



# OUR RESPONSE TO GLOBAL CHALLENGES

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We are driving the transition to low-carbon development, setting the tone and strategic guidelines for our portfolio companies.

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## Why is this important to us?

The world is on the verge of critical global climate change. Temperature changes entail a number of adverse climatic phenomena (droughts, floods, abnormal heat, etc.), the scale of which is growing from year to year. We see it as our responsibility to use all the resources at our disposal to achieve carbon neutrality, help our portfolio companies and other stakeholders decarbonize their global supply chains, and minimize the negative impacts of global climate change.



## Our goals and objectives:

- Reduce your carbon footprint by 10% by 2032 from a base year of 2021 and achieve carbon neutrality by 2060
- Increasing the share of low-carbon generation in electricity purchases to 45% by 2032 (from 2021 levels)

| Material topics | Impact type | Direct impact |
|-----------------|-------------|---------------|
| Energy          | -           | ●●●           |

Impact type: + positive – negative

## Materiality level:

- strong
- average
- low

# DECARBONIZATION

Kazakhstan, being the largest emitter of greenhouse gases in Central Asia<sup>3</sup>, expresses its commitment to the global goal of addressing climate change. The country has established a database of strategic documents related to climate change. We adhere to the goals of being one of the first in this aspect – the Concept of the transition of the Republic of Kazakhstan to a “green economy”. The Concept includes indicators for improving energy efficiency and reducing carbon dioxide emissions in the power sector. In 2016, Kazakhstan ratified the Paris Agreement. Furthermore, after the announcement by the President of Kazakhstan in December 2020 on the goal to achieve carbon neutrality, the country began developing a Strategy for Achieving Carbon Neutrality by 2060, in which we are actively participate.

As a socially responsible organization, we can play an significant role in promoting the climate agenda in Kazakhstan and worldwide. We are a driver for the transition to low-carbon development, setting the tone and strategic direction for our portfolio companies. The Fund shares the global concern about climate change and supports global efforts to reduce greenhouse gas emissions. To this end, the Fund has calculated the carbon footprint of the Fund Group for 2022. It amounted to 60.9 million tons of CO<sub>2</sub> equivalent. Of these, 50.7 million tons of CO<sub>2</sub> equivalent are direct CO<sub>2</sub> emissions, 10.2 million tons of CO<sub>2</sub> equivalent are indirect emissions. Among the Fund's enterprises, the highest direct greenhouse gas emissions are attributed to Samruk-Energy JSC (65%), which is primarily engaged in electricity generation from coal-fired power plants. The share of direct greenhouse gas emissions from the oil and gas industry (JSC NC KazMunayGas and JSC NC QazaqGaz) is 28%, as their activities are also focused on fossil fuels. All other companies of the Fund account for less than 7% of the total emissions.

<sup>3</sup> According to redicap (The Regional Dialogue on Carbon Pricing)

Since 2013, the country has established an emissions trading system and we keep track and inventory of direct greenhouse gas emissions. Currently, the emissions trading system covers only a part of the sectors and accounts for nearly 50% of all greenhouse gas emissions in Kazakhstan. However, our major portfolio companies are participants in this system and receive emission allowances.

Within the framework of the modern climate agenda, we recognize the need to reduce the growing burden on the climate and the environment. We align ourselves with the climate targets set by our country and support the initiative to achieve carbon neutrality in the Republic of Kazakhstan by 2060. As a major holding representing the state's interests in sectors of the economy with significant climate impacts, the Fund plays a key role in the transitioning Kazakhstan's economy onto a sustainable path. We invest in various projects for the construction and modernization of production facilities that use more efficient and environmentally friendly production technologies. We support innovative projects aimed at using renewable energy sources, such as solar and wind power, attracting investments in projects that align to these trends and have the potential for profitability.

We have identified decarbonization as one of our priority strategic objectives, aimed at enhancing sustainability, ensuring energy security and strengthening competitiveness. In order to establish target indicators, we conducted modeling in 2022 based on three development scenarios for the Fund until 2032, with the prospective of achieving carbon neutrality by 2060: “Business as Usual”, “Decarbonization” and “Deep Decarbonization”.

The most optimistic scenario, Deep Decarbonization, aims to achieve a 10% reduction in carbon footprint by 2032 compared to the 2021 level. This scenario assumes a faster energy transition through accelerated commissioning of nuclear power plants, with the first unit starting operation in 2032. It also involves increasing the share of RES and HPPs to 30%, raising the level of electrification in the transportation sector to 19%, and increasing the share of electricity purchased from alternative sources to 45%.

Under a neutral scenario (Decarbonization), it is only possible to maintain emissions at the level of 2021. Whereas in the "Business as Usual" scenario, projects a 19% increase in

carbon footprint, as it assumes the continuation of current trends without a focus on decarbonization.

Our low-carbon development directions align completely with the national "Strategy for Achieving Carbon Neutrality by 2060". In all scenarios, we recognize the need for new capacity additions to avoid energy shortages in the country. However, achieving our carbon reduction goals is impossible without the deployment of nuclear power plants, with the first unit in 2032. The introduction of an environmentally friendly source of baseload power will help reduce the reliance on coal-fired power plants and enable the decommissioning of the aging units at the Ekibastuz GRES-1 power plant.

The results obtained served as the basis for the Low-Carbon Development Concept approved in the reporting year and the Action Plan for the Transition to a Low-carbon Business Model. The Concept outline the vision, goals and key directions of a fair and economically viable low-carbon development of the Fund with an estimated implementation cost of around \$20-25 billion USD. In the reporting year, all major holding companies developed their own transition plans aligned with the Low-Carbon Development Concept, including specific goals, activities, projects and associated costs.

© [Quantitative indicators are described in more detail in the Greenhouse gas emissions section.](#)

## GROWTH CONSTRAINTS

The volatility of GDP has a negative impact on the state budget, increasing reliance on external debt and transfers from the National Fund. This, in turn, limits investments in infrastructure projects, despite the fact that more than 50% of budget expenditures are social. The lack of investment is not compensated by the private sector. One of the limiting factors is the current tariff policy aimed at reducing the impact on the end consumers. As a result, depreciation of fixed assets in the country increased from 36% in 2015 to 38.7% in 2019 (75.5% in electricity supply, 64.2% in mining industry and 58.9% in information and communications).

The lack of investment in technological progress is also manifested in the low level of economic productivity. The solution of this systemic problem is one of the key factors for sustainable GDP growth and increasing the incomes of citizens of the country.

The application of the established tariffs by the Fund implies the occurrence of the following risks of tariff formation: deterioration of the financial result for the Group of companies of the Fund, failure to fulfill the indicators of the Development Plan, the application of penalties.

The Fund's ongoing priority projects in the field of electric power and gasification of regions may require updating a number of regulatory documents. It is planned to conduct continuous work together with interested state bodies in order to modernize the regulatory framework.

## CLIMATE RISKS AND OPPORTUNITIES

Kazakhstan faces challenges in following the global decarbonization trend. Our country has one of the highest energy and carbon intensities in the world due to the continued reliance on coal as a primary source of energy. A rapid transition to renewable energy could lead to systemic issues of

energy security. International organizations demand a shift away from hydrocarbon fuels as they contribute to greenhouse gas emissions and climate change. However, a sudden abandonment of coal and oil in Kazakhstan would result in the collapse of the entire economy.

We recognize the significance of climate risks and opportunities on the activities of the Fund Group as a whole. Therefore, we assess them at the Fund level and task portfolio companies with implementing climate risks and opportunity assessments in accordance with TCFD. The adoption of TCFD recommendations

strengthens and develops corporate risk management practices, preparing the Fund for anticipated regulatory tightening in financial markets.

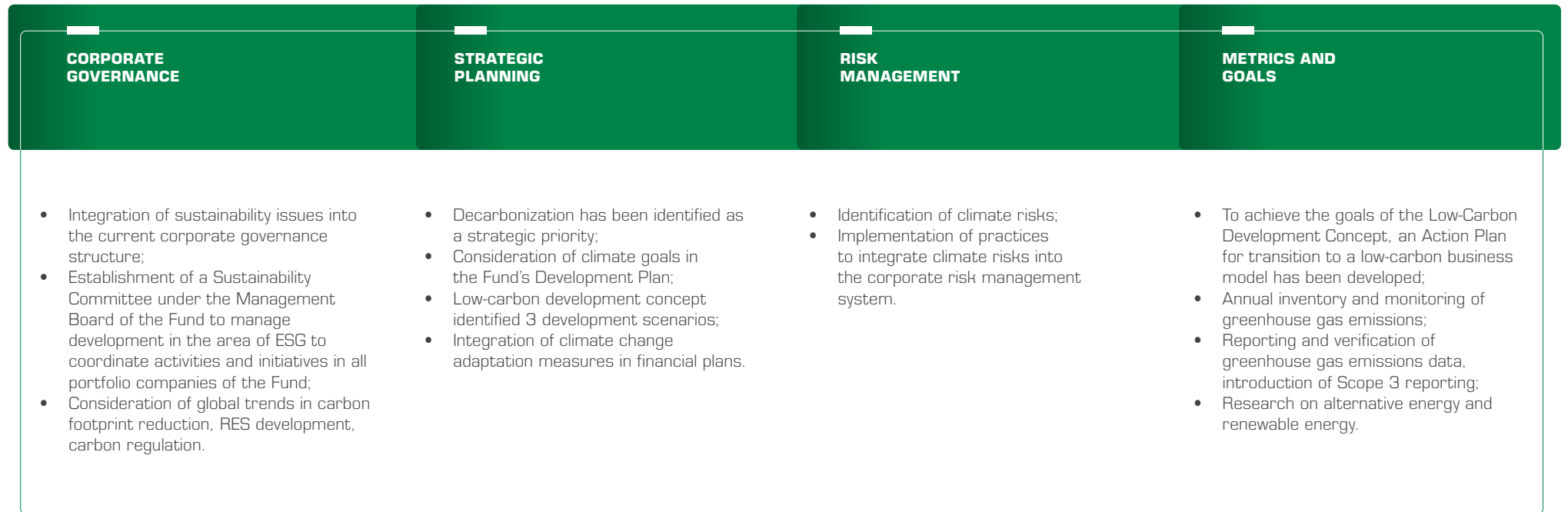
On the one hand, the climate agenda is seen as challenges to the traditional energy system and carries significant transitional risks for the Fund. For instance, coal mining and coal-fired electricity generation, which are integral to the production processes of the Fund's portfolio companies, employ

40,000 workers across the country. Therefore, the Fund emphasizes a gradual and sensible transition to low-carbon technologies without completely abandoning traditional energy sources. Achieving carbon neutrality by 2060 should be based on a balance between energy and environmental security. Thus, alternative energy, particularly nuclear energy, plays a crucial role in the step-by-step reduction of Kazakhstan's coal dependency.

On the other hand, the transition to carbon neutrality presents new growth opportunities for us. Our key capabilities in a gradual and sensible energy transition:

- Acceleration of portfolio diversification;
- Development of new industries;
- Creation of new jobs and enhancing workforce skills;
- Accessing finance and investments;
- Technology transfer and knowledge sharing. [GRI201-2](#)

**FIGURE 1. MANAGING CLIMATE RISKS AND OPPORTUNITIES OF THE FUND**



**TABLE 2. RISKS ASSOCIATED WITH THE TRANSITION TO A LOW-CARBON ECONOMY** GRI201-2

**Transition Risks**

| Policy and Legal risks   |  |
|--|--|
| <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>Increased costs of compliance with the requirements of national environmental legislation</li> <li>Increased costs due to stricter national and international carbon regulations</li> <li>Restrictions on doing business as a result of the proliferation of new climate initiatives</li> </ul>  | <p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>Monitoring compliance with legislation in the field of environmental protection and deadlines for submitting applications for emission permits and reporting to state regulatory authorities; compliance with technical regulations</li> <li>Monitoring the use of the quota limit for greenhouse gas emissions, conducting an inventory of greenhouse gas emissions</li> <li>Implementation of the practice of disclosure of climate-related information, risks and opportunities in accordance with the requirements of the CDP and TCFD.</li> <li>AFM implementation at 12 installations of the 1<sup>st</sup> category of the Fund Group</li> <li>Improving environmental and climate risk management practices by implementing programs to improve the efficiency of materials, energy and water use, and rational waste management</li> <li>Communication with stakeholders on improving legislation</li> <li>Ensuring the commercial attractiveness and payback of projects, which is limited currently by the tariff policy aimed at curbing growth.</li> <li>Using the offset mechanism</li> </ul> |
| Технологические риски  |  |
| <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>Increased costs for strengthening the national electric grid to ensure readiness to connect new large energy sources, integration of renewable energy sources and energy storage systems</li> <li>Increased costs for modernization and technical re-equipment of energy infrastructure, introduction of low-carbon technologies</li> <li>Rising prices for energy, raw materials and other resources</li> </ul> | <p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>Approval of the Low-Carbon Development Concept including a Plan for the transition to a low-carbon business model</li> <li>Approval of the Fund's Resource and Energy Conservation Program until 2027;</li> <li>The Fund has started implementing elements of Smart Grid technology, using the example of HEGOC JSC;</li> <li>Start of the construction of a maneuverable PSU in Turkestan (for more details, see page 42);</li> <li>Interaction with government agencies and organizations on the development of the electric energy and electric capacity market</li> <li>Increase of the gas resource base due to geological exploration and new projects</li> <li>Implementation of priority projects (table № 7)</li> <li>Financing and implementation of the R&amp;D program</li> <li>Development and use of new technologies, such as RES, energy-efficient technologies, BAT, carbon capture and storage technologies, etc.</li> </ul>  |
| Market risks   |  |
| <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>Refusal of financing due to the high level of greenhouse gas emissions</li> <li>Margin reduction due to rising prices for raw materials and energy</li> <li>Risk of changes in supply and demand for certain climate-related goods, products, and services</li> <li>Risk of lost profits due to the start of a new commodity supercycle</li> </ul>   | <p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>Monitoring the implementation of the electricity sales plan, ongoing investment projects, and the development of the Fund's capital investments</li> <li>Attracting a significant amount of investments, which previously were mainly aimed at the development of the oil and gas sector</li> <li>Transparent and competitive conditions for the selection of investment projects and ensuring a high level of stability for investors</li> <li>Ensuring a planned and reasonable energy transfer based on a reasonable balance between the pace of development of human civilization and ensuring ecological balance</li> </ul>  |
| Reputation risks   |  |
| <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>Imbalance between socio-economic development and environmental impact (energy security risks)</li> <li>Negative social impact as a result of abandoning the use of coal (5 single-industry towns and about 40,000 workers depend on the country's coal industry)</li> </ul>  | <p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>Membership in international associations and initiatives</li> <li>Obtaining an ESG Ratings</li> </ul>   |

## Physical Risks

### Short-term risks caused by extreme weather events, such as cyclones, hurricanes, floods

#### Risks:

- Prolonged period of abnormally high or low air temperatures
- Extreme weather events

#### Measures:

- Voluntary property insurance against damage (accidental death, loss or injury) resulting from the occurrence of accidental and unforeseen direct physical impacts.
- Protection of employees' property interests through a system of compulsory insurance of employees against accidents in the performance of their work (job) duties.
- Mandatory environmental insurance.

### Systematic (chronic) risks caused by long-term changes in climate models

#### Risks:

- Water stress and climate change in the Caspian Sea catchment area
- Changes in the level of the Caspian Sea and rivers in the regions where the Fund Group operates

#### Measures:

- Reservoir water desalination plant at Karazhanbas field
- Reconstruction and expansion of the Astrakhan-Mangyshlak main water pipeline
- Elimination of historical waste
- Monitoring of inundated and flooded wells

With respect to the risks associated with climate change, we have assessed and recognised provisions for decommissioning and remediation of environmental damage by the Fund's portfolio companies that extract resources from the subsoil. Such provision as at 31 December 2022 amounted to KZT363 064 million. [GRI201-2](#)

In order to implement jointly initiatives and projects, attract investments, the Fund will expand the practice of interaction with major international organizations and sovereign wealth

funds. Moreover, in addition to attracting investments for the sustainable development of the country's economy, cooperation with international strategic partners will have a positive effect through the transfer of advanced knowledge, practices and technologies. Strengthening global partnership initiatives along with geographical diversification will allow the Fund to gain access to new markets and increase international investment experience, combining resources and competencies through investment mechanisms and enhancing the image of the Republic of Kazakhstan and the Fund.

We are convinced that achieving carbon neutrality by 2060 should be based on a rational balance between energy and environmental security. Therefore, alternative energy, in particular, nuclear generation, plays a key role in the gradual withdrawal of Kazakhstan's economy from coal dependence.