

Sustainable development KPIs of KMG's management

To implement strategic sustainability targets for 2021, the following motivational KPIs were approved for the Chairman of the Management Board (corporate KPIs) related to the introduction of the sustainable development management system:

- Implementation of investments projects, including the Tazalyq sustainability project and the construction of a desalination plant in Kenderly
- ESG rating

For 2022, motivational KPIs of the Chairman of the Management Board (corporate KPIs) related to sustainability are more ambitious than those set for 2021:

- Implementation of investment projects, including those which focus on sustainability
- ESG Risk Rating: 28.2
- 5% reduction in Lost Time Incident Rate (LTIR)

For Deputy Chairmen of the Management Board, the following functional KPIs are planned for 2022:

- Development and approval of an Action Plan to implement KMG's Low-Carbon Development Programme for 2022–2031.
- Development of an Action Plan in a respective business direction to implement KMG's Low-Carbon Development Programme for 2022–2031.
- Implementation of investment projects involving sustainability aspects:
 - Construction of a new gas processing plant in Zhanaozen,
 - Upgrade and expansion of the Astrakhan–Mangyshlak water pipeline (Phase 1),

- Construction of a desalination plant in Kenderly with a daily capacity of 50,000 m³,
- Tazalyq.

Low-Carbon Development Programme

Today, decarbonisation of industry as part of climate change mitigation has solid positions on global political, investment and trade agenda.

Reducing the carbon footprint is the critical factor in fighting global warming.

The sustainability and long-term horizon of decarbonisation is set forth by the Paris Agreement on climate change, which sets a global goal to hold temperature increase to 1.5°C by 2100 and achieve a reduction of CO₂ emissions of 25% by 2030, 70% by 2050, and 100% by 2070 (full decarbonisation).

Kazakhstan in turn supports international initiatives to step up efforts and enhance ambitions towards achieving the Paris Agreement goals, taking on voluntary commitment to have greenhouse gas emissions reduced by 15% by 2030 from the 1990 level.

Last November, President of the Republic of Kazakhstan Kassym-Jomart Tokayev spoke at a climate change conference and announced that Kazakhstan is ready to take action on climate change and achieve carbon neutrality by 2060. To this end, a Doctrine for Carbon Neutrality of the Republic of Kazakhstan is being developed to achieve carbon neutrality by 2060.

KMG developed a Low-Carbon Development Programme for 2022–2031 as a single low-carbon

development agenda that streamlines the Company's efforts in the realm of carbon footprint reduction.

The document primarily aims to formulate the climate ambitions of KMG, structure key carbon footprint reduction approaches and initiatives through the analysis of the existing potential, define main directions for development and increase the Company's preparedness.

The Programme comprises five key sections (carbon policies and key trends; KMG's GHG emission inventory; scenario modelling; strategic areas of the Programme; implementation mechanism). 2019 was set as the baseline year.

To understand the current situation and identify a pathway to be taken, the Programme takes a deep dive into the Company's greenhouse gas emissions.

The exercise covered direct (Scope 1)¹ and indirect (Scope 2) emissions.

- Scope 1 includes GHG emissions associated with the flaring of hydrocarbon fuels and unavoidable fugitive emissions in production processes at sources owned by KMG;
- Scope 2 emissions are associated with the consumption of electricity, heat, hot water and steam supplied from outside.

The inventory data was used for scenario modelling of KMG's development. The model included three scenarios: business-as-usual, green development, and low-carbon development.

According to the modelling results, under the business-as-usual scenario, KMG's subsidiaries and affiliates will vary in terms of their GHG emissions until 2030, with the total increase in GHG emissions across all assets standing at nearly 4% versus 2019.

¹ For the purposes of this Programme, direct emissions include only CO₂.

Under the green scenario, GHG emissions are expected to go down assuming the operating structure of assets stays unchanged and measures are put in place to achieve energy efficiency, enable conversion to electric heating, and switch to renewable energy sources.

Under the low-carbon development scenario, the above measures are enhanced with projects to actively develop hydrogen energy, projects on carbon capture and storage, and robust offset policy (climate projects).

The most promising scenario until 2031 is the green development scenario with a focus on energy efficiency and renewable energy.

At the same time the Company is to pilot other high-potential options to enhance competencies and build capacity before scaling up once the external conditions are favourable.

As part of the green development scenario, an achievable goal for KMG is to reduce carbon dioxide emissions by 15% or 6 mln tonnes of CO₂ by 2031 vs 2019.

KMG takes a responsible approach to the Programme and has established a project office to run it effectively, as well as recruited professionals with relevant expertise and experience. To oversee the progress and highlight the Programme's importance for KMG, each top manager of the Company and its subsidiaries and associates have KPIs set for them that are linked to low-carbon development indicators.

Also, in the first year after the Programme's adoption, the following measures were approved and put in place:

- The Competence Centre for hydrogen energy was set up at KMG International to focus on applied research in potential use of blue and green hydrogen.
- KMG signed a memorandum with Eni on joint hybrid projects that combine the use of renewable energy and gas, hydrogen energy projects, and bioethanol projects.
- KMG signed a memorandum with TotalEnergies on joint implementation of large-scale renewable energy projects.
- A memorandum was signed with Shell on potential cooperation in the area of carbon capture and storage.

- A memorandum was signed between KMG, Atyrau Refinery and Air Liquide Munay Tech Gases LLP on a pilot project in hydrogen mobility.
- Proposals were submitted to amend national legislation with a view to supporting renewable energy (regulation of small-scale renewable generation and bilateral contracts on renewable energy).

In addition to the core activities included into the Programme, KMG developed further decarbonisation measures that may play a major role in the Company's long-term strategy for low-carbon development. These include:

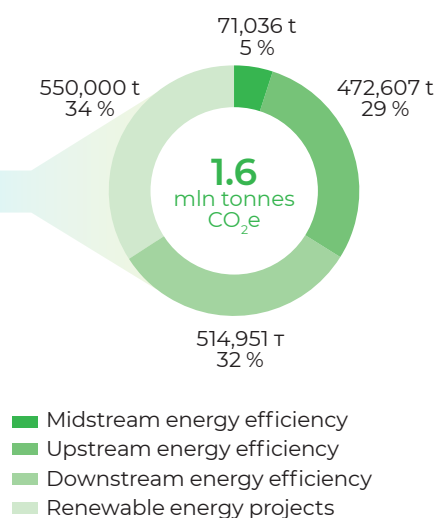
- carbon capture, utilisation and storage (CCUS) projects;
- hydrogen energy;
- forest-climate projects.

Target



- KMG's baseline emissions (2019)
- Emissions reduction
- KMG's target emissions (2031)

Key areas



- Midstream energy efficiency
- Upstream energy efficiency
- Downstream energy efficiency
- Renewable energy projects

Additional measures

I. Hydrogen energy:

- establishing a Centre of Competence for hydrogen energy to build KMG's capacity
- pilot project on hydrogen mobility at Atyrau Refinery

II. Carbon capture, storage and utilisation (CCUS) technologies:

Pilot project at JSC Embamunaigas with a capture potential of around 20,000 tonnes of CO₂ annually

III. Forest-climate projects:

2,000 ha (10–16,000 tonnes of CO₂e annually)

IV. Routine flaring:

29,800 tonnes of CO₂e

V. Implementation of the Programme for Quantification, Control, Detection and Repair of Methane Leaks (LDAR)

Targets:

KMG's strategic focuses in carbon footprint reduction

Nº	Indicator	Baseline year indicator (2019)	Target indicator (2031)
Key indicator			
1.	Reduction of direct and indirect CO ₂ emissions	10.7 mln tonnes of CO ₂ e ¹	-15 % (1.6 mln tonnes of CO ₂ e ²)
Targets			
2.	Reduction of carbon intensity:		-10 %
	• Hydrocarbon production	147.6 tonnes of CO ₂ e / ths toe of produced hydrocarbons	132.9 tonnes of CO ₂ e / ths toe of produced hydrocarbons
	• Large refineries	330.3 tonnes of CO ₂ e / ths tonnes of oil	297.3 tonnes of CO ₂ e / ths tonnes of oil
	• Bitumen production	54.4 tonnes of CO ₂ e / ths tonnes of oil	49 tonnes of CO ₂ e / ths tonnes of oil
	• Gas processing	1.1 tonnes of CO ₂ e / ths m ³ of gas	1 tonne of CO ₂ e / ths m ³ of gas
	• Transportation	9.3 tonnes of CO ₂ e / ths tonnes of oil	8.3 tonnes of CO ₂ e / ths tonnes of oil
3.	Reduction of carbon intensity		-10 %
	• Hydrocarbon production	2,281.3 MJ / ths toe of produced hydrocarbons	2,053.2 MJ / ths toe of produced hydrocarbons
	• Large refineries	3,732.4 MJ / tonne of oil	3,359.2 MJ / tonne of oil
	• Bitumen production	650.1 MJ / tonne of oil	585.1 MJ / tonne of oil
	• Gas processing	3,296.5 MJ / ths m ³ of gas	2,966.7 MJ / ths m ³ of gas
	• Transportation	120.9 MJ / tonne of oil	108.9 MJ / tonne of oil
4.	Share of renewable energy in KMG's electricity balance from the baseline	0.005% (211 MWh)	15 % (600 000 MWh)
5.	Routine flaring	0.43 %	0 % (29,800 tonnes of CO ₂ e)
6.	Implementation of the Programme for Quantification, Control, Detection and Repair of Methane Leaks (LDAR)	0 %	100 % coverage of subsidiaries and associates engaged in production
7.	Forest-climate projects	0	2,000 ha (10–16,000 tonnes of CO ₂ e annually)
8.	Introduction of the energy management service	Partial coverage of subsidiaries and associates	100% coverage of subsidiaries and associates
9.	Carbon Disclosure Project climate rating	C (knowledge of climate impacts and issues)	A/A– (implementing current best practices)
10.	Annual allocation of funds for implementation of low-carbon projects	0	At least 10% of CAPEX (USD 130–150 mln)

¹ Baseline year emissions include CO₂ emissions from KMG's overseas operating assets.

² For the purposes of this programme, Scope 1 and Scope 2 emissions are included, with only CO₂ included in direct emissions.