying out anti-corruption propaganda;
- co-operation with government authorities, partners and customers;
- mandatory internal audits for violations of anti-corruption laws and internal policies.

**Objective: To become a leading example of a modern company in Kazakhstan, demonstrating absolute absence of corruption and achieving maximum transparency in all areas of its operations.**

To achieve this goal, the following activities will be undertaken:

### **Short-term horizon:**

ISO 37001 (Anti-Bribery System) certification.

### **Medium-term horizon:**

development of mechanisms of monetary incentives for employees of CA and branches of Kazakhtelecom JSC who reported the fact of corruption or other offences or otherwise assisted in counteracting the commission of corruption or other offences;

Conducting a training course to improve understanding of processes within the company, including anti-corruption issues;

Developing a briefing manual for managers, including heads of divisions and departments in the area of anti-corruption;

organising training sessions for members of the management and executive bodies of the Company and SDCs on anti-corruption issues, demonstrating the latest trends in compliance and corporate culture;

holding training events for employees of organisations on anti-corruption issues by the heads of the Company's branches and structural subdivisions and the first heads of subsidiaries and affiliates.

**Long-term horizon:**

carrying out annual assessment of corruption risks in Kazakhtelecom JSC in all departments and structural subdivisions where corruption offences are likely to occur;

conducting due diligence on distributors and service providers (Third-party Due Diligence). Evaluate the company's efforts to assess and manage corruption risks associated with third-party suppliers and partners by measuring the number of due diligence processes conducted and any actions taken to mitigate risks. Implement a rigorous due diligence process for third-party suppliers and partners to mitigate corruption risks;

Conducting a comprehensive baseline assessment of the company's current anti-corruption practices, identifying weaknesses and high-risk points. Regularly monitor and audit the company's operations for compliance with anti-corruption laws and other regulations.

development of anti-corruption policies and procedures to combat corruption in accordance with international requirements and recommendations of the OECD, Basel Institute on Governance, UN Global Compact, International Chamber of Commerce (ICC), World Economic Forum Partnership against Corruption.

### **7.3 Promoting ethical business conduct and behaviour in the organisation**

Kazakhtelecom JSC pays attention to responsible corporate ethics, anti-corruption, economic efficiency, procurement practices, competition, innovation, information security and data protection within its ESG strategy, and places special importance on co-operation with local suppliers for procurement of goods and services. In its activities, the Company follows the state policy aimed at developing the national economy of local content.

In accordance with the Conflict of Interest Policy, the Board of Directors monitors and, where possible, eliminates potential conflicts of interest of members of the Board of Directors and shareholders, including misuse of the Company's property and abuse in related-party transactions. Members of the Board of Directors have no family or other ties with members of the executive body and other responsible employees of the Company that could affect the quality of their decisions. In 2022, no conflicts of interest were recorded in the work of the Board of Directors. In the reporting period, the Company did not record any cases related to violation of antimonopoly legislation and other legal actions against the Company in connection with hindrance of competition.

Corporate ethics issues are regulated by the Code of Business Ethics and the Code of Corporate Governance, which are open documents and are freely distributed by the Company among employees, shareholders, customers, partners and other stakeholders. Based on the

results of 2022, the Company did not identify any cases of corporate disputes between the Company and members of the Board of Directors, as well as facts of their misconduct. The provisions of the Code of Business Ethics and the Code of Corporate Governance are mandatory for all categories of employees and officials.

The Information Policy of Kazakhtelecom JSC is developed in accordance with the legislation of the Republic of Kazakhstan, the Charter and the Code of Corporate Governance of Kazakhtelecom JSC. The Company adheres to the principles of information openness and transparency, confirming its readiness to comply with high standards of corporate governance.

Moreover, adherence to high standards of ethics stimulates innovation, improves the quality and efficiency of business processes, which contributes to the sustainable development of society and the environment.

**Goal: Adhere to leading international ethical standards for responsible business conduct**

To achieve this goal, the following activities will be undertaken:

**Short-term horizon:**

increasing the share of local content in the procurement of goods, works and services through the introduction of new procurement rules on the Fund's electronic platform, development of a Supplier Code of Conduct, and strengthening partnerships with local communities.

**Medium-term horizon:**

development and approval of a policy regulating the approach to shareholder relations;

disclosure of detailed information on the remuneration of the Company's top management, including the annual compensation of the Chairman of the Management Board and the average annual compensation of all other employees, as well as the ratio between them. Transparency on the structure of short-term (variable) remuneration of top management should also be achieved.

**Long-term horizon:**

encouraging and promoting adherence to principles and standards of ethical and responsible business conduct among employees, business partners and suppliers;

implementation of a supplier screening process to systematically identify significant suppliers;

Identify the highest authority to oversee the implementation of the ESG programme for suppliers;

Developing a publicly available and Group-wide tax policy, strategy or principles to guide the Company's approach to taxation;

Improving the quality and transparency of ESG reporting. Expanding areas for disclosure of material ESG indicators in annual reports;

Integration of ESG requirements into the vendor code;

ESG and corporate governance rating upgrade to A (2027) and AA (2030) .

## 7.4 Managing, identifying and mitigating ESG risks

In the risk register, Kazakhtelecom JSC identifies several significant categories of risks directly related to ESG risks, such as:

environmental risk (exceeding emission limits, fines for violations of the Environmental Code of the Republic of Kazakhstan);

personnel risk (staff turnover, competence deficit, social tension, injuries);

compliance risk (conflict of interest, corruption, non-compliance with the code of ethics);

legal risk (non-compliance with environmental and labour laws);

information security risk (leakage of confidential information and loss of customer and Company data);

risk of procurement procedures (lagging behind competitors, delays, shortcomings in the procurement process);

safety of physical assets (occurrence of fires);

risk of functioning of telecommunication network facilities and IT systems.

When analysing risks, it is necessary to consider information about the probability and possible impact on the Company, as well as to determine the timeframe and resources required to mitigate these risks. Deciding not to minimise risk is also a risk management decision.

To effectively assess and manage ESG risks associated with social, technological, physical, economic and natural factors, appropriate mitigation measures must be taken. These measures include insurance, human resource management, education, motivational programmes, as well as physical and technological solutions, diversification of the business portfolio, and cooperation with external parties such as suppliers and customers.

Kazakhtelecom JSC recognises that ESG risks may adversely affect financial results, reputation, relations with stakeholders and the environment. Therefore, the Company strives to continuously improve its ESG practices and reporting, as well as to seek new opportunities for value creation through integration of ESG risk management.

Managing, identifying and mitigating risks related to the environment, social responsibility and corporate governance have become key factors in modern business. Effective risk management can reduce costs, minimise potential losses, increase efficiency, develop new markets and identify new opportunities for innovation and growth for the Company, which also helps to ensure financial sustainability in the long term.

Risks related to climate change should also be considered by the Company as opportunities for growth. On the one hand, physical and transitional risks associated with regulatory pressure and changing market conditions can be transformed into possible ways for the Company to grow by implementing resource and energy efficiency, creating new innovative products with sustainability in mind, and developing new markets and niches, which will contribute to climate change resilience and provide a basis for a more positive financial impact on the Company by aligning with strategic planning and management system

It is important to recognise that ESG risk management has a direct bearing on the long-term sustainability and success of companies. Unrecorded aspects of the Company's negative impact on the environment can lead to environmental disasters, resulting not only in significant reputational damage but also financial losses. Failure to comply with social responsibility can lead to protests, lawsuits and damage to business reputation. Deficiencies in corporate governance can lead to internal conflicts, increased inefficiency and loss of stakeholder confidence.

Kazakhtelecom JSC's risk management system includes assessment and monitoring of financial, legal, operational and strategic risks, but ESG risks have not yet been identified in the Company's main risk perimeter. It is important to emphasise that control and monitoring of social and managerial risks is carried out within the Company to a greater or lesser extent. Nevertheless, in order to create a full-fledged risk management system, it is necessary to pay attention to climate and environmental risks. Therefore, the implementation of strategies and measures to manage ESG-related risks becomes a priority. This includes analysing and assessing risks, developing specific policies and procedures to mitigate these risks, and establishing monitoring and reporting mechanisms to ensure ESG compliance with TCFD standards (IFRS S2).

**Purpose: To organise a system for managing, identifying and mitigating ESG risks regulated by policies and procedures.**

To achieve this goal, the following activities will be undertaken:

**Short-term horizon:**

Identify climate risks. Compile a list of risk owners and processes included in the risk map.

**Medium-term horizon:**

Identify material issues for its operations, a business impact materiality matrix and associated business impact strategies at this time. An in-depth materiality analysis should be conducted within the Company at the level of all stakeholders from suppliers to the Board of Directors.

**Long-term horizon:**

Consider climate, environmental, social and technological risks. Develop reports on the characterisation of emerging risks, the potential impact of emerging/developing risks on the Company's business in order to understand the scale and consequences of these risks, and mitigation measures to reduce the negative impact of these risks on our company;

Integrate ESG risk criteria into the product development and/or approval process;

Develop the Company's strategy to promote and reinforce an effective risk culture throughout the organisation including: Measures to enable employees to proactively identify and report potential risks and continuously improve risk management practices by engaging employees in a structured feedback process; provide targeted training on risk management principles to employees at all levels of the Company;

incorporate risk management criteria into the personnel evaluation process.

## **8. Conclusion**

Kazakhtelecom JSC's ESG Strategy for 2024-2032 is a clear action plan reflecting the Company's ESG ambitions. Implementation of this strategy emphasises the Company's commitment to responsible business, and readiness to actively contribute to solving modern challenges related to climate change, ensuring social justice and improving management practices. Significant ongoing projects and initiatives show a serious attitude to achieving the set goals, which, in turn, will ensure sustainable growth and development of Kazakhtelecom JSC in the next decades.

**Annex 1**

**to ESG Strategy of Kazakhtelecom JSC for 2024-2032**

**Declaration of Independence of the Board of Directors**

**A balance of skills, experience and knowledge:**

The Board and its committees should have a balance of skills, experience and knowledge to ensure that independent, objective and effective decisions are made in the best interests of the organisation and with due regard to the fair treatment of all shareholders and the principles of sustainable development.

**Diversity of the Board of Directors:**

Diversity of the Board of Directors should be ensured according to the following criteria:

experience;

personality traits;

national, ethnic and cultural composition;

gender composition.

**Independent Directors:**

The Board of Directors should include independent directors in the number sufficient to ensure independence of decisions and fair treatment of all shareholders. The recommended number of independent directors on the company's Board of Directors is up to fifty per cent of the total number of members of the Board of Directors.

**Requirements for independent directors:**

Requirements to independent directors are established in accordance with the legislation of the Republic of Kazakhstan and the Charter of Kazakhtelecom JSC (hereinafter - the Company).

**Circumstances affecting the recognition of a director as independent:**

A Director may not have been an employee of the Company or its subsidiary/affiliated organisation for the last three years.

A Director or a member of his family may not receive remuneration from the Company or its subsidiary/affiliated organisation during the current financial year, except for remuneration for serving as a member of the Board of Directors.

Family members of a director may not hold managerial positions in the Company or its subsidiary/dependent organisation.

A Director shall not be a consultant or representative of a company advising the Company and/or the management of the Company.

A director may not be affiliated with any major customer or supplier of the Company.

A Director may not be affiliated to non-profit organisations receiving significant donations from the Society.

A Director may not be the Company's auditor for three years preceding his election to the Board of Directors.

**Duties of an independent director:**

An independent director should monitor the possible loss of independence status and notify the Chairman of the Board of Directors in advance in writing in case of such situations. If there are circumstances affecting the independence of a member of the Board of Directors, the Chairman of the Board of Directors shall immediately bring this information to the attention of the shareholders in order to make an appropriate decision.

**Annex 2  
to ESG Strategy of Kazakhtelecom JSC for 2024-2032**

**Key initiatives and ESG Strategy activities**



Directions	initiatives	Main activities
Environmental aspect	Assessment and reduction of energy consumption in production activities to improve energy efficiency.	<ol style="list-style-type: none"> <li>1) carrying out mandatory energy audits;</li> <li>2) Installation of motion/presence sensors for the lighting system;</li> <li>3) setting the hibernation mode of personal computers;</li> <li>4) application of reflective film on windows;</li> <li>5) modernisation of process equipment with higher efficiency of at least 0.94-0.96;</li> <li>6) use of free-cooling technology in the construction of new data centres;</li> <li>7) modernisation of existing data centres to improve energy efficiency;</li> <li>8) Elimination of heat losses through insulation of buildings and structures as part of measures to prepare the Company's facilities for the heating season;</li> <li>9) optimisation of heated spaces in use consists in reducing unused spaces;</li> <li>10) setting energy consumption targets;</li> <li>11) separate metering for all data centres in terms of energy consumption.</li> </ol>
	Setting emission reduction targets in accordance with international standards.	<ol style="list-style-type: none"> <li>1) conduct an assessment of GHG emissions Scope 3;</li> <li>2) Identify climate opportunities under TCFD (IFRS S2) and develop a methodological approach for identifying climate risks and opportunities;</li> <li>3) Analyse scenarios related to climate change in accordance with TCFD recommendations (IFRS S2);</li> <li>4) Develop a plan to adapt to the identified physical climate risks;</li> <li>5) designation of a responsible person at the level of the Management position.</li> </ol>
	Investing in carbon offsetting projects.	<ol style="list-style-type: none"> <li>1) purchase of green certificates;</li> <li>2) building a portfolio of offset projects.</li> </ol>
	Waste Management.	<ol style="list-style-type: none"> <li>1) development of instructions on production and consumption waste management on the territory of the enterprise;</li> <li>2) Development of a waste management programme;</li> <li>3) conclusion of a contract with companies that collect and recycle waste;</li> <li>4) setting targets for waste utilisation and disposal.</li> </ol>
Social aspect	Strengthening measures to protect customer data and privacy.	<ol style="list-style-type: none"> <li>1) introduction of mechanisms for informing clients about data privacy protection issues: the nature of the information collected, transfer of data to third parties, data retention periods in corporate files;</li> <li>2) The Management Board of Kazakhtelecom JSC should ensure that the Company analyses and assesses the adequacy of the Company's internal controls with regard to the protection of customers' personal data received through the Company's sales channels 2023-2024;</li> <li>3) Kazakhtelecom JSC's Management Board to strengthen control over response to information security incidents;</li> </ol>

		4) Consider including regular audits of insider and confidential information management processes and assessment of their effectiveness in the Safeguards Map and/or work plans of compliance, risk management and internal controls, and internal audit services.
	Ensuring that telecommunications services are accessible to all, including people with disabilities.	Equipping hospitals with 5G internet networks, fibre optic cables for digitalisation of medicine.
	Implementing diversity and inclusion programmes in the workplace.	<ol style="list-style-type: none"> <li>1) Develop and implement a gender pay equity programme, if applicable set quantitative targets and timelines to reduce gender pay gaps;</li> <li>2) Introduce initiatives to increase staff diversity beyond the regional women's programme (e.g. hiring employees with disabilities beyond the local minimum, establishing employee associations/groups to discuss diversity issues).</li> </ol>
	Providing opportunities for training and career development.	<ol style="list-style-type: none"> <li>1) launch a course aimed at increasing knowledge of the company's processes, including those related to anti-corruption and labour protection;</li> <li>2) develop ESG trainings for employees;</li> <li>3) Introduce training and development programmes that ensure employees share responsibility for creating a safe, respectful and inclusive culture;</li> <li>4) compliance training for their employees by the heads of subsidiaries and affiliates;</li> <li>5) Training employees in lawful and value-oriented behaviour and ethical principles. Raising employee awareness of business ethics. Cascade of internal training from top management to management and employees;</li> <li>6) to develop training courses on personnel diversity issues, in particular, on overcoming unconscious bias when hiring personnel for the top management of Kazakhtelecom JSC and structural subdivisions of the HR system (SV&amp;EE, EMS).</li> </ol>
	Promoting the health and safety of workers.	<ol style="list-style-type: none"> <li>1) create regulations for disclosure of information on HSE performance among contractors (including the number of fatalities during work at the Company's facilities);</li> <li>2) consider introducing an HIV/AIDS programme among employees.</li> </ol>
	Supporting local communities through CSR initiatives.	<ol style="list-style-type: none"> <li>1) set the Company's goals or objectives for the development of local communities (support of the regions where the Company operates) and the timeframe for their achievement;</li> <li>2) introduce the practice of monitoring local community development programmes (support of regions of operation) and charity programmes.</li> </ol>

	<p>Ensuring a diverse and independent Board of Directors</p>	<ol style="list-style-type: none"> <li>1) increase the share of independent directors (target level of 50% of the total number of Board members according to the UKCGC (London Stock Exchange).</li> <li>2) compliance with the provisions of the declaration of independence of the members of the Board of Directors;</li> <li>3) develop a Board diversity policy that takes into account diversity factors such as gender, age, race, ethnicity, country of origin, nationality or cultural background in the process of nominating candidates to the Board;</li> <li>4) increase the share of women on the Board of Directors and in the Executive Body (target level - the share of women on the Board of Directors and in the Executive Body of the Company should be at least 20% in the medium term and the share of women among management personnel at 35% by 2027);</li> <li>5) ensure that the talent pool for the various levels of management in the Company, including BOD members and employee training plans, is kept up-to-date. In doing so, attention should be paid to factors such as current and future skills gaps, gender equality, ethnic diversity and inclusion;</li> <li>6) elect an independent director as the Chairman of the Board of Directors: if it is impossible to elect an independent director as the Chairman of the Board of Directors, determine a senior independent director from among the elected independent directors.</li> </ol>
<p>Governance and ethics</p>	<p>Developing strict anti-corruption policies and procedures to combat corruption.</p>	<ol style="list-style-type: none"> <li>1) ISO 37001 (Anti-Bribery System) certification;</li> <li>2) development of mechanisms for monetary incentives for employees of CA and branches of Kazakhtelecom JSC who reported the fact of corruption or other offences or otherwise assisted in counteracting the commission of corruption or other offences;</li> <li>3) Conducting a training course to improve understanding of processes within the company, including anti-corruption issues;</li> <li>4) Developing a briefing instruction for managers, including heads of divisions and departments in the area of anti-corruption;</li> <li>5) organising training sessions for members of the management and executive bodies of the Company and SDCs on anti-corruption issues, demonstrating the latest trends in compliance and corporate culture;</li> <li>6) holding training events for employees of organisations on anti-corruption issues by the heads of the Company's branches and structural subdivisions and the first heads of subsidiaries and affiliates;</li> <li>7) carrying out annual assessment of corruption risks in Kazakhtelecom JSC in all departments and structural subdivisions where corruption offences are likely to occur;</li> <li>8) conducting due diligence on distributors and service providers (Third-party Due Diligence). Evaluate the company's efforts to assess and manage corruption risks associated with third-party suppliers and partners by measuring the number of due diligence processes conducted and any actions taken to mitigate risks. Implement a rigorous due diligence process for third-party suppliers and partners to mitigate corruption risks;</li> </ol>

		<ol style="list-style-type: none"> <li>9) Conduct a comprehensive baseline assessment of the company's current anti-corruption practices, identifying weaknesses and high-risk points. Regularly monitor and audit the company's operations for compliance with anti-corruption laws and regulations;</li> <li>10) development of anti-corruption policies and procedures to combat corruption in accordance with international requirements and recommendations of the OECD, Basel Institute on Governance, UN Global Compact, International Chamber of Commerce (ICC), World Economic Forum Partnership against Corruption.</li> </ol>
	<p>Promoting ethical business conduct and behaviour in the organisation.</p>	<ol style="list-style-type: none"> <li>1) to increase the share of local content in the procurement of goods, works and services, to introduce new procurement rules on the Fund's electronic platform, to develop a Code of Conduct for Suppliers, and intends to increase the percentage of competitive method and strengthen partnerships with local communities in various ways;</li> <li>2) development and approval of a policy regulating the approach to shareholder relations;</li> <li>3) disclosure of detailed information on the remuneration of the Company's top management, including the annual compensation of the Chief Executive Officer and the average annual compensation of all other employees, as well as the ratio between them. Transparency on the structure of short-term (variable) remuneration of top management should also be achieved;</li> <li>4) encouraging and promoting adherence to principles and standards of ethical and responsible business conduct among employees, business partners and suppliers;</li> <li>5) implementing a supplier screening process to systematically identify significant suppliers;</li> <li>6) Identify the highest authority to oversee the implementation of the ESG programme for suppliers.</li> <li>7) Developing a publicly available and Group-wide tax policy, strategy or principles to guide the Company's approach to taxation;</li> <li>8) improving the quality and transparency of ESG reporting. expanding the areas for disclosure of material ESG indicators in annual reports;</li> <li>9) Integration of ESG requirements into the vendor code;</li> <li>10) improving ESG and corporate governance ratings to A (2027) and AA (2030).</li> </ol>
	<p>Manage, identify and mitigate ESG risks.</p>	<ol style="list-style-type: none"> <li>1) Identify climate risks. Compile a list of risk owners and processes included in the risk map;</li> <li>2) Identify material issues for the business, a business impact materiality matrix and associated business impact strategies for the current business. An in-depth materiality analysis should be conducted internally at all stakeholder levels from suppliers to the Board of Directors;</li> <li>3) Consider climate, environmental, social and technological risks. Develop reports on the characterisation of emerging risk, the potential impact of emerging/developing risk on the Company's business in order to understand the scale and consequences of this risk, and mitigation measures to reduce the negative impact of this risk on our company;</li> <li>4) perform sensitivity analyses or stress testing of non-financial risks;</li> <li>5) Integrate ESG risk criteria into the product development and/or approval process;</li> <li>6) Develop the Company's strategy to promote and reinforce an effective risk culture throughout the organisation including: Measures to enable employees to proactively identify and report</li> </ol>

		<p>potential risks and continuously improve risk management practices by engaging employees in a structured feedback process;</p> <p>7) provide targeted training on risk management principles to employees at all levels of the Company;</p> <p>8) incorporate risk management criteria into the personnel evaluation process.</p>
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**Annex 3**  
**to ESG Strategy of Kazakhtelecom JSC for 2024-2032**

**Key performance indicators of the Company within the framework of ESG initiatives**

initiatives	KPI	Realisation period	Responsible unit
<b>Environmental aspect</b>			
Assessment and reduction of energy consumption in production activities to improve energy efficiency	Reduced energy consumption of lighting systems due to the use of energy-saving bulbs.	Realisable period 2023-2025.	UDF
	Reduced energy consumption of lighting systems as a result of the introduction of motion sensors	2024-2025	UDF
	Reduced power consumption of personal computers as a result of PC hibernation and complete shutdown	2024-2025	DIT
	Reduced energy consumption as a result of switching copper networks to fibre-optic links	2024-2032.	UDF
<b>Social aspect</b>			
Strengthening measures to protect customer data and privacy	NPS (Net Promoter Score) - Consumer Loyalty Index	permanently	Director of Customer Experience Management
	Time of absence of physical security and technical protection of the Company's facilities	permanently	Managing Director for Security

	Compensation for damage to the Company (performance audits, investigations and other measures) (of total damage)	permanently	Managing Director for Security
	Carrying out activities to counter FROD on telecommunications networks (internal, external)	permanently	Managing Director for Security
	Decrease in FROD and reduction in the total amount of FROD for the Company	permanently	Managing Director for Security
	Implementation of corporate governance procedures within the framework of the 5G project (submission to the Board of Directors of Kazakhtelecom JSC of a report on the implementation of the 5G project, consideration of issues submitted for consideration by the management bodies of Kcell JSC and MT-S LLP on the 5G project)	permanently	Managing Director of Security, Managing Director for Strategy and External Asset Management
	Launch of products and new network functionality	2024-2032	DRNB
Making telecommunications services accessible to all, including people with disabilities	Implementation of the action plan of the JRun Strategy Roadmap	2024-2032	Responsible units
	Inclusion of Kazakhtelecom JSC's measures in the National Project "Affordable Internet" for 2023-2027.	2024-2027	Managing Director for Business Development with Government Bodies
	Approval of the strategy of service quality management in Kazakhtelecom JSC	until 2027	Director of Customer Experience Management
	Approval of the Service Quality Bonus Rules	until 2027	Director of Customer Experience Management
	Introduction of unified standards of service provision to external and internal customers	until 2027	Director of Customer Experience Management
	Digital service dashboard (QlikSense)	until 2027	Director of Customer Experience Management
	Achievement of the NPS (Net Promoter Score) loyalty index	permanently	Director of Customer Experience Management
	Fixing the volume of net FROD before the project is put into commercial operation Migration of DRM DRM 2.0	until 2027	UDF

	Launch of innovative products into commercial operation jointly with divisions	permanently	Chief Innovation Officer
Implementing diversity and inclusion programmes in the workplace	Increase in labour productivity	annually	Managing Director for Human Resources
	Implementation of the communication plan for EX issues	annually	Managing Director for Human Resources
	Developing a concept for creating and motivating project teams	2024-2032	SVIOE
	SRS Index	annually	ODMS
	Internal user satisfaction (ENPS)	annually	Managing Director for Human Resources
Providing opportunities for training and career development	IR screening	annually	ODMS
	Dashboard implementation	2024	DIT
	Digitalisation of EX processes according to Employee Journey Map (EJM) (50%)	2024-2032	DIT
	Execution of the comprehensive action plan to ensure social stability of Samruk	annually	ODMS
Promoting the health and safety of employees	Achieving zero injuries through improved safety culture, commitment, training and monitoring of safe work practices (LTIF -Lost Time Injury Frequency).	annually	S&L
	Implementation of the occupational health and safety action plan	annually	S&L
	Implementation of the Internal Control Plan for Occupational Health and Safety	annually	S&L
	Training of the Company's employees on the following topics: Occupational Safety Culture; Injury Prevention Programme (IPR); Safety Programme for Managers (SWE-2);	annually	S&L

	Timely passage of employees medical commission.	annually	S&L
	Attestation of workplaces for labour conditions	annually	S&L
	Well Being (reducing the rate of sickness with temporary loss of working capacity)	annually	ODMS
Supporting local communities through CSR initiatives	Increasing information activity of divisions (press events, events, etc.)	annually	PR department
	Implementation of quarterly Media Plans	quarterly	PR department
	Number of publications about the company's activities in mass media	permanently	PR department
	Execution of the Communications Plan for the Transformation Programme	annually	PR department
<b>Corporate governance</b>			
Independent and diverse composition of the Board of Directors	Share of independent directors in the company's Board of Directors according to UKCGC (target level - 50% of the total number of members of the Board of Directors)	until 2032	Foundation
	Share of independent directors (target level - 66%)	until 2032	Foundation
	Share of women in the Board of Directors and Executive Body (target level - at least 20%)	until 2032	Foundation
	Proportion of women in senior management (target 30 per cent by 2027)	until 2032	Management of the Company
	Number of hours of training provided to directors, including gender equality, ethnic diversity and inclusion.	until 2032	KU
Developing strict anti-corruption policies and procedures to combat corruption.  Ethical business conduct	Obtaining ISO 37001 certification	2026	SC
	Introduction of incentive mechanisms for reporting corruption cases	2026	SC
	Development of instructions for briefings for managers on anti-corruption issues	2026	SC



	Number of hours of anti-corruption training conducted	annually	SC
	Annual corruption risk assessment of all departments and divisions where corruption offences are likely to occur	annually	SC
	Third-Party Due Diligence of distributors and service providers to mitigate corruption risks	annually	SC
	Regular monitoring and auditing of the company's operations for compliance with anti-corruption laws and regulations	annually	SC
	Development of anti-corruption policies and procedures to combat corruption in accordance with international requirements and recommendations OECD, Basel institute on Governance UN Global Compact, International Chamber of Commerce, World Economic Forum partnership against corruption	2026	SC
Promoting ethical business conduct and behaviour in the organisation.	Developing a shareholder relations policy	2025	DCU&SD
	Supplementing ESG principles and requirements in the Supplier Code of Conduct	2025	DTC
	Reduction of staff turnover to 5%	until 2032	Managing Director for Human Resources
	ESG and corporate governance rating upgrade to A level (2027) and AA level (2030)	until 2032	DCU&SD
	Level of shareholder involvement in decision-making and feedback processes.	annually	Secretariat
ESG risk management system	Number of in-house ESG risk trainings and seminars held.	2024-2032	DCU&SD/DUR&VK
	Integrate ESG risk criteria into the company's product and service development process.	2026	DCU&SD/DUR&VK
	Development of an action plan for ESG risk management	2026	DCU&SD/DUR&VK

	Carrying out ESG (climate) risk identification	2024-2026	DCU&SD/DUR&VK
	Development of procedures and policies for ESG risk management	2024-2026	DCU&SD/DUR&VK
	Development of a methodology to identify ESG risks	2024-2025	DCU&SD/DUR&VK

**Annex 4**

**to ESG Strategy of Kazakhtelecom JSC for 2024-2032**

**Report on climatic risks and opportunities of Kazakhtelecom JSC**

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## **Purpose of the Report**

The purpose of this Report is to identify the company's potential climate risks and apply the developed climate change scenarios.

The Report provides qualitative and quantitative assessment of the impact of climate risks and opportunities on the company's financial results, as well as the development of at least two scenarios to assess the impact of climate change on the detail of Kazakhtelecom JSC (hereinafter - Kazakhtelecom, the company). The analysis focuses on creating climate change scenarios adapted to Kazakhtelecom's priority facilities and relevant components of its operations, which allows modelling and understanding potential climate challenges and opportunities that the company may face in the future.

The report also includes identification of specific climate action priorities for the low-carbon development of the company's business. It provides recommendations on how the insights gained from analysing climate change scenarios can potentially be integrated into the company's strategies and operations. These recommendations aim to help the company adapt to and mitigate climate change, while promoting sustainable and low-carbon business practices.

## **Brief overview**

The key assets of Kazakhtelecom, including 25 data centres located in major cities and regional centres of the Republic of Kazakhstan, were selected for physical risk analysis. These facilities represent three main segments of the company's value chain: infrastructure, operations and maintenance.

The climatic hazards considered in this analysis include increases in average, maximum and minimum temperatures, precipitation, flooding and extreme weather conditions (wind speed). These risks were selected because of their significance for Kazakhtelecom's operations and assets. The results of the analysis showed that two climatic factors pose the greatest threat to the company's assets: temperature rise and floods.

Rising temperatures can cause loss of productivity of workers and increase energy demand for cooling of buildings and equipment, especially in cities such as Astana, Almaty and Shymkent. In 2023, an increase in fuel consumption for stationary emission sources (boilers) and purchased heat was recorded due to unfavourable weather conditions, including increased precipitation and days with sub-zero temperatures.

Floods are another significant threat as they can cause structural damage to assets, especially in the northern and western regions of the country. The physical indicators of these climate hazards tend to increase over time and vary depending on the scenario.

The analysis of transition risks has shown that they can have a significant financial impact on Kazakhtelecom's assets, especially in the NZE 2050 scenario, which assumes large investments in renewable energy sources and "green" technologies. Despite the initial growth of financial indicators in this scenario, by 2050 they may start to stabilise or even decline due to the need for significant investments and increased operating costs.

Physical risks, while important, have a less significant financial impact on the company compared to transitional risks. However, the historically dry and harsh climatic conditions in Kazakhstan could lead to more severe impacts in the future, especially in the high emissions scenario (RCP 8.5). In this scenario, EBITDA and operating profit are projected to decline significantly by 2060 due to increased operating costs.

Thus, Kazakhtelecom demonstrates stability and financial sustainability in most climate scenarios, except for RCP 8.5 scenario, where financial risks turn out to be the most significant. These risks, however, are related to the distant future and do not have an immediate impact on the company's current stability.

## **1. Basic information about the Report**

The Task Force on Climate-related Financial Disclosures (TCFD) was established by the Financial Stability Board (FSB) in December 2015 in response to growing concerns about the financial risks posed by climate change.

TCFD has played a key role in raising awareness of the financial risks associated with climate change and accelerating the adoption of climate risk reporting. The TCFD methodology has become the industry standard for climate risk disclosure, helping to change the way companies and investors approach managing climate challenges and opportunities.

The International Sustainability Standards Board (ISSB) was established in November 2021 to develop "sustainability-related disclosure standards that provide investors and other capital market participants with information about the sustainability risks and opportunities of companies to help them make informed decisions."

On 26 June 2023, ISSB issued two international sustainability disclosure standards:

IFRS S1 General Disclosure Requirements for Financial Information Related to Sustainable Development;

IFRS S2 Climate-related Disclosures.

IFRS S1 and IFRS S2 are effective for annual periods beginning on or after 1 January 2024. This means that in 2025, investors will be able to see information based on inputs from entities applying these standards in the 2024 reporting period.

The ISSB operates under the auspices of the International Financial Reporting Standards Foundation (IFRS Foundation) and aims to bring together various existing sustainability standards and guidelines, such as those developed by the Global Reporting Initiative (GRI), TCFD and others.

The requirements of IFRS S2 Climate-related Disclosures include and are fully aligned with the four pillars and 11 recommended disclosures published by the TCFD.

Scenario analysis helps companies identify the potential impacts of climate change on their operations and financial performance, develop effective strategies to manage these risks, and capitalise on emerging opportunities. It also facilitates clear, transparent and comparable disclosure of climate risks and opportunities to investors, regulators and other stakeholders.

Since the publication of the TCFD report, there has been an increased focus on scenario analysis in financial and climate risk reporting. Many companies and financial institutions have

adopted scenario analysis as a key tool to assess climate risks and opportunities, and to align their strategies with a low-carbon and sustainable future.

The adoption of the scenario analysis was driven by the recognition that climate change poses significant financial risks to businesses and investors. Failure to realise these risks could result in serious economic and social consequences. Scenario analysis provides a framework for businesses to identify, assess and manage these risks in a structured and systematic way, and to take proactive steps to build sustainable growth.

This report includes the identification of the potential climate sensitivity of Kazakhtelecom's value chain and the application of developed climate change scenarios for stress testing.

### **Climate change scenarios**

Publicly available scenarios are usually developed by international research or regulatory groups. Such scenarios include useful information on possible greenhouse gas emissions, physical climate change, environmental impacts and socio-economic conditions. At the same time, an organisation may choose to develop its own set of climate-related scenarios or use customised (mixed) climate scenarios.

Physical climate scenarios typically represent the results of global climate models that show the response of the Earth's climate to changes in atmospheric greenhouse gas concentrations. The Intergovernmental Panel on Climate Change (IPCC, IPCC) scenarios based on "Representative Concentration Pathways" (RCPs) are examples of physical climate scenarios adopted by the IPCC. Model outputs are often 'scaled up' to identify potential climate changes at the local level, which are then used to create climate change impact scenarios (initial impacts such as floods or droughts, secondary impacts such as crop loss, and tertiary impacts such as famine).

Transition scenarios typically present plausible assumptions about the development of climate policies and the deployment of "climate-friendly" technologies to limit greenhouse gas emissions. Transition scenarios draw conclusions, often based on modelling, about how policies and technologies related to energy supply and greenhouse gas emissions interact with economic activity, energy consumption and GDP among other key factors. Such scenarios can have material implications for organisations in particular sectors of the economy in the short to medium to long term. These scenarios may reflect a faster or slower transition depending on different rates of change in key parameters.

### **Risks associated with climate change: physical and transition risks**

According to TCFD recommendations, climate risks are roughly divided into two categories: transient and physical climate risks. Transition risks arise from the transition to a low-carbon economy. Physical risks relate to damage and material losses due to the long-term financial impacts caused by natural hazards in a changing climate.

Physical risks are related to the impacts of climate change. These risks can be triggered by specific events (acute) or associated with long-term changes in climate patterns (chronic). Physical risks can have financial implications for organisations, such as direct damage to assets

and indirect impacts due to supply chain disruption. Organisations' financial performance can also be affected by changes in water availability, sources and quality; food security; and extreme temperature changes affecting organisations' premises, operations, supply chains, transport needs and employee safety.

Transition risks relate to the pace and extent to which the organisation manages and adapts to internal and external changes to reduce greenhouse gas emissions and transition to renewable energy. Transition requires changes in policy and legal regulation as well as changes in the marketplace to address mitigation and adaptation issues related to climate change. Depending on the nature, speed and direction of these changes, transition risks can present different levels of financial and reputational risk to organisations. Alternatively, if an organisation is a low-carbon emitter and operates in the renewable energy or climate transition market, it may face market, technological and reputational opportunities.

### **Opportunities related to climate change**

Efforts to mitigate and adapt to climate change also create opportunities for organisations such as, for example, resource efficiency and cost savings, adopting low carbon energy sources, developing new products and services, accessing new markets, maximising new policies that subsidise efficiency and clean energy, and building resilience across the supply chain. Opportunities related to climate change will vary depending on the region and sector in which the organisation operates.

### **Climate-related financial impacts**

The financial impact of climate risks has become a significant challenge for businesses, investors, governments and financial institutions. Climate risks encompass a wide range of financial challenges and uncertainties arising from the physical and transient impacts of climate change.

Key aspects of the financial impact of climate risks:

Potential financial impacts of physical risks:	Potential financial impacts of transitional risks:
<p>Damage to and loss of assets</p> <p>Supply chain disruptions</p> <p>Increased operating costs</p>	<p>Regulatory risks</p> <p>Market risks</p> <p>Legal and liability</p> <p>Reputational and brand risks</p> <p>Risks associated with loans and investments</p>

	<p>Impact on the insurance industry</p> <p>Volatility of financial markets</p> <p>Changes in credit ratings</p>
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## 2. Climate risk assessment in the context of the Company's value chain

The main sphere of Kazakhtelecom's activity is provision of info-communication services of telephony, data transmission networks, broadband access, video broadcasting, SIP-telephony (Session Initiation Protocol), IPTV (Internet Protocol Television) and hosting.

In 2021, the primary inventory of GHG emissions was carried out for the following branches of Kazakhtelecom operating in all regions of Kazakhstan:

Corporate Business Division;

Retail Business Division;

Network Division Association;

Information Technology Division;

Telecom Comptroller's Office;

"Service Factory."

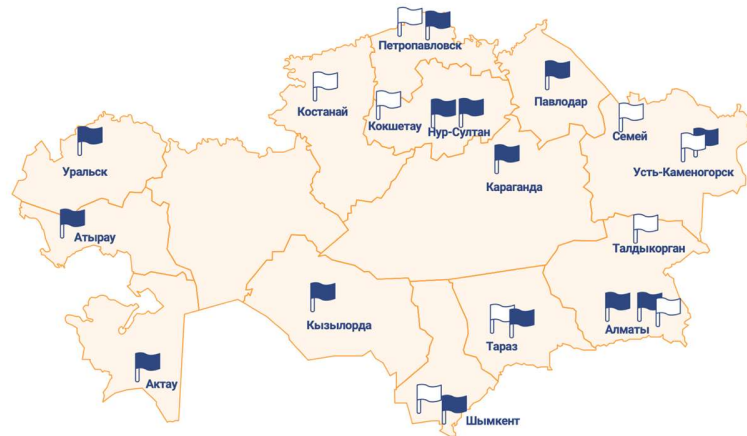
Corporate University;

Directorate for the construction of telecommunications and infrastructure facilities.

The inventory boundaries did not include subsidiaries and other affiliated organisations. In the future, when improving the GHG emissions accounting system, the Company plans to expand the inventory boundaries (for more details, see the 2022-2032 INPP)

A number of assets were selected for physical risk analysis, including 25 data centres in major cities and regional centres of the Republic of Kazakhstan. These 25 locations cover three segments of the company's value chain: infrastructure, operations and maintenance.





 - Data Centre  - Modular Data Centre

Figure 1. Kazakhtelecom's Data Processing Centres (DPCs)

Climate risk analysis for key segments of the value chain presents the main physical climate risks to which Kazakhtelecom's assets are exposed and their potential impact on business operations. It is based on the results of the physical risk analysis.

Table 1. Value chain and associated climate risks

Name	Category	Subcategory	Detailed description of climate risk	Illustrative description of the impact
Operations and Infrastructure	Chronic	Temperature	For operational sites, many are subject to a multitude of climatic threats (air temperature, heat waves, annual maximum daily temperature, wet bulb temperature). These threats can also significantly affect the performance and safety of employees.	<p>Deterioration of production capacity.</p> <p>Some equipment may not be able to withstand high temperatures.</p> <p>Additional costs (investment in cooling systems).</p> <p>Impact on employee health: increased risk of heat-related illnesses and risk of poor decision-making, which increases the likelihood of</p>

				injuries, accidents and reduces productivity.
Infrastructure	Chronic	Temperature	Temperature decline is a climate threat to which infrastructure assets are considered highly exposed (in terms of cold wave frequency or number of consecutive days, and for annual minimum daily temperature).	Annual damage expressed in terms of increased energy consumption costs associated with heating. Increased structural damage to the physical infrastructure.
Operations	Chronic	Increased humidity and precipitation	Moisture and precipitation can affect the reliability of equipment and cable networks, especially in areas with high levels of precipitation.	Increased costs for maintenance and replacement of equipment. Risk of corrosion of metal parts of the infrastructure. Interruption of work due to equipment damage and failures
	Spicy	Floods	Floods pose a significant climatic risk to Kazakhtelecom's assets as they can lead to flooding of infrastructure and serious damage to equipment	Floods pose a significant climatic risk to Kazakhtelecom's assets as they can lead to flooding of infrastructure and serious damage to equipment.
	Chronic	Extreme weather (wind load)	Assets in areas with high winds are at risk of structural damage and outages.	Increased repair and restoration costs. Interruption of operations due to infrastructure damage. Impact on employee safety.

### 3. Choice of climate change scenarios

In order to analyse the applicability of climate models in the telecoms sector among reference companies, reports from companies such as OTE Group, Telenor, Deutsche Telekom, Elisa, INWIT, Telefonica, Swisscom, Singtel, Tele2 and Telstra were examined. The results show that most companies use a combination of climate scenarios to assess risks and opportunities, with RCP 8.5, RCP 2.6 and RCP 4.5 scenarios being the most common. These scenarios cover both worst-case and optimistic projections, allowing companies to prepare for different future scenarios and make informed strategic decisions. Additionally, reference companies actively use the NZE 2050 scenario, which plays an important role in long-term planning centred on achieving climate goals and contributes to the development of strategies that are consistent with international climate agreements and sustainable development goals.

RCP<sup>15</sup> (Representative Concentration Pathways) scenarios are a set of greenhouse gas (GHG) concentration trajectories used by the Intergovernmental Panel on Climate Change (IPCC) to assess the potential impacts of climate change.

There are four RCP scenarios, ranging from a low emissions scenario (RCP2.6) to a high future emissions scenario (RCP8.5). Each scenario takes into account a number of factors including technological, economic and behavioural changes affecting nature.

RCP2.6 is a low-emissions scenario in which aggressive mitigation efforts lead to a peak in greenhouse gas emissions around 2020, followed by a rapid decline to near zero by the end of the century. This scenario assumes a strong move towards renewable and low-carbon energy sources, widespread deployment of energy efficiency measures, and significant changes in land use.

RCP4.5 is a medium emissions scenario in which emissions peak in the middle of the century and decline to half of the peak by 2100. This scenario assumes moderate efforts to introduce changes in the technological sphere.

RCP8.5 is a high-emissions scenario in which emissions continue to increase throughout the 21st century, with little effort to mitigate climate change. This scenario assumes continued use of fossil fuels, limited deployment of renewable energy and limited technological change.

RCP scenarios are used to assess the impacts of climate change on various sectors such as agriculture, health and infrastructure. These scenarios provide a range of possible outcomes based on the amount of global greenhouse gas emissions and help in planning future adaptation and mitigation strategies.

Net Zero Emissions by 2050 (NZE 2050) is a scenario designed to achieve net zero greenhouse gas emissions by 2050. This scenario assumes significant reductions in carbon emissions across all sectors of the economy. The basic idea is to reduce emissions to a level that can be offset by natural or technological methods of absorbing carbon dioxide, such as reforestation or the use of carbon capture and storage technologies.

The NZE 2050 scenario requires a transition to renewable energy, increased energy efficiency, innovative technologies and a fundamental change in consumption patterns. Achieving this goal also requires large-scale international co-operation, significant investment in new technologies and policies aimed at sustainable development. The NZE 2050 scenario is critical to limiting global warming to 1.5°C, which is in line with the goals of the Paris Climate Agreement.

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<sup>15</sup> Detailed information on RCP scenarios is available at [www.ipcc.ch](http://www.ipcc.ch)

## 4 Analysing the impact of physical and transient climate risks

### 4.1 Analysing the Impact of Physical Climate Risks

#### 4.1.1 Climate indicators included in the analysis.

The list of key indicators included in the analysis was selected based on the following methodology:

Climate risks that have been identified in the assessment;

Risks assessed as "hotspots" (i.e., having high and very high exposure) on average for 25 assets;

Climate risks identified by reference companies<sup>16</sup>.

The following is the final list of indicators included in the analysis:

Table 2. List of indicators relevant for analysing climate change

Category	Type	Indicator and unit of measure	Significance for exposure risk analysis
Temperature	Chronic	Annual minimum daily minimum temperature (°C)	Relevant due to the risk of freezing of equipment and wiring
	Chronic	Annual maximum daily maximum temperature (°C)	Relevant for cooling equipment and preventing overheating
Precipitation	Chronic	Annual precipitation	Operation of underground and above ground cables, risk of flooding and corrosion, especially in regions with high humidity and frequent precipitation.
Floods	Spicy	River flooding	Increased structural damage to assets, it is important to consider when planning the location of infrastructure in low-lying areas.
Extreme weather	Spicy	Maximum wind speed (m/s)	Protecting antennas and masts, can cause equipment failure in steppe regions known for high winds.

<sup>16</sup> OTE Group, Telenor, Deutsche Telekom, Elisa, INWIT, Telefonica, Swisscom, Singtel, Tele2, Telstra

Assets were analysed based on two metrics:

- 1) the physical value of the indicator (i.e., which asset has the highest temperature in the RCP scenario).
- 2) asset exposure (i.e., when comparing all assets in the same climate region, which asset has the highest physical values under the RCP scenario).

#### 4.1.2 Average change in physical values from baseline

Total potential exposure

The table below shows the average (for the original 25 assets) and the change over time and by scenario.

Table 3: Physical values of indicators for each scenario and their change compared to the baseline level

Category	Physical hazards	Historical data	RCP 2.6 - SSP 1-2.6 (2032)	Change (%)	RCP 2.6 - SSP 1-2.6 (2060)	Change (%)	RCP 4.5 - SSP2 -4.5 (2032)	Change (%)	RCP 4.5 - SSP 2-4.5 (2060)	Change (%)	RCP 8.5 - SSP 5-8.5 (2032)	Change (%)	RCP 8.5 - SSP 5-8.5 (2060)	Change (%)
Temperature	Air surface temperature (°C)	10.25	10.50	2.44%	10.75	4.88%	10.60	3.41%	11.00	7.32%	11.00	7.32%	12.00	17.07%
Temperature	Annual minimum daily minimum temperature (°C)	-5.15	-4.98	-3.23%	-4.86	-5.71%	-4.91	-4.71%	-4.72	-8.19%	-4.60	-10.67%	-4.09	-20.60%
Temperature	Annual maximum daily maximum temperature (°C)	14.91	15.20	1.95%	15.67	5.10%	15.40	3.29%	15.91	6.70%	16.12	8.11%	17.02	14.17%
Precipitation	Snow level (mm)	150.00	155.00	3.33%	160.00	6.67%	157.00	4.67%	165.00	10.00%	160.00	6.67%	170.00	13.33%
Precipitation	Annual precipitation (mm/year)	300.00	310.00	3.33%	320.00	6.67%	315.00	5.00%	330.00	10.00%	320.00	6.67%	340.00	13.33%

Floods	River flooding (m)	5.00	05.10	2.00%	5.20	4.00%	5.15	3.00%	5.30	6.00%	5.20	4.00%	5.50	10.00%
Extreme weather	Wind speed (m/s)	25.00	25.50	2.00%	26.00	4.00%	25.80	3.20%	26.50	6.00%	26.00	4.00%	27.00	8.00%

In general, average precipitation totals (both snowfall and rainfall) decrease over time regardless of the climate scenario. This means that there will be fewer and shorter cold waves and less precipitation. Conversely, temperature indicators (maximum and minimum air temperature) will increase over time regardless of the scenario, resulting in a warmer environment for all assets.

For each risk, the first column shows the exposure, while the second column shows the change from the historical period.

**Temperature**

This indicator includes three climate hazards: rising average temperatures, high temperatures, and low temperatures.

*Changes in physical values compared to baseline*

Overall, there is an increase in temperature for air surface temperature and annual maximum daily maximum temperature. In the RCP8.5 scenario, the air surface temperature increases by 17% by 2060 compared to the baseline, while the annual maximum daily maximum temperature increases by 14% over the same period. The minimum temperature also, increases by 20% and this may cause more significant impacts than the increase in high and average temperatures.

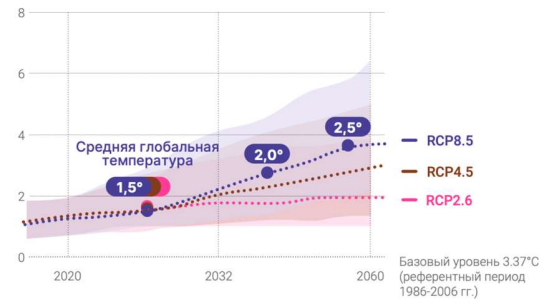
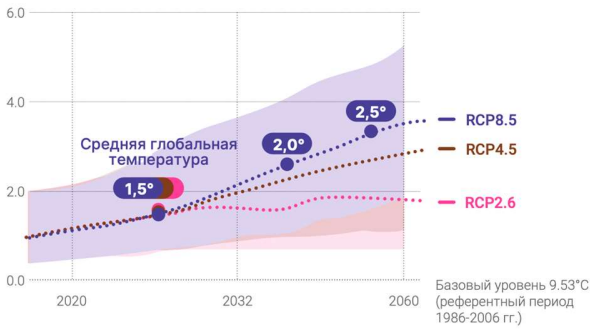
*Increase in average temperature*

Rising average temperatures can adversely affect the operation and performance of telecoms facilities, especially cooling systems, power equipment and storage infrastructure. As average temperatures rise, equipment may not be prepared to operate in such extreme conditions, requiring additional investment in upgrading cooling and ventilation systems. This can also affect the health of employees, especially those working in open areas without access to air conditioning. There is an increased risk of heat illness, impaired concentration and decision-making, which can lead to an increased incidence of incidents, accidents and reduced overall company productivity.

Figure 2: Assets located in the most vulnerable regions to temperature threats

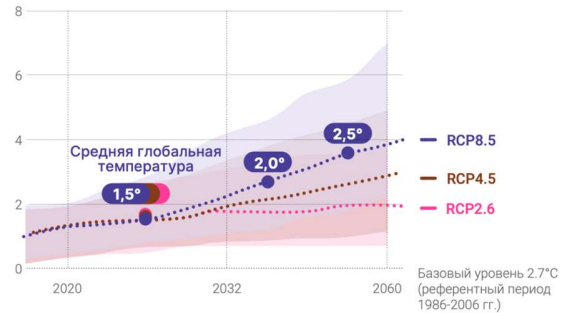
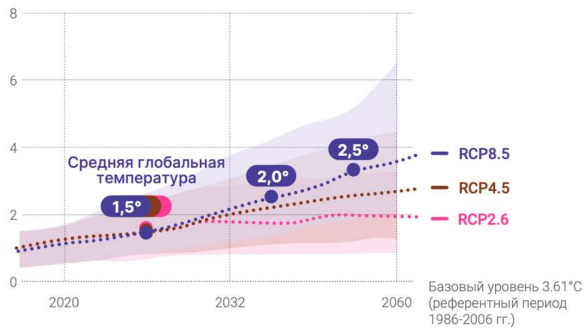
Atyrau:

Astana:



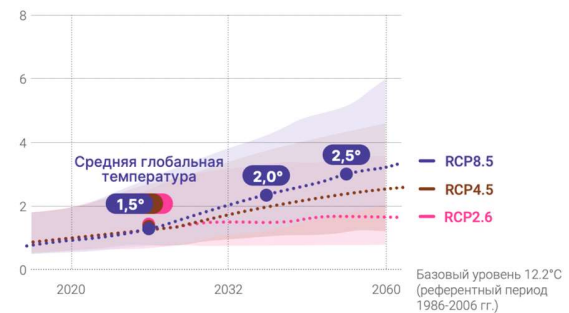
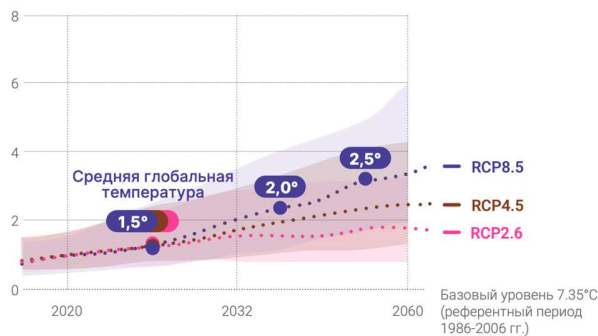
### Ust-Kamenogorsk:

### Petropavlovsk:



### Almaty:

### Shymkent:



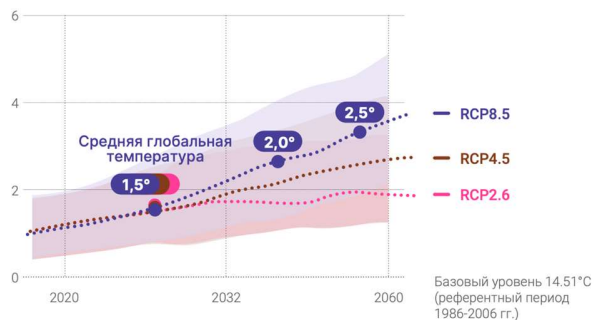
Based on the analysis, the most vulnerable regions are Almaty, Atyrau and Shymkent, where significant temperature increases are predicted. These regions require priority attention and the development of adaptation measures to protect infrastructure. At the same time, Astana, Petropavlovsk and Ust-Kamenogorsk show more stable changes, although they require attention to adapt to changing climatic conditions. Thus, a comprehensive analysis across all scenarios shows that climate change will have a significant impact on different regions of Kazakhstan, and the development of adaptation strategies should take into account the specific conditions of each region.

#### *Maximum temperatures*

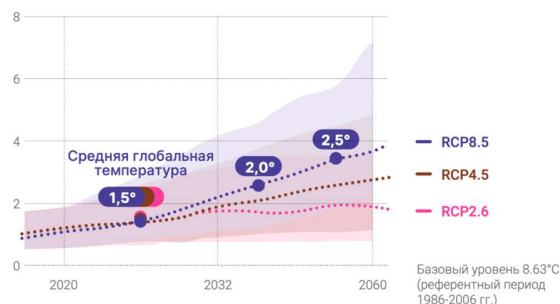
High temperatures can overheat and damage telecoms equipment, reducing its efficiency and reliability. This includes degradation of cooling systems, which can lead to network failures and increased operating costs to maintain optimal equipment conditions.

Figure 3: Assets located in the most vulnerable regions to temperature threats

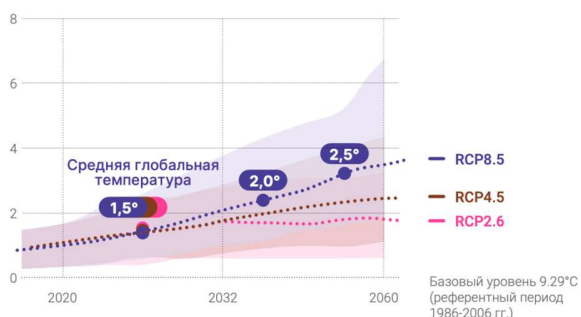
### Atyrau:



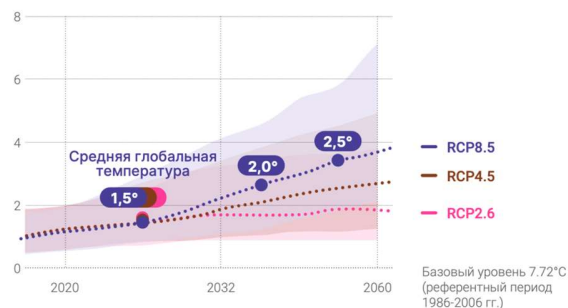
### Astana:



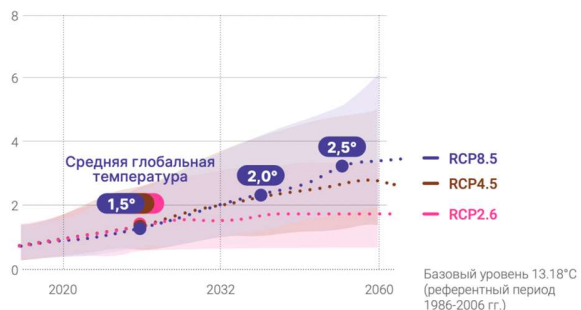
### Ust-Kamenogorsk:



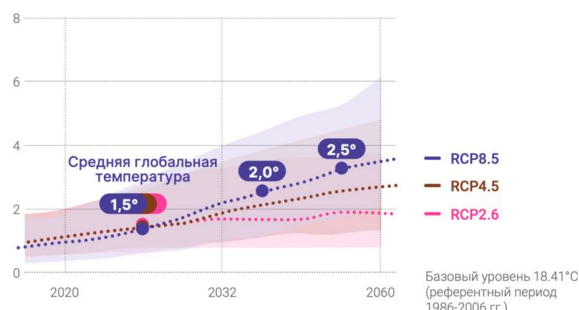
### Petropavlovsk:



### Almaty:



### Shymkent:



In the analysis of climatic changes in maximum temperatures, special attention is paid to three regions - Almaty, Atyrau and Shymkent. These regions show the highest temperature changes under all scenarios considered.

Based on the analysis, Almaty, Atyrau and Shymkent are the most vulnerable regions in terms of maximum temperatures, where significant temperature increases are predicted under all scenarios. These regions require special attention and the development of adaptation measures to protect infrastructure. Astana, Petropavlovsk and Ust-Kamenogorsk show more stable changes, although they require some attention to adapt to changing climatic conditions.

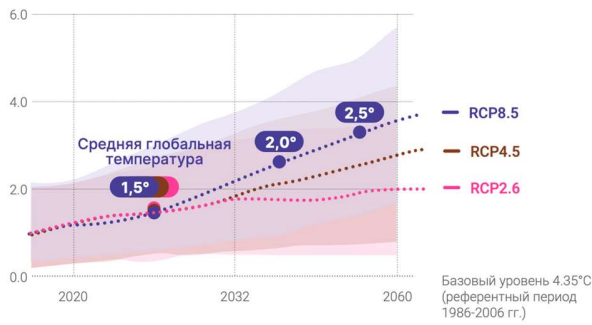
### *Minimum temperatures*



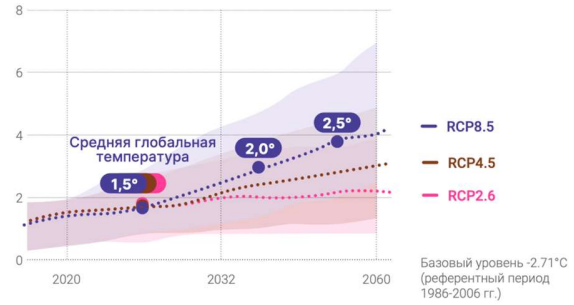
Low temperatures accompanying cold waves can have a significant impact on Kazakhtelecom's operations. This impact includes potential equipment and network failures, requiring additional measures to protect infrastructure in extreme cold weather conditions.

Figure 4: Assets located in the most vulnerable regions to temperature threats

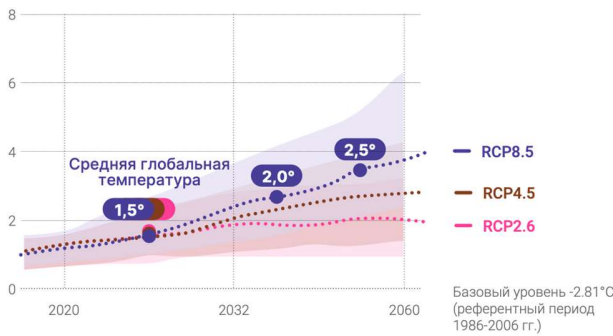
**Atyrau:**



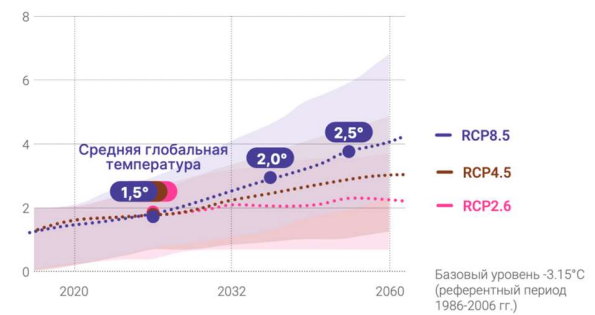
**Astana:**



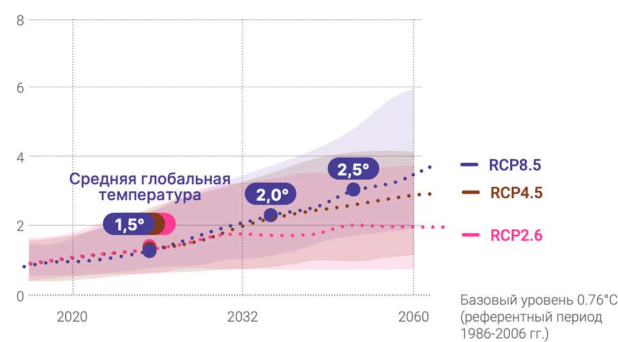
**Ust-Kamenogorsk:**



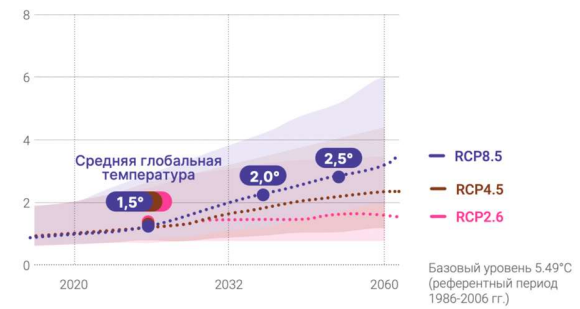
**Petropavlovsk:**



**Almaty:**



**Shymkent:**



Particular attention in the analysis is paid to the regions of Almaty, Atyrau and Shymkent, as they demonstrate the largest changes in minimum temperatures under all scenarios, which may significantly affect Kazakhtelecom's telecommunications infrastructure. Astana is also among the regions that require prioritised attention given the predicted significant changes in temperatures. These regions require the development of adaptation measures to protect infrastructure from climate change. Petropavlovsk and Ust-Kamenogorsk

show less significant changes, but also require attention to adapt to changing climatic conditions.

## Precipitation

This indicator includes two climate risks: snowfall and annual precipitation.

### *Change in physical values compared to baseline*

Although snowfall decreases over time, regardless of the scenario chosen, total precipitation is projected to increase. High precipitation levels can cause flooding problems if sufficient water diversion and retention equipment is not installed on site.

### *Risks associated with the amount of snow*

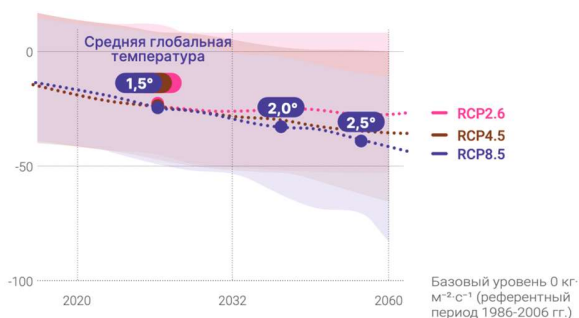
The risk associated with the highest snowfall is the maximum annual accumulation of snow in one day during the year. Under conditions of such climatic changes, Kazakhtelecom's telecommunications infrastructure may face serious challenges, especially in regions with historically high levels of snow precipitation.

Precipitation, including both snow and rain, can damage the telecommunications network and infrastructure, resulting in operational difficulties. For example, significant precipitation could damage cables, antenna installations and other network elements, resulting in increased maintenance and repair costs. In addition, heavy precipitation may cause power supply disruptions, adversely affecting the reliability of telecommunications services. In regions where groundwater may be affected by increased precipitation, underground cable lines and other infrastructure may be damaged.

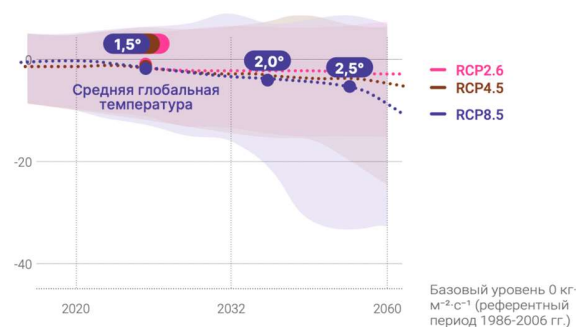
Based on the analysis, Kazakhtelecom's most risk-prone assets are those located in regions with the highest rainfall, where the potential impact on infrastructure can be significant.

Figure 5: Assets most vulnerable to precipitation-related risks

Atyrau:

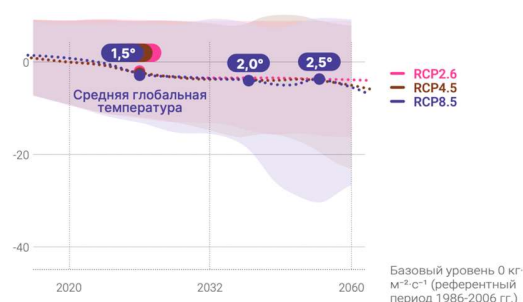
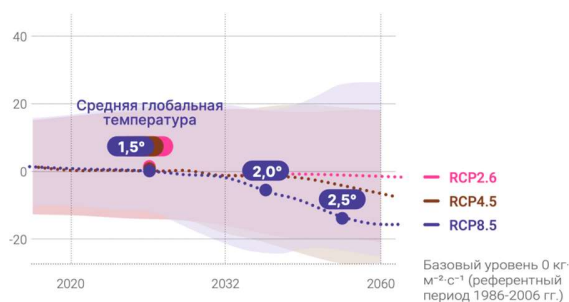


Astana:

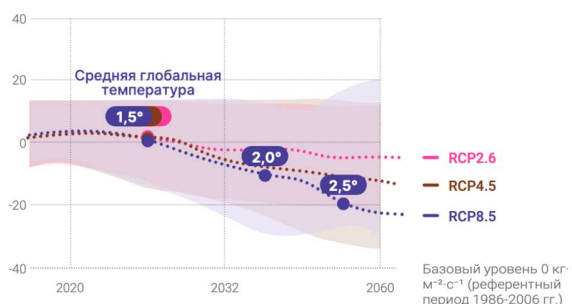


Ust-Kamenogorsk:

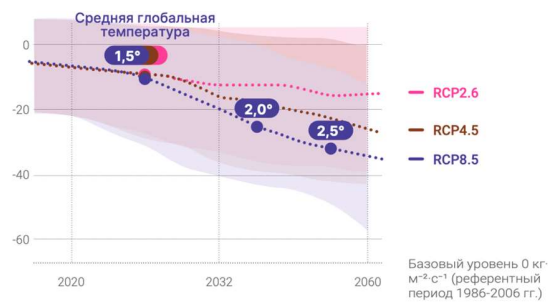
Petropavlovsk:



### Almaty:



### Shymkent:



Based on the analysis, the most vulnerable regions are Atyrau and Shymkent, where snowfall is projected to decrease significantly under the RCP 8.5 scenario. At the same time, Ust-Kamenogorsk and Petropavlovsk show more stable changes, although they require attention to adapt to changing climatic conditions. Almaty and Astana also require infrastructure adaptation, especially in the face of changing snow cover, but their changes are less extreme compared to other regions.

These changes in snowfall may require infrastructure upgrades for several reasons related to changing climatic conditions and their impact on the region.

Firstly, snow is an important source of moisture, especially in the spring period when it melts and recharges water bodies. A decrease in snow precipitation may lead to a reduction in spring runoff, which in turn will have a negative impact on water supply. Under such conditions, it may be necessary to modernise drainage systems, construct new reservoirs and implement other measures to maintain a stable water supply.

Second, climate change may favour an increase in the frequency and intensity of rainfall instead of snow, which increases the risks of flooding and soil erosion. Infrastructure designed for certain levels of snowfall may not be ready for such changes, creating the need to adapt and strengthen existing systems to prevent potential damage.

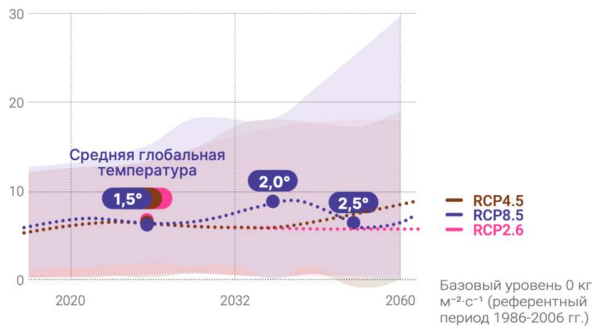
Reduced precipitation in the form of snow may also change the overall climatic condition of the region, affecting heat exchange processes and requiring a revision of approaches to the operation and maintenance of telecommunications and other infrastructure facilities. All of these factors highlight the need to modernise infrastructure to ensure its resilience to new climatic conditions and minimise associated risks.

### *Annual precipitation*

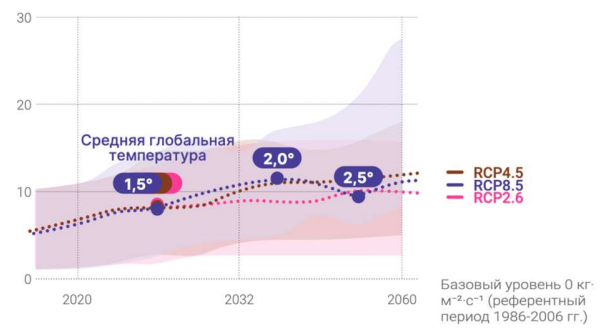
Annual precipitation is measured as the total amount of precipitation that falls during the year. This parameter is critical for Kazakhtelecom's infrastructure, as significant changes in precipitation levels can lead to impacts on the reliability and operation of telecommunications systems, including risks associated with waterlogging of facilities and deterioration of conditions for cable laying and maintenance.

Figure 6: Assets most vulnerable to precipitation-related risks

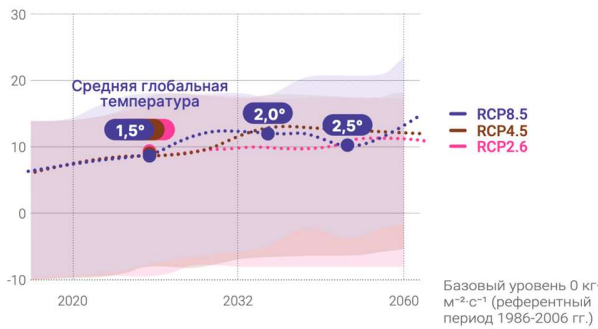
Атырау:



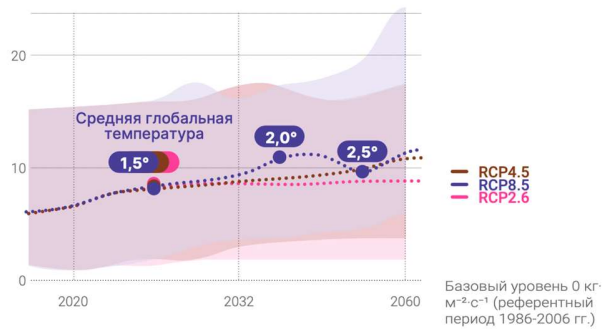
Астана:



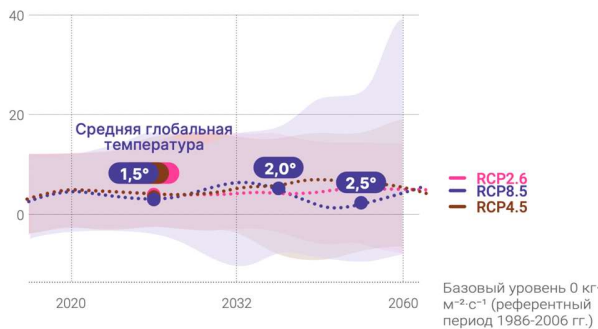
Усть-Каменогорск:



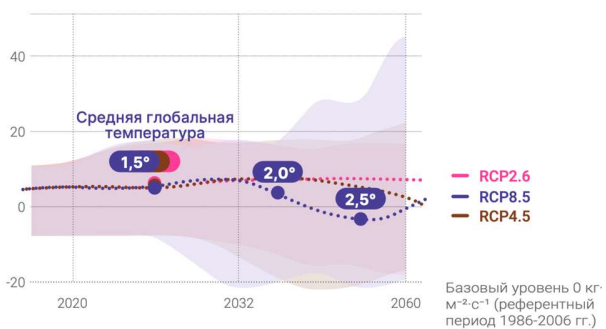
Петропавловск:



Алматы:



Шымкент:



Based on the analysis of annual precipitation data for six key regions - Almaty, Atyrau, Ust-Kamenogorsk, Astana, Petropavlovsk and Shymkent - under RCP 2.6, RCP 4.5 and RCP 8.5 scenarios, taking into account horizons up to 2032 and 2060, the following conclusions can be drawn about the impact of climate change on Kazakhtelecom's telecommunications infrastructure.

Almaty and Ust-Kamenogorsk are the most vulnerable in this indicator, requiring significant infrastructure adaptation measures to prevent risks associated with increased

precipitation. At the same time, Atyrau, Astana and Petropavlovsk show less extreme changes but also require attention to adapt to changing climatic conditions. Shymkent, although showing moderate changes, also requires consideration in adaptation strategies.

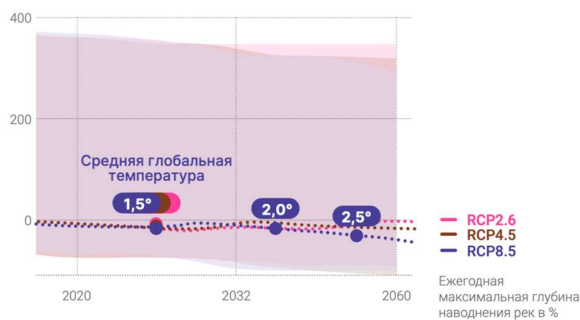
## Floods

This indicator covers one of the climatic risks - floods. For Kazakhtelecom's infrastructure, this risk is of particular importance, as such floods can cause significant damage to the company's networks and facilities, especially in areas subject to regular waterlogging.

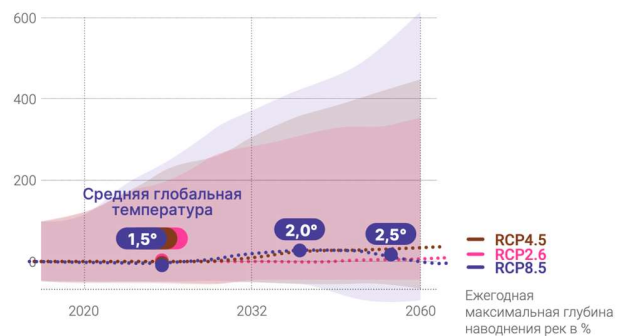
*Average dynamics of change in physical values relative to the baseline level*

Figure 7: Assets most vulnerable to flood-related risks

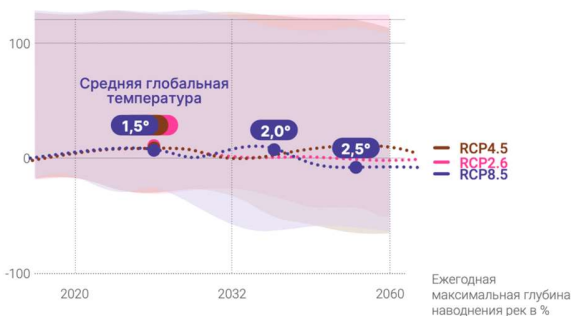
Atyrau:



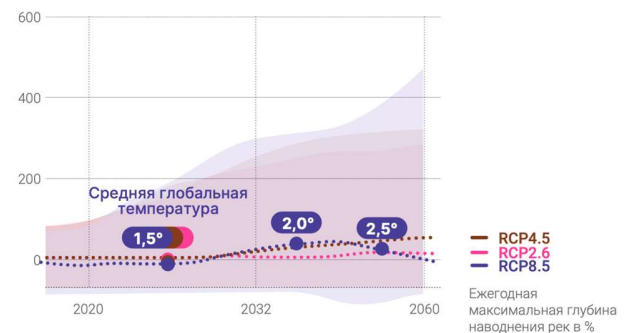
Astana:



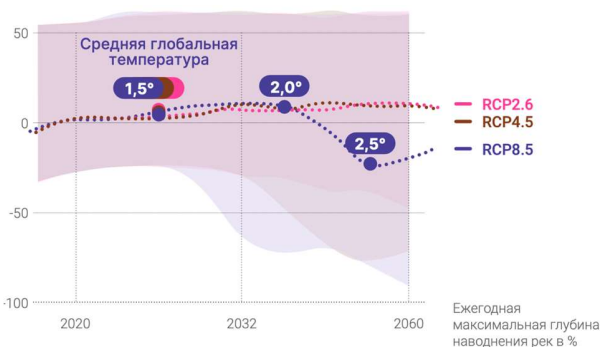
Ust-Kamenogorsk:



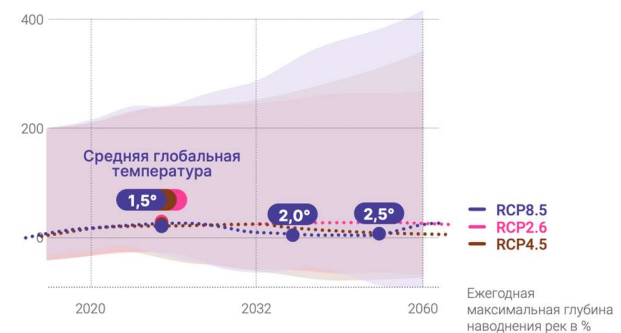
Petropavlovsk:



Almaty:



Shymkent:



Based on the analysis, Almaty and Atyrau remain the most vulnerable regions in terms of maximum flood depths, where flood depths are forecast to increase significantly under all scenarios. These regions require development and implementation of adaptation measures for infrastructure protection. At the same time, Ust-Kamenogorsk, Astana, Petropavlovsk and Shymkent also require attention in the long term given the projected changes, especially under the RCP 8.5 scenario.

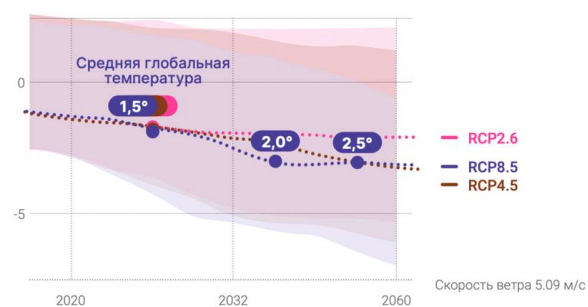
### Extreme weather conditions

This indicator includes one climate risk, namely maximum wind speed (m/s). It represents the annual maximum value of the daily maximum wind speed.

*Average dynamics of physical values compared to the baseline level*

Figure 8: Assets most vulnerable to wind speed risks

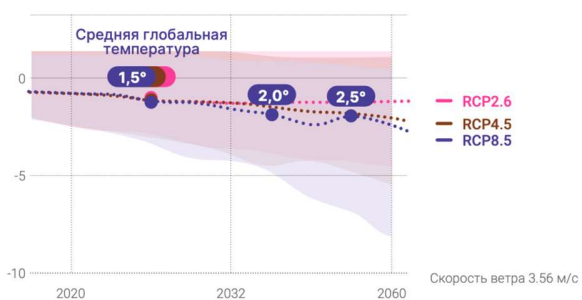
Atyrau:



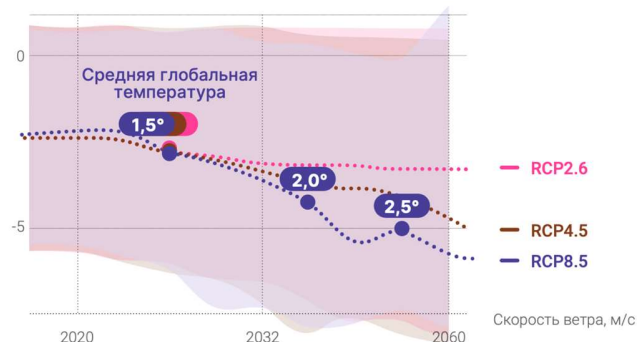
Astana:



Ust-Kamenogorsk:

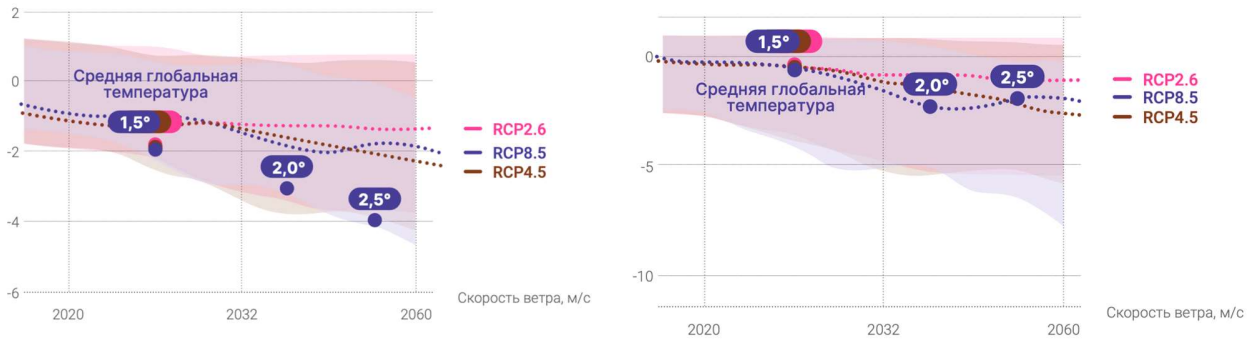


Petropavlovsk:



Almaty:

Shymkent:



Reduced wind speeds can affect air quality, reduce wind energy productivity and change the microclimate, which can affect the infrastructure and resilience of telecommunication networks. On the other hand, an increase in wind speeds can lead to increased wind loads on infrastructure, which requires consideration in the design and construction of telecommunications facilities. In particular, increased wind can affect the stability of poles, masts and towers, requiring structural reinforcement and increased frequency of inspection and maintenance.

Based on the analysis, Almaty and Atyrau are the most vulnerable regions to an increase in maximum wind speeds, where a significant increase in wind speeds is predicted. These regions require special attention in developing adaptation measures to protect infrastructure. Petropavlovsk, Shymkent, Ust-Kamenogorsk and Astana show more stable changes, but also require consideration in adaptation strategies to changing climatic conditions.

*Summary analysis of physical climate risks*

In the face of increasing climate change, telecoms infrastructure is becoming increasingly vulnerable to physical climate risks. Analyses conducted for six key regions in Kazakhstan - Almaty, Atyrau, Ust-Kamenogorsk, Astana, Petropavlovsk and Shymkent - using the RCP 2.6, RCP 4.5, RCP 8.5 and NZE 2050 climate change scenarios revealed significant differences in the dynamics of climate parameters. These parameters include increases in average and maximum temperatures, changes in minimum temperatures, annual precipitation, floods, wind speeds, and other factors that could have a significant impact on the operation and sustainability of Kazakhtelecom's telecommunications facilities.

Below is systematised information on the most vulnerable and stable regions for each of the climate parameters considered. This information will help to better prioritise areas for infrastructure adaptation, minimising potential risks and ensuring the company's long-term resilience in a changing climate.

Table 5. Physical risks for Kazakhtelecom under different climatic scenarios

Climate parameter	High-risk regions	Regions with moderate risk
-------------------	-------------------	----------------------------

Increase in average temperature	<p><b>RCP 2.6:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 4.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 8.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>
Increase in maximum temperatures	<p><b>RCP 2.6:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 4.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 8.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>
Decrease in minimum temperatures	<p><b>RCP 2.6:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 4.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 8.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>
Reduction of snow precipitation	<p><b>RCP 2.6:</b> Shymkent, Atyrau</p> <p><b>RCP 4.5:</b> Shymkent, Atyrau</p> <p><b>RCP 8.5:</b> Shymkent, Atyrau</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Almaty</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Almaty</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Almaty</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>
Increase in annual precipitation	<p><b>RCP 2.6:</b> Almaty, Ust-Kamenogorsk, Atyrau</p> <p><b>RCP 4.5:</b> Almaty, Ust-Kamenogorsk, Atyrau</p> <p><b>RCP 8.5:</b> Almaty, Ust-Kamenogorsk, Atyrau</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Astana, Petropavlovsk, Shymkent</p> <p><b>RCP 4.5:</b> Astana, Petropavlovsk, Shymkent</p> <p><b>RCP 8.5:</b> Astana, Petropavlovsk, Shymkent</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>



Increase in flood depths	<p><b>RCP 2.6:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 4.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>RCP 8.5:</b> Almaty, Atyrau, Shymkent</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>
Change in maximum wind speed	<p><b>RCP 2.6:</b> Almaty, Atyrau</p> <p><b>RCP 4.5:</b> Almaty, Atyrau</p> <p><b>RCP 8.5:</b> Almaty, Atyrau</p> <p><b>NZE 2050:</b> Almaty, Astana</p>	<p><b>RCP 2.6:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 4.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>RCP 8.5:</b> Ust-Kamenogorsk, Petropavlovsk, Astana</p> <p><b>NZE 2050:</b> Shymkent, Ust-Kamenogorsk</p>

## 4.2 Analysing the Impact of Transient Climate Risks

The Climate Risk Disclosure (TCFD) Working Group has developed a structured approach that enables organisations to effectively assess and disclose climate risks and opportunities within their financial reporting. With increasing demand from investors, lenders, insurers and other stakeholders for climate-related financial information, TCFD and the International Accounting Standards Board (ISSB) provide the metrics and data needed to robustly analyse the potential financial impacts of climate change.

The TCFD recommendations and the requirements in IFRS S1 and S2 aim to incentivise companies to assess and disclose climate risks and opportunities in their annual financial statements. The focus is on two types of risks:

Risks associated with the transition to a low-carbon economy: These risks include changes in policy, legislation, technology, market conditions and reputation that are associated with climate change mitigation and adaptation measures.

Risks associated with the physical impacts of climate change: These are risks caused by direct physical changes in the climate, such as increases in temperature, changes in precipitation and extreme weather events.

In addition, the standards recommend scenario analyses to assess the sustainability of companies' strategies in different climatic conditions. This allows companies to better understand potential risks and opportunities and adapt their strategies to changing conditions.

The following transitional risks were selected for Kazakhtelecom based on the TCFD recommendations and the requirements of IFRS standards S1 and S2:

### *Legal risks*

Climate change policy and regulatory measures continue to evolve, and their objectives are generally divided into two areas: limiting processes that contribute to the negative impacts of climate change and incentivising adaptation to climate change. For example, introducing carbon pricing mechanisms and switching to low-carbon energy sources. For Kazakhtelecom, this means the need to monitor and comply with new requirements, which may increase operating costs and require significant investment in infrastructure modernisation.

Litigation and legal risks also play an important role. An increase in the number of lawsuits related to climate change may create additional financial liabilities for the company. This requires Kazakhtelecom to pay increased attention to information disclosure and compliance with all regulatory norms to minimise legal risks.

### *Technological risks*

Technological innovations supporting the transition to a low-carbon economy can have a significant impact on Kazakhtelecom's operations. The development and deployment of renewable energy, energy storage and other energy efficient solutions will require significant investment. The Company will need to modernise its infrastructure to meet new technological standards and remain competitive in the market.

The uncertainty associated with the timing of the development and implementation of new technologies is also a risk, as it affects how effectively the company can adapt to changes in the market.

### *Market risks*

Climate change affects market conditions, which may manifest itself in changes in supply and demand for telecommunication services and equipment. For Kazakhtelecom this means the need to adapt business model and products to new conditions, where sustainable development becomes a key factor for customers and partners.

Demand for more energy efficient and sustainable solutions will increase, which may require the company to develop new products and services focused on reducing its carbon footprint and meeting new market needs.

These three categories of risks were selected for analysis and inclusion in Kazakhtelecom's report due to their significant impact on the company's activity and the need to adapt to changing conditions. Based on TCFD recommendations and IFRS S1 and S2 requirements, Kazakhtelecom should analyse and integrate these risks into its management strategy to ensure long-term sustainability and competitiveness in the market.

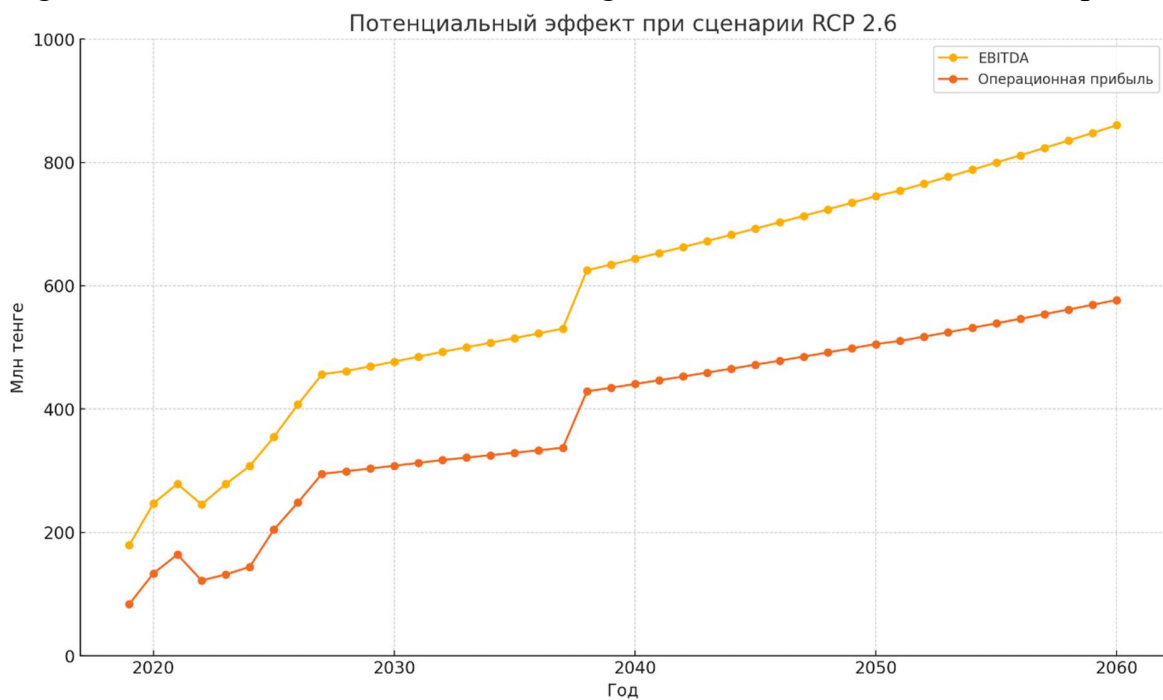
Climate modelling for Kazakhtelecom covers the period up to 2060. This modelling horizon was selected in accordance with the Strategy for achieving carbon neutrality of the Republic of Kazakhstan until 2060. When developing the models, the provisions of the Low Carbon Development Programme of Kazakhtelecom JSC for 2022-2032 were taken into account.

Financial modelling of climate risks has been undertaken for Kazakhtelecom under four scenarios (RCP 2.6, RCP 4.5, RCP 8.5 and NZE 2050) to help assess how various climate changes and associated regulatory measures could affect Kazakhtelecom's financial performance over the longer term. The modelling covers key aspects such as revenue, operating expenses (OPEX), capital expenditure (CAPEX), EBITDA and operating profit.

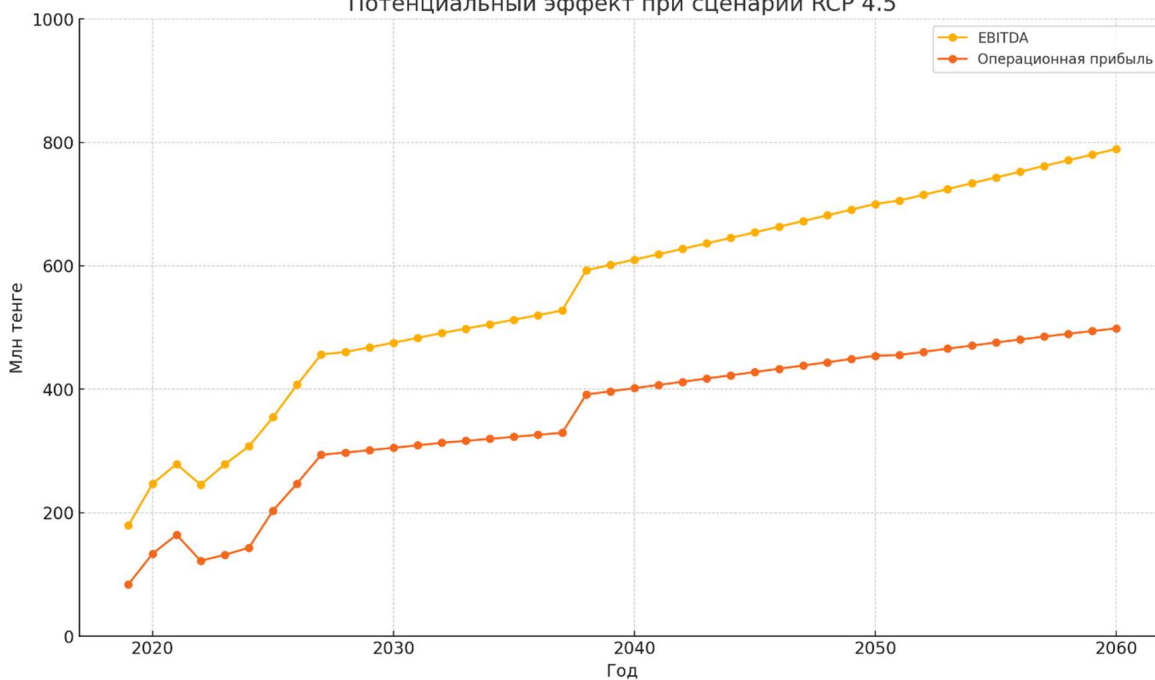
The analysis considered scenarios with different levels of carbon emissions to assess the impact on the company in the face of changing legislation, rising temperatures and increased frequency of extreme weather events. The models also took into account potential changes in electricity prices and the need to modernise infrastructure to meet new environmental standards.

The results of climate modelling showed that in general, Kazakhtelecom is not expected to be significantly financially affected by climate risks. Despite potential changes in legislation, rising temperatures and increased frequency of extreme weather events, the company is prepared to adapt to these changes. Financial indicators such as revenue, operating expenses and capital expenditures remain stable under different scenarios, which indicates a high level of Kazakhtelecom's resilience to climate challenges.

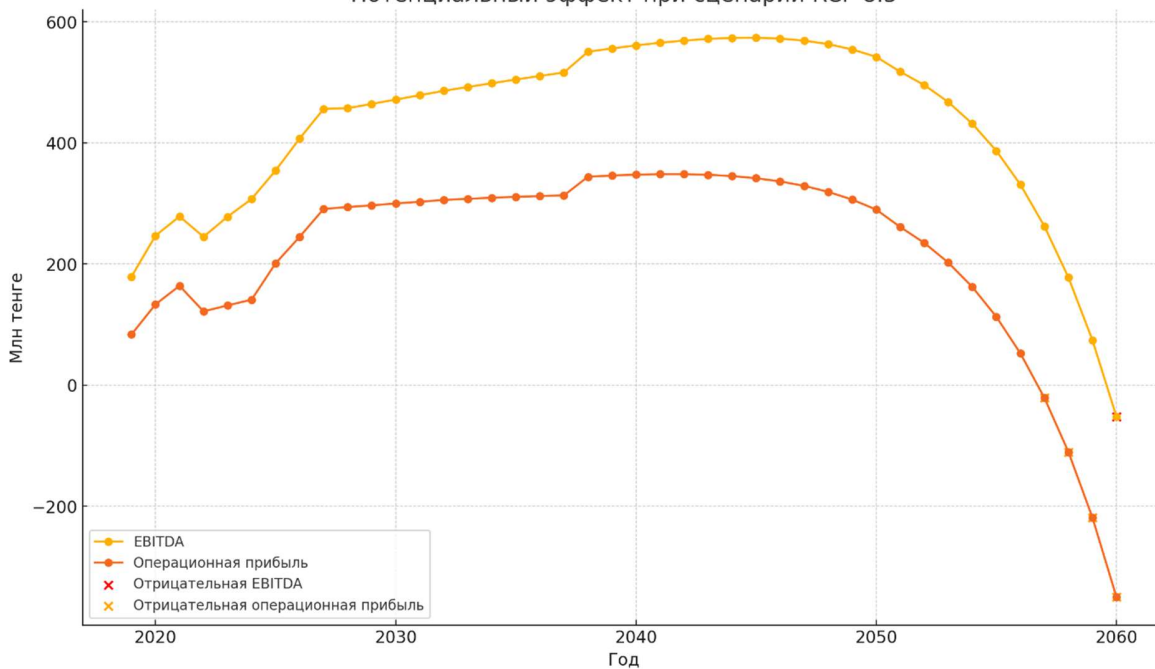
Figure 9. Potential effect of climate change on Kazakhtelecom's financial performance

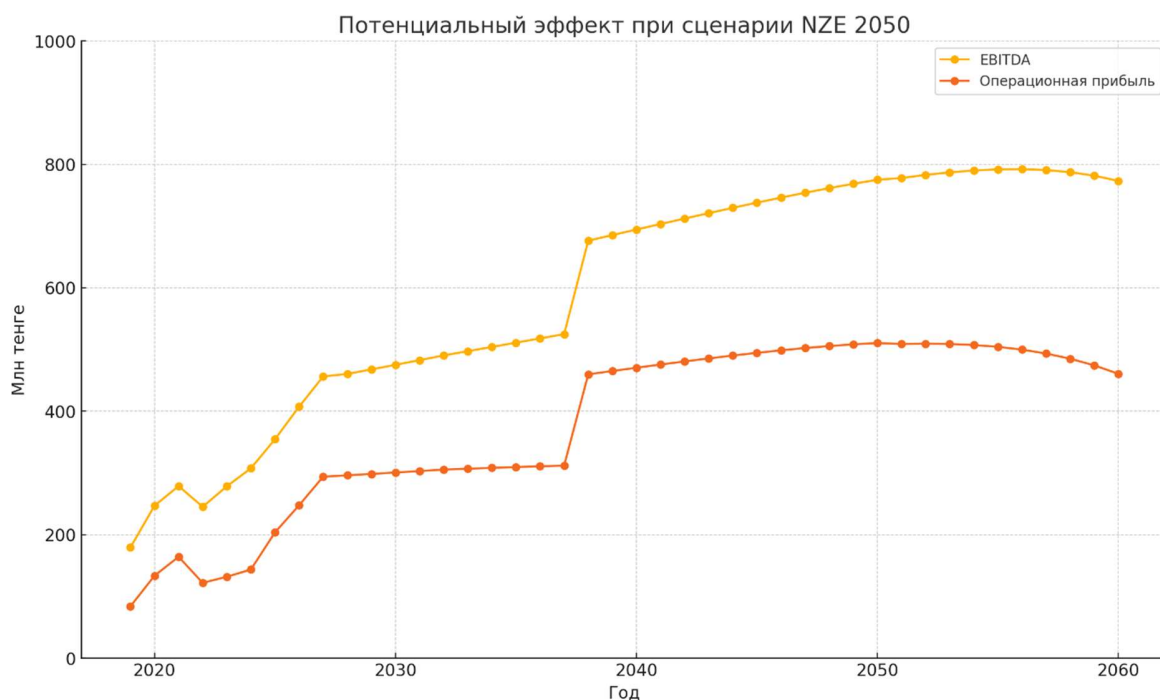


Потенциальный эффект при сценарии RCP 4.5



Потенциальный эффект при сценарии RCP 8.5





The analysis of all four scenarios demonstrates how climate change may affect Kazakhtelecom's financial performance in the long term up to 2060. In the low and moderate emissions scenarios (RCP 2.6 and RCP 4.5), the company shows steady growth in EBITDA and operating profit, which demonstrates its ability to maintain stable financial performance in a more favourable climate and moderate emissions. Operating costs remain under control and the company demonstrates successful adaptation to changes, which is confirmed by positive profit dynamics.

However, in the high emissions scenario (RCP 8.5) there is a significant decline in both EBITDA and operating profit after 2050. This is due to increased climate risks leading to higher operating costs and lower profitability. The emerging financial challenges emphasise the company's vulnerability to increasing climate change.

The NZE 2050 scenario assumes significant investments in renewable energy and green technologies. This scenario requires significant investment in infrastructure modernisation and energy efficient solutions to achieve carbon neutrality by 2050. The investments are aimed at reducing the company's carbon footprint and meeting new environmental standards, which in the long term can reduce dependence on traditional energy sources and increase the company's resilience to changes in the energy market.

However, such investments come with financial challenges. Despite an initial increase in financial performance, financial performance stabilises by 2050 and then declines in EBITDA and operating profit. This indicates that while the adoption of green technologies contributes to environmental goals, it also increases operating costs and may put pressure on profitability in the long term. However, investments in green technologies and renewable energy are necessary measures to adapt to changing climate conditions and meet global and national commitments to reduce greenhouse gas emissions.

In general, the analysis shows that Kazakhtelecom maintains stability and financial sustainability in most climate scenarios. Under low and moderate emissions, the company demonstrates strong growth and ability to adapt to changes. However, in the high emissions scenario (RCP 8.5) there are serious financial challenges associated with the growth of operating costs and reduced profitability. It should be noted that these risks manifest themselves closer to 2060 and, despite their severity, they do not have a direct impact on the company's current financial stability.

### **4.3 Climatic opportunities**

Kazakhstan is actively implementing measures to reduce its carbon footprint and promote sustainable development. These efforts are reflected in the national climate policy supported by key documents such as the Environmental Code of the Republic of Kazakhstan, the Paris Climate Agreement, the Strategy for Achieving Carbon Neutrality until 2060, and the Updated National Contribution of the Republic of Kazakhstan to the Global Climate Change Response (NCCR).

The Environmental Code of the Republic of Kazakhstan, adopted in 2021, aims to create a legal framework for sustainable development of the country. It reflects measures to reduce greenhouse gas emissions, promote the use of renewable energy sources and improve environmental safety. The Code also provides for the introduction of mechanisms such as emissions trading systems, support for green technologies and promotion of energy-saving practices.

The Paris Climate Agreement is Kazakhstan's key international commitment to limit global warming. As part of the agreement, the country has made commitments to reduce greenhouse gas emissions and achieve carbon neutrality by 2060. These goals are reflected in the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan by 2060, which aims to phase out the use of coal power, increase the share of renewable energy sources and promote green technologies.

For Kazakhtelecom, these changes in national climate policy open new opportunities to integrate sustainable practices into its operations. Under the Low Carbon Development Programme 2022-2032, Kazakhtelecom plans to introduce energy efficient solutions and decarbonise its infrastructure.

In addition, Kazakhtelecom's ESG strategy for 2024-2032 is aimed at integrating climate and social aspects into the company's activities, which enables it to meet international standards of sustainable development and improve its competitiveness in the market. This strategy also envisages the company's active participation in the implementation of national climate initiatives, which in the long term contributes to the improvement of Kazakhtelecom's environmental and economic sustainability.

Thus, the national climate policy of Kazakhstan and Kazakhtelecom's initiatives on introduction of sustainable practices create a platform for achieving carbon footprint reduction targets, which contributes to strengthening the company's position in the market and improving its environmental reputation.

Kazakhtelecom implements several projects, which are implemented both independently and under partnership agreements. These projects were selected to assess their possible

mitigation of transition and climate risks in different scenarios. Tougher climate policy in the country stimulates more active launch of projects and implementation of the Company's Low Carbon Development Programme.

Thus, within the framework of Kazakhtelecom JSC's Low Carbon Development Programme for 2022-2032, the possibility of purchasing green certificates is being considered. Purchase of green certificates will make it possible to reduce indirect GHG emissions by scope 2 by substituting imported electricity produced by burning fossil fuels with "green" electricity from RES. The Company is developing measures to minimise the consumption of imported electricity, heat and fuel resources when operating its own power generating facilities. It also plans to promote projects and new technologies, including IoT, that contribute to reducing carbon footprint and improving energy efficiency.

Kazakhtelecom will contribute to the development and promotion of a wide range of digital and telecommunication services and products that will positively influence the intensity and rate of reduction of greenhouse gas emissions by our customers and the economy of the Republic of Kazakhstan as a whole. As part of the RES market development in Kazakhstan, the company will endeavour to procure alternative energy and switch to environmentally friendly fuels.

#### *Opportunities in digitalisation*

Digitalisation plays a key role in reducing greenhouse gas emissions and improving climate sustainability. Kazakhtelecom's strategy focuses on the following areas:

Energy efficiency and process optimisation:

Implementation of intelligent management systems to reduce energy consumption and greenhouse gas emissions.

Optimise network and data centre operations to reduce carbon footprint and improve overall efficiency.

Smart grids and renewable energy:

Development of smart grids that promote efficient management of energy consumption and integration of renewable energy sources (RES).

Supporting initiatives to incorporate renewable energy into telecoms networks, thereby reducing dependence on fossil fuels.

Digital modelling:

Using digital technologies to optimise the design and operation of telecommunications infrastructure to reduce carbon footprint.

Commercialisation of carbon offsets

One of the areas in which Kazakhtelecom can get additional benefits is commercialisation of carbon offsets. Carbon offsets are a mechanism to offset greenhouse gas emissions through the implementation of climate projects.

This mechanism allows Kazakhtelecom not only to reduce its emissions, but also to monetise its climate efforts in the marketplace.

Kazakhtelecom is actively developing projects contributing to sustainable development and improvement of the quality of life in Kazakhstan.

Table 6: Key opportunities of Kazakhtelecom JSC

Company initiatives	Type of energy/resources	Implementation timeframe
Deduplication of copper communication lines and replacement with LED light sources	Electricity	In the process.
Purchase of green certificates	Electricity from RES	2032
Measures to minimise the consumption of imported electricity, heat and fuel resources	Electric energy, heat energy, fuel	In the process.
Promoting IoT projects and technologies to improve energy efficiency	Electricity	In the process.
Developing and promoting digital and telecoms services and products to reduce carbon footprints	Energy resources	In the process.
Procurement of alternative energy and transition to environmentally friendly fuels	Alternative energy (RES)	In the process.
Reduction of fossil fuel consumption at stationary and mobile sources	Fossil fuels	In the process.

The evaluation also considered the potential for the following opportunities:

- 1) opportunity to diversify business activities;
- 2) access to new markets;
- 3) Developing and/or expanding low-carbon telecoms goods and services;
- 4) Developing new products or services through research and development (R&D) and innovation.