

Environmental Protection



Environmental Policy

KEGOC considers environmental activities as an integral part of its day-to-day operations. Environmental responsibility is a key principle of KEGOC Environmental Policy.

The goals of KEGOC Environmental Policy are to minimize adverse environmental impact, increase the level of environmental safety, take responsibility for environmental security of Kazakhstan National Power Grid development, promote energy saving and rational use of environmental and energy resources in the Company's activities. KEGOC's management takes the responsibility for implementation of obligations taken in accordance with Environmental Policy on continuous

improvement and pollution prevention, as well as obligation to meet applicable legislative and other requirements related to KEGOC in terms of its environmental aspects. All employees of the Company as well as employees of contractors working for the Company's interest review KEGOC's Environmental Policy.



KEGOC LAUNCHED THE BUSINESS
TRANSFORMATION PROGRAMME
TO ENHANCE THE PERFORMANCE OF
THE COMPANY'S OPERATIONS

2015

The Company implemented the environmental management system, which is certified for compliance with the requirements of international standard ISO 14001. The system operates as part of KEGOC's integrated management system. The main objective of its implementation and operation is to apply new management methods that would enhance the influence on the environmental aspects of the Company's operational and economic activities. The environmental aspects management is a component of KEGOC's corporate risk management system.

KEGOC's registers of environmental aspects for 2020 were developed for effective management. When identifying the aspects, all components of the environmental impact of the Company's activities are analysed (energy saving, water, soil, emissions, waste). Activities to manage environmental aspects are specified in the Company's Environmental Program for 2020. 'Potential poly-chlorinated biphenyls

(PCB) containing waste', 'transformer oil' and 'waste transformer oil' were identified as critical environmental aspects in 2020. The 'potential PCB-containing waste' aspect is critical due to the fact that the polychlorinated biphenyl is a dangerous substance according to the Environmental Code of the Republic of Kazakhstan (red hazard level). The 'spent transformer oil' and 'transformer oil' aspects are critical due to the existence of oil-filled equipment.

102-15

Financial or non-financial sanctions or fines for non-compliance with environmental laws and regulations were not imposed on KEGOC in 2020.

No appeals were received by the Company in connection with the environmental impact.

102-44

Ambient

Air Protection

According to the standards, the MES branches identified stationary sources of harmful emissions (both organized and unorganized emission sources). In order to monitor emissions from stationary sources, the MES branches conducted in 2020 the operational monitoring (monitoring of the operating process), namely, kept records of hours of operation for each item of equipment and consumption of

materials. The environmental monitoring of operations conducted by qualified organisations determine stationary source emissions through calculations or laboratory measurements.

In 2020, the volume of gross emissions of contaminants from stationary sources amounted to 9.34 tonnes (the established standard was 11.63 tonnes).

Emissions from stationary sources in 2020

Name of KEGOC's MES branch	Emissions from stationary sources, t/y	
	Standard	Actual
Akmolinskiye MES	0.93	0.55
Aktyubinskiye MES	0.31	0.10
Almatinskiye MES	0.73	0.73
Vostochnye MES	1.42	1.42
Zapadnye MES	0.84	0.50
Sarbaikiye MES	0.68	0.68
Severnye MES	1.23	0.13
Tsentralnye MES	5.18	5.18
Yuzhnye MES	0.30	0.05
Total	11.63	9.34

Thus, gross emissions from stationary sources (with regard to standard rate) dropped by 20%. The fact of the reduced emissions (Akmolinskiye MES, Aktyubinskiye MES, Almatinskiye MES, Zapadnye MES, Severnye MES and Yuzhnye MES branches) was supported by the findings of the environmental monitoring that was conducted by the specialized organisations.

According to the UN Framework Convention on Climate Change, Kyoto Protocol, Paris Agreement and environmental laws of the Republic of Kazakhstan, the MES branches made an inventory of greenhouse gases emitted as a result of the Company operations in 2019. Greenhouse gas emissions from stationary sources and mobile sources equated to stationary

sources were calculated. The 2019 reports on inventory of greenhouse gases were sent to and registered at the territorial environment departments.

102-12

In accordance with the Resolution of the Government of the Republic of Kazakhstan 'On approval of the list of greenhouse gases subject to state regulation', the list includes carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and perfluorocarbons (PCFs).

Following the results of inventory of greenhouse gases emitted by stationary sources, emissions amount to 154.47 tonne carbon dioxide equivalent a year, in this connection KEGOC does not fall within the

requirements for greenhouse gas cap-and-trade according to the National Plan for Greenhouse Gas Quota Allocation for 2018-2020.

Greenhouse gas emissions from stationary sources of KEGOC in 2020

CO ₂ , tonne	CH ₄ , tonne carbon dioxide equivalent	N ₂ O, tonne carbon dioxide equivalent	Total emissions in the tonne carbon dioxide equivalent
154.4	0.0022	0.06542	154.47

According to the Code of the Republic of Kazakhstan on Taxes and Other Mandatory Payments to the Budget the emissions from mobile sources shall not be measured, reports specify the amount of the used fuel. The vehicles were tested for toxicity and opacity of exhaust gas.

The Company does not emit any ozone-depleting substances influencing the climate change.

EU5

Waste Management

The waste products are generated during operation, repair and rehabilitation of the substation equipment. Waste management in KEGOC is guided by the Environmental Code of the Republic of Kazakhstan and corporate standard 'Waste management in KEGOC'.

At KEGOC, all wastes are divided according to the:

1. type: industrial and municipal wastes (solid domestic wastes) generated in the course of life activity;
2. hazard level (according to the Environmental Code of the Republic of Kazakhstan):
 - 'green' – G index (non-hazardous);
 - 'amber' – A index (hazardous);
 - 'red' – R index (hazardous).

The list of waste and their hazard level is updated as required.

The MES branches annually develop or amend the waste datasheets for each type of waste containing the description of waste production processes by their origin, quantitative and qualitative indicators, handling rules, monitoring techniques, environmental impact, waste producers information.

For safe handling of industrial and consumer wastes, the MES branches defined the areas for temporary safe and separate waste storage, prepared schematic maps of waste disposal on the territory of facilities with the explication and ensure timely removal for the subsequent disposal.

Waste Volume in KEGOC Divisions

Indicator, tonnes	2020
'green' – G index	5,042.86
'amber' – A index	74.25
'red' – R index	–
Total	5,117.11

The work on detection of PCBs in the equipment at KEGOC substations continued in 2020; this work was performed in accordance with the Law of the Republic of Kazakhstan on Ratification of the Stockholm Convention on Persistent Organic Pollutants and Rules for Handling of Persistent Organic Pollutants and Wastes Containing such Pollutants (approved by order of Kazakhstan Minister for Environment Protection). The MES branches updated the PCBs containing equipment registers; the registers were submitted to the territorial environmental authorities within the established deadlines.

In 2020, the planned and conducted laboratory analyses for the presence of PCBs in the oil-filled equipment of Akmolinskiye MES branch, Vostochnye MES branch, Severnye MES branch, Tsentralnye MES branch and Yuzhny MES branch detected no PCB.

Water Impact

The Company does not use water in its operational process. Water consumption by KEGOC is insignificant, so this has no material influence on used water sources. Water is consumed and discharged in accordance with contracts concluded by MES branches with specialized organisations. There are no discharges into water facilities and relief. Water is supplied from artesian wells at the seven KEGOC branches facilities; the wells are used according to obtained permissions. The specialised organisations are contracted to permanently monitor the ground water intake facilities in accordance with the Water Code of Kazakhstan.

Potential sources contaminating water and soil at the Company's facilities include transformer oil used in oil-filled equipment, as well as waste waters resulting from domestic use of water. Environmental friendliness is one of high-priority criteria for KEGOC to select an equipment. The Company smoothly replaces oil circuit breakers with SF6 and vacuum circuit breakers to reduce the volume of transformer oil used at the MES branches substations. The oil free equipment increases reliability and fire safety and excludes pollution of ground water and soil. The oil-filled equipment has oil receiving devices or oil soak pits that prevent oil from spilling on the soil. The containment of oil receiving devices is checked on regular basis.

Environmental Actions during Investment Projects Implementation

The Company addresses the environmental issues in a comprehensive way when implementing projects, including investment projects. PESTEL analysis is used to analyse the risks of project implementation, including analysis of social and environmental risks. The results of the conducted environmental impact assessment are taken into account, and the option that does the least harm to the environment and human health is adopted. Identification and assessment of project risks are carried out on a regular basis and at all stages of project implementation. The impact on atmospheric air, surface and groundwater, landscapes, land resources and soil cover, biodiversity and more is estimated.

In order to manage the environmental risks, the design provides that the grid facilities must be arranged in the territories well removed from populated areas and designated conservation areas. OHTL routes mainly pass along steppes and semideserts. Should the OHTL cross forest-steppe zone, environmental impact assessment is prepared to clean glades for the OHTL and take mitigation measures. For the purpose of transparency and availability of the environmental information on the Company's activities, the public hearings of draft EIAs are held.

102-11

Energy Efficiency

The main objectives of energy saving and efficiency improvement at KEGOC is to reduce the consumption of fuel and power resources through reduction of auxiliary energy consumption by KEGOC facilities, reduction of technical electricity loss while transmitting via the national power

grid, improvement of the methods used for monitoring of energy consumption, and provision of the Company's facilities with electricity meters and other devices for metering of fuel and power resources, organisation of the information acquisition processes based on the metering devices.

Consumption of Fuel and Energy Resources in 2020, GJ¹

Electricity	10,155,056.34
Heat power	81,395.58
Fuel	114,064.86
including	
motor gasoline	44,767.94
diesel fuel	65,250.37
natural gas	3,911.25
liquefied gas	135.30
Total	10,350,516.77

¹ When converted to Joule, the international system of units (SI) was used.

302-1

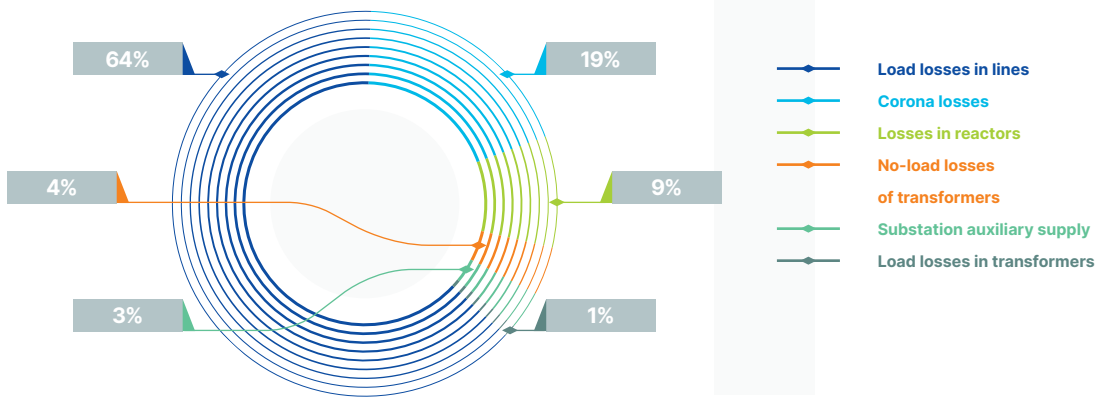
Consumption of fuel and energy resources decreased by 360,105 GJ in 2020 compared to 2019.

The most effective, in terms of reducing the energy consumption, are the measures on reduction of technological consumption of electricity in transmission lines.

The electrical power system of Kazakhstan is defined by large concentration of powerful

energy sources in the North and long length transit lines (about 1,000 km) (main transits include Kazakhstan North – South transit and Pavlodar oblast – Aktobe oblast transit): this is due to the vast territory of Kazakhstan and materially affects the level of technical losses. Also technical losses in KEGOC grid depend on the operation modes of neighbouring states' power systems (electricity transit, export and import) and climatic conditions.

KEGOC's Technical Losses Structure for 2020



The technical losses in KEGOC networks in 2020 amounted to 2.792 billion kWh or 6.0% of electricity supply to the grid based on the metering devices.

EU12

It should be understood that technical loss of electric power means the loss of electric power resulting from the physical processes in conductors and electrical equipment which occur during the electricity transmission

across transmission lines. Thus, the main goal of planning and taking the measures on reduction of electric power losses is to bring the actual amounts of technological loss to its optimal level.

Due to measures on electricity loss reduction implemented, in 2020 the reduction of electricity consumption amounted to 4.261 million kWh.

Activity	Outcomes	
	million kWh	GJ
Line tripping under low-load conditions	0.254	916
Shutdown of power transformers under low load conditions	4.006	14,422
Total for KEGOC	4.261	15,339

302-4