Resource conservation and energy efficiency

The Samruk-Kazyna JSC Energy and Resource Saving Programme until 2027 (hereinafter referred to as the Programme) is developed to implement the Samruk-Kazyna JSC Low Carbon Development Concept, taking into account global trends in the field of energy saving and energy efficiency improvement, as well as the directions of the state policy in these areas. The Programme is one of the key instruments in achieving the Fund's objectives in the field of low-carbon development. The Programme perimeter in terms of implementing technical measures for energy and resource saving includes Samruk-Energy JSC, NC KazMunayGas JSC, NC QazaqGaz JSC, NC Kazakhstan Temir Zholy JSC and NAC Kazatomprom JSC being the largest consumers for which a reduction in FER consumption can be achieved.

Our key objectives in the area of resource saving and energy efficiency are to maximise the rational use of fuel, energy and water resources, cost-effectively reduce the energy intensity of products, introduce innovative equipment and technologies, and ensure an increased level of energy security.

To achieve our goals, we have identified the following objectives until 2027:

- Reduction of energy intensity of products of organisations within the Programme perimeter by 10% by 2027 (from the base year of 2021).
- Continuous improvement of production processes' energy efficiency.
- Creation of optimal organisational and economic conditions.
- Efficient use and reduction of consumption of fuel, energy and water resources.
- Implementation of a system of energy efficiency indicators of the energy management system.

Saving fuel and energy resources (FER) and, as a consequence, reducing costs, will allow the Fund's companies to increase the competitiveness of their products and reduce their carbon footprint. Energy saving is in fact the "new fuel" of the economy, as it is the best opportunity to more fully utilise available resources, support economic growth and reduce energy costs.

Taking into account the specifics of operations, the portfolio companies have developed and are implementing their own energy policies, energy and resource conservation programmes, as well as regulations on energy saving and energy efficiency management.

Within the framework of the existing energy management systems in accordance with the requirements of ISO 50001:2011 international standard, we conduct energy audits on a regular basis, use tools to motivate employees in the process of developing ideas and solutions to save energy resources, develop new technologies through research and development, etc. The Fund also conducts targeted energy audits of equipment, the results of which are used to develop and implement necessary measures to optimise equipment and processes. In addition to these measures, we conduct targeted energy audits of equipment, and develop and implement the necessary measures to optimise equipment and processes based on their results. We introduced quarterly monitoring of FER consumption for regular collection, analysis and current control of information on achieved results.

REDUCED ENERGY CONSUMPTION

GRI 302-4

Within the framework of the ongoing work on energy and resource saving and energy efficiency improvement for 2024, the total energy saving amounted to 12.5 million GJ. For 4 years 2021–2024 the total savings of[35] energy resources obtained from the implementation of energy saving programmes amounted to 57.4 million GJ.

In the energy sector, we implemented 67 different measures aimed at improving energy efficiency and rational use of resources; the implementation of these measures made it possible to reduce energy consumption to 12,490,000 GJ; the following measures made the greatest impact on energy efficiency: increasing the capacity of power units, cleaning the heat-exchange surfaces of the turbine condenser, carrying out equipment adjustment, sealing the furnace of boiler gas ducts, replacing the thermal insulation of heat network pipelines.

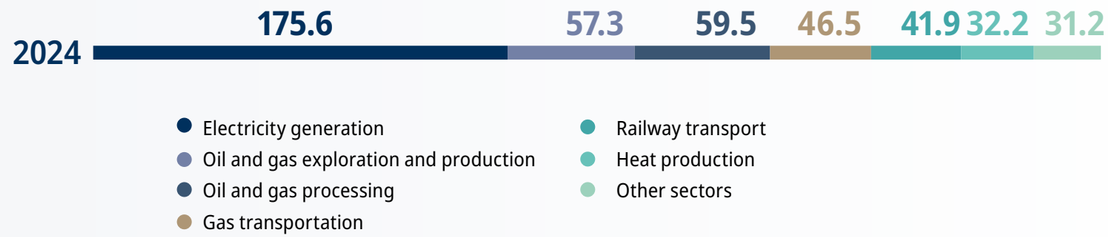
In the oil and gas sector, NC KazMunayGas JSC implemented 70 equipment modernisation measures, including replacement of gas burners of process furnaces, introduction of energy-saving technologies, optimisation of heat generation and consumption, and modernisation of lighting systems. This resulted in savings of 2,361,000 GJ of energy resources.

In the mining and metallurgical sector, Kazatomprom JSC implemented a set of measures to improve energy efficiency, which resulted in savings of KZT 240,000 GJ. In particular, solar collector units for hot water supply for own needs were put into operation, energy-saving transformers are being commissioned, variable frequency drives were installed to optimise energy consumption of equipment, reactive power compensators were installed to improve energy efficiency of power grids, and insulation of heat network pipelines was replaced, which helps reduce heat losses and energy costs.

[35] Progress on energy saving is tracked by 2021 – the base reporting year at the time of adoption of the Low Carbon Development Concept of Samruk-Kazyna JSC. GRI 302-4

GRI 302-4 **Reduction of energy consumption as a result of reduction initiatives, million GJ**

GRI 302-1 **Energy consumption by sector, 2024, million GJ**



Total savings of energy resources obtained from the implementation of energy saving programmes amounted to 9.2 million GJ of hard coal, 1.4 million GJ of natural gas, 0.2 million GJ of stripped gas.

ENERGY RESOURCE CONSUMPTION

GRI 302-1
GRI 302-4

Total energy consumption, million GJ

	2021	2022	2023	2024
Energy consumption by the Fund	491.9	453.9[36]	430.9	444.2

Energy consumption in the heat and power generation sector is 207.7 million GJ, which is 47% of the total consumption. Energy consumption in the oil and gas sector is 175.9 million GJ (40% of total consumption). Energy consumption of the transport and logistics sector is 41.9 million GJ (9% of total energy consumption).

[36] The total energy consumption in the 2022 Sustainability Report is different due to the exclusion of electricity sold that year to avoid double counting.

GRI 302-1 **Consumption of fuel and energy resources from non-renewable sources, million GJ**

Fuel and energy source	2021	2022	2023	2024
Liquid fuels, including:	30.63	31.69	32.97	33.95
Petrol	0.93	0.88	1.09	1.15
Diesel fuel	29.71	30.81	31.88	32.80
Boiler and heating oil, including:	45.39	50.26	47.52	42.59
Heating oil (refinery gas)	39.70	46.37	42.38	38.50
Oil	0.65	0.96	1.17	1.18
Fuel oil	5.01	2.92	3.98	2.91
Marine fuel (IFO fuel oil)	0.03	0.01	0	-
Associated petroleum gas	14.47	15.70	12.93	13.81
Hard coal	334.71	328.63	327.12	338.75
Gas, including:	145.50	129.66	111.35	123.64
Natural gas	127.25	112.46	94.79	104.83
Stripped gas	18.04	17.10	16.49	18.72
LPG	0.22	0.10	0.07	0.09

Note: Fuel consumption conversion coefficients from natural values to GJ were determined in accordance with the Methodology for Formation of Fuel and Energy Balance and Calculation of Certain Statistical Indicators Characterising the Energy Sector No.160 of 11 August 2016.

The largest consumption of fuel and energy resources from non-renewable sources is coal – 338.7 million GJ (61% of total consumption), which is used in the energy sector to produce heat and electricity. The second place is occupied by gas – 123.6 million GJ (22%, of which 19% is natural gas – 104.8 million GJ), the consumption of liquid fuels was 34 million GJ (6%).

Energy consumption from renewable sources totalled 42,000 GJ, which is more than 2 times higher than the consumption from similar sources in 2023 (17,000 million GJ). This is the energy generated by RES.

GRI 302-1 **Fuel consumption from renewable sources, '000**

	2021	2022	2023	2024
Electricity (generation from RES), '000	26	46	17	42

GRI 302-3 **Energy intensity, '000 per unit of relevant products**

Indicator	Unit of measurement	2021	2022	2023	2024
Oil and gas exploration and production	GJ/t hydrocarbon feed	2.43	2.78	2.68	2.55
Oil and gas processing	GJ/ tonnes of refined oil (gas)	3.84	4.06	3.87	3.41
Oil transportation	GJ/t of oil	0.13	0.12	0.10	0.09
Gas transportation	GJ/million m³	1.65	1.11	0.87	0.90
Uranium exploration and production	'000/tonnes of uranium mined	0.25	0.25	0.26	0.24
Electricity generation	GJ/ '000 kWh	4.45	4.33	4.25	4.23
Heat production	GJ/Gcal	5.69	5.51	5.44	4.76
Railway transport	GJ/million tonnes Km gross	93.98	92.84	87.90	87.72
Production of chemical products	million GJ/tonnes of chemical products produced	0.46	0.40	0.17	0.30
Metallurgical projects	'000/t of refined gold	1.84	1.62	1.99	1.67

Water resources management

GRI 3-3
GRI 303-1

Climate change, population growth and anthropogenic pressures are having serious impacts on the world's water resources: water scarcity is worsening, precipitation patterns and the entire water cycle are being disrupted. This has a significant impact on ecosystems, economy, human health and communities. Kazakhstan is a 'water-dependent' country; only 2.8 per cent[37] of the territory is covered with water, while two thirds are arid zones. A significant part of water resources (over 40%) comes from neighbouring countries, making the use of transboundary rivers a vital issue for the republic. According to UN estimates, by 2040 Kazakhstan's water needs will be covered only by 50%. Realising the criticality of the issue for national security, the Government is taking serious measures: in 2023 the Ministry of Water Resources and Irrigation was established, and in 2024 the Concept of Development of the Water Resources Management System of the Republic of Kazakhstan for 2024–2030 was approved. It includes measures to conserve water. In particular, it is planned to increase water reuse in economic sectors from 17% to 28% by the end of 2030.

Water availability is a critical factor for the production activities of the Fund's companies. Our organisations in the energy (electricity and heat generation), mining (oil and gas extraction, uranium mining) and refining (oil and gas processing) sectors have the greatest impact on the country's water resources. We therefore work with stakeholders to jointly address water-related issues, including portfolio companies, local communities and Government agencies.

GRI 3-3 Our goal in the area of water consumption is to maximise the rational use of water resources in production processes. It is outlined in the Samruk-Kazyna JSC Energy and Resource Saving Programme 2027, as developed to implement the Low Carbon Development Concept.

The programme envisages a number of technical measures in the field of water resources management: reduction of production wastewater discharge and improvement of its quality; saving process water for make-up of recycling systems; installation of devices for determining the content of oil products in water; improvement of the temperature regime of recycling water supply, etc.

[37] www.news.un.org/ru/story/2022/06/1425862