



ENVIRONMENTAL IMPACT

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ONE WAY OF GIVING FEEDBACK IS THE "SANDWICH" PRINCIPLE: FIRST YOU SHARE ABOUT YOUR OWN VALUES, THEN YOU TALK ABOUT THE BARRIERS THAT HAD CREATED OBSTACLES, AND END WITH A SUGGESTION ON WHAT COULD BE IMPROVED.



GRI 2-23

BUSINESS PRINCIPLE:

Environment

We have a systematic approach to environmental management in order to achieve continuous performance improvement.

To this end, we manage these matters as critical business activities, set standards and targets for improvement, and measure, appraise and report performance externally.

We continually look for ways to reduce the environmental impact of our operations.

2023

Energy intensity at KPO made up

1.13

GJ per tonne of production

Specific GHG emissions

65

tons of GHG/ thousand tons of hydrocarbons' production

Gas utilization

99.95%

13 years

of implementation of the Biodiversity Action Plan at the Karachaganak Field territory

Generated waste

52,387

tons

Recycled waste

30,139

tons

Water consumption

353,738

m³

Reuse of treated wastewater

56,467

m³

WHY IS IT IMPORTANT TO US? GRI 3-3

The climate agenda is a major challenge for the entire oil and gas industry. It is essential for KPO to contribute to addressing climate change and to achieving carbon neutrality goals in order to ensure compliance with legislative requirements, remain competitive and sustainable in a changing global energy system.

An important event in 2023 was the release of the Republic of Kazakhstan's Carbon Neutrality Strategy 2060, a document that sets ambitious zero-carbon targets and identifies the key transformations needed to decarbonise the country.

CLIMATE CHANGE AND ENERGY TRANSITION

In 2023, KPO prepared an Environmental Vision for the period until the end of the FPSA (2037). This concept formed the basis of the KPO Green Strategy and the KPO-365 Business Strategy.

The KPO Green Strategy was developed in 2023 in line with the country strategic plans and takes into account global world trends for reduction of the carbon footprint of products.

The KPO Green Strategy covers five (5) key areas: GHG reduction vision, power strategy, offsetting strategy, water management and waste management.

- **GHG reduction vision**

KPO continues evaluating the best engineering solutions and conduct studies aimed at reducing its GHG emissions. Based on the results of this work, decisions are made to implement both short and long-term projects. As of I Quarter 2024, the GHG reduction vision includes heat integration projects and studies on the development of renewable energy sources, offset projects and other alternatives.

- **Power strategy**

The main objective of the power strategy is to ensure stable electricity supply that meets current and future KPO requirements as well as export obligations under the FPSA, taking into account the need to reduce greenhouse gas emissions, comply with regulations and implement the best available technologies. In 2023, the project concept selection phase was finalised and work is continued by Project Execution team.

- **Offsetting strategy**

Carbon offset projects play an essential role in the decarbonisation process in the short to medium terms as other solutions gain momentum. Through the offset strategy, KPO intends to compensate the shortfall in GHG emission quotes in addition to projects aimed at reducing GHG, and to ensure that carbon neutrality targets are met in the long term. In 2023, the feasibility of offset projects in the West Kazakhstan Oblast was assessed, and potential opportunities in sustainable agriculture and waste management were identified.

- **Water management**

Taking into account global and local water security risks, KPO aims to improve the efficiency of water resources utilisation by increasing the use of recycled water for technical needs of production facilities, introducing water-saving and digital technologies. The Aksai Sewage Treatment Plant Upgrade Project is assessed as one of the major alternative long-term sustainable sources of technical water. In 2023, the project passed the concept selection stage and was transferred onto the Projects Execution team.

- **Waste management**

In 2023, KPO performed a comprehensive analysis of the waste management system and developed an action plan aimed at improving waste management practices. The plan's activities are focused on reducing waste generation, minimising waste transfer over distance, and maximising recycling and reuse through the implementation of advanced technologies.

ENVIRONMENTAL MANAGEMENT APPROACH

ENVIRONMENTAL MANAGEMENT SYSTEM GRI 2-23, 2-24, 3-1, 3-3

KPO has certified to use the Integrated HSE Management System certified to comply with international standards [ISO 14001:2015](#), [ISO 45001:2018](#) и [ISO 50001:2018](#), as well as HSE Policy targeted to continuous improvement. In 2023, KPO successfully passed the ISO 14001 audit that confirmed compliance with the requirements of the standard.

The key environmental commitments of the Company's HSE Policy include the following significant impacts:

- prevention of the environmental pollution,
- reduction of greenhouse gas emissions
- biodiversity and ecosystems conservation,
- conservation of natural resources,
- continuous improvement in environmental performance.

As part of maintaining an effective environmental management system and in order to comply with the requirements of the new Environmental Code, KPO environmental procedures are regularly reviewed.

According to the RoK Environmental Code, KPO has an obligation to implement the best available techniques (BAT). In 2023, an integrated technical audit (ITA) for compliance with BAT was conducted. The ITA process was introduced in the RoK Environmental Code from 2021 and is the first stage of development and(or) revision of RoK Best Available Techniques Handbooks (hereinafter referred to as BAT Handbook).

Environmental aspects electronic management system

Environmental Aspects Register is developed and used by KPO to manage environmental aspects [EnvAR](#).

Environmental Aspects Register of the Company's divisions are annually reviewed and updated in line with the actual status. Based on the Company's divisions registers, the Consolidated register of the most material environmental aspects is developed in order to devise additional activities/control measures to reduce risks and improve the environmental condition. In 2023, the Consolidated Register of Significant Environmental Aspects of KPO covered the following aspects:

- 1) Pollutant emissions into the atmosphere and greenhouse gases,
- 2) Waste formation and management,
- 3) Detection of unauthorized waste disposal,
- 4) Treatment and discharge of domestic waste water,
- 5) Generation and disposal of industrial waste water,
- 6) Spills,
- 7) Water resources consumption.



ENVIRONMENTAL COMPLIANCE GRI 2-27

KPO runs its business in accordance with the environmental legislation of the Republic of Kazakhstan (RoK). KPO annually requests and obtains an Environmental Impact Permit (EEP) from the RoK Ministry of Environmental Protection. This permit sets the limits for contaminants emissions, discharges and limits for accumulation and burial of waste.

In 2023, two administrative fines in the field of environmental protection were filed in relation to the events of 2021–2022 for a total amount of KZT 214.52 mln. KPO voluntarily paid a fine worth KZT 164.4 mln for excess emissions of pollutants into the atmosphere. Currently, the Company is in the process of partial appealing the court decision that imposed an administrative penalty for exceeding pollutant discharge standards worth KZT 50 mln.

Implementation of the Environmental Code

In 2023, as part of the Environmental Code requirements the following was obtained:

- Environmental Impact Permit for KOGCF facilities for 2024;
- Environmental Permit for Atyrau Terminal facility for 2024–2030;
- Environmental Permit for Bolshoi Chagan OPS facility for 2024–2030;

In 2023, the Plan for implementation of the requirements of the new RoK Environmental Code was 90% completed.

During the year 2023, as members of the working groups under the Ministry of Environmental Protection, Geology and Natural Resources of RoK and the KAZENERGY Association, the Company took part in 84 meetings and commented and introduced proposals for 74 projects of the RoK laws and regulations in environment protection, as a result the following changes been made to corresponding RoK regulatory legal acts:

1. Rules for issuing Environmental Permits (EP) and Instructions for determining the facility category in connection with changes in the RoK Environmental Code from 05.07.2023:
 - the Environmental Permit (EP) form separates limits for the construction period and limits for operations;
 - criteria have been defined for classifying construction and installation works and reclamation

and (or) liquidation work into categories I, II, III or IV. Some of the KPO non-process related construction and installation activities (temporary roads and sites, etc.) do not require obtaining an EP, as they were classified as related to categories III or IV.

2. The BAT Handbook for oil and gas production was approved with the RoK Government Resolution, on the basis of which the project documentation is required to be developed for obtaining an Integrated Environmental Permit (IEP).
3. Amendments have been made to the Rules for Conducting Public Hearings (PH). Major changes include the following:
 - Public hearings are allowed to be held prior to the State Environmental Expertise (SEE) and application for the Environmental Permit;
 - Public hearings can be held in a mixed format – open meetings and video conferences;
 - No public hearings are required when re-submitting an application for the State Environmental Expertise after receiving a refusal to issue an EP.

The following are under discussion:

- addition to the RoK Environmental Code on mandatory environmental audits every five years;
- the new environmental quality norms project for air, soil and physical factors, as a replacement to existing sanitary-hygiene norms (MPC);
- project of a new Water Code with regards to organization of the new RoK Ministry of Water Resources and Irrigation.

Environmental Public Hearings GRI 2-29

In 2023, the Company held public hearings on materials of an inquiry for obtaining Environmental Impact Permit:

- For KPO facilities located at the Karachaganak Field for 2024. According to the RoK Environmental Code, the public hearings were held on 8–9 October 2023 by means of open meetings in 4 rural districts of the Burlin region (Uspenovskiy, Priuralnyi, Zharsuatsky, Pugachevsky). For public consideration there were presented 84 construction projects, three emission ratio design projects, Waste Management programme, Industrial Control programme, Environmental Protection Plan.
- Public hearings for the **KPC – Bolshoi Chagan – Atyrau** export pipeline facilities located in the **West Kazakhstan Oblast** for 2024–2030 held on 8 November 2023 by the means of open meetings in the Kushum rural district of the Baiterek

region (Bolshoi Chagan village). One construction project, two emission ratio design projects, Waste Management Programme, Industrial Control Programme, Environmental Protection Plan were presented for the public review.

- Public hearings for facilities of the **KPC – Bolshoi Chagan – Atyrau** export pipeline located in the **Atyrau oblast** for 2024–2030 were held on 22nd November 2023 as open meetings in the Makhambet rural district (Beibarys village). Two construction projects, two emission ratio design projects, Waste Management Programme, Industrial Control Programme, Environmental Protection Plan were presented for the public consideration.

Information about the planned public hearings was brought for attention of the state authorities and the public through announcements at the Unified Environmental Portal, in a periodical printed publication (newspaper), TV channel and on bulletin boards of local executive authorities of administrative-territorial units.

All projects submitted for discussion at the public hearings in 2023 were endorsed by the state authorities and the public. The results of public hearings were reflected in the protocols of public hearings. A package of documents submitted for the public hearings, including the discussion results, are available on the website <https://ecportal.kz/>.

Supplier environmental assessment

GRI 308-1, 308-2

Based on the RoK Environmental Code, KPO as an operator of the Karachaganak Oil Gas Condensate Field and the condensate export pipeline of KPC-Bolshoi Chagan-Atyrau is obliged to obtain an Environmental Impact Permit, which also includes contractors engaged to perform works and to provide services on the territory of KPO facilities. Contractor organisations are obliged to comply with the terms of the Environmental Impact Permit and also bear responsibility for any non-compliance as per the RoK laws.

Thus, since 2021, KPO has been continuously working to improve its engagement with suppliers. In the period from 2021 to 2022, the Contractors' control system has been implemented and further developed in 2023.

CONTRACTOR ORGANISATIONS ARE OBLIGED TO COMPLY WITH THE TERMS OF THE ENVIRONMENTAL IMPACT PERMIT AND ALSO BEAR RESPONSIBILITY FOR ANY NON-COMPLIANCE AS PER THE RoK LEGISLATION.

In 2023, the Company's HSE requirements reflected in Schedule D of contracts were revised. This has allowed proceeding with amendments to existing contracts upon which a number of suppliers are to independently manage wastes generated by them on the territory of the KPO facilities. Subsequently, all suppliers performing works at KPO facilities shall handle safe storage of waste at workplaces. While KPO will handle further collection and transportation of waste involving a specialized contractor.

In 2023, KPO has implemented a practice of limited-scope audits of contractors by means of the KPO Environmental Controllorship in order to check their compliance with terms of the KPO Environmental Permit. As a result of the audits, accounting systems for fuel consumption at stationary emission sources and contractor waste flows were improved. In 2024, internal environmental control system during works or operational environmental control is subject to the audits.

On 22nd December 2023, as part of raising the environmental awareness, improving the Environment Management System and fulfilling requirements of the contracts' Schedule D, KPO held a workshop on familiarization with requirements of the new RoK Environmental Code for the contractors' environmental specialists. The workshop was attended by representatives of the 57 contractor organisations. The workshop provided attendees with detailed requirements of the new RoK Environmental Code, as well with better understanding of the Operator and contractors' responsibilities on the environmental protection.

ENVIRONMENTAL PROTECTIVE MEASURES PLAN FOR 2023

GRI 3-3, SDG 9.4

To achieve the goals set in environmental protection, KPO annually develops an Environmental Protective Measures Plans (hereinafter referred as EPMP). The Plan's measures focus on ensuring the environmental safety, improving environmental protection methods and technologies, ensuring rational

use of nature and maintaining compliance with the ISO 14001 and ISO 50001 international standards.

In 2023 KPO operated the business on the basis of the environmental permits issued. The EPMPs were developed and approved for each of the Permits obtained.

Tab. 27. KPO Environmental Protective Measures Plans 2023 and Environmental Impact Permits issued

| # | 2023 Environmental Protective Measures Plans | Valid Permits for 2023 | Permit issuing Authority |
|---|---|---|--|
| 1 | 2023 KPO EPMP for the Karachaganak Field (KOGCF) | Environmental Impact Permits (effective period: Jan1 to Dec 31, 2023) | Committee for Environmental Regulation and Control of the RoK Ministry of Environment, Geology and Natural Resources |
| 2 | 2021-2030 KPO EPMP for the KPC – Bolshoi Chagan – Atyrau condensate export pipeline (WKO) | Environmental Impact Permits in 2020 (effective period: Jan 1, 2021 till Dec 31, 2030): 1. Air pollutant emissions; 2. Pollutants discharged with wastewater. | WKO Akimat, West-Kazakhstan Oblast Administration of Natural Resources and Nature Use Control |
| 3 | KPO 2023-2030 EPMP for Atyrau Oblast | Environmental Impact Permits (effective period: Jan 1, 2023 to Dec 31, 2030) | Atyrau Oblast Akimat, Atyrau Oblast Administration of Natural Resources and Nature Use Control |

In 2023, the total actual costs of the environmental measures implemented at Karachaganak Field amounted to KZT 1.8 bln against KZT 1.5 bln planned and that is 118%.

The 2023 KPO EPMP implementation by sections is shown in Table 28.

Tab. 28. 2023 Environmental Protective Measures Plan Progress, % GRI 3-3

| # | Sections of Environmental Protective Measures Plan | KPO measures' implementation, %: | | |
|---|---|----------------------------------|---|--|
| | | - within Karachaganak Field | - on the KPC-Bolshoi Chagan-Atyrau export condensate pipeline (WKO) | - on the KPC-Bolshoi Chagan-Atyrau export condensate pipeline (AO) |
| 1 | Air conservation | 100% | 100% | 100% |
| 2 | Conservation and rational use of water resources | 207% | N/A* | N/A* |
| 3 | Land conservation | 100% | N/A* | N/A* |
| 4 | Flora and fauna conservation | 100% | N/A* | 100% |
| 5 | Production and consumption waste management | 190% | N/A* | N/A* |
| 6 | Introduction of management systems and best safe technologies | 88% | N/A* | N/A* |
| 7 | Scientific researches and design and survey works in environmental protection | 100% | 100% | 100% |
| 8 | Environmental awareness and promotion | N/A* | 100% | 100% |
| | TOTAL: | (KZT 1.8 bln) | (KZT 12 mln) | (KZT 22 mln) |

* N/A – measures are not applicable.



The Akim of the West Kazakhstan Oblast Turegaliyev N.T., the Head of ECOHUB Yelemessova A. and KPO Corporate Environment Controller Mukangaliyev R. at the Uralsk Green Forum, June 2023

The environmental effect from the implementation of environmental protection measures is presented in Table 29.

Tab. 29. Environmental effect from the implementation of environmental protection measures to reduce emissions and waste, 2023 GRI 3-3

| | |
|---|---|
| Air emissions | <p>The reduction in actual pollutant emissions into the atmosphere as a result of implementation of measures thanks to introduction of advanced technologies for 2023 amounts to 3,059 tonnes:</p> <ul style="list-style-type: none"> • Use of a surface pump to transfer product with high gas volume fraction during the test of four wells has resulted in reduction of emissions by 2,521 tonnes; • Use of hydrocarbon-based fluid for the reservoir operations (Lamix or Deisel) helped to reduce the amount of air polluting emissions by 538 tonnes. |
| Water consumption | <ul style="list-style-type: none"> • The volume of reuse of treated wastewater, including rain and melt water, for 2023 amounted to 56,267 m³, which led to a reduction in fresh water intake for technical needs from surface sources. Treated waste waters were re-used for the KOGCF technical purposes, as well as for dust suppression and drill mud preparation. |
| Waste management | <ul style="list-style-type: none"> • In 2023, 524.907 tonnes of non-recyclable production and consumption waste were disposed by high-temperature incineration, including residues received after segregation of solid municipal waste, food waste and epidemiologically hazardous waste (medical waste, dewatered sludge from silt areas). This helped to reduce the volume of burial wastes by 461.347 tonnes. • As a result of municipal waste segregation at the segregation plant, 118.316 tonnes of useful components (waste paper, plastic, glass and scrap metal) were extracted for subsequent transfer to specialized companies for processing and (or) reuse. • The volume of liquid waste processing equals to 7,631.90 tonnes. • 1,486.16 tonnes of base oil recovered in the process of processing the 15,759.08 tonnes of oil-based drill sludge and other industrial waste. |
| Land reclamation GRI 304-3, SDG 6.6, 15.1, 15.5 | <p>In 2023, land reclamation was carried out after the completion of construction work on 51 hectares area.</p> |

ENVIRONMENTAL MONITORING GRI 3-3, 413-1, SDG 3.9

KPO implements a number of environmental protection programmes that include all aspects of operational activities. One of the key programmes is a Production Environmental Control (PEC) Programme developed in line with the RoK Environmental Code to meet the following objectives:

- obtaining reliable data about the Company's emissions and impact of production activities on the environment;
- rapid and proactive response to emergencies;
- minimizing the impact on the environment and human health;
- communication with stakeholders (local communities, state regulatory authorities, partner companies) about the environmental activities of the Company and risks for population health.

As part of the PEC Programme, the environmental emissions such as air emissions, wastewater discharge, waste treatment, wastes accumulation and disposal, and the quality of environmental components such as air, surface and ground water, and soil are monitored.

In 2023, the PEC monitoring of the environment components has demonstrated that concentrations of target substances were on a par with those observed in previous years. No negative impact on the environment from the Karachaganak Field operations was identified.

KPO regularly keeps the production environmental control over the environmental condition at the Field's waste disposal facilities. In 2023, no direct negative impact on the environmental components has been revealed as a result of monitoring of the ground water and soil at the Eco Centre's Solid Industrial Waste Burial Landfill and the Temporary Liquid Drilling Waste Storage Site, as well as in cells 35A and 35B. Quantitative control over the movement of waste is carried out in order to take into account the volume of burial, as well as the volumes and time of waste accumulation.

Air quality is monitored by ways of collecting and testing the samples. The job is performed by an accredited laboratory, as well as 18 stationary automatic EMSs. To assess the quality of atmospheric air, sanitary and hygienic standards are used – maximum permissible concentrations (MPC). To determine the level of atmospheric air pollution, the registered concentrations of monitored components are compared with MPC and demonstrated in fractions.

In 2023, over 100 thous. samples were taken by the laboratory during the process, about 115 thous. laboratory sample analyses and some 28 thous. measurements were conducted.

The Company pays special attention to protection of atmospheric air in the Field area, at the SPZ boundaries and in settlements adjacent to the Karachaganak Field.

Sanitary Protection Zone SDG 11.4, 15.2

The current estimated Sanitary Protection Zone (SPZ) at the Karachaganak Oil Gas Condensate Field is valid from January 1, 2018. In 2021, KPO successfully completed the relocation of environmental air monitoring stations commenced in 2018. The relocation of these stations was performed due to the change of the Sanitary Protection Zone to ensure correct performance of the continuous air monitoring and to comply with the RoK legal requirements. The plot map of the Karachaganak field with SPZ marked, as of end 2023 is available for viewing on the KPO website in the section [Sustainability/Environmental monitoring/Sanitary protection zone](#).

In 2023, KPO has continued the implementation of the Project "Organization and improvement of the estimated KOGCF Sanitary Protection Zone", having completed "The first phase of planting the KOGCF SPZ and extending the SPZ boundaries". The aim of the Project is to take care of existing forest stands and to plant new trees, as well as to install signages at the SPZ boundaries.

In order to protect historical and cultural heritage sites from potential negative impact, the Project also provides for the installation of relevant signages at the boundaries of the protected heritage sites. Earlier in 2019, KPO organized the large-scale archaeological research on this topic (see the details in the [KPO Sustainability Report 2019](#), pp. 85-88). SDG 11.4

In 2023, the boundaries of the Sanitary Protection Zone were expanded, including the installation of signages and boundaries of protective zones of historical and cultural heritage sites.

Total area of plots planned for the tree planting for the entire project period will be 249.1 hectares including the 151.9 hectare area to create new forest belts, and the 97.2 hectares is the area of reconstruction work on existing plantations.

Total implementation period for the entire project includes the period from spring 2023 up to 2028:

- 2022 – surveys, field work, development of project documentation.
- 2023 – drawing the SPZ boundaries.
- 2024 – installation of signages at the boundaries of protected historical sites.
- 2023–2026 – renovation of forest belts.
- 2025–2028 – planting of new forest belts.

Construction of capital facilities in the process of this Project implementation is not foreseen. The work is carried out by a contractor. Plot map "The main design solutions for arrangement and improvement of the Karachaganak Oil Gas Condensate Field's Sanitary Protection Zone for the period 2023–2028" is available on the KPO website in the section [Sustainability/Environmental monitoring/Sanitary protection zone](#). The consolidated plot plans for placement of the SPZ facilities and landscaping were agreed by involved stakeholders, business organizations and agricultural producers.

Atmospheric Air Monitoring by Environmental Monitoring Stations

GRI 413-1

18 stationary automatic Environmental Monitoring Stations are installed along the perimeter of the KOGCF and the SPZ (EMSs 001 – 018) and integrated into a single automatic environmental monitoring system.

Four out of 18 EMSs are located in the Field and within the SPZ. As of end 2023, 13 EMSs are based at the SPZ boundaries: 006 – 018 EMSs; EMS 005 is located near the Aksai city.

Annual average concentrations of the monitored components recorded by EMSs in 2023 at the KOGCF SPZ boundary are shown in Table 30. The column "Actual annual average concentration" shows the minimum and maximum annual average concentrations of the monitored components recorded by each EMS.

Tab. 30. Annual average concentrations of the monitored components recorded by EMS in 2023

| Monitored components | Actual annual average concentration, mg/m ³ | MPC one-time ¹¹ , mg/m ³ | Exceedance of MPC one-time* |
|----------------------|--|--|-----------------------------|
| H ₂ S | from 0 to 0.001 | 0.008 | no |
| SO ₂ | from 0.002 to 0.007 | 0.5 | no |
| NO ₂ | from 0.002 to 0.007 | 0.2 | no |
| CO | from 0.1 to 0.2 | 5.0 | no |

* Criteria of air quality assessment at the SPZ boundary is MPC one-time. EMS are configured to give a signal when the MPC one-time is exceeded.

All the EMSs take measurements of the four main pollutants (H₂S, SO₂, NO₂, CO) on a continuous basis, i.e., 24/7.

According to the data received from EMSs in 2023, the actual daily, monthly, quarterly and annual average concentrations of the monitored components did not exceed the established sanitary and hygienic limits. While, during the year 177 cases of one-time 20-minute

exceedance in H₂S concentration and one case of CO₂ exceedance were recorded.

Pursuant to the requirement of the RoK Environmental Code (Sub-it. 8, It. 2, Article 184), KPO delivered notices regarding the exceedance recorded at the EMS-017 and the EMS-007 to the WKO Environmental Department.

GRI 413-2

¹¹ ** MPC one-time. MPC daily average – maximum permissible daily average concentration of chemical substance [in mg/m³] in the ambient air of settlements. This concentration shall not cause a reflex response in human bodies (holding of breath, irritation of eyes, upper respiratory tract, etc.) in case of 20-30 min of inhalation.

It should be noted that no connection was found between the exceedance shown in Table 31 and the operations of the KPO field facilities. At the times of the exceedance, all KPO facilities were functioning in normal operation mode, no well flaring or clean-

ups were performed. There were no malfunctions of process equipment, leaks or unauthorized emissions, emergency or scheduled shutdowns of the process. No direct H₂S sources were revealed at the KPO facilities.

Tab. 31. One-time MPC exceedances recorded by EMS in 2023

| EMS No. | Monitored components | MPC one-time, mg/ m ³ | Number of exceedances | Frequency ratio of MPC one-time exceedance |
|---------|----------------------|----------------------------------|-----------------------|--|
| EMS-005 | H ₂ S | 0.008 | 4 | from 1.125 to 2.25 |
| EMS-006 | H ₂ S | 0.008 | 23 | from 1.125 to 3.625 |
| EMS-006 | CO | 5.0 | 1 | 1.12 |
| EMS-007 | H ₂ S | 0.008 | 41 | from 1.125 to 4.875 |
| EMS-008 | H ₂ S | 0.008 | 44 | from 1.125 to 7.375 |
| EMS-010 | H ₂ S | 0.008 | 1 | 1.375 |
| EMS-011 | H ₂ S | 0.008 | 1 | 1.175 |
| EMS-012 | H ₂ S | 0.008 | 1 | 1.625 |
| EMS-015 | H ₂ S | 0.008 | 4 | from 1.125 to 95.875 |
| EMS-016 | H ₂ S | 0.008 | 32 | from 1.125 to 3.625 |
| EMS-017 | H ₂ S | 0.008 | 26 | from 1.125 to 17.0 |

No gas odour complaints from the local communities adjacent to the Karachaganak Field were raised on the date the MPC exceedances were recorded.

Air quality data from all 18 KPO automatic EMSs are transmitted online to the West Kazakhstan Oblast Environmental Department via the Ecomonitor portal.

Atmospheric air monitoring in the villages adjacent to the Karachaganak Field GRI 413-1

In six villages located along the perimeter of the field: Zharsuat, Zhanatalap, Dimitrovo, Karachaganak, Priuralnoe, Uspenovka, and in Aksai town, stationary air monitoring posts have been installed. The air sampling is carried out four (4) times a day (at 1, 7, 13 and 19 hours according to the State Standard) by the permanent personnel of the contracting laboratory, who reside in the specified villages. Approximately 52,000 air samples were collected and analysed at the stationary posts in 2023.

Air samples are chemically tested in the laboratory in Aksai for the content of five main components in accordance with the State Standard and ruling

documents: hydrogen sulphide (H₂S), sulphur dioxide (SO₂), nitrogen dioxide (NO₂), carbon oxide/monoxide (CO), and methyl mercaptan (CH₃SH). In addition, every 10 days the air is monitored for the concentration of volatile organic components: benzene (C₆H₆), toluene (C₇H₈), xylene (C₈H₁₀).

Monthly results of air monitoring are published in local print media and distributed to the villages for posting on the information boards, as well as published on the [KPO web-site](#) on a monthly basis. If any gas odour complaint is raised by someone of the community, an unscheduled air sampling is performed at the stationary posts.

In 2023, no MPC exceedances were recorded for the daily average concentrations of the monitored air components in the villages.

In 2023, 19 complaints with respect to gas odour were raised by the villagers living in proximity of the Karachaganak Field. The unscheduled air sampling was carried out in the villages, the analysis results of which showed that the concentrations of the monitored components did not exceed the established MPC one-time. Each complaint from an initiator with respect to gas odour was addressed.

The annual average concentrations of the monitored air components in the seven villages in 2023 are shown in Table 32. The column "Actual annual average concentration" shows the minimum and maximum

annual average concentrations of the monitored components. Criterion for assessing air quality in settlements is MPC daily average.

Tab. 32. Annual average concentrations of the monitored air components in the villages adjacent to the Karachaganak Field in 2023 (GRI 413-1)

| Monitored components | Actual annual average concentration, mg/m ³ | MPC* one-time ¹² , mg/m ³ | Exceedance of MPC daily average |
|--------------------------------|--|---|---------------------------------|
| H ₂ S | 0.002 | 0.008** | no |
| SO ₂ | 0.003 – 0.004 | 0.05 | no |
| NO ₂ | Between 0.023 and 0.026 | 0.04 | no |
| CO | 0.428 – 0.455 | 3.0 | no |
| C ₆ H ₆ | from 0.166 to 0.178 | 0.3** | no |
| C ₇ H ₈ | below MDL* | 0.6** | no |
| C ₈ H ₁₀ | below MDL* | 0.2** | no |
| CH ₃ SH | Not detected | 0.006** | no |

* Measurements recorded were below the method's minimal detection limit (MDL). MDLs for the monitored components: C₇H₈ – 0.14 mg/m³; C₈H₁₀ – 0.14 mg/m³.

** MPC one-time. MPC daily average for hydrogen sulphide and methyl mercaptan is not established, therefore, MPC one-time is referred to for comparison purpose; MPC one-time is also applied in order to assess the content of benzene, toluene and xylene in the air as the frequency of components' sample collection and analysis is once in ten days.



¹² MPC daily average – maximum permissible daily average concentration of chemical substance [in mg/m³] in the ambient air of settlements. This concentration shall not have direct or indirect adverse effect on human body in case of inhalation during indefinitely long-term period (years).

WHY IS IT IMPORTANT TO US? GRI 3-3

Air pollution harms human health, affects food security, hinders economic development, leads to loss of biodiversity, contributes to climate change and degrades the environment that people rely on for their livelihoods. The United Nations recognize air pollution as one of the major threats to human and planetary health.

The KPO industrial complex operation is inevitably associated with the air pollutant emissions. Pollutants are generated on all process stages: production, preparation, storage and transportation of gas and condensate. Reduction of emissions, recycling of waste and application of new technologies remain the most important issues on the Company's agenda. The Company's mission in this matter is to minimize the negative impact of its activities.

AIR EMISSIONS

KPO manages air pollutant emissions based on the limits established in the Environmental Impact Permit.

To control compliance with the limits, the Company monitors industrial emissions. At the KPO facilities, the air emissions are mainly released from sour gas and formation fluid contamination mixtures' (FFCM) flaring,

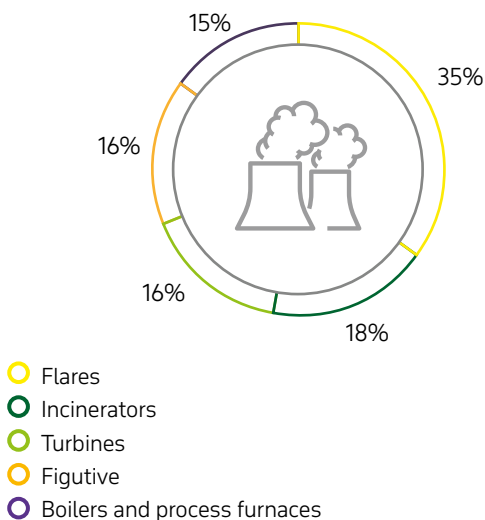
fuel gas flaring in turbines, furnaces and boilers, from diesel fuel flaring in diesel-generator units. The sulphur dioxide, carbon oxide and nitrogen oxides are the main combustion products.

Regulation of direct greenhouse gas (GHG) emissions in KPO is carried within the framework of the current National Emissions Quotas' Trading System.

Tab. 33. Targets in managing emissions GRI 3-3

| Our 2023 targets | Target achievement status | Actions taken to complete targets in 2023 | Targets for 2024 |
|--|---------------------------|---|--|
| Conduct analysis and studies on additional efficient off-gas treatment plants for KPC incinerators | Completed | The Report "Analysis of emissions reduction opportunities for KPC incinerators" was issued. | Conduct analysis for additional opportunities to implement Tail Gas Clean-up Units |

Graph 19. Pollutant emissions in KPO by main air pollution sources, in 2023



In 2023, the total amount of air emissions was increased by 10% compared to 2022, totalling 5,765 tonnes. The increase in emissions in 2023 is justified by the increase of condensate production by 7%, and gas by 15% compared to 2022, and inclusion of the contractor companies' emissions under the Company's obligation in accordance with the requirements of the RoK Environmental Code. Table 34 shows data on the permissible and actual KPO's emissions for the period of 2021-2023.



IN 2023 THE POLLUTANT EMISSIONS TO AIR MADE

5,765
TONNES

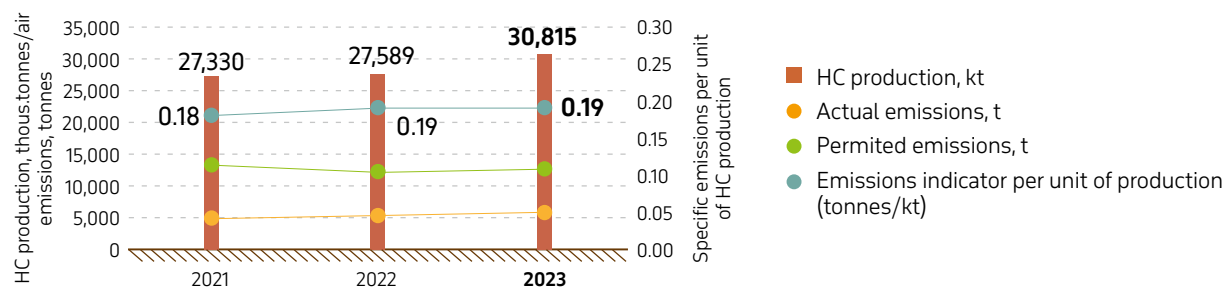
Tab. 34. Permitted and actual volumes of pollutant emissions, 2021–2023 GRI 305-7, SDG 3.9, 12.4

| Annual volume of emissions by pollutants, in tonnes: | 2023 | 2022 | 2021 |
|--|---------------|---------------|---------------|
| Permitted emissions: | 11,346 | 12,005 | 13,219 |
| Actual, including: | 5,765 | 5,236 | 4,798 |
| Nitrogen oxides (NOx) | 1,362 | 1,182 | 1,197 |
| Sulphur dioxide (SO ₂) | 2,251 | 2,143 | 1,989 |
| Carbon dioxide (CO ₂) | 1,159 | 1,142 | 1,039 |
| Volatile organic compounds | 513 | 534 | 452 |
| Hydrogen sulphide – H ₂ S | 3 | 3 | 3 |
| Solid particles | 441 | 198 | 71 |
| Other | 36 | 34 | 47 |

Note.: Emission volumes data are provided in accordance with the data of statistical report "2-TP Air".

In KPO, emissions are calculated using the methods specified in MPE project and recommended for use in the Republic of Kazakhstan.

Graph 20. Hydrocarbons' production and environmental emissions in 2021–2023



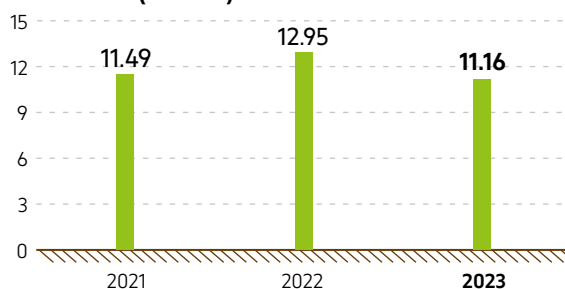
In 2023, the specific emissions per unit of production amounted to 0.19 tonnes per 1,000 tonnes of hydrocarbons (HC) produced same as in 2022.

GAS FLARING OG6, SDG 3.9, 7.3, 8.4, 12.2, 12.4, 12.5

In 2023, the total amount of gas flared reached 0.05% (0.07% in 2022) of the total volume of gas produced or 0.32 tonnes per thousand tonnes of produced hydrocarbons. Such a low flaring emission rate resultant from flaring testifies of high operational performance against the global industrial average rate of 8.57 tonnes per one thousand tonnes and European average rate of 2.55 tonnes per one thousand tonnes, as follows from the IOGP 2022's Report. This confirms the very high level of KPO for this indicator among the global and European oil and gas producers and makes Karachaganak the leading oil and gas condensate field in Kazakhstan in terms of gas utilization.

Decrease in gas flaring volumes by 14% in 2023 comparing to 2022 is related to absence of well operations associated with the hydrocarbons' flaring during full shutdown of main facilities for turnaround and as well as due to commissioning works.

Graph 21. Volumes of produced gas flared in 2021–2023 (mln m³)

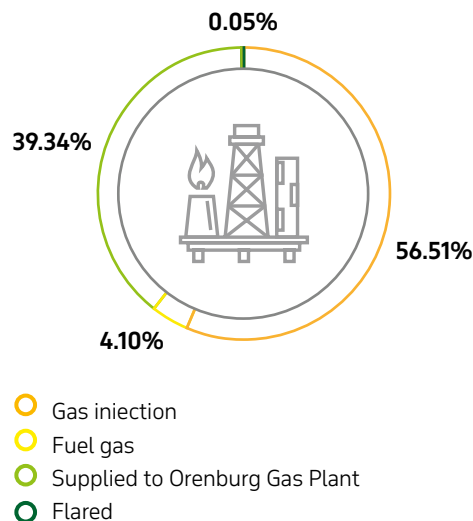


Gas Utilization OG6, SDG 3.9, 7.3, 8.4, 12.2, 12.4, 12.5

In accordance with legislation requirements, KPO develops and approves with Regulatory Bodies the programmes of sour gas processing development.

In 2023, the KPO gas utilization rate reached 99.95% (99.93% in 2022). The performance target approved by the RoK Authority under the 2023 Associated Gas Processing Development Programme is 99.84%.

Graph 22. Gas utilization and flaring in 2023



GREENHOUSE GASES

Direct Greenhouse Gas emissions

GRI 305-1, 305-7, SDG 3.9, 12.4, 13.1, 13.2

Regulation of direct greenhouse gas (GHG) emissions in KPO is conducted within the framework of the current National Emissions' Quotas Trading System. KPO has obtained quotas for the 2023 GHG emissions (CO₂) in the amount of 2,299,321 tonnes on the basis of specific emissions indicators (benchmarks). In 2023, actual emissions have amounted to 1,991,739 tonnes of CO₂, which made 87% of the quota. In January 2024 the residual of the 2022's quota worth 480,948 tonnes of CO₂ was added up to the Company.

In order to control the level of GHG emissions in line with the issued quota, KPO conducts GHG emissions assessment for carbon dioxide (CO₂) and methane (CH₄) every quarter. The emissions were assessed using the calculation method on the basis of the Company's operations data (in terms of fuel consumption and laboratory data on fuel composition) using the current Methodology Guidelines #280 of 05.11.2010 approved by the Environmental Authority.

Rates used for analysis of the GHG emissions are calculated quarterly as per the laboratory data of the certified KPO Chemical Laboratory.

To convert the GHG emissions into carbon dioxide equivalent (CO₂-eq.), the global warming potential values were used according to item 4 of Decision of Conference of the Parties 6/CP.27 of November 17, 2022.

At the year-end, independent certified organization shall verify monitoring results and produce an Inventory report for the reporting period.

According to the verified GHG Emissions Inventory Report for 2023, the total volume of GHG emissions amounted to 2,012,982 tonnes in CO₂-equivalent, of which CO₂ contribution equalled to 1,991,739 tonnes of CO₂-equivalent (99%), CH₄ – 12,805 tonnes of CO₂-equivalent (0.6%), N₂O – 8,438 tonnes of CO₂-equivalent (0.4%).

Information on the dynamics of generated GHG emissions is provided in table 35. The slight increase in GHG emissions (by 9%) in 2023 compared to 2022 is related to full operation of the 4th Injection Compressor and its High Pressure Flare throughout the year while in 2022 this equipment operated only seven months.

Tab. 35. Dynamics of GHG emissions generated from KPO production activities, 2021–2023 SDG 13.2.2 (C130202)

| Total volume of greenhouse gas emissions (tonnes of CO ₂ -equivalent) | | | | | |
|--|---|--------------------|-----------------------------|-----------------------------|-----------------------------|
| From fuel combustion at stationary sources | From fuel combustion at flares and incinerators | Fugitive emissions | Total GHG emissions in 2023 | Total GHG emissions in 2022 | Total GHG emissions in 2021 |
| 1,867,178 | 135,988 | 9,816 | 2,012,982 | 1,851,066 | 1,745,768 |

The methodology for calculating GHG emissions from fugitive emission sources

To count the GHG emissions from fugitive emission sources, KPO uses its own methodology developed for efficient monitoring and approved by the Ministry of Environmental Protection and Natural Resources of the Republic of Kazakhstan in 2020. This methodology has allowed gaining more accurate data of methane (CH₄) emissions from fugitive emission sources at KPO facilities and significantly minimize calculations' equivocation. The methodology is applied during the annual GHG emission inventory process.

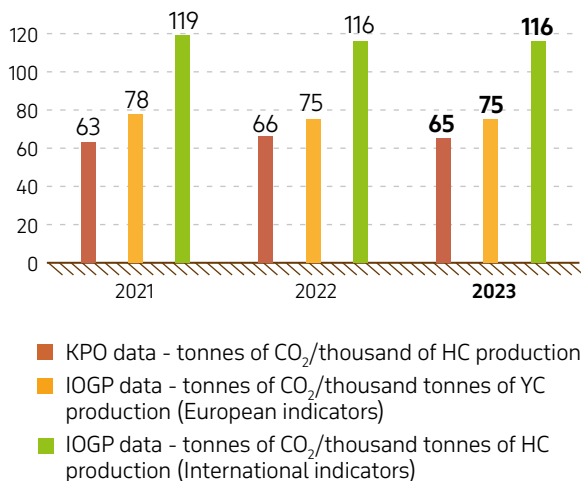
The Scope 2 emissions calculation has been conducted only for the purchased energy in the field facilities.

Specific greenhouse gas emissions

GRI 305-4, SDG 13.1

In 2023, the KPO's specific indicator of CO₂ emissions totalled 66 tonnes of CO₂/thousand tonnes of HC liquids production. Graph 23 shows the dynamics of specific GHG emissions comparing to the specific emissions data provided by the IOGP. The actual specific GHG emissions in KPO are lower than the European indicators by 14% and lower than the international indicators by 44%.

Graph. 23. Dynamics of specific GHG emissions per unit of produced hydrocarbons (HC)*, 2021–2023



The data was sourced by Annual report of the International Associations of Oil and Gas Producers (IOGP) – “Environmental Performance Indicators – 2022 data”. The 2022 data was used for comparison purpose in 2023, as the 2023 IOGP Report was not available at the time this Report was prepared. The 2021 data were changed in the 2022 IOGP Report.

Indirect greenhouse gas emissions

GRI 305-2

Indirect GHG emissions at KOGCF resulting from the consumption of imported electric power in 2023 account for an insignificant part (0.1%), since the Company has a gas turbine power plant, the main purpose of which is to provide its own electricity to the entire production complex of the Field and nearby settlements.

These emissions are not subject to accounting and are not included in the reporting under the internal system of quotas for GHG emissions of the Republic of Kazakhstan. Information on them is provided only in reports to KPO Parent Companies. In 2023, the indirect GHG emissions at KPO amounted to 980 tonnes of CO₂.



WHY IS IT IMPORTANT TO US? GRI 3-3

KPO is one of the leading oil and gas companies of the Republic of Kazakhstan, being both supplier and user of fuel and energy resources (FER), and recognizes the need for the rational use and increase of the energy efficiency level in the Company.

The policy of carbon regulation reinforcement in Kazakhstan bring serious challenges for KPO. As both one of the large GHG emitters and the FER consumer in the country, the Company faces the necessity of the adaptation to new standards and regulations.

KPO is actively engaged in dialogue with shareholders, the state, the PSA LLC authority and other stakeholders to jointly define the strategy for future field development and create favourable conditions for technology investments, which are not paid off under current conditions but valuable in the long term.

ENERGY EFFICIENCY

KPO assumes responsibility to preserve favourable conditions for life-sustaining activity of future generations and make contributions in achieving the goal to decrease energy intensity and de-carbonization of the economy of the Republic of Kazakhstan. Ensuring energy resources extraction, while transitioning to low-carbon technologies, is one of the challenges that we face. Our current targets require continuing energy efficiency activities and

their assessment, including application of the best available technologies, energy-efficient equipment and environmentally friendly materials.

In order to minimize energy efficiency risks and impact of the Company, we have set a number of targets. The results of their implementation are presented further in the text.



Tab. 36. Targets in energy efficiency GRI 3-3

| Our 2023 targets | Target achievement status | Actions taken to complete targets in 2023 | Targets for 2024 |
|--|---------------------------|---|---|
| Conduct a surveillance audit of the Energy Management System for compliance with the ISO 50001:2018 standard | Completed | A certification audit against the ISO 50001:2018 new standard requirements was successfully conducted in July 2023. The Company did not get any non-conformance as per the audit results. | Conduct a surveillance audit of the Energy Management System for compliance with the ISO 50001:2018 standard |
| Conduct an annual energy analysis of the Company and continue monitoring energy efficiency performance for equipment/processes that have a material impact on KPO's energy intensity | Completed | The Company's energy-dispersive analysis for 2023 was conducted. Regular monitoring of Energy performance indicators is conducted on a quarterly basis. | Conduct an Annual Energy Analysis and continue monitoring energy efficiency performance for equipment/processes that have a material impact on energy intensity |
| Continue work on implementation of the activities scheduled for 2022 | Completed | All activities scheduled for 2023 were carried out throughout the year | Carry out scheduled activities and continue analysis and search for new opportunities to increase Energy performance as part of the KPO Green Strategy |

ENERGY MANAGEMENT SYSTEM GRI 3-3

The ISO certification contributes to enhancement of the KPO reputation as a reliable partner to the Republic of Kazakhstan that takes appropriate actions to meet both regulatory requirements and international standards.

In July 2023, KPO has successfully conducted a certification audit against the ISO 50001:2018 standard. Following the audit, the KPO Energy Management System was recognized as corresponding to the international standards.

In accordance with the ISO 50001:2018 requirements, KPO Energy Policy was developed to be used as the guiding principles to determine and evaluate the energy efficiency goals and targets. The KPO Energy Policy is an integral part of the long-term field

development plan and contributes to achievement of strategic goals and targets of the Company. GRI 2-23

KPO supports a trend on personal approach to eco-friendliness, green thinking and conscious consumption. Company has implemented and apply the "Green office" concept to ensure more efficient application of the existing procedures of environmental and energy management.

KPO Green Rules focus on driving forward the personnel's willingness to change and be inspired to take action and reduce not only individual but also Company's impact on the environment. These Rules contain clear and simple instructions for all KPO and contractors' personnel and visitors on how to contribute to the improvement of the environment.

ENERGY CONSUMPTION GRI 302-1

KPO carries out an annual energy review and energy efficiency monitoring as part of the energy efficiency measures. Following the review, in 2023 KPO experienced an increase of energy intensity by 2.7% against 2022 that was due to Turnaround activities at

the Karachaganak Field facilities and start-up of the 4th Gas Injection Compressor in 2022.

In 2023, the energy consumption totalled 1,189,548 tonnes of coal equivalent compared to 1,109,277 tonnes of coal equivalent in 2022. Table 37 shows the energy consumption volumes broken down by energy type.

Tab. 37. KPO energy consumption in 2021–2023 GRI 302-1

| Type of energy | UOM | Energy consumption, physical units | | | Energy consumption, tons of oil equivalent (toe) | | | Energy consumption, GJ | | |
|-----------------------------|-----------------------|------------------------------------|---------|---------|--|------------------|------------------|------------------------|-------------------|-------------------|
| | | 2023 | 2022 | 2021 | 2023 | 2022 | 2021 | 2023 | 2022 | 2021 |
| Fuel gas | thous. m ³ | 962,528 | 897,582 | 832,863 | 1,185,834 | 1,105,821 | 1,026,088 | 34,756,795 | 32,411,614 | 30,074,639 |
| Electric energy (purchased) | MW/h | 5,867 | 7,229 | 6,710 | 722 | 889 | 825 | 21,162 | 26,057 | 24,181 |
| Diesel | m ³ | 700 | 760 | 705 | 883 | 958 | 888 | 25,881 | 28,079 | 26,027 |
| Petrol | m ³ | 233 | 233 | 228 | 257 | 258 | 251 | 7,533 | 7,562 | 7,357 |
| Heating (in rented offices) | Gcal | 12,948 | 9,448 | 10,388 | 1,852 | 1,351 | 1,486 | 54,282 | 39,598 | 43,555 |
| Total | | | | | 1,189,548 | 1,109,277 | 1,029,538 | 34,865,652 | 32,512,909 | 30,175,759 |

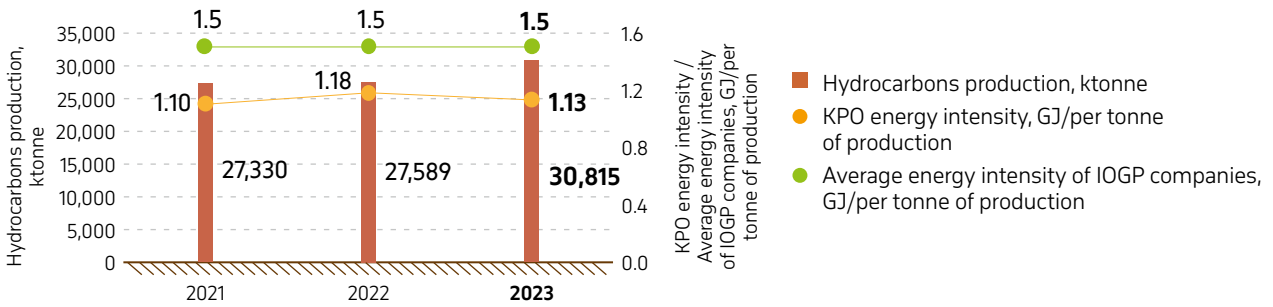


In 2023, the KPO energy intensity indicator was 1.13 GJ /tonnes of hydrocarbons, which was below the average energy intensity indicator of the companies that submitted their reports to the IOGP¹³ (1,5). The outcomes of this comparison analysis provide the basis for identifying areas of significant energy

consumption and possibilities for improving Company's energy characteristics, and also determining energy policy, setting efficiency goals and targets and working out energy saving and energy efficiency measures.

GRI 3-3

Graph 24. Dynamics of energy intensity, 2021–2023 GRI 302-3



ENERGY EFFICIENCY ACTIVITIES

In 2023, KPO continued implementation of scheduled activities in accordance with Energy Saving and Energy Efficiency Plan for 2022–2026. The Energy audit being carried out every five years is planned for 2025.

In accordance with the approved Plan for Energy Saving and Energy Efficiency improvement the following activities were completed in 2023:

- The work continued on replacing lamps with LED ones at production facilities and utilities areas. In 2023, 990 lamps were replaced in the Company facilities. The estimated savings in electrical power consumption per year from the replacement of lamps was about 266, 045 kW*h. In the period of 2019–2023, 12,564 lamps were replaced and around 1,651,845 KW/h saved.

- The work continues on improving the fuel gas reporting process.
- The work continues on implementation of the Green Office Project Plan in KPO offices.
- The opportunity of using renewable power sources for power supply of KPO administrative building was assessed.

Also, in 2023 as part of the Green Strategy, a number of studies were carried out, variety of options evaluated for achieving Energy concept goals, in particular, options of implementing energy efficiency activities were reviewed, including the use of BAT and installation of energy saving equipment.

¹³ Data source: Annual reports of the International Association of Oil and Gas Producers (IOGP) – “Environmental Performance Indicators – 2022 data”. For comparison purpose, the 2022 data are used in 2023, as 2023 IOGP Report was not issued at the time this Report was prepared. The average energy intensity for 2021 of companies reporting to the specified Association has been changed according to the IOGP report.

IMPROVEMENT OF ENVIRONMENTAL AWARENESS AND CULTURE

"Green thinking" is actively promoted amongst KPO employees and contractors. Activities raising environmental awareness and culture stimulate more careful attitude to the Company resources and raise personnel loyalty to the introduction of green technologies and practices.

In 2023, KPO carried out a number of activities among the employees and contractors as part of the Programme on improvement of environmental awareness and culture.

On 2nd June 2023, the [VI Uralsk Green Forum](#) (UGF) was held in Uralsk. The participants discussed the topic 'New Trends in the ESG and Sustainable Development Principles Integration'. The Forum was attended by more than 170 participants, including representatives of the RoK Public Chamber of the Majilis (Parliament), companies – natural resources users, environmental associations, experts, environmental and "green" transformation specialists, national and regional media, and students. [GRI 2-17](#)

"Sustainable business development and ESG fundamentals" workshop was held as part of the VI UGF, where such topics as political economy of the climate change agenda, management of sustainable development risks, corporate governance and sustainable green funding were discussed. Video is available by this [link](#).

On 22nd December 2023, KPO held the workshop for contractor organisations on the theme "The RoK Environmental Code. Relationship between the contractor organisation and the Operator. Contractor's compliance with the RoK Environmental Code requirements". The workshop hosted over 100 attendees.

In 2023, the KPO Environmental Concept has been developed, – the Company's strategic vision for achieving the environmental goals until 2037. The Concept has outlined the Company's activities in minimizing its environmental impact.

To achieve the set environmental targets within the established time frame, the KPO Environmental Work Programme was developed, where the activities and specific tasks for further ensuring the maximum possible environmental impact mitigation and sustainable development of the Company were defined.

In 2023, on occasion of the Safety & Environment Day KPO participated at the "Eni Award 2023" and received a special "Eni Safety & Environment Award". The Environmental Award 2023 was presented for the effective implementation of the Water Use Reduction and Optimisation Project in the Field.

In July 2023, a training video was released on the KPO electronic system for managing environmental aspects registers **EnvAR**. This system is available to every KPO user for review and use as a reference guide on all environmental aspects and existing control measures to minimize the environmental impact.

In 2023, over 250 KPO employees took part in Uralsk and Aksai clean-up and improvement campaigns. Such events promote reassessment of people's attitude towards waste and minimization of its generation.

Green Office Project

Since 2020, the Company has launched the "Green Office" Project, the goal of which is to create a conscious concern for the environment and to minimize the environmental footprint of the Company's offices.

The Green Office Project Implementation Plan was issued in 2023. The Plan highlights short-term and long-term measures aimed at water and energy conservation, separate waste collection (SWC) and refusal from plastic disposable tableware and the goal of "Zero Plastic Waste by 2030". As a result of these activities, consumption of disposable tableware was decreased by 75% compared to 2019 in the Company's offices rented in Uralsk and Aksai.

The issued Green Office Guideline provides for recommendations to save natural resources used in the offices, to create favourable micro-climate for employees and to introduce ecological infrastructure.

In 2023, as part of the promotion of the Green Office Project and Leadership and Safety Culture Programme to minimize the use of plastic disposable tableware in the Company's offices, the Safety, Environment & Asset Integrity Directorate presented environmentally friendly sets of tableware to all KPO employees.

In the electronic version of this Report, readers may watch the video "Say "No" to paper cups" and presentation about the "Green Office Project".

WHY IS IT IMPORTANT TO US? GRI 3-3

Ensuring access to safe water and sanitation is a human right.

Excessive and irrational water consumption can lead to impacts associated with the depletion of water resources and water shortage for industrial and economic needs, deterioration of aquatic ecosystems and decrease in the ability of water resources to naturally reproduce and purify.

The Company's target is to use water resources rationally with the aim to preserve them. KPO controls the use of clean water by undertaking a set of measures on conservation of water resources and re-use of treated water, wherever possible.

WATER CONSUMPTION AND WATER DISPOSAL

GRI 303-1

Protection and rational use of water resources is an important and priority task facing both all mankind and our company. Water is the source of life and a valuable industrial raw material.

The results of our work to minimize the risks of the Company's production impact on the use of water resources presented below.

WATER CONSUMPTION GRI 303-3, 303-5

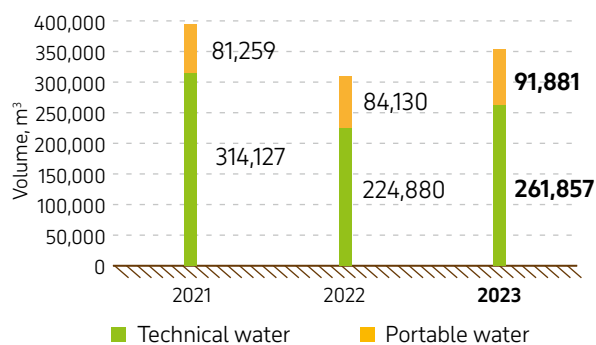
In 2023, the total water withdrawal in the Company amounted to 353,738 m³, of which 261,857 m³ was the technical water and 91,881 m³ was the potable water.

In 2023, the volume of water consumed for production processes and for technical needs (not returned to ecosystem after the water intake) made up 182,419 m³.

GRI 303-5

Graph 25. Water withdrawal in KPO, 2021–2023

GRI 303-3, SDG 6.4.1 (C060401)



In 2023, KPO consumed water by 15% less compared to 2022. Domestic water consumption was slightly higher than in 2022 which was due to the increase of well operations and construction of new facilities.

There is no seepage flow into the Konchubai Gully. The water flow only occurs during the spring-time snow melt and rains. In 2021, the combination of prolonged dry periods and little snow floods observed in the region has led to a critical decrease in the water level in the Reservoir №1. In this view, in the past last two years, KPO has been carrying out a number of activities allowing optimization of technical water consumption and increase the reuse of treated wastewater, rainwater, and melt water. Besides, after conducting experimental filtration studies at wells, groundwater from wells was sent to operational facilities for reusing for technical needs.

From January 2022 to March 2023, in order to avoid damage to the reservoir, there no water intake for technical purposes was made from Konchubai Gully.

During the spring snowmelting in 2023, the water level at the Konchubai Gully raised up, which allowed to cover the technical water needs of production at the KPO facilities. GRI 303-1, SDG 6.4

KPO Water supply sources

Prior to 2023, the main source of water supply for KPO production needs was a reservoir No.1 at Konchubai Gully. For the domestic needs, KPO used water from the Zharsuat water intake. Sources of water supply for domestic and process needs at the pumping station in Bolshoy Chagan is the Serebryakovskiy water intake, while the Atyrau pumping station is supplied from the Kigach water intake.

The Karachaganak Oil Gas Condensate Field is based in area with no water shortage according to Atueduct Water Risk Atlas source of Water Resources Institute <https://www.wri.org>.

Also, the sources of water supply are the ground water from Akchagyl underground reservoir, wells No. W-4, W-9 inside the Field as per the Permission for Special Water Use issued by the Zhaiyk-Caspian Basin Inspectorate under No. KZ92VTE00093596 Series Kas. Zhaiyk (groundwater) dated 02.08.2022 and water of technical quality from Reservoir No. 2 on Konchubai Gully under the contracts with Industrial Construction Services KAZ LLP. Water withdrawal from other water

intakes is conducted on the bases of contracts with water suppliers. **GRI 303-5**

Technical water is used from Reservoir No.1 of the Konchubay Gully, under the Special Water Use Permit issued by the Zhaiyk-Caspian Basin Inspectorate № KZ43VTE00079540 Series Kas. Zhayik (surface) dated 19.10.2021 (valid till 24.05.2025).

Treated domestic, rainwater, and melt wastewater is reused for technical purposes, if the quality is in compliance.

In 2023, the potable water was used for domestic needs of KPO facilities. By exception, due to the lack of alternative water sources, the potable water on Bolshoi Chagan's Pumping Station is used for technical purposes to refill fire water tanks and ensure the fire safety.

On potable water usage for the Karachaganak Field facilities, KPO is the secondary user under contract with AksaiGasPromEnergO LLP, a supplier of potable water from Zharsuat water intake.

Table 38 shows KPO water consumption breakdown by source.

Tab. 38. KPO water consumption in 2021–2023 by sources, m³ **GRI 303-3, 303-5, SDG 6.4.1 (C060401)**

| # | Source | Facility | Water quality | 2023 | 2022 | 2021 |
|---|--|----------------------------|--------------------------|---------|---------|---------|
| 1 | Zharsuat water intake facility (household needs) | Karachaganak field (KOGCF) | groundwater, potable | 90,257 | 82,404 | 79,852 |
| 2 | Konchubay Gully, Reservoir 1 | Karachaganak field (KOGCF) | surface water, technical | 206,140 | 14,130 | 310,352 |
| 3 | Ground waters from Akchagyl underground reservoir, Wells W-4, W-9 | Karachaganak field (KOGCF) | ground water, technical | – | 4,967 | – |
| 4 | Technical quality water from Reservoir 2 | | surface water, technical | 50,920 | 172,450 | – |
| 5 | Reuse for process needs of rain water and produced water from wells after well testing | Karachaganak field | re-use | 10,445 | 30,816 | – |
| 6 | Serebryakovskiy water intake facility | Bolshoi Chagan OPS | groundwater, potable | 1,624 | 1,726 | 1,407 |
| | for household needs | | | 645 | 670 | 868 |
| | for production needs | | | 979 | 1,056 | 539 |
| 7 | Kigach water intake facility | Atyrau OPS | surface water, technical | 4,797 | 2,517 | 3,775 |
| | for household needs | | | 776 | 749 | 808 |
| | for production needs | | | 4,021 | 1,768 | 2,967 |

Note: water consumption is metered using meters with measurements recorded in the logbooks and further in the KPO water consumption metering database.

TREATED WASTEWATER DISCHARGES GRI 303-2, 303-4, SDG 6.3

KPO uses special man-made facilities for collecting treated domestic and industrial wastewater and storm runoffs. These facilities exclude an option of contaminants' soaking into the soil and groundwater

and allow collecting the treated wastewater for their reuse for technical needs, thereby reducing the fresh water intake. Wastewater collection facilities by type are presented in table 39.

Tab. 39. KPO wastewater collection facilities by types

| Type of wastewater | Treated domestic wastewater | Industrial wastewater and storm runoffs | Rainfall and snow melt wastewater |
|-----------------------|---|--|---|
| Facility and location | <ul style="list-style-type: none"> • KCC holding ponds No. 1 and 2 • Evaporation ponds at Bolshoi Chagan OPS and Atyrau OPS | <ul style="list-style-type: none"> • KPC sediment pond • Unit-2 sediment pond • Unit-3 collecting ponds (two) | <ul style="list-style-type: none"> • KPC irrigation lagoons (two) • KCC irrigation lagoon • Unit-2 irrigation lagoon • Eco Centre holding ponds (two) |

Formation water produced with hydrocarbons and process wastewater are treated and injected into the deep-lying formations of the Karachaganak Field Subsurface Wastewater Disposal Polygons 1 and 2. Wastewater injection is the international practice of disposing wastewater, avoiding the formation of salt-containing waste on the surface during the treatment. Due to the reliable water shutoff and soil properties, which are ideal for the injection of wastewater, the migration of wastewater into upper aquifers is ruled out.

In 2019, the Company has developed the Unified concept of options for the treatment of wastewater injected into the underground strata, alternative to the strip column at Unit-3. Two alternative options were suggested for consideration as most appropriate solution:

1. Disposal of wastewater from Unit-3 to Unit-2 using the Unit-2 production water treatment system (the existing H₂S strip column);
2. Disposal of wastewater from Unit-3 to the existing 14" condensate pipeline to KPC.

Due to optimization of resources and maintaining compliance with the RoK requirements, the Company stopped project development on strip column installation at Unit-3 and from 2020 has continued development of the design project on the second alternative option of the wastewater treatment at Unit-3 as defined by the Unified Concept Report.

In 2020, the project "Unit 3. Process Water Line Jump-Over of the KOGCF" was implemented, the aim of the project was to reduce the H₂S concentration in the injected wastewater by re-routing process water from Unit-3 to KPC via the existing condensate pipelines. The project includes installation of a jump-over line to reroute produced water from Unit-3, which is currently supplied to Polygon 1 RP-1 and RP-3 wells, to KPC via the existing condensate pipelines transporting unstable condensate from Unit-2 and Unit-3. Water will be separated and further supplied to the KPC existing produced wastewater system.

According to the RoK legislation, the volume of discharged wastewater and number of discharged contaminants are estimated and justified in the Company project documentation and regulated by special permits. Wastewater generated as a result of the KPO economic and production activities is not discharged into the natural water bodies.

In the production process of hydrocarbons, the separated formation water is pumped down to the underground water horizons (polygons). In 2023, this volume has made up 669,443,4 m³. This water volume includes the formation water, the water formed during the gas dewatering and the water after the caustic neutralization. Water taken from the Konchubai Gully for desalting of crude oil and for the the reverse osmosis is also injected into the polygons. In 2023, this water was 17,23% of the total water injection.

Table 40 shows the KPO discharge volumes in 2021–2023 by wastewater types and receiving facilities.

Tab. 40. Total discharge volume and contaminants by wastewater type and receiving facility, 2021–2023, m³

GRI 303-4

| Receiving facility | Type of wastewater | 2023 | | 2022 | | 2021 | |
|---|---|-----------------------------------|--------------------------------|-----------------------------------|--------------------------------|-----------------------------------|--------------------------------|
| | | Discharge volumes, m ³ | Amount of contaminants, tonnes | Discharge volumes, m ³ | Amount of contaminants, tonnes | Discharge volumes, m ³ | Amount of contaminants, tonnes |
| Holding ponds | Treated domestic wastewater | 27,484 | 15.20 | 42,412 | 29.44 | 72,123 | 44.51 |
| Subsurface Wastewater Disposal Polygons | Industrial and storm wastewater, process and formation wastewater | 808,777 | 68,26 | 764,139 | 60,699 | 780,755 | 58,935 |
| Terrain of Bolshoi Chagan OPS and Atyrau Terminal OPS | Rainfall and snow melt wastewater | 4,501 | 2.33 | 3,168 | 1.81 | 2,538 | 1.595 |
| Total discharge | | 840,762 | 68,843 | 809,719 | 60,730 | 855,416 | 58,981 |

Note: the volume of water discharge is metered, meters data entered in the logbooks and further in the KPO water consumption metering database. The amount of contaminants discharged is defined by calculation as the product of the actual concentration of the contaminant before the discharge and the actual volume discharged.

In 2023, the volume of discharged wastewater increased by 3.3% as compared to 2022. Of which, in 2023, the volume of injected industrial wastewater increased by 5.1% as compared to 2022. The increase in industrial wastewater in 2023 was due to the produced water growth in the hydrocarbons production. The volume of discharged treated domestic wastewater decreased by 35.2% as compared to 2022 due to suspension of treated domestic wastewater discharge from the bio ponds of Trains A and B to the KCC holding ponds 1 and 2 to accumulate water for technical reasons.

In 2023, the discharge of contaminants amounted to 68,843 tonnes (which was 11.8% more compared to 2022 – 60,730 tonnes). Only 0.1 tonnes were discharged over the limit. Insignificant excess volume of discharged pollutants was reported for associated wastewater, injected to subsurface horizons of the Polygon №1, namely the exceedance was on petroleum products.

KPO controls the content of pollutants in wastewater. According to the Project of Regulatory Permissible Discharges for 2023, the composition of pollutants in discharges includes the following: suspended substances, ammonium nitrogen, nitrates, nitrites, BOD 20, BOD 5, petroleum products, sulfates, chlorides, iron, anionic surfactants, phosphates, COD, dry residue, pH value, sulfides, hydrogen sulfide, methanol, copper, zinc, aluminum.

The Company made necessary payments for the generated contaminants discharges in 2023.

In general, wastewater injection has no effect on the environmental components such as soil, flora and fauna, as wastewater is injected into effectively isolated deep horizons with high-mineralized groundwater that is not used for domestic and potable, balneological, process needs, irrigation and farming.

REUSE OF TREATED AND OTHER WASTEWATER GRI 303-3 (2016), SDG 6.3

In order to reduce the intake of natural technical water, KPO uses treated domestic, industrial and rainwater and storm wastewater for the technical needs of

the Karachaganak Field, for such types of activities as drilling, preparation of drilling fluids, irrigation of



forest plantations, dust suppression on roads and construction sites, and filling fire water tanks.

The wastewater is re-used at the Company facilities in line with the 2023–2028 Operating Procedure.

WHY IS IT IMPORTANT TO US? GRI 3-3

If handled unsafely, a hazardous production waste, its storage and disposal sites, may pose a threat to the environment and cause pollution of air, underground and surface waters, soils and vegetation, which may have a negative impact on the environment and the health of people.

KPO carries out complex work to prevent negative impact on the environment, i.e. carries out burial and accumulation only in the arranged waste storage sites, monitors the prevention of excess burial and accumulation of waste, as well as the timely removal of waste from accumulation sites.

In 2023, the Company reused 56,467 m³ of treated wastewater for technical needs, mostly to make drilling mud. Table 41 shows the activities that utilize treated wastewater and water.

Tab. 41. Reuse of treated wastewater and groundwater in 2021–2023, m³

| | 2023 | 2022 | 2021 |
|---|---------------|---------------|---------------|
| The total volume of re-used treated wastewater, including: | 56,467 | 75,452 | 35,061 |
| Technical needs of the operational facilities | 13,383 | 42,161 | 3,362 |
| For drilling and drilling mud preparation | 26,095 | 18,509 | 5,317 |
| Irrigation, hydro tests, and replenishing of fire tanks | 1,996 | 10,376 | 8,465 |
| Dust suppression and watering | 14,993 | 4,406 | 17,917 |

Note: the volume of reused water is measured indirectly in m³ (motor hours, tank truck volume, number of trips, pumping capacity, etc.) with the completion of a control ticket and data entered in the logbook.

INDUSTRIAL WASTEWATER MANAGEMENT GRI 303-2



Tab. 42. Targets in managing effluents GRI 3-3, SDG 6.3, 6.4

| Our 2023 targets | Target achievement status | Actions taken in 2023 | Targets for 2024 |
|--|---------------------------|--|---|
| Carry out workover on the injection well RP-6 in order to increase the perforation intervals in the Triassic Reservoir II. | Completed | Workover of RP-6 well of the Triassic Reservoir II+III has been carried out from 12.10.23 till 05.11.23. | Carry out workover on injection well RP-7 in order to increase perforation intervals in the Triassic Reservoir. |

| Our 2023 targets | Target achievement status | Actions taken in 2023 | Targets for 2024 |
|--|---------------------------|--|---|
| <ul style="list-style-type: none"> Issue an updated summary report on process water demand. Pilot filtration Test operation of Jurassic wells with post-treatment of water at reverse osmosis units. Evaluate an option to utilize for technical needs the treated water from Aksai sewage plant. | | <ul style="list-style-type: none"> KPO's overall water balance and demand forecasts were issued. Trial operation of Jurassic well 36J was conducted in Q1, 2023 via the Reverse Osmosis unit. Jurassic Appraisal Design Project and its Environmental Impact Assessment were completed. Concept of the project to offtake treated sewage water from Aksai Wastewater Treatment Plant has been developed. | <ul style="list-style-type: none"> Perform trial and validate capability to process up to 115 m³/h of produced water. Obtain a licence for geological survey of the Jurassic ground water. Conduct prospecting and assessment work for groundwater. Compile a final geological report based on the results of prospecting and assessment works on the groundwater of the KOGCF. Present the Geological Report for approval of the State Commission for Subsoil Expertise Review. Obtain a Special Water Use Permit for Jurassic wells. Take a Final Investment Decision on the project of water supply from Aksai Wastewater Treatment Plant. |

Managing the formation water and industrial effluent water is one of the main challenges faced by KPO in the Karachaganak Field.

KPO's industrial water management strategy consists of implementation of a portfolio of interconnected projects aimed at removal of production restrictions in terms of formation water handling as well as ensuring personnel safety, asset integrity and environmental compliance.

As mentioned in the report for 2022, in 2022, Addendum No. 3 to the current industrial Wastewater Disposal Project was developed in terms of adjusting design parameters and a report on possible impacts was drawn up. These documents were agreed by the Department of the Industrial Safety Committee and

received a positive conclusion from the Committee for Environmental Regulation and Control.

Addendum No. 3 to the Wastewater Injection Project reflects an increase in wastewater injection volume from 2023 until the end of FPSA in 2037 up to 1,100 thousand m³ per year, as well as the implementation of technical measures to increase the potential of the injection well stock through additional perforation of target and prospective injection intervals and hydraulic fracturing.

In accordance with the requirements of the Environmental Code of the Republic of Kazakhstan and the Rules for Conducting Post-project Analysis on "Amendment No. 3 to the project for the injection of industrial wastewater into deep-seated aquifers in terms of adjusting design indicators and the EIA



Waste Segregation Unit of the KPO Eco Centre

section" in January 2024, the project plans include carrying out a post-project analysis of design solutions and develop a conclusion with further posting at the portal of the Environmental Regulation and Control Committee to the RoK Ministry of Environment and Natural Resources.

The project of upgrade of a caustic neutralisation unit was ongoing since 2022; the start-up is expected in 2024.

As part of the implementation of the Design project decisions and in order to increase the perforation intervals in the Reservoir II, the workover of the well RP-6 was carried out in 2023. According to the KOGCF Wastewater Design project the similar workover in the RP-7 well is planned in 2024.

To support the plan to increase the scope of injected water in the Polygon 2, the Project of upgrade of sand and guard filters is currently ongoing with anticipated start-up in 2024.

Tab. 43. Industrial wastewater management projects, ongoing in 2023 GRI 303-2

| Project | Business driver | Note |
|--|------------------------|--|
| Upgrade of a caustic neutralisation unit | Safe operations | Implementation of the project will provide improvement of the caustic neutralization process (CNU). By means of process automation the risks for personnel exposure to toxic agents will be reduced. Importantly, the upgraded CNU project will be able to partly utilize the Reverse Osmosis water that otherwise would have been disposed. |
| Upgrade of sand and guard filters | Production maintenance | Upgrade of sand and guard filters will allow to achieve KPC water treatment capacity to 115 m ³ /d. |
| Technical Water Supply from the Aksai Wastewater Treatment Plant | Production maintenance | A Feasibility Study has been conducted by KPO to synergise with a Project of the Upgrade of Aksai Wastewater Treatment Plant currently ongoing with the Akimat. Concept has been developed and the project progresses further. |

WASTE HANDLING SDG 3.9, 6.3, 12.4, 12.5

Waste handling in KPO is focused on reducing real and potential hazards that production waste generated by the Company may pose to people and the environment.

Our target is to treat and recycle waste at our facilities, cut down waste transfer to landfills, reduce negative impact from burials, as well as to research and apply new methods and technologies.

As per the Monitoring Operating Programme, KPO performs regular Production Environmental Control (PEC) over the environmental conditions at the waste burial and accumulation sites in the Field.

In 2023, the monitoring did not reveal direct negative impact on the environmental components. As part of the Production Environmental Control, the quantitative control is exercised over the movement of waste in order to account for the burial volumes, as well as the volumes and time of waste accumulation.

GRI 306-1

The results of our work to minimize the risks of the Company's production waste impact on the environment are presented below in the table and further in the text.



Tab. 44. Targets in waste management GRI 3-3, SDG 12.4, 12.5

| Our 2023 targets | Target achievement status | Actions taken to complete targets in 2023 | Targets for 2024 |
|---|---------------------------|--|--|
| Ensure implementation of activities scheduled for 2023 as per the KOGCF Waste Management Programme, and as per the Waste Management Programmes for Bolshoi Chagan Ops and Atyrau OPS. | Completed | All activities scheduled for 2023 in line with the Waste Management Programmes were implemented throughout the year. | Ensure implementation of activities scheduled for 2024 as per the Waste Management Programme for the Karachaganak Field, and as per the Bolshoi Chagan OPS and Atyrau OPS Waste Management Programmes. |

KPO processes related to production, processing and transportation of raw materials, as well as the use of special equipment, materials and other required resources, inevitably involve generation of waste.

Measures taken by KPO to reduce the volume of generated waste, to ensure compliance with environmental safety rules during the accumulation, collection and transportation, segregation, reuse, recycling, treatment and reduction of waste, including reducing their hazardous properties, as well as environmentally friendly burial – all this enables to significantly mitigate the adverse impact on people and the environment. **GRI 3-3, 306-1**

The KPO Waste Management Programme for 2023 provides indicators and measures to gradually reduce the accumulated and generated waste volumes and level of hazardous properties. The Company applies the following waste management methods:

- waste recovery to process stream;
- waste treatment at the Eco Centre facilities;
- waste burial at the Eco Centre facilities;
- waste handover to specialist contractor organizations for further processing, reuse or destruction. **OG7**

In 2023, the total amount of waste generated at KPO facilities was 52,387 tonnes. Compared to 2022, the volume of waste in 2023 in KPO increased by 15,144 tonnes, which was mainly due to the increase of well operations, and the new development projects. Graph 26 shows all types of waste generated at KPO.

According to the Unified Republican Form of the waste information reporting system, the total volume of waste generated in 2023 included both waste generated and treated.

WHY IS IT IMPORTANT TO US? GRI 3-3

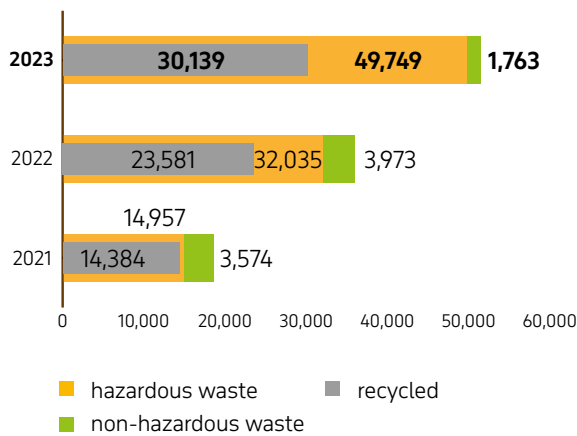
As an international oil and gas company, KPO makes great efforts to perform operations with minimal impact on biodiversity.

Since 2012, KPO has been monitoring the biodiversity to define the level of potential risks from its operational activities. In case if there are evidences that the Company's activities are having a significant impact on the environment in the West Kazakhstan region, the former would initiate monitoring in order to timely plan and implement activities required to preserve the ecosystems.

As part of Biodiversity Action Plan (BAP) KPO performs the assessment of the four main factors impacting the KOGCF biodiversity:

- Pollutant emissions;
- Physical impact (noise, light, vibration);
- Cattle grazing at KOGCF area;
- Mechanical impact (construction, pits, roads, etc.).

Graph 26. Quantity of waste generated at KPO facilities in 2020–2023, tonnes GRI 306-3



Note.: The municipal waste is not accounted for in this calculation due to their insignificant quantity (below 6%) compared to the production waste. The municipal waste is described further in the text in the waste handling methods table.

WASTE PROCESSING AND BURIAL GRI 306-2, 306-4, 306-5

The Company production and consumption wastes are treated at the Eco Center facilities or the Waste Management Complex. The facility ensures cost-efficient and environmentally safe recycling and

treatment of solid waste and fluids and is considered to be an example of the best drilling waste management practice in the West Kazakhstan Oblast.



Drilling wastes are treated by means of technologies, which allow not only reducing their volume and hazards, but also recovering valuable components from them, and treating the waste for further reuse.

KPO IS AWARE THAT NATURAL BIODIVERSITY IS NOT SUBJECT TO ADMINISTRATIVE AND TERRITORIAL DIVISIONS SET UP BY HUMANS AND IN ORDER TO PRESERVE ALL THE ENTIRE BIOLOGICAL WEALTH OF A CERTAIN TERRITORY AND THE FRAGILE LINKS IN THE CHAIN OF SPECIES INTERACTION, ALL PLAYERS MUST FOLLOW COMMON PRINCIPLES AND APPROACHES.

Waste recycling back into production process exercised by the Company is the best possible way to re-use the generated waste.

The KPO Eco Centre comprises five waste treatment facilities, as well as a Landfill for its safe disposal.

During 2023, all Waste Management Programme (WMP) measures scheduled for 2023 including waste segregation, reuse, processing and reduction of their quantities and hazardous properties, were implemented throughout the year. During 2023 the following activities have been implemented:

Tab. 45. Eco Centre facilities and recycling activities in 2023

| Eco-Centre Units | Waste treatment activities in 2023 |
|---|--|
| Thermo-mechanical Cutting Cleaning facility (TCC) | Owing to recovery technology of base oil and water from the treated oil-based drill cuttings, in 2023 the quantity of KPO buried waste was reduced by 13% of the initially generated amount. In 2023, 15,759 tonnes of waste were treated; 1,975 tonnes of base oil and water were separated; and 13,784 tonnes of waste treated at the TCC were buried at the Solid Industrial Waste Landfill. |
| General Purpose Incinerator (GPI) | Resulting from waste incineration in the GPI, the quantity of waste was reduced by 88%. In 2023, 525 tonnes of waste were sent for incineration, following which 64 tonnes of ash were buried at the Eco-Centre Solid Industrial Waste Landfill. |
| Liquid Treatment Plant (LTP) | In 2023, 7,632 tonnes of liquid waste were treated. The process resulted in 6,086 tonnes of treated brines and muds, which were sent for reuse – preparation of drilling brines and muds. |
| Waste Segregation Unit (WSU) | In 2023, out of 757 tonnes of solid domestic waste, 525 tonnes were sent to General Purpose Incinerator for incineration, 117 tonnes, including waste paper, metal scrap, glass and plastic were sorted for handing over to the specialised organizations for treatment and reuse. 115 tonnes of solid domestic waste were handed over to specialist organizations for burial at the SDW landfill. 242 tonnes of food waste were handed over to specialist organization for composting. |
| Solid Industrial Waste Landfill | At the end of 2023, 16 cells of the Solid industrial Waste Landfill were capped and closed. |

In 2023, the Company continued to excavate wastes from the old Solid Waste and Spent Drilling Fluids Storage Site for further treatment at the Thermo-mechanical Cutting Cleaning Facility and burial at the Solid Industrial Waste Landfill. The waste is buried at the Landfill in compliance with the RoK environmental legislation.

In 2023, 2,817 tonnes were sent for treatment from the Solid Waste and Spent Drilling Liquids Storage Site. Processing of waste from the old site is planned to be continued in 2024. **GRI 306-4**

Table 44 shows the waste handling methods used by the Company in 2023.

Tab. 46. KPO waste handling methods in 2023, tonnes **GRI 306-3, 306-5**

| # | Waste handling method | Generated hazardous waste | Generated non-hazardous waste | Municipal waste | TOTAL: |
|---|--|---------------------------|-------------------------------|-----------------|---------|
| 1 | Availability at the enterprise as at the beginning of 2023 | 350,262 | 8 | 4 | 350,274 |
| 2 | Generated during the reporting year | 49,749 | 1,763 | 874 | 52,387 |
| 3 | Reused at the enterprise | 7,650 | 0 | 0 | 7,650 |
| 4 | Treated at the enterprise facilities | 30,006 | 133 | 658 | 30,797 |
| 5 | Incineration in General Purpose Incinerator without energy recovery | 0.1 | 0 | 524.8 | 524.9 |
| 6 | Burial at Solid Industrial Waste Landfill | 20,806 | 0 | 0 | 20,806 |
| 7 | Temporary storage of drilling liquid waste in Cells #35 A/B of EcoCentre | 4,584 | 0 | 0 | 4,584 |

| # | Waste handling method | Generated hazardous waste | Generated non-hazardous waste | Municipal waste | TOTAL: |
|---|---|---------------------------|-------------------------------|-----------------|---------|
| 8 | Transferred to the specialized contractor organizations | 1,453 | 1,615 | 310 | 3,378 |
| 9 | Availability in the enterprise as of end 2023 | 364,798 | 23 | 23 | 364,844 |

Note: the amount of waste is defined by weighing each batch of waste at the Eco Centre weight scales prior to its transportation for treatment, segregation, removal, burial or other operations. Waste quantities are logged in the load supporting documents (control tickets, waste handover certificates) and further in the Company's waste accounting database.



Operations HSE team and sub-contractor representatives on site while conducting a scientific research and development of the Konchubai Gully

The KPO waste is mainly produced during well drilling and workover activities. Whereby, depending on the type of the drilling mud used, the water or oil-based drill cuttings are generated. The solid and liquid drilling waste generated in 2023 has amounted to 17,552 tonnes (68% of the initially generated waste, i.e., waste volume before treatment). Drilling waste volumes were significantly increased due to the growth

of well operations as a result of the of a second drilling rig mobilization.

Table 47 shows the main types of drilling waste broken down by handling methods. As table shows, only water-based mud and brines are subject to disposal at the Eco-Centre cells 35 A/B, and the water-based drill cuttings to be buried at the Landfill. Oil-based drilling cuttings are subject to burying after pre-treatment and extraction of the oil base. **GRI 306-5**

Tab. 47. Waste generated from well operations by handling methods, 2021-2023 **OG7**

| # | Type of waste | Generated waste, tonnes | | | Handling methods |
|---|--------------------------------|-------------------------|-------|-------|--|
| | | 2023 | 2022 | 2021 | |
| 1 | Spent water-based drilling mud | 579 | 1,154 | 382 | Treatment at Liquid treatment plant (LTP) |
| | | 3,873 | 3,467 | 383 | Temporary storage of drilling liquid wastes (Cells #35 A/B Eco-Centre) |
| 2 | Water-based drilling cuttings | 1,369 | 2,716 | 987 | Burial |
| | | 98 | 0 | 0 | Temporary storage of drilling liquid wastes (Cells #35 A/B Eco-Centre) |
| | | 223 | 0 | 0 | Treatment at Liquid Treatment Plant (LTP) |
| 3 | Spent oil-based drilling mud | 2,596 | 1,257 | 432 | Treatment at the Thermo-mechanical Cutting Cleaning facility (TCC) and Liquid Treatment Plant (LTP), heat treatment in the Rotary Kiln Incinerator (RKI) |
| 4 | Oil-based drilling cuttings | 15,779 | 5,760 | 2,776 | Treated at the TCC with extraction of oil base, water and followed by the burial of the solid part, heat treatment in Rotary-Kiln Incinerator |
| 5 | Spent brines | 2,931 | 3,022 | 1,438 | Treatment at TCC and LTP, heat treatment in Rotary-Kiln Incinerator |
| | | 503 | 155 | 189 | Temporary storage of drilling liquid wastes (Cells #35 A/B Eco-Centre) |



Site activities as part of the Scientific Research and Development of the Konchubai Gully

| # | Type of waste | Generated waste, tonnes | | | Handling methods |
|---|---------------|-------------------------|------|------|---|
| | | 2023 | 2022 | 2021 | |
| 6 | Oil cuttings | 19 | 21 | 60 | Heat treatment in the Rotary Kiln Incinerator, treatment at TCC |

Within the contract terms, the Company hands over part of the waste for recycling to specialised contractors, who make their own decision on further waste handling methods once the waste has been accepted from KPO, and report on its transfer to third parties on a quarterly basis. Depending on the type, specialised enterprises hand over the waste for treatment with subsequent production of consumer goods, demercurization, regeneration, thermal treatment, incineration, physical and chemical treatment, dismantling into component parts with further transfer to concerned enterprises as recyclables.

Based on Article 301 of the RoK Environmental Code that prohibits burial of waste plastic, plastic, polyethylene and polyethylene terephthalate packaging, waste paper, cardboard, paper waste, glass cullet at the Landfills, the Company carries out sorting and segregation of such waste engaging contractors that lease office buildings to the Company. Such types of waste are then handed over to specialized enterprises to be used as recyclables. **GRI 306-4**

For the whole period of the waste paper segregation from 2011 till the end of 2023, about 915 tonnes of the waste paper had been collected and handed over to local companies to produce consumer goods.

The segregation of spent batteries was arranged in all company office premises. In 2023, 133 kg of batteries collected. **GRI 306-4**

Food Waste Treatment **GRI 306-4-c-ii**

In order to comply with the requirements of the RoK Environmental Code, during 2021–2022 KPO has implemented the most efficient way to handle food waste generated at the food facilities of the Karachaganak Field. The contract was signed for the biocomposting of food waste. In 2023, the Company handed over 242 tonnes of food waste from the food facilities of the Karachaganak Field to the food waste processing enterprise. The resulting biocompost is used in agriculture and forestry as organic fertilizers to restore and improve soil fertility.