

DEVELOPMENT STRATEGY

**Non-Profit Joint Stock Company «International Center for Green Technology
and Investment Projects» for 2025–2029**

Astana, 2024

Content

List of Abbreviations and Special Terms	4
1. Current Situation Analysis	6
1.1. Analysis of the External Environment	6
1.1.1. Analysis of the Legal Landscape of the External Environment	6
1.1.2. Analysis of the Economic Landscape of the External Environment	7
1.1.3. Analysis of the Social Landscape of the External Environment.....	11
1.1.4. Analysis of the Technological Landscape of the External Environment	14
1.2. Analysis of the Internal Environment.....	18
1.2.1 Assessment of Human Capital	18
1.2.3 Funding Structure.....	18
1.2.4. Knowledge Base and Information Assets.....	19
1.2.5. Clients and Partners	19
1.3. Overview of International Experience in Green Economy Development	20
1.4 SWOT – analysis.....	25
2. Mission and Vision.....	27
3. Goals and Objectives.....	28
Strategic Direction 1: Facilitating the further transition of Kazakhstan to the principles of BAT	28
1.1. Increasing the coverage of industrial/manufacturing enterprises within the framework of Comprehensive technological audits	28
1.2. Development and improvement (monitoring, effectiveness analysis, updating) of Best Available Techniques (BAT) reference documents	29
1.3. Consulting stakeholders on the transition to BAT principles (conducting trainings, seminars, business games) and developing services for enterprises to obtain Comprehensive environmental permit	29
Strategic Direction 2: Promoting the development of green technologies, projects attraction of financing	30
2.1. Promoting the improvement of legislation in Kazakhstan regarding green technologies and projects	30
2.1. Promoting the Improvement of Legislation in Kazakhstan Regarding Green Technologies and Projects.....	30

2.2. Development of <i>The Industry center for technological competencies</i>	31
2.3. <i>Financing «green» projects</i>	32
Strategic direction 3: Enhancing the Company’s operational efficiency	32
3.1. <i>Development of human capital</i>	32
3.2. <i>Ensuring financial stability</i>	33
3.3. <i>Development of strategic communications at national and international levels</i>	33
4. KPI.....	35
Indicators for Achieving Strategic Directions, Goals, and Objectives	35
List of references	38

List of Abbreviations and Special Terms

Carbon Neutrality Strategy	The strategy for achieving carbon neutrality in the Republic of Kazakhstan by 2060, approved by the Presidential Decree of the Republic of Kazakhstan dated February 2, 2023, No. 121
Concept	The concept for transitioning to a "green" economy, approved by the Presidential Decree of the Republic of Kazakhstan dated May 30, 2013, No. 577.
Kazakhstan Strategy	The "Kazakhstan 2050" strategy, the Address by the President of the Republic of Kazakhstan, Leader of the Nation N.A. Nazarbayev to the people of Kazakhstan, Astana, December 14, 2012
Environmental Code	The Environmental Code of the Republic of Kazakhstan, dated January 2, 2021, No. 400-VI ZRK
BNS ASPR RK	Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan
CSR MF RK	Committee of State Revenues of the Ministry of Finance of the Republic of Kazakhstan
NB RK	National Bank of the Republic of Kazakhstan
MEPR RK	Ministry of Ecology and Natural Resources of the Republic of Kazakhstan
AIFC	Astana International Financial Centre
RES	Renewable Energy Sources
GDP	Gross Domestic Product
BAT	Best Available Techniques
BREF	Best Available Techniques Reference Document
CEP	Comprehensive Environmental Permit
CTA	Comprehensive Technological Audit
CBAM	Carbon Border Adjustment Mechanism
R&D	Research and Development
IEA	International Energy Agency
NREL	National Renewable Energy Laboratory
	Global Cleantech Innovation Programme UNIDO
GCIP	This program supports innovation and entrepreneurship in developing markets and economies to address climate and environmental challenges
EU	European Union
ESG	Environmental, Social, and Corporate Governance
GGGI	Global Green Growth Institute
Register of "Green"	In accordance with the Rules for Recognizing Technologies as "Green," approved by the Government Resolution No. 576 dated August 18, 2022.

Technologies and
Projects

GX Bonds

Green Transformation Bonds of Japan (GX Economy
Transition)

toe

Ton of Oil Equivalent

Non-Profit Joint Stock Company «International Center for Green Technologies and Investment Projects» (hereinafter referred to as the Company) was established by the Government of the Republic of Kazakhstan decree dated April 27, 2018, No. 224.

The development strategy of the Company is a medium-term strategic document that defines the Company's mission in achieving the goals set by the sole shareholder, represented by the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan (hereinafter referred to as the Ministry). The strategy aligns with the documents of the State Planning System and the Ministry's Development Plan.

1. Current Situation Analysis

To conduct a comprehensive analysis of the current situation, both external and internal environmental aspects were examined, resulting in the identification of challenges and opportunities at global, national, and corporate levels.

1.1. Analysis of the External Environment

1.1.1. Analysis of the Legal Landscape of the External Environment

The Republic of Kazakhstan is consistently transitioning towards creating a sustainable and efficient market economy model, focusing its efforts on «green» development. This transition is driven by several international documents, including the Rio de Janeiro Principles, the Agenda for the 21st Century, the Johannesburg Plan, the UN Sustainable Development Goals, the Paris Agreement, and the UN Convention on Biological Diversity.

To facilitate the subsequent transition of the Republic of Kazakhstan to a «green economy», a number of strategic documents have been adopted, outlining the need for systemic reforms across various sectors of economic activity. Among the key documents of the State Planning System that lay the fundamental foundations for further transformations are the «Kazakhstan – 2050 Strategy: A New Political Course of a Successful State», the National Development Plan of the Republic of Kazakhstan until 2029, the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan by 2060, and the Concept for the Transition to a Green Economy.

The following priority tasks for the transition of the Republic of Kazakhstan to a «green economy» have been identified to date:

1. The strategy emphasizes the necessity of creating a favorable investment climate for low-carbon policies to stimulate the accelerated modernization of existing production and infrastructure.
2. The concept prioritizes the implementation of Best Available Techniques (BAT) across various economic sectors to minimize negative anthropogenic impacts on the environment, conserve water, and promote resource-efficient practices to subsequently enhance productivity.
3. The concept mandates the development of "green" financing aimed at engaging financial institutions in the implementation of projects that improve and

restore the environment through the introduction of "green" loans, "green" bonds, and other financial instruments.

Thus, the main strategic documents and initiatives, including the implementation of BAT and the attainment of Comprehensive Environmental Permits (CEP) by industrial enterprises, create a foundation for the transition to a green economy. The high demand for «green» technologies across various sectors of the economy and the expected increase in green financing, as outlined in the Strategy, also contribute to the successful implementation of environmental initiatives. However, to achieve the set goals, alignment of sectoral programs and oversight of the implementation of these documents at the local level are necessary.

1.1.2. Analysis of the Economic Landscape of the External Environment

In 2023, the GDP growth of the Republic of Kazakhstan reached 5.1%, driven by robust domestic demand despite a 7% decline in exports. Government spending increased by 24.3% in 2023, primarily due to higher non-oil revenues including personal income taxes, social taxes, VAT, and dividends from state companies. Despite a decrease in oil revenues resulting from falling prices, exports to the Eurasian Economic Union countries supported growth in the non-oil sectors of the economy.

In the first quarter of 2024, economic growth in the Republic of Kazakhstan slowed to 4.7% compared to the previous year, sustained by growth in sectors such as construction (up 15.9%), telecommunications (9.3%), and transportation and warehousing (9.5%)¹.

Throughout 2024, the National Bank of Kazakhstan gradually lowered the base rate from 15.25% in January to 14.75%² in July; however, the annual consumer price index still exceeded the target level, reaching 108.6% in July 2024³. According to Fitch forecasts, inflation is expected to average 8.6% in 2024 and 7.5% in 2025, which is above the medium-term target level of the National Bank of Kazakhstan set at 5%⁴.

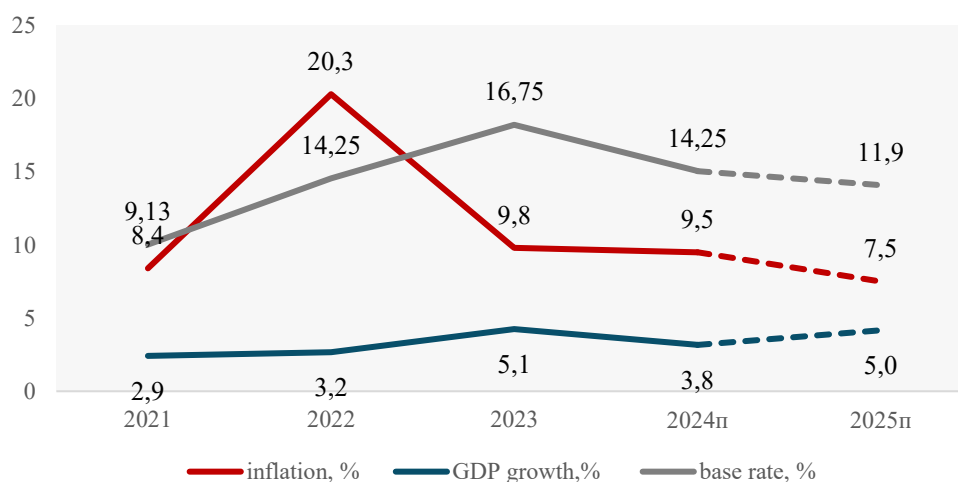
¹ Regional Economic Prospects, EBRD, May 2024

² NBRK

³ BNS ASPR RK

⁴ Fitch Affirms Kazakhstan at 'BBB'; Outlook Stable ([fitchratings.com](https://www.fitchratings.com))

Figure 1. Dynamics of GDP Growth, Inflation, and Base Rate, %



Data Source: NB RK, ASPR BNS RK

On May 17, 2024, Fitch Ratings confirmed Kazakhstan's sovereign credit rating at "BBB" with a stable outlook. According to Fitch, the rating is supported by the country's stable external and fiscal indicators, which have demonstrated resilience to economic shocks, as well as financial flexibility provided by accumulated oil revenues. However, these advantages may be offset by Kazakhstan's dependence on raw material exports and high inflation.

Fitch projects a slowdown in GDP growth to 3.8% in 2024 compared to 5.1% in 2023, partially due to a decrease in investment activity, construction, and credit growth, as well as the aftermath of severe flooding in April in the northwest of the country. Nonetheless, GDP growth is expected to reach 5% in 2025 due to increased oil production volumes. Economic diversification may be enhanced through the development of the Trans-Caspian International Transport Route and new investments in renewable energy.

Fitch identifies several risks that could negatively impact the economic situation:

- Deterioration of the balance of payments, for example, due to a serious price shock in raw materials, export disruptions, a prolonged period of fiscal policy easing, or the fulfillment of significant contingent liabilities.
- Deterioration in economic policy implementation, which may negatively affect the predictability of monetary policy and exchange rates.
- Consequences of sanctions against Russia, geopolitical tensions, or social and political unrest within the country.

On the other hand, Fitch notes several factors that could improve the economic situation:

- Continued improvement in the predictability and effectiveness of economic policy, the business climate, and economic diversification.
- Further strengthening of the balance of payments, for example, through a prolonged period of higher oil revenues and prudent budgetary policies.

Turning to the issue of climate financing in Kazakhstan, according to a UNDP study funded by the EU Regional Platform for Sustainable Development for Central

Asia, the total climate budget of Kazakhstan increased 1.25 times from 2019 to 2021, reaching 2,396 billion tenge in 2021, which accounted for 12.1% of the state budget. The largest share of the budget (77% or 1,741 billion tenge) was allocated to SDG 9 (Industry, Innovation, and Infrastructure). For SDG 13 (Climate Action), the total climate budget is focused on addressing three key objectives: 1) enhancing resilience and adaptive capacity to extreme climate events and natural disasters across various countries (13.1); 2) integrating climate measures into national policies, strategies, and planning (13.2); and 3) improving education and awareness, as well as developing human and institutional capacity in the areas of climate change mitigation, adaptation, impact reduction, and early warning systems (13.3).

Significant funding directed towards achieving objectives 13.1 and 13.2, with 99% of the resources allocated to the integration of climate policy. The current budget system and expenditure planning require a more targeted focus on climate change. Many budget programs are developed based on sectoral needs without considering long-term climate risks. For instance, infrastructure projects such as the construction of schools, kindergartens, and hospitals often need improvements in climate resilience, including energy efficiency and flood protection⁵.

According to state statistics, environmental protection expenditures reached 610 billion tenge in 2023, a 37.2% increase from 2022 (444.5 billion tenge), with a significant portion (97.2%) borne by industrial enterprises.

As noted by the National Statistics Bureau, the total expenditures on energy-saving technologies and improving energy efficiency, as well as on renewable energy sources, accounted for 33.2% of the total, waste management constituted 21.6%, and air protection and climate change issues made up 20%.

Table 1. Environmental protection expenditures by region, thousand tenge

	2021	2022	2023
Republic of Kazakhstan	416 955 575	444 514 269	610 285 222
Abai	3 244 786	5 804 267	6 962 550
Akmolinskaya	18 839 038	19 313 971	127 715 648
Aktobe	59 259 824	44 987 100	51 289 862
Almaty Region	1 814 394	2 096 057	2 876 627
Atyrau	76 753 130	100 859 822	89 151 170
West Kazakhstan	13 014 366	9 678 433	15 116 668
Zhambyl	58 751 671	26 993 650	50 254 606
Jetisu	936 822	993 228	1 557 099
Karaganda	24 173 817	45 973 744	41 843 002
Kostanay	25 046 596	22 624 807	43 035 888
Kyzylorda	4 767 423	3 889 222	4 635 305
Mangystau	13 762 285	13 734 770	7 165 260
Pavlodar	38 155 928	37 326 905	59 495 022
North Kazakhstan	4 924 202	11 771 800	7 193 159
Turkestan	1 948 430	8 544 944	18 334 526
Ulytau	12 646 350	12 860 844	15 042 930

⁵ [EU-funded SDG Platform for Central Asia: on climate financing and Kazakhstan's environmental future | United Nations Development Programme \(undp.org\)](#)

	2021	2022	2023
East Kazakhstan	36 863 495	33 451 971	38 832 365
Astana	8 219 235	16 852 108	7 321 551
Almaty	8 893 841	7 519 421	12 505 140
Shymkent	4 939 942	19 237 205	9 956 844

Data Source: BNS ASPR RK

The increase in environmental protection expenditures aligns with the Strategy for Achieving Carbon Neutrality in Kazakhstan by 2060. The necessary amount of net investments in low-carbon technologies to achieve carbon neutrality in Kazakhstan is estimated at USD 610 billion, with 86% of the required investments expected to come from the private sector. Consequently, increasing the volume of green financing, including through government support measures, is particularly relevant.

To date, a legislative framework has been established for the development of green financing. A new version of the Environmental Code has been adopted, and corresponding amendments have been made to subordinate regulatory legal acts for the issuance and circulation of green and ESG bonds. Rules for disclosing ESG information have been adopted on the exchanges of the Astana International Financial Center (AIFC) and KASE.

The government support measures provided under the approved rules by the relevant authorized bodies in various sectors of the economy for private entrepreneurs⁶ include the following financing instruments for green projects:

- Subsidizing part of the interest rate on loans issued by second-tier banks to entrepreneurs for the implementation of green projects;
- Subsidizing the coupon interest rate on green bonds issued in accordance with the legislation of the Republic of Kazakhstan and/or AIFC regulations;
- Providing guarantees for bonds, including green bonds, issued in accordance with AIFC regulations and included in the official list of the AIFC stock exchange.

According to the Ministry of National Economy of the Republic of Kazakhstan, as of May 2024, 102 projects have been supported for green initiatives (85 subsidies and 17 guarantees) with a loan amount of 224.7 billion tenge (223.4 billion tenge for subsidies and 1.3 billion tenge for guarantees).

An important factor in stimulating the adoption of green technologies by Kazakh exporters is the introduction of the Carbon Border Adjustment Mechanism (CBAM) by the European Union. In 2023, Kazakhstan's export volume totaled USD 79,139 million, of which exports to EU countries amounted to USD 30,989 million or 39% of the total country exports⁷. Given that the EU is a key export destination for Kazakhstan, the introduction of CBAM could significantly impact the development of green technologies in Kazakhstan.

⁶ The approved Rules and forms of state financial support for sectors of the economy in which private entrepreneurship entities subject to state support operate are registered with the Ministry of Justice of the Republic of Kazakhstan November 27, 2023 No. 33681.

⁷ BNS ASPR RK

CBAM proposes additional carbon levies on goods exported to the EU if they do not meet established carbon standards. This could increase the cost of Kazakh export goods, especially those produced with high carbon emissions, such as products from the metallurgical and mining industries. Kazakh goods that do not comply with CBAM requirements may become less competitive in the EU market compared to products from other countries that have already implemented stricter environmental standards, potentially leading to a decline in exports to the EU.

In this regard, the introduction of CBAM may serve as an impetus for Kazakhstan to accelerate its transition to cleaner technologies. The adoption of green technologies and improvements in production energy efficiency could help reduce the carbon footprint of exported products and minimize costs associated with CBAM. Furthermore, national programs for the development of green technologies, along with pressure from CBAM, could attract international investments into Kazakhstan aimed at modernizing industry and developing renewable energy sources. This could enhance the country's environmental image and strengthen its position in international markets.

In summary, the analysis of economic factors in the external environment indicates that projected GDP growth and economic incentives create opportunities for the development of green technologies in Kazakhstan. However, high dependence on raw materials, inflationary risks, and external factors present significant challenges. Therefore, in the context of moderate economic growth and high inflation, government support and international cooperation will be critical for the successful implementation of green technologies.

1.1.3. Analysis of the Social Landscape of the External Environment

Turning to the assessment of social aspects of the external environment, it is evident that Kazakh society recognizes the importance of «green initiatives». For instance, the «Taza Kazakhstan» campaign attracted over 3.9 million participants, during which more than 697,000 tons of waste were collected, and approximately 1.2 million green plants were planted. Additionally, large-scale environmental events and international actions such as «Earth Hour» and «Water Guardians» help raise public awareness about resource conservation and foster a culture of environmental stewardship.

In addition to public perception of ecological issues, it is essential to consider the impact of the environmental situation on the population. According to a 2021 assessment by the World Bank, poor air quality is responsible for between 6,000 and 9,360 premature deaths annually⁸. Therefore, the implementation of «clean» technologies is not only an opportunity for "greening" the economy but also a critical necessity for preserving public health.

The World Economic Forum (WEF) forecasts that within the next five years, up to 80% of companies worldwide plan to adopt ESG (Environmental, Social, and

⁸ The World Bank Clean Air and Cool Planet Cost-Effective Air Quality Management in Kazakhstan and Its Impact on Greenhouse Gas Emissions, 2021

Governance) standards, invest in green technologies, and adapt to climate change, which will increase demand for green jobs⁹. Sustainable development specialists rank second among the fastest-growing professions, reflecting the shift towards a green economy. A growing demand for engineers in renewable energy, as well as for specialists in the installation and maintenance of solar energy systems, is anticipated. In recent years, there has been an annual growth of 8% in jobs requiring green skills¹⁰.

Furthermore, the WEF predicts that by 2027, 83 million jobs are expected to be lost, while 69 million new jobs will be created. The most significant job losses are anticipated in the agriculture and natural resources sectors, as well as in manufacturing and transportation. The primary drivers of these changes are environmental, technological, and economic trends. At the same time, the global transition to a sustainable economy by 2030 could facilitate the creation of 30 million jobs in clean energy, energy efficiency, and low-emission technologies¹¹.

Regarding environmental literacy, it is noteworthy that ecological and biological education is taught to schoolchildren in Kazakhstan through young naturalist stations, school clubs, and extracurricular organizations. Basic education establishes the foundation of ecological knowledge through subjects like "World Cognition" and "Natural Science." Additionally, Kazakh universities offer specialized programs in ecology and environmental science, including new and innovative courses with an interdisciplinary approach.

According to Kazakhstan's Concept for Transitioning to a Green Economy, by 2050, the share of green energy in total energy production should reach 50%. The shift to low-carbon energy will contribute to the creation of new green jobs and the development of related specialties. Moreover, transitioning to green technologies will necessitate reforms in construction, emphasizing the use of energy-efficient materials, in the transport sector for job creation in the manufacturing and servicing of electric vehicles, and in the agribusiness sector, which will require the implementation of organic farming methods and drip irrigation systems.

In 2023, employment in Kazakhstan reached 9 million people (+34% compared to 2019), with the largest shares belonging to the industry and agriculture sectors at 11.8% and 12.3%, respectively. Employment in the industrial sector has shown annual growth, increasing from 1,094,000 people to 1,121,000 over a five-year period. However, the number of workers in green jobs has decreased by 16% since 2019, totaling 50,200 people in 2023. Of the total green jobs¹², 44,700 are in

⁹ WEF- Future of jobs report, 2023 y.

¹⁰ WEF- Future of jobs report, 2023 y.

¹¹ WEF- Future of jobs report, 2023 y.

¹² According to the Instructions for filling out the statistical form of the general state statistical observation "Labor Report" of the BNS ASPR RK, green jobs include jobs that contribute to the preservation and restoration of the environment.

industry, 27,000 in the mining sector, including 15,000 in coal extraction. No green jobs have been recorded in the metallurgical industry¹³.

Table 2. Number of workers in green jobs, thousand people

2019	2020	2021	2022	2023
59,7	50,0	48,0	48,9	50,2

Data Source: BNS ASPR RK

It is also important to note that the active implementation of green technologies creates risks for workers in traditional energy and the mining sector. Currently, 1.1 million people are employed in industry, of which 277,500 are in mining and 148,800 in the supply of electricity, gas, steam, hot water, and air conditioning¹⁴. The share of green jobs in the total number employed in industry is merely 0.4%.

In this context, it is necessary to develop a system for retraining and continuous education. To ensure a Just Transition to sustainable development, it is crucial to design and implement educational programs that prepare specialists in renewable energy, energy efficiency, sustainable agriculture, waste recycling, and environmental management.

The transition to a green economy must consider the interests of all population segments and promote social justice. For instance, Germany previously implemented a project for a just closure of coal mines in the Ruhr region, while simultaneously creating jobs in new sectors¹⁵.

An important factor to highlight is the increase in electricity tariffs. This necessary measure is driven by the need to modernize the country's energy infrastructure. However, rising electricity tariffs contribute to inflation by increasing the costs of goods and services. This, in turn, may lead to social tensions due to rising prices for essential services and the cost of living. Therefore, it is crucial to consider the potential social consequences and develop support measures for the most vulnerable segments of the population.

In summary, based on the analyzed social factors, it can be noted that support for environmental initiatives fosters a favorable environment for the implementation of green technologies. However, large-scale development of these initiatives requires addressing issues related to job losses in traditional energy and the mining sector, as well as potential negative social consequences, including inflation due to increased electricity tariffs. Effective development of green technologies will be possible only with the active implementation of retraining programs and compensatory measures to protect vulnerable population groups.

¹³Information-analytical system «Taldau», BNS ASPR RK.

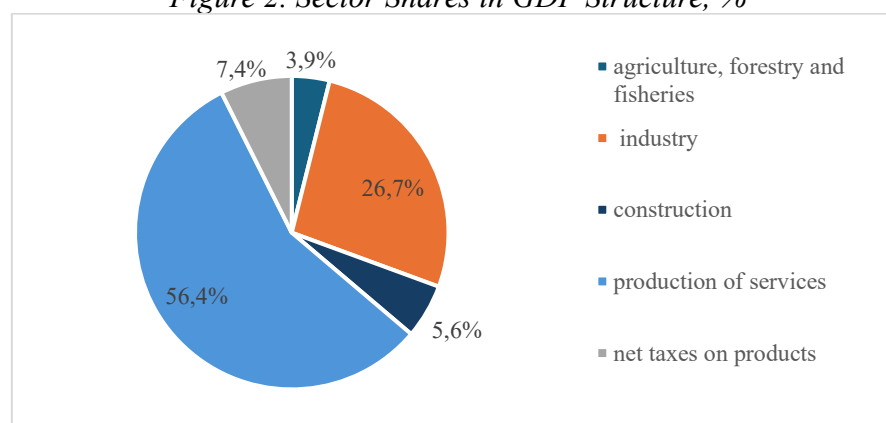
¹⁴ BNS ASPR RK

¹⁵ <https://www.iea.org/policies/17716-germanys-closure-of-hard-coal-mines-in-the-ruhr-and-saar-regions>

1.1.4. Analysis of the Technological Landscape of the External Environment

The presence of significant natural resources in Kazakhstan lead to a predominance of raw materials in the country's GDP and export. In 2023, the country's GDP reached 119.8 trillion tenge, with industry accounting for 40%, of which the mining sector contributed 18.3%¹⁶. Oil and petroleum products take main share in export, comprising 55.9%¹⁷ of total exports in 2023.

Figure 2. Sector Shares in GDP Structure, %



Data source: BNS ASPR RK

The industrial sector is primarily driven by mining, which is a significant contributor to greenhouse gas emissions, alongside the energy sector. The industrial production volume in 2023 was 47 trillion tenge, half of which was attributed to the mining sector and quarrying (47%), with coal production increasing by 1.5 times and crude oil by 1.3 times. The generation, transmission, and distribution of electricity accounted for 6% of the overall industrial structure¹⁸.

While these positive indicators reflect active industrial development in the country, increased production.

According to state statistics, pollutant emissions have shown slight reductions from 2019 to 2023 years, however, overall volumes remain stable.

Table 3. Atmospheric Pollutant Emissions from stationary sources, thousand tons

2019	2020	2021	2022	2023
2 483,1	2 441,0	2 407,5	2 314,8	2 257,5

Data Source: BNS ASPR RK

Regionally, the highest emissions are recorded in Karaganda (455 million tons) and Pavlodar (694 million tons) regions, which host major coal mines. These regions also lead in solid pollutant emissions, with Pavlodar reporting 147.1 thousand tons and Karaganda 89.2 thousand tons in 2023. The western regions are prominent in specific atmospheric emissions due to the activities of major oil and

¹⁶ BNS ASPR RK

¹⁷ BNS ASPR RK, CSR MF RK

¹⁸ BNS ASPR RK

gas operators such as TSO, KPO, and NCOC, as well as critical chemical manufacturing.

Kazakhstan's economy is characterized by high energy intensity. In 2023, total fuel and energy consumption reached 73,377.9 thousand tons of oil equivalent, with 45% consumed by industry. In 2022, the energy intensity of Kazakhstan's GDP was 0.315 thousand tons of oil equivalent per thousand USD at 2015 prices, while in OECD countries, this figure was 0.10 thousand tons of oil equivalent per thousand USD in 2021.

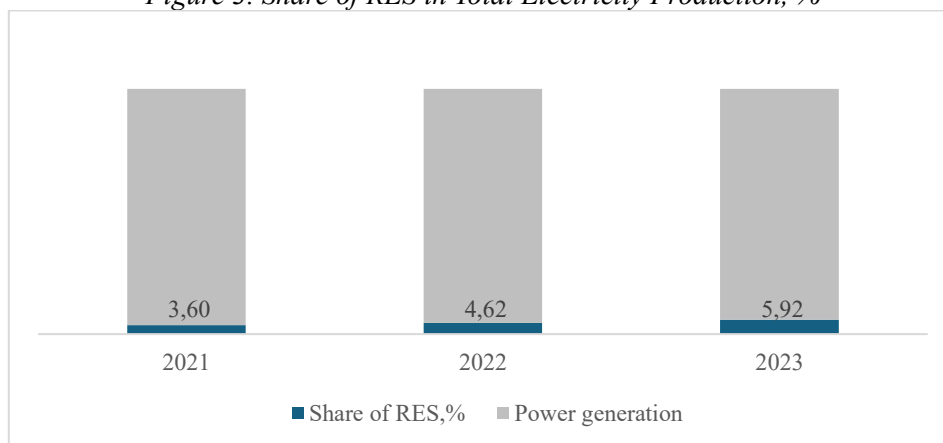
Table 4. Electricity production, million kWh

	2021	2022	2023
Power generation	115 079,2	113 453,2	113 585,4
Share of renewable energy sources	3,6%	4,62%	5,92%

Data source: BNS ASPR RK

According to state statistics, electricity generation from Kazakhstan's power plants has been declining over the last three years. In 2023, production decreased from 115.1 billion kWh in 2021 to 113.6 billion kWh.

Figure 3. Share of RES in Total Electricity Production, %



Data source: BNS ASPR RK

In 2023, the volume of electricity generated from renewable energy sources (RES) amounted to 6.675 billion kWh, or 5.92%¹⁹. In comparison, the share of RES in OECD countries reaches 11.9%²⁰.

The forecast for electricity capacity from 2024 to 2030 indicates a significant shortage of electric power up to 6.2 GW by 2030. Currently, the average equipment wear rate of power plants is 56%, and automation in the sector is relatively low, at around 40%²¹.

The wear and tear of industrial enterprises' production assets is estimated at 30–44%²², reflecting on emissions of pollutants and high energy consumption of existing technological lines. The municipal infrastructure also requires

¹⁹ <https://www.kegoc.kz/ru/press-center/press-releases/>

²⁰ <https://data.oecd.org/energy.htm>

²¹ <https://www.kegoc.kz/ru/press-center/press-releases/>

²² BNS ASPR RK

modernization and repair. The country has about 128,000 km of heating, water supply, and sewage networks, with an overall wear rate of 51%, which also requires addressing. In this regard, the "Tariff for Investment"²³ program aims to attract investments from 2023 to 2029 for the modernization of engineering networks for electricity, heating, water supply, and sewage. This is expected to reduce network wear by 20% by 2029²⁴.

According to the World Bank, approximately 2.01 billion tons of solid municipal waste are generated globally each year, with around 33% not being disposed of in an environmentally safe manner. By 2050, global waste volume is projected to reach 3.40 billion tons, which is more than double the growth rate of the population during this period²⁵.

In Kazakhstan, 4.1 million tons of municipal waste were collected in 2023, of which only 1 million tons were sorted and recycled (24%)²⁶. To address this, plans are in place to construct 37 new solid waste recycling plants and modernize 8 existing plants, with a total capacity exceeding 1.2 million tons per year. This is expected to raise recycling volume to 1.4 million tons annually²⁷.

It is important to note that green technologies, despite their role in sustainable development and the reduction of greenhouse gas emissions and carbon footprint, also pose new challenges in waste disposal and recycling. Materials used in solar panels, wind turbines, and lithium-ion batteries—including glass, plastics, fiberglass, and metals - contain toxic substances that require proper disposal to prevent soil and water contamination. The solar panel recycling market is projected to grow from \$404.3 million in 2024 to \$1.86 billion by 2034²⁸. Furthermore, by 2050, an accumulation of 43 million tons of wind turbine blade waste is expected, with the majority concentrated in China, Europe, and the USA.

These facts underscore the necessity for the development of environmentally friendly and energy-efficient production. In this context, creating best available techniques (BAT) reference documents help reduce environmental impact by providing effective technological solutions for enterprises. From 2021 to 2024, 16 BAT reference documents were developed for various industries, including oil and gas, chemistry, metallurgy, and energy. Starting January 1, 2025, under Kazakhstan's Environmental Code, I-category facilities (the top 50 largest polluters) will be required to obtain comprehensive environmental permits, significantly increasing demand for the adoption of BAT to minimize environmental impact.

In conclusion, analyzing the technological factors of the external environment indicates that, given Kazakhstan's high greenhouse gas emissions, it is crucial to

²³ Rules for the formation of tariffs, Order No. 90 of the Ministry of National Economy of the Republic of Kazakhstan dated 19.11. 2019

²⁴ <https://www.gov.kz/memleket/entities/krem/press/article/details/139374?lang=ru>

²⁵ https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

²⁶ BNS ASPR RK

²⁷ <https://primeminister.kz/ru/news/37-novykh-zavodov-po-pererabotke-tverdykh-bytovykh-otkhodov-zapustyat-v-kazakhstane-27502>

²⁸ <https://www.globenewswire.com/news-release/2024/06/07/2895207/28124/en/Global-Solar-Panel-Recycling-Market-Analysis-2024-2034-Featuring-First-Solar-Sharp-Trina-Solar-We-Recycle-Solar-Reiling-and-Yingli-Energy-Co.html>

focus on a circular economy by transitioning to more eco-friendly and energy-efficient production and developing waste recycling systems. Additionally, the electricity deficit and high equipment wear necessitate investments in modernizing municipal infrastructure.

1.2. Analysis of the Internal Environment

To determine long-term strategic goals, an analysis of the Company's internal resources has been conducted. This analysis aims to identify strengths and weaknesses, as well as organizational opportunities and constraints.

1.2.1 Assessment of Human Capital

Human resources are a key asset of the Company and play a central role in achieving its strategic objectives. As of the first half of 2024, the Company employs 61 individuals, of whom 13 are engaged in administrative support and 48 work in specialized structural divisions. In terms of qualifications, the staff includes 18 specialists with legal degrees, 18 with economic backgrounds, 14 ecologists, 7 technical specialists, 2 linguists, and 2 IT specialists. Among the employees, there are 22 holders of master's degrees in the fields of natural sciences, economics, law, and finance, as well as 2 candidates of biological and technical sciences and 1 doctor of economics.

However, there are issues related to staff turnover, which stood at 55.6% in the first half of 2024, indicating the need for initiatives to improve employee loyalty. The Company is taking measures to attract talent and create comfortable working conditions. The provision of flexible work schedules is aimed at enhancing working conditions by accommodating employees' needs (such as taking children to school or daycare) and ensuring a more comfortable commute considering peak hour traffic.

Employee competency development is facilitated through internal training programs and professional development courses. Moving forward, in addition to the need for developing employee potential, there may be a requirement to attract specialists with the skills necessary for implementing new strategic directions.

1.2.3 Funding Structure

An important source of funding for the Company's activities is the provision of services to the Ministry of Ecology and natural resources of the Republic of Kazakhstan under Budget Program 044 «Facilitating Kazakhstan's accelerated transition to a green economy by promoting technologies and best practices, business development, and investment». This includes the following key areas: developing guidelines for best available techniques (BAT), attracting alternative sources of funding within the framework of the Register of Green Technologies and Projects, preparing and publishing on Kazakhstan's transition to a «green» economy, climate change issues, and analyzing for «green» jobs in the energy sector of Kazakhstan.

In addition to budgetary funding, the Company actively operates in the service market, providing industrial enterprises with comprehensive technical audit services, developing guidelines on best available techniques, and conducting training on these topics.

Furthermore, the Company is actively involved in implementing international

projects under the green agenda, including grant programs GCIP-Kazakhstan and Readiness-II. However, funds from these grant projects are allocated solely to cover expenses for the planned activities and do not impact the Company's financial results.

The structure of funding sources for the Company's activities in 2024 is projected as follows: budget funding – 38,8%, funding from projects supported by international organizations – 37,45%, provision of private commercial services (CTA) – 6,8%, development of commercial reference books – 14.6%, and other fundings – 2.4%. This indicates that the Company actively engages with the market and international organizations, securing a significant portion of its funding from these sources.

1.2.4. Knowledge Base and Information Assets

The Company is actively developing an information platform to inform relevant government bodies, organizations, and the public about guidelines for best available techniques (BAT) and to provide consulting support in this area, including organizing training workshops and lectures on environmental topics.

The Company has established a Register of «green» technologies and projects, as well as a Web Portal for «Comprehensive technological audit» and a Web Portal for guidelines on best available techniques.

The Register of «green» technologies and projects aims to create a database of «green» technologies and projects to attract investments. «Green» projects and technologies that have passed the evaluation by the commission for inclusion in the Register are available for search and viewing by investors interested in «green» technologies and/or projects.

The Web Portal for «Comprehensive technological audit» is designed to conduct comprehensive technological audits, which are the first step in developing and/or revising guidelines for best available techniques.

The Web Portal for guidelines on best available techniques facilitates interaction with the authorized environmental protection body and other government agencies regarding the development and updating of guidelines, as well as informing interested organizations and the public about the development of these guidelines and providing them with consulting support.

1.2.5. Clients and Partners

Within its competence, the Company participates in state and national initiatives, expanding business contacts and proposing improvements to environmental and climate policies and mechanisms. This enhances networking, promotes the Company's image at international and national forums, and contributes to attracting investments and establishing strategic partnerships. In particular, the Company actively collaborates with the United Nations Industrial Development Organization (UNIDO) under the GCIP-Kazakhstan program, as well as with the Green Climate Fund under the Readiness program.

The fruitful cooperation of the Company with international organizations promotes innovation and startups in the field of green technologies. Kazakhstan has become the first country in Central Asia to join the Global Cleantech Innovation Program. Since the start of the project in 2022, 45 projects have been selected to participate in the GCIP Accelerator 2023, resulting in 22 startups reaching the semifinals of GCIP-Kazakhstan, undergoing international training from NGIN experts and receiving mentorship support. The startup Ozen-M secured second place at the global GCIP Cleantech Days 2024 competition in the "Most Promising Business" category.

Collaboration within the Readiness program has allowed for the development of 7 training modules that outline low-carbon opportunities while informing about the availability of climate financing from the Green Climate Fund. The Company also conducts training sessions for representatives of the industrial sector.

Thus, partnerships with international organizations enable the Company to actively participate in state and international initiatives. This collaboration enhances opportunities for innovative development and strategic partnerships, facilitating the promotion of green technologies in Kazakhstan.

1.3. Overview of International Experience in Green Economy Development

1.3.1. Global Climate Policy

At the global level, the European Union (EU) is a leader in climate policy. The EU has set ambitious targets to reduce greenhouse gas emissions by 55% by 2030 and to achieve climate neutrality by 2050. Key tools include the European Emissions Trading System, the European Green Deal, and related legislative initiatives. The EU actively promotes the climate agenda internationally, leveraging its market as a means of influence.

Under the European Green Deal, the Industrial Plan, and the Law on Net Zero Emissions, the EU aims to reduce emissions across various sectors, enhance natural carbon sinks, improve the emissions trading system, and strengthen social support for citizens and small businesses. In updating its policies, the EU places a strong emphasis on fostering innovation and clean technologies by simplifying regulatory frameworks and access to financing, improving workforce skills, and promoting open and fair trade to create sustainable supply chains²⁹.

Japan set a goal to achieve carbon neutrality by 2050 and to reduce emissions by 46% by 2030. Key measures include the development of renewable and hydrogen energy, carbon capture, utilization, and storage (CCUS) technologies, and the promotion of green innovations. The Japanese government's national strategy for green transformation (GX) aims to reduce emissions while stimulating economic growth through the development of new eco-friendly sectors and technologies, issuing government bonds to finance investments in clean technologies and

²⁹ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en

infrastructure, and advancing research and development in areas such as hydrogen energy, carbon capture, and next-generation nuclear reactors. The strategy emphasizes government climate financing to support green investments, including issuing bonds totaling 20 trillion yen over ten years and funding the transition period through public-private partnerships, in addition to establishing carbon pricing³⁰.

The Government of South Korea has also adopted a comprehensive national strategy launched in 2020, aimed at achieving carbon neutrality and stimulating economic growth through green technologies and infrastructure, focusing on «green» investments (public and private investments in renewable energy), developing eco-friendly industries, sustainable urban development, and investing in education and training programs to prepare the workforce for green jobs. The new «Green New Deal» in South Korea places special emphasis on social protection systems designed to minimize disruptions for workers in traditional sectors³¹.

The People's Republic of China, as the largest emitter of greenhouse gases, plays a key role in global climate initiatives. China has significantly increased the priority of climate policy, setting a target to peak emissions by 2030 and achieve carbon neutrality by 2060. Key measures include the development of renewable energy, implementing an emissions trading system, and tightening environmental standards.

In 2023, China released the book «Green Development of China in a New Era», outlining the country's aspirations to build a «green», circular, and low-carbon economy while ensuring a balance between economic development and environmental sustainability (through the implementation of green initiatives that ensure continuous economic growth and job creation). This book advocates for the adoption of cleaner technologies, adherence to principles of a circular economy, transitioning to renewable energy, sustainable urban and industrial development, supporting eco-friendly sectors (such as electric vehicles and clean technologies), modernizing existing production facilities, and promoting a culture of environmental responsibility³². China places significant emphasis on activating investments in scientific and technological innovation, with the country's gross domestic expenditure on research and development (R&D) rising from 1.03 trillion yuan in 2012 to over 2.8 trillion yuan in 2021, and investments by Chinese enterprises continuing to grow, accounting for over 76% of total R&D investment in the country. The share of technological inventions on a global scale is around 60%, making China the most active country in innovation and environmental technologies.

In climate measures, significant attention is given to developing emissions trading systems (ETS). For example, the EU directs ETS revenues into a new social climate fund (to address social consequences related to the system and for vulnerable groups), a general budget for climate change mitigation, low-carbon innovation, and

³⁰ <https://gri-japan.com/insights/nagatacho-update/overview-japans-green-transformation-gx>

³¹ <https://www.undp.org/blog/south-koreas-green-new-deal-year-transition>

³²

https://english.news.cn/20230119/b9b902af9308417db57bf08ca7a74a9e/20230119b9b902af9308417db57bf08ca7a74a9e_XxjwshE007008_20230119_CBMFN0A001.pdf

assistance for individuals, households, and businesses³³. In Japan, it is planned to use ETS revenues to repay GX bonds by 2050, while in South Korea, revenues from the system are used for climate change mitigation and low-carbon innovation. Notably, China currently lacks a mechanism for utilizing revenues generated from its ETS, despite being the largest carbon market in the world by emissions coverage³⁴.

To prevent and control environmental pollution by industry, OECD countries have been utilizing the best available techniques (BAT) tool for several decades. The EU is a global leader in this regard, with over 30 years of experience applying the BAT-based approach to develop conditions for issuing environmental permits, having published 36 documents on BAT³⁵. The Russian BAT Bureau has released 53 informational and technical reference guides on best available techniques (BAT) and is actively updating and revising these documents.

Thus, global trends in the transition to a green economy include a focus on a «just transition», green finance and investments, innovation and clean technologies, improving climate literacy, carbon pricing mechanisms, and the shift towards circular economy principles.

1.3.2. Climate Financing Worldwide

At COP15 in Copenhagen in 2009, developed countries committed to providing annual financing to developing countries, with a target of reaching \$100 billion per year starting in 2020. This commitment was reaffirmed at the Paris Climate Conference (COP21) and extended to 2025. In 2022, this goal was achieved for the first time at the level of \$115.9 billion, but with a two-year delay. The primary financing is provided in the form of loans (69%), grants (28%), and equity participation (3%). Global financial needs until 2030 are estimated at \$5 trillion per year, of which \$2.4 trillion is necessary for developing countries³⁶.

Considering that a significant portion of climate financing is provided as loans—many of which are not concessional—the debt pressure in developing countries is increasing and may hinder investment in climate projects³⁷.

1.3.3. Organizations Similar to the Society

In the EU, the *Innovation Fund* has been established as a European funding program, aiming to accumulate €40 billion from 2020 to 2030. To date, the fund has allocated approximately €6.5 billion to 124 projects focused on innovative low-carbon technologies. The program is part of the new emissions trading scheme, and its budget is based on carbon emissions quotas. The Innovation Fund supports investments in renewable energy, energy storage, carbon capture, utilization and storage, as well as decarbonizing energy-intensive industries. Its scope covers pilot

³³ https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/our-ambition-2030_en#new-emissions-trading-system-for-buildings-road-transport-and-additional-sectors-and-the-social-climate-fund

³⁴ <https://icapcarbonaction.com/en/ets/china-national-ets>

³⁵ <https://eippcb.jrc.ec.europa.eu/reference>

³⁶ OECD, Climate Finance Provided and Mobilised by Developed Countries in 2013-2022

³⁷ [A climate finance goal that works for developing countries | UNCTAD](#)

projects, pre-commercial technologies, and large commercial projects. Overall, the program aims to enhance Europe's competitiveness in green technologies³⁸.

In Japan, the *International Center for Environmental Technology Transfer* (ICETT) was established in collaboration with industry, academia, and the government to facilitate the smooth transfer of Japanese environmental protection systems, contributing to global environmental preservation and sustainable economic development. ICETT aims to transfer Japanese or international environmental protection technologies to other countries to take the initiative in addressing ecological issues both globally and domestically, thereby helping to preserve the global environment and ensuring sustainable growth. To achieve this goal, ICETT conducts various environmental activities, such as training and technical guidance, research and development, surveys and information provision, as well as outreach and public awareness initiatives to effectively promote the transfer of technologies suited to specific conditions in each country³⁹.

In South Korea, the National Institute of Green Technology (formerly Green Technology Center Korea, GTC-K) has been operational since 2013. This institute plays a central role in developing laws related to climate technologies and supports technology transfer to developing countries within the framework of global partnerships. The institute actively engages in project development and promotion of eco-friendly technologies, such as renewable energy, energy-efficient systems, and technologies aimed at reducing carbon emissions. Recent achievements include the analysis of trends and effectiveness of national investments in R&D, developing methodologies for assessing the level of green technologies and competitiveness indices, supporting green technology policies for governmental organizations, creating an information system for green technologies, establishing cooperation in green research and development between technologically advanced countries and international organizations, and conducting climate change response research⁴⁰.

The *Global Green Growth Institute* (GGGI) is an international organization that supports its member governments in fulfilling their commitments under the Paris Climate Agreement and their sustainable development goals. GGGI provides technical assistance to governments through embedded country teams and helps mobilize funding for climate-resilient projects. The organization's current strategy (Strategy 2030) includes the following priorities:

- Stimulating and accelerating access to climate financing/green investments for public and private sectors in member countries;
- Supporting member countries in strengthening political planning, regulatory frameworks, and institutional capacity to achieve green growth outcomes;
- Creating a sustainable and circular bioeconomy while preserving healthy natural systems;

³⁸ https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/what-innovation-fund_en

³⁹ <https://www.icett.or.jp/english/gaiyou/objective.html>

⁴⁰ <https://www.nst.re.kr/>

- Ensuring the resilience of cities and communities, making them livable and sustainable through support for «green» jobs, services, and green infrastructure;
- Accelerating progress in eradicating poverty and gender inequality through GGGI country programs;
- Ensuring sustainable, more efficient, and diversified funding for GGGI activities;
- Promoting growth and expanding green growth community capabilities through knowledge transfer;
- Becoming an effective, high-performing, and flexible organization⁴¹.

The National Center for Climate Change Strategy and International Cooperation (NCSC) is a subordinate institution directly reporting to the Ministry of Ecology and Environmental Protection in China. It is a strategic research organization at the national level, as well as a center for international cooperation and information exchange on China's climate change response measures. Its primary responsibilities include organizing research (on strategic planning, China's policies and regulations, international policies, statistical assessments, information training, and carbon markets related to climate change), developing China's climate change policy and international negotiation strategies, and cooperating to support decision-making. Additionally, as directed by higher authorities, the center manages clean development mechanism projects, emissions trading, national data and information management related to climate change, and conducts advocacy and training on climate change issues⁴².

Analysis of international experience shows that countries are adapting their strategies for transitioning to a green economy according to changing conditions and global needs, focusing on developing green financing and investments. Effective support mechanisms include «green» loans, concessional tariff programs, environmental taxes, and carbon funds, where the government plays a significant role. The implementation of best available techniques (BAT) is carried out in various ways across different countries, demonstrating the possibility of applying these practices in Kazakhstan. The Company can adapt its activities in line with global trends, concentrating efforts on developing green financing, an innovative ecosystem, scientific research, capacity building in green technologies, and sustainable carbon regulation.

⁴¹ https://gggi.org/wp-content/uploads/2019/12/Strategy-2030-EXTERNAL-191212_FINAL.pdf

⁴² <http://www.ncsc.org.cn/#>

1.4 SWOT – analysis

Based on the analysis of the external and internal environment of Kazakhstan, key factors that significantly influence the country's strategic development have been identified. On one hand, the political environment and legislative framework of the Republic of Kazakhstan reflect the government's commitment to transitioning to a green economy. On the other hand, the economic situation is complicated by high inflation rates, dependence on raw material exports, and slow economic growth, which may be exacerbated by external economic and geopolitical factors.

Social and technological aspects also significantly affect the opportunities for developing green technologies. Potential increases in electricity tariffs and changes in employment structures necessitate the implementation of retraining programs and the creation of green jobs based on the principles of a just transition. Additionally, the high level of infrastructure wear and the need to introduce new technologies and more effective waste management create both challenges and an increased demand for green technologies.

SWOT - analysis

Strengths	Weaknesses
<ul style="list-style-type: none">• Legislative framework for the transition to a "green" economy.• Gradual economic growth.• A qualified workforce within the Company with experience in the green sector.• Established partnerships and ongoing programs with international organizations.	<ul style="list-style-type: none">• High dependence of Kazakhstan's economy on raw material exports.• Elevated inflation levels• Insufficient funding• Insufficient economic measures to stimulate the transition to a "green" economy• Limited financial resources of the Company under the budget program.• High employee turnover
Opportunities	Threats
<ul style="list-style-type: none">• Global trends towards sustainable development and increased environmental literacy are creating demand for green technologies.• Stricter environmental legislation will encourage large enterprises to adopt green technologies.• The Carbon Border Adjustment Mechanism (CBAM) will incentivize Kazakhstani exporting companies to reduce their product carbon footprints.• The aging energy and utility infrastructure requires investments that could finance green projects.	<ul style="list-style-type: none">• Fluctuations in prices for exported raw materials and geopolitical risks may negatively impact the country's economy and reduce government support for green policies.• Limited resources of the Company for developing and effectively promoting green technologies.• Challenges in attracting and retaining talented employees.• Rising tariffs and job losses in traditional sectors could potentially heighten social tension.

In conclusion, the results of the SWOT analysis indicate that global trends towards sustainable development, the tightening of Kazakhstan's legislation, and the

urgent need to upgrade infrastructure create significant incentives for the adoption of green technologies. However, an imbalance in budgetary policy and a potential deterioration in the country's balance of payments, due to falling commodity prices and/or geopolitical risks, could negatively impact government support for environmental policy. Moreover, despite the limited financial resources, the Company must strive to attract and enhance the loyalty of talented employees. In this context, taking into account the identified strengths and weaknesses of the Company, as well as potential opportunities and threats, strategic objectives and tasks for the Company over the next five years have been formulated.

Non-Profit Joint Stock Company "International Center for Green Technologies and Investment Projects" (hereinafter referred to as the Company) was established by the resolution of the Government of the Republic of Kazakhstan No. 224 on April 27, 2018. The Company's development strategy is a mid-term strategic document that defines the Company's mission to achieve the goals set by the Sole Shareholder, represented by the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan (hereinafter referred to as the Ministry). The strategy aligns with the documents of the State Planning System and the Ministry's Development Plan.

2. Mission and Vision

Mission

To promote green technologies and support businesses to enhance the competitiveness of the economy, improve the quality of life for the population, and reduce negative environmental impacts.

Vision

To be The Service operator for «green» technologies and the bureau of the best available techniques, actively cooperating with international partners.

Strategic Directions

In line with the Company's mission, three strategic directions have been identified:

1. Facilitating the further transition of Kazakhstan to the principles of Green Economy.
2. Promoting the development of «green» technologies, projects and attraction of financing.
3. Enhancing the operational efficiency of the Company.

To achieve these strategic directions, specific goals have been set, which encompass ten tasks and initiatives. The implementation of these will enable the Company to utilize tools and mechanisms that address both internal and external challenges and opportunities, as well as maximize the effective use of available resources.

3. Goals and Objectives

Strategic Direction 1: Facilitating the further transition of Kazakhstan to the principles of BAT

Considering global trends towards achieving carbon neutrality and the requirements of environmental legislation in the Republic of Kazakhstan, the Company will continue to implement the strategic direction of «Facilitating the further transition of Kazakhstan to the principles of BAT». This direction will focus on three strategic goals aimed at the development and implementation of best available technologies in the country.

1.1. Increasing the coverage of industrial/manufacturing enterprises within the framework of Comprehensive technological audits

1.2. Development and improvement (monitoring, effectiveness analysis, updating) of Best Available Techniques (BAT) reference documents

1.3. Consulting stakeholders on the transition to BAT principles (conducting trainings, seminars, business games) and developing services for enterprises to obtain Comprehensive environmental permit

1.1. Increasing the coverage of industrial/manufacturing enterprises within the framework of Comprehensive technological audits

Significant progress has been made by the Company in the area of Comprehensive Technological Audits (CTA) in previous years. CTAs have been conducted for over 100 enterprises across various sectors, including energy, oil extraction, non-ferrous and ferrous metallurgy, cement and oil refining, the chemical industry, coal production, waste management, organic synthesis, and wastewater treatment. From 2021 to 2024, eight sectoral reports were generated and submitted to the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan covering the energy, coal, oil extraction, oil refining, chemical, cement, and metallurgy sectors. To further develop this direction, the Company plans to increase the coverage of industrial and manufacturing enterprises within the framework of CTAs.

This effort will involve raising awareness within the business community about the significance and benefits of CTAs. The Company will actively utilize its media resources and conduct meetings and seminars. Regarding the expansion of CTAs, it is planned to systematically increase the number of audits conducted annually, targeting at least four audits per year. The Company will proactively reach out to enterprises, encouraging them to undergo CTAs for planning and auditing purposes. Key sectors of the Kazakh economy will be covered, including, but not limited to, waste management, various aspects of livestock production, textiles and food industries, pulp production, glass and ceramics, uranium ore extraction, and other mineral resources.

Implementing this strategy will significantly increase the number of enterprises undergoing CTAs, leading to improved environmental performance in

Kazakhstan's industrial sector. These efforts will not only contribute to better environmental conditions but also help foster a sustainable ecological culture in business, enhancing Kazakhstan's reputation as a country actively working towards environmental sustainability and innovation.

1.2. Development and improvement (monitoring, effectiveness analysis, updating) of Best Available Techniques (BAT) reference documents

In previous years, the Company has made significant strides in developing Best Available Technique (BAT) Reference Documents aimed at reducing environmental impacts and enhancing technological efficiency. From 2021 to 2024, 16 BAT reference documents were developed and approved, fully covering the technological processes of the top 50 operators of Category I facilities. The Company will continue to advance this direction, including the development of at least three new BAT reference documents annually for previously unaddressed activities, as well as updating existing documents.

New BAT reference documents will be developed for sectors of the economy that require urgent implementation of BAT, taking into account their specific characteristics and technological needs. Throughout this process, the Company will closely engage with enterprises to assess the effectiveness of the reference documents in practice and conduct outreach activities, including seminars and business games.

To ensure the relevance and effectiveness of the proposed BAT, an analysis of the effectiveness of the already developed reference documents and their impact on emission reductions and improvements in technological processes will be conducted. This will include monitoring how enterprises implement the recommendations and technologies suggested in the BAT reference documents and how this influences their environmental performance. Additionally, successful practices and areas requiring improvement will be analyzed.

As a result of this work, significant improvements in environmental performance across various sectors of the economy are expected. New BAT reference documents will assist enterprises in achieving substantial emission reductions, enhancing technological efficiency, and complying with international sustainability standards.

1.3. Consulting stakeholders on the transition to BAT principles (conducting trainings, seminars, business games) and developing services for enterprises to obtain Comprehensive environmental permit

In accordance with the Environmental Code of the Republic of Kazakhstan, the requirement for enterprises to obtain a Comprehensive Environmental Permit (CEP) will come into effect on January 1, 2025. There may be demand from enterprises subject to this requirement for support and assistance in the CEP acquisition process. The Company's accumulated experience in conducting comprehensive technical audits and developing BAT enables it to offer consulting services for enterprises striving to comply with CEP requirements. Accordingly, the

Company plans to develop services to assist enterprises in the CEP acquisition process, providing professional support at all stages, from application submission to permit issuance.

Simultaneously, the Company will continue to enhance its consulting services related to BAT by conducting at least four trainings, seminars, and business games for stakeholders each year. Furthermore, the Company will explore the creation of a regional network with the Central Asian BAT Bureau, allowing for the sharing of expertise in conducting CTAs and developing BAT reference documents with partners in other Central Asian countries and entering neighboring markets. The implementation of this initiative will not only strengthen the Company's position but also significantly positively impact the environmental situation in Kazakhstan and the Central Asian region.

Strategic Direction 2: Promoting the development of green technologies, projects attraction of financing

2.1. Promoting the improvement of legislation in Kazakhstan regarding green technologies and projects

2.2. Development of The Industry center for technological competencies

2.3. Financing «green» projects

2.1. Promoting the Improvement of Legislation in Kazakhstan Regarding Green Technologies and Projects

The Company will conduct an analysis of existing industry legislation and regulatory legal acts in areas such as environmental protection, energy, water resources, organic farming, urban infrastructure, and more.

In accordance with Article 130 of the Environmental Code of the Republic of Kazakhstan, the Company is responsible for establishing and maintaining a registry of «green» technologies and projects by domestic producers and suppliers. However, there is currently no mechanism to incentivize projects included in this registry. To improve the functionality of the registry and its funding mechanism, a series of legislative amendments will be proposed to strengthen the regulatory framework and promote sustainable development. It is proposed to legally establish the use of the registry in the process of government «green» procurement, which will help increase demand for «green» technologies and projects. Tax incentives and subsidies for companies implementing innovative environmentally friendly technologies are also planned. These measures will not only enhance the effectiveness of the registry but also significantly bolster its role as a key tool in promoting the green economy and sustainable innovations in the country, aiming to include at least seven projects in the «green» technologies and projects registry annually.

The Company will also develop proposals for the implementation of effective financial instruments to support "green" projects, similar to the current financing mechanism for R&D by subsoil users. Additionally, the Company will continue working on proposals to improve the classification (taxonomy) of green technologies, criteria and requirements for "green" technologies and projects, and

the mechanism for issuing certificates of compliance or conclusions on the compliance of technologies.

As a result of this legislative work, active interaction with market participants, lawmakers, and representatives of state bodies is expected.

2.2. Development of *The Industry center for technological competencies*

For the development of the green technologies and projects market, efforts will be made to establish this market. As a result, market participants will be identified, a database of participants will be created, and mechanisms for their interaction will be developed.

To identify the demand for «green» technologies and projects, the Company will conduct research, surveys, and questionnaires to identify the demand of market stakeholders for «green» technologies, projects, and fundraising. Based on the research findings, the Company will develop proposals for green technologies and projects for businesses and create a portfolio of projects for financing. In responding to business requests, the Company will collaborate closely with government bodies and other entities, including associations, banks, the AIFC, and others.

During the evaluation of potential projects, the Company will offer consulting services to businesses on «green» technologies, projects, financing, and technical support. It will also conduct research on environmental, economic, and climate topics and perform independent assessments to recognize technologies or projects as «green».

Given the existing scientific and practical potential, the Company will actively participate in shaping the strategic vision for the technological development of the sector. This includes implementing tasks for developing and promoting high-tech innovations in «green» technologies, considering industry priorities and specificities, and involving leading domestic and international experts, technology companies, and research institutions.

In this context, the Company will assist in developing targeted technology programs focused on key (priority) technologies and solving the sector's technological challenges through collaboration between the government, businesses, and the scientific community.

The Company will also promote the commercialization of scientific and technical developments in green technologies. Based on identified industry needs and technology trends, it will propose amendments to legislation and program documents aimed at stimulating innovation and advancing green technologies. This will create a legal foundation to support technological development, essential for sustainable growth and minimizing environmental impacts.

Additionally, the Company will facilitate the transfer of advanced «green» technologies. International companies can act as effective conduits for bringing new knowledge into the economy through direct investments or joint ventures. One of the technology transfer mechanisms will involve joining existing international technology transfer networks.

Furthermore, as part of the Global program for the promotion of innovation in clean technologies and entrepreneurship in cooperation with UNIDO, the Company will support «green» projects through mentorship, training, networking, marketing assistance, market research, access to investors, and practical events such as technology brokerage sessions.

2.3. Financing «green» projects

In the context of global climate change and the growing importance of sustainable development, the Republic of Kazakhstan faces the need for effective management of carbon emissions and financing of green technologies. In this regard, the creation of a Carbon Fund is planned to finance projects aimed at reducing greenhouse gas emissions and developing green technologies. The Fund will operate in accordance with the legislation of AIFC, with the Company participating in the management of its assets and the identification of key areas for financing.

The Fund in Kazakhstan will be financed through contributions from investors, as well as funds from international partners (institutions) within the framework of international projects such as the Joint Credit Mechanism (JCM), the «Green Bridge» partnership program, and others.

The main objectives of The Carbon Fund in Kazakhstan will include:

- Reduction of carbon emissions in the country.
- Development of green technologies and support for innovative startups.
- Attraction of financial resources and investments for sustainable development.
- Facilitation of the transition to a green economy and improvement of the environmental situation.

Strategic direction 3: Enhancing the Company's operational efficiency

3.1. Development of human capital

3.2. Ensuring financial stability

3.3. Development of strategic communications at national and international levels

3.1. Development of human capital

A key factor for the successful implementation of the development strategy is the enhancement of the Company's human capital. Therefore, the principles of the Company's personnel policy are meritocracy, development of corporate culture, social stability, and employee engagement.

To ensure alignment between strategic goals and individual employee objectives, the performance evaluation system is based on SMART criteria, including both quantitative and qualitative indicators.

To improve the recruitment and retention of highly qualified personnel, a talent pool will be created, and efforts will be made to attract specialists with international academic and professional experience who can share their knowledge with internal staff. Given the Company's financial constraints, the focus will be on

non-monetary incentives, such as the development of mentorship programs, recognition of individual achievements, fostering a positive work environment, and providing opportunities for continuous career advancement.

To enhance the Company's attractiveness as an employer, efforts will be made to build an HR brand, which will include participation in career fairs, open days, and publications highlighting the corporate culture. Collaboration with universities will also be intensified to attract young talent and develop local expertise.

Additionally, to develop human potential, employees will undergo training and certification to enhance their competencies in the field of sustainability and non-financial reporting.

Regular monitoring and assessment of the personnel policy implementation will allow for timely adjustments and improvements in internal processes. The development of human capital will not only contribute to achieving strategic goals but also foster a loyal and motivated workforce within the Company.

3.2. Ensuring financial stability

The company aims to increase the free cash flow by improving EBITDA metrics and implementing efficient capital investments for further development. This goal will enable the company to effectively manage its assets and capital structure, strengthen financial stability, and ensure transparency in financial activities.

3.3. Development of strategic communications at national and international levels

To build a positive image of the Company and attract necessary resources and partnerships, it is essential to develop strategic communications both nationally and internationally.

Development of Strategic PR

The development of strategic public relations (PR) will serve as the foundation for successfully promoting the principles of a «green economy», thereby enhancing the Company's image in supporting green technologies and projects. This initiative will involve the annual creation of a media plan, enhancement of the Company's website, implementation of alternative media tools, content creation and promotion, as well as monitoring and analyzing information related to the Company.

The annual media plan will focus on crafting targeted messages and executing image-building activities using all available media tools. This approach will ensure maximum reach and engagement with the target audience by providing balanced and accurate information about the Company's activities.

The Company will continue to enhance its website and social media pages as key sources of information on green technologies and best practices. This effort will include publishing weekly news digests, event reports, and the introduction of new services for subscribers. Active content creation and promotion will be conducted, including press releases, articles, infographics, and videos to capture audience attention through social networks and other media platforms. Additionally,

alternative media tools will be utilized through active engagement with journalists, bloggers, experts, and the organization of informational events.

The Company will systematically monitor and analyze various media resources, including online platforms, television channels, and print publications, to comprehensively assess its public perception. This process will involve regular tracking of mentions, evaluating the tone of materials, and analyzing public opinion, enabling timely responses to negative publications and adjustments to ensure a positive image of the Company.

As a result of these efforts, the Company's image as a driver of green growth will improve, increasing awareness and understanding among target groups, while enhancing reputation management and establishing unified standards for communication policy.

Development of International Cooperation

In addition to strategic communications within Kazakhstan, active international cooperation is equally important. This work will focus on exchanging experiences related to the implementation of green technologies and financing corresponding projects.

To enhance its expertise, the Company will actively study and integrate best practices from foreign countries, exchange experiences in green technologies, and engage actively with international organizations and foreign partners.

Expected outcomes include establishing partnerships with international organizations and foreign partners, signing memoranda and cooperation agreements, attracting international support for the transition to a green economy, and conducting joint initiatives. These measures will not only expand the Company's influence in green policy but also create a foundation for supporting investment projects.

4. KPI

Achievement of the Company's mission and strategic directions will be ensured through regular monitoring of target KPIs.

Indicators for Achieving Strategic Directions, Goals, and Objectives

№	Indicator	Unit	Formula	2025	2026	2027	2028	2029
Strategic Direction 1: Supporting Kazakhstan's transition to BAT principles								
<i>Increasing the coverage of industrial/manufacturing enterprises within the framework of the Comprehensive Technological Audit</i>								
1	Conduction of Comprehensive Technological Audits (CTA) for industrial/production enterprises	unit		No less than 4	No less than 4	No less than 4	No less than 4	No less than 4
Development and improvement (Monitoring, Effectiveness Analysis, Update) of BAT Guidelines								
2	Development of BAT for previously unaddressed sectors	unit		No less than 3 (funded from the budget) No less than 1 (in case of attracting extra-budgetary funds)	No less than 3 (funded from the budget) No less than 1 (in case of attracting extra-budgetary funds)	No less than 3 (funded from the budget) No less than 1 (in case of attracting extra-budgetary funds)	-	-
Consulting stakeholders on transitioning to BAT Principles (training, workshops, business games) and developing services for enterprises to obtain Comprehensive Environmental Permits (CEP)								
3	Consulting services for supporting enterprises in obtaining CEP	unit		No less than 1	No less than 1	No less than 1	No less than 1	No less than 1
Strategic Direction 2: Promoting the development of «green» technologies, projects and attraction of financing								
Supporting the improvement of legislation in Kazakhstan on «green» technologies and projects								
4	Inclusion of projects in the «green» technologies and projects Register	unit		No less than 7	No less than 7	No less than 7	No less than 7	No less than 7

№	Indicator	Unit	Formula	2025	2026	2027	2028	2029
	Strategic Direction 3: Enhancing the Company's Operational Efficiency							
5	Ensuring public awareness of BAT and Kazakhstan's transition to a low-carbon economy	%	$p = \frac{N_{\text{общ}} * 100\%}{N_{\text{H}}}$ <p> $N_{\text{общ}} = N1 + N2 + N3 + N4 + N5 + N6$ </p> <p>Where: N_{H} = Workforce (Economically Active Population) of Kazakhstan according to the Statistics Agency,</p> <p> $N_{\text{общ}}$ = Number of the population aware of BAT and green technology information during the reporting period. $N1$ = Number of visits to the NP JSC «IGTIPC» website; $N2$ = Number of people engaged in seminars, round tables, training, and awareness-raising activities related to BAT and GT; $N3$ = Number of people consulted on </p>	3,8	4,3	4,8	5,3	5,5

№	Indicator	Unit	Formula	2025	2026	2027	2028	2029
			BAT and green technologies; N4 = Number of people reached through print and electronic media; N5 = Number of people reached through social media by the end of the reporting period; N6 = Number of people reached through TV channels.					

List of references

1. Regional Economic Prospects, EBRD, May 2024
2. The National Bank of the Republic of Kazakhstan
3. Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (BNS ASPR RK). Environmental indicators, Energy Efficiency, Industry, Economic indicators <https://stat.gov.kz/ru/>
4. Fitch Affirms Kazakhstan at 'BBB'; Outlook Stable. <https://www.fitchratings.com/entity/kazakhstan-80442239>
5. The approved Rules and forms of state financial support for sectors of the economy in which private business entities subject to state support operate are registered with the Ministry of Justice of the Republic of Kazakhstan, November 27, 2023 No. 33681.
6. The World Bank Clean Air and Cool Planet Cost-Effective Air Quality Management in Kazakhstan and Its Impact on Greenhouse Gas Emissions, 2021
7. The World Economic Forum - Future of jobs report, 2023.
8. BNS ASPR RK, Instructions for completing the statistical form of the national statistical observation «Labor Report»
9. Information and analytical system «Taldau», BNS ASPR RK
10. <https://www.iea.org/policies/17716-germanys-closure-of-hard-coal-mines-in-the-ruhr-and-saar-regions>
11. State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan. Indicators of foreign trade. https://kgd.gov.kz/ru/exp_trade_files
12. <https://www.kegoc.kz/ru/press-center/press-releases/>
13. <https://data.oecd.org/energy.htm>
14. <https://www.kegoc.kz/ru/press-center/press-releases/>
15. Rules for the formation of tariffs, the order № 90 MNE RK от 19.11. 2019
16. <https://www.gov.kz/memleket/entities/krem/press/article/details/139374?lang=ru>
17. https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html
18. <https://primeminister.kz/ru/news/37-novykh-zavodov-po-pererabotke-tverdykh-bytovykh-otkhodov-zapustyat-v-kazakhstane-27502>
19. <https://www.globenewswire.com/news-release/2024/06/07/2895207/28124/en/Global-Solar-Panel-Recycling-Market-Analysis-2024-2034-Featuring-First-Solar-Sharp-Trina-Solar-We-Recycle-Solar-Reiling-and-Yingli-Energy-Co.html>
20. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en
21. <https://grjapan.com/insights/nagatacho-update/overview-japans-green-transformation-gx>
22. <https://www.undp.org/blog/south-koreas-green-new-deal-year-transition>

23. https://english.news.cn/20230119/b9b902af9308417db57bf08ca7a74a9e/20230119b9b902af9308417db57bf08ca7a74a9e_XxjwshE007008_20230119_CBMFN0A001.pdf
24. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/our-ambition-2030_en#new-emissions-trading-system-for-buildings-road-transport-and-additional-sectors-and-the-social-climate-fund
25. <https://icapcarbonaction.com/en/ets/china-national-ets>
26. <https://eippcb.jrc.ec.europa.eu/reference>
27. OECD, Climate Finance Provided and Mobilised by Developed Countries in 2013-2022
28. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/what-innovation-fund_en
29. <https://www.icett.or.jp/english/gaiyou/objective.html>
30. <https://www.nst.re.kr/>
31. https://gggi.org/wp-content/uploads/2019/12/Strategy-2030-EXTERNAL-191212_FINAL.pdf
32. <http://www.ncsc.org.cn/#>