ENVIRONMENTAL PROTECTION

Management approach: key aspects and initiatives

Participation in initiatives and programmes

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

The World Bank's Zero Routine Flaring by 2030 initiative

SUSTAINABLE DEVELOPMENT GOALS

UN 17 Sustainable Development Goals initiative

CDP
DISCLOSURE INSIGHT ACTION

Climate program CDP

Global Methane Initiative

Global Methane Initiative

International Association of Oil & Gas Producers

International Association of Oil & Gas Producers – IOGP

CASPIAN ENVIRONMENT PROGRAMME

Caspian Environmental Protection Initiative – CEPI

Environmental highlights

Indicator	2022	2023	2024
NO_x emissions, tonnes per 1,000 tonnes of produced hydrocarbons	0.31	0.35	0.39
SO_x emissions, tonnes per 1,000 tonnes of produced hydrocarbons	0.21	0.23	0.23
APG flaring rate, tonnes per 1,000 tonnes of produced hydrocarbons	1.5	1.4	1.45

The health, safety and environment management system is designed to Kazakhstan's statutory requirements, ISO 14001 and ISO 45001 international industry standards, global best practices, and recommendations of the IOGP. It covers ten areas and relies on four pillars: leadership, goal achievement, risk management, and continuous improvement.

Since 2006, KMG operates an integrated quality, environmental, and occupational health and safety management system compliant with ISO 9001, ISO 14001, and ISO 45001. KMG's subsidiaries and associates with significant energy consumption are certified to ISO 50001. The effectiveness of the HSE management system is verified by independent auditors on a regular basis.

To improve its Health, Safety and Environment Management System, KMG has it certified to ISO 45001.

Recognising the nature and scale of its footprint, the Company is committed to prioritising the sustainable use of natural resources, ensuring safe working conditions, safeguarding employee health across all business lines, protecting the well-being of local communities in its regions of operation, and upholding environmental stewardship.

We have made significant progress in enhancing the environmental safety of our operations thanks to effective corporate standards and continuous improvements in management. We aim to achieve a zero footprint, which means no negative impact on the environment whatsoever.

Monitoring
- HSE reporting rules
- Automated HSE road safety system
- HSE KPI framework
- Incident investigation process
- Automated accident investigation module
- Benchmarking

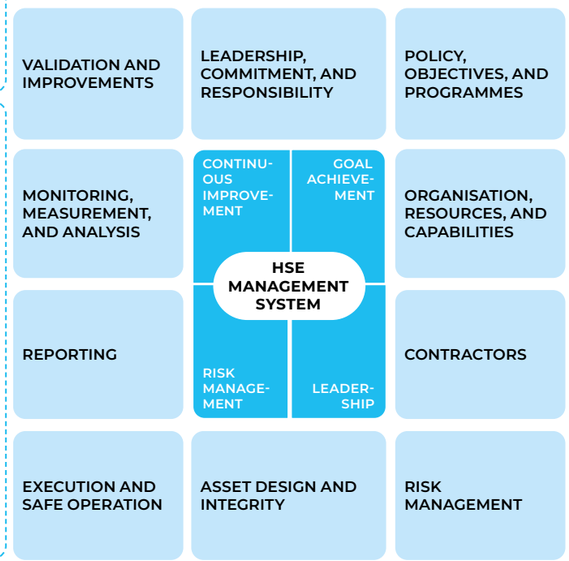
Internal control and improvements
- HSE assessment management system
- HSE committees system
- Compliance Audits
- HSE awareness efforts

Leadership
- Leadership commitment: leadership forums, SPE
- Three tiers of HSE committees

Goals
- Zero incidents
- Zero spills
- Zero discharges
- Zero routine flaring

Strategy
- Safety at work
- Environmental responsibility

Execution
- Health management system
- Transport safety programme
- Crisis management standard
- Methane leak detection programme
- Waste management standard
- Water management standard
- Energy efficiency roadmap



Policies
- HSE policy
- Transport policy
- Alcohol policy
- Emissions policy

Standards
- Developing and implementing HSE standards in line with global best practices

Asset integrity
- Fire preparedness
- LOTO
- Process safety management system

Risk management
- Risk management system
- Behaviour-based safety programme
- EIA (Environmental Impact Assessment) standard

Stakeholders
- Contractor standard
- Contractor reporting
- Public consultations

2024 highlights

SO_x emissions intensity
0.23 (IOGP – 0.09)

NO_x emissions intensity
0.39 (IOGP – 0.36)

Recovery of historical waste and remediation of oil-contaminated soils
1,099 thous. tonnes
(1,145 thous. tonnes in 2023)

CDP water security score
B

Environmental performance indicators, tonnes per 1,000 toe of produced hydrocarbons

Year	SO_x emissions intensity	NO_x emissions intensity	Raw gas flaring rate	Raw gas utilisation, %
2022	0.21	0.31	1.5	98.8
2023	0.23	0.35	1.4	98.9
2024	0.23	0.39	1.45	98.9

KMG Group's goals in HSE management are directly related to its Development Strategy. Our Development Strategy until 2031 covers strategic initiatives to promote greater environmental responsibility. KMG Group's environmental priorities include effective management of air emissions, water resources and waste, flaring reduction, and land reclamation.

The Company remains dedicated to being an environmentally responsible business by further enhancing its environmental protection management system, maintaining open dialogue with all stakeholders, and fulfilling its commitments as outlined in its Environmental Policy.

Taza Qazaqstan environmental campaign

Clean Kazakhstan (Taza Qazaqstan) is a large-scale nationwide environmental campaign initiated by the President of the Republic of Kazakhstan in 2024. KMG Group actively participates in this initiative. Our Clean Kazakhstan action plan comprises five key areas with a focus on implementing environmental initiatives, fostering a green mindset corporate culture, promoting an environmentally conscious society, and raising awareness about the campaign.

A central aspect of our action plan is the initiative to clean up populated areas. To support this effort, we established a Group-wide schedule of community clean-up events, which saw participation of more than 2,800 employees from 34 companies, including top executives. The participating companies included KMG subsidiaries from Astana, the Mangistau, Aktobe, Atyrau, Kyzylorda, Pavlodar, Turkestan, and West Kazakhstan regions.

Greening projects

KMG actively engages in large-scale tree planting initiatives, contributing to the country's reforestation efforts. In early April 2024, KMG provided financial support for a mass planting campaign, with some 4.5 mln saxaul seedlings planted across 15,000 ha on the dried seabed of the Aral Sea.

Initially, KMG Group aimed to plant a total of 88,925 trees in 2024. However, we made a decision to step up our greening efforts, resulting in the planting of 97,218 trees and shrubs by KMG Group in 2024.

On 12 October, as part of a Group-wide simultaneous tree planting campaign, our employees planted more than 12,000 trees, including 125 three-metre pine trees planted around School No. 111 in Astana and five trees planted near the office building by employees of KMG's Corporate Centre. The campaign saw participation from top executives of 28 subsidiaries and associates and more than 1,400 employees.

Use of reverse vending machines

KMG's Corporate Centre also launched an initiative to collect plastic bottles and aluminium cans using a reverse vending machine (RVM). To promote plastic waste collection, on 1 September 2024, the Corporate Centre announced a competition encouraging active use of the RVM. The goal of the competition is to raise awareness about reverse vending machines that accept bottles and cans for recycling. In addition to incentivising waste separation, this initiative seeks to foster environmental responsibility among employees. Since the installation of the RVM in February 2023, we have collected 45,777 plastic bottles and 11,601 aluminium cans for recycling, totalling 54,378 items.

Green Office

The Company adheres to the Green Office principles, which focus on resource efficiency and environmental sustainability. To date, eco-bins for waste separation have been installed in KMG's Corporate Centre, a cabinet for storing fluorescent lamps is set up in the warehouse, electronic document management has been implemented, and there are designated parking areas for bicycles and charging stations for electric vehicles.

On 7 August 2024, the Company hosted an Eco-Mindset Workshop attended by more than 120 employees, focusing on key environmental topics such as consumption reduction, management of household waste generation, and waste separation, and featuring a book swap fair organised by volunteers.

Priority environmental projects

Eliminating legacy pollution

Elimination of historical pollution, as well as sources of negative environmental impact (idle wells, wastewater reservoirs, landfills and other production facilities).

Reducing atmospheric emissions

Reduction in emissions through improved technology solutions, e.g. replacing fuel oil with fuel/natural gas as a process furnace fuel; using next-generation additives; tree planting and land improvement at production facilities; upgrading equipment; replacing burners; streamlining equipment operating modes to reduce runtime; treating exhaust gases from harmful compounds; expanding gas processing capacity; installing gas processing units; engaging in ongoing monitoring to detect and promptly repair leaks; equipping storage tanks with floating roofs to minimise the generation of volatile fractions by eliminating the free space above the product common in conventional tanks.

Automated environmental monitoring information system

The automated environmental monitoring information system is designed to create a shared information space in environmental protection and covers the following critical tasks: automated generation of environmental reports to government agencies; maintaining the database of authorisation regulations and calculating environmental emission fees; day-to-day environmental monitoring based on environmental controls at production sites.

Waste management

KMG's production operations generate production and consumption waste. KMG Group develops and implements a set of measures to improve the waste management system, keeps records of waste generated and accumulated, including contractors' waste, and ensures the safe accumulation of waste until it is recovered or disposed of. In 2024, KMG's expenses for the recovery of historical oil waste totalled KZT 13.5 bln.

In selecting waste recovery methods, KMG prioritises advanced technologies that minimise environmental impact and prevent secondary pollution.

In 2024, KMG subsidiaries and associates disposed of a total of 1,099 thous. tonnes of historical waste, with their disposal sites remediated.

In 2024, we approved the Corporate Waste Management Standard for KMG Group. The Standard specifies step-by-step actions of officers in charge at subsidiaries and associates when carrying out waste management activities to ensure compliance with the requirements of Kazakhstan's environmental laws. The standard is a guiding document for waste management at production facilities.

For more details on waste management, see KMG's Sustainability Report.

Asset retirement obligations

Oil and gas assets

Under the terms of certain contracts, in accordance with legislation and regulatory legal acts, KMG has legal obligations to dismantle and liquidate fixed assets and restore land plots at each of the fields. In particular, KMG's obligations include the gradual closure of all non-productive wells and actions to permanently terminate operations, such as dismantling pipelines, buildings and reclamation of the contract area, as well as decommissioning and obligations to prevent environmental pollution at the production site.

The Company calculates asset retirement obligations separately for each contract. The amount of the liability is the present value of the estimated costs that are expected to be required to settle the liability, adjusted for the expected inflation rate and discounted using average long-term risk-free interest rates on government debt of transition economies, adjusted for risks inherent in the Kazakhstan market.

As of 31 December 2024, the carrying amount of the Company's provision for liabilities to liquidate oil and gas assets was KZT 142 bln (as of 31 December 2023: KZT 124 bln).

For details, see Note 4 in the consolidated financial statements.

Oil and gas trunklines

In accordance with the Law of the Republic of Kazakhstan On Trunk Pipeline, which entered into force on 4 July 2012, KazTransOil has a legal obligation to liquidate the trunkline after the end of operation and implement subsequent measures to restore the environment, including land reclamation. The provision for the obligation to abandon pipelines and land reclamation is estimated based on the cost of dismantling and reclamation works calculated by KMG. As of 31 December 2024, the carrying amount of KMG Group's provision for the obligation to abandon pipelines and reclaim land of the Company amounted to KZT 37 bln (as of 31 December 2023: KZT 46 bln).

For details, see Note 4 in the consolidated financial statements.

Environmental remediation

KMG also creates provisions for obligations related to environmental clean-up and rehabilitation, based on its estimates and judgements. Environmental costs are either capitalised or expensed based on their future economic benefits.

The Company's environmental remediation reserve represents management's best estimates based on an independent assessment of the expected costs required for KMG Group to comply with the existing Kazakh and European regulatory frameworks. As of 31 December 2024, the carrying amount of the provision for environmental liabilities was KZT 42 bln (as of 31 December 2023: KZT 39 bln).

For details, see Note 35 in the consolidated financial statements.

Water protection

Water is an integral part of all KMG production processes. KMG aderes to the principles of the UN Global Compact and integrates the Sustainable Development Goals (SDGs) into its operations. The Company adheres to all 17 SDGs, including Goal 6, Clean Water and Sanitation. In its activities, the Company strives to reduce water consumption, increase water use efficiency, drive up water reuse and recycling, improve the quality of effluents, and minimise the impact on natural water bodies.

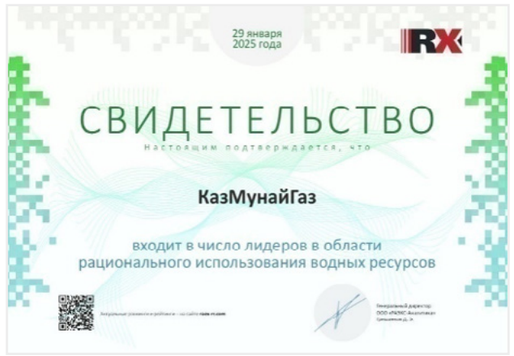
As KMG is a vertically integrated company engaged in the production, transportation, and processing of hydrocarbons, all our processes consume a lot of water. The Company takes water from surface and underground sources, municipal water supply systems, and the Caspian Sea. Wastewater from KMG's operations mainly goes to specialised receivers: storage ponds, and evaporation and filtration fields. Those facilities are technical structures designed for natural treatment of wastewater and preventing environmental pollution. Operations that do not have their own storage facilities transfer wastewater to dedicated companies for treatment and disposal. The quality standards for discharged water established by environmental laws are met through the use of mechanical and biological methods of effluent treatment. However, no wastewater is discharged into surface natural water bodies.

One of the Company's most important objectives is to increase the reuse of treated effluents by returning them to the process, using them for irrigation of green areas, and dust suppression on construction sites and roads.

KMG uses the World Resources Institute's (WRI) Aqueduct water stress metrics to evaluate and monitor production assets in water stressed areas within the Caspian Sea, and the Syr Darya and Ural river basins.

The first ESG rating published by RAEX in December 2024 recognised KMG as one of the leaders in sustainable water management. In addition to considering the water use metrics of 144 companies from Russia, Kazakhstan, and Mongolia, this rating assessed the quality of corporate policies and programmes, information on the identification of water use risks, and corresponding risk mitigants.

The number of companies with a high or very high sustainable water use score is extremely limited, with only 21 contestants out of 144 making it to the list. Moreover, only ten companies were included in the top tier, with KMG among them.



Tazalyq project

The Tazalyq project is one of the key ongoing environmental initiatives of Atyrau Refinery. It includes the upgrade of the evaporation fields, mechanical treatment plants, and biological treatment facilities, as well as the construction of an advanced treatment facility. The project will have a significant environmental effect by improving the quality of wastewater treatment and eliminating harmful evaporation into the atmosphere from open tanks of the treatment plant and environmental impacts from evaporation fields.

This project will help double the capacity of mechanical treatment plants. In addition, a pipeline from Atyrau Refinery to the municipal sewage treatment facilities was installed in place of the existing open channel, which was used to discharge wastewater from Atyrau Refinery to its evaporation fields, thus eliminating the release of hazardous substances into the environment.

Two phases of the mechanical treatment plants upgrade were completed (Phase 1 in late 2023 and Phase 2 in May 2024), with relevant facilities commissioned. As a result, the wastewater treatment capacity of the plants increased to 1,000 m^3 per hour, while the average monthly oil sludge treatment capacity reached 12,000 m^3. Open reservoirs were removed, which helped minimise the release of hydrocarbon vapours into the atmosphere from open tanks. The reclamation of Atyrau Refinery's evaporation fields is also underway. It consists of several stages: drainage of evaporation fields, mowing of reeds, deep ploughing, treatment with a biological agent, and triple reclamation.

Astrakhan–Mangyshlak main water line

Phase 1 of upgrading and expanding the Astrakhan–Mangyshlak main water line was completed in December 2023.

The project aims to increase the pipeline's throughput capacity from 110,000 to 170,000 m^3 per day and modernise outdated equipment to ensure a reliable water supply for the population, agricultural producers, oil and gas companies, and other industrial consumers in the Atyrau and Mangistau regions. The upgrade involved replacing two sections of the Astrakhan–Mangyshlak pipeline with a total length of about 177 km. This pipeline is the only centralised source of water supply for consumers in the Kurmangazy, Isatay, and Zhylyoi districts of the Atyrau Region, the city of Zhanaozen, and the Beineu, Mangistau, Karakiya, and Tupkaragan districts of the Mangistau Region. Water consumption by the population increases by 4–5% annually.

Formation water desalination plant at the Karazhanbas field

Karazhanbasmunai's Karazhanbas field in the Mangistau Region launched a formation water desalination plant to address the issue of water supply to the field. Once the full capacity is reached, the formation water processing will amount to 42.5 thous. m^3 per day, while desalinated water production will reach 17 thous. m^3 per day, thus releasing a significant volume of water for the needs of the region's population.

Construction of desalination plants near the Kenderly recreational area, Mangistau Region

KMG is building a seawater desalination plant with a capacity of 50 thous. m^3 per day next to the Kenderly recreational area. This project will solve the problem of drinking water shortage for the residents of Zhanaozen, while also having a multiplier effect on the development of tourism, business, and agriculture. Main construction works are now over, with the development of utilities underway. Workers laid 201 km of the main water pipeline for supplying desalinated water to Zhanaozen, erected 83 km of power transmission lines, and built 40 km of road. With 97% of the 46 km gas pipeline installed, its commissioning is scheduled for 2025.

For more details on KMG's water management and related projects, see KMG's Sustainability Report.

Since 2020, the Company has been calculating its water footprint and making water management disclosures through the Carbon Disclosure Project (CDP) Water Security Questionnaire.

KMG's water management efforts were highly rated in 2024 based on the 2023 questionnaire results. The Company achieved a "B" score in the CDP Water Security rating, which marked an improvement from its previous "C" score.

Corporate CDP questionnaire for 2023