KazMunayGas National Company JCS - Climate Change 2020

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

JSC National Company KazMunayGas (KMG, the Company) is Kazakhstan's leading vertically integrated oil and gas company, operating assets across the entire production cycle from the exploration and production of hydrocarbons to transportation, refining and services. Established in 2002, the Company represents the interests of the Republic of Kazakhstan in the national oil and gas industry.

Outside of Kazakhstan, KMG has more than a thousand fuel sales points in Romania, Moldova, Bulgaria, and Georgia. KMG International N.V. is a strategic enterprise for oil refining and marketing in Romania and the countries of the Black Sea and Mediterranean basins with the access to the end-user market with a population of more than 300 million people.

The company accounts for 26% of the total oil and gas condensate and 15% of natural and associated gas production in Kazakhstan, 57% of oil transportation via oil pipelines and tankers from the port of Aktau, as well as 79% of natural gas transportation via main gas pipelines and 82% of oil refining in Kazakhstan with a share of oil products retail market amounting to 17%. KMG also contributes to the economic growth of Kazakhstan and Romania by employing over 70 thousand people (in 2019, the Company revised its approach to calculating the actual number of employees (employees of companies with shares exceeding 50 per cent were included in the calculation).

We recognize that our long-term success depends on how effectively, transparently and responsibly we conduct our business. We are committed to support and develop the expertise and knowledge of our human capital as well as to work closely with the communities to ensure operational excellence in regions where we operate. We also understand that the company holds the responsibility to continuously improve its environmental performance by reducing its environmental footprint, improving the products and introducing innovative green technologies.

We have highest regard for sustainable development and more transparent approach to ESG. Over the past four years, we have significantly improved our basic environmental performance. In 2019 in KMG started its work the Board of Directors Health, Safety, Environment and Sustainable development committee (BoD HSE&SD Committee). It demonstrates the Board’s commitment to best practices and improves our performance in these areas. Starting from 2012, we prepare our sustainability report in compliance with the international non-financial reporting standards developed by the Global Reporting Initiative (GRI). This helps us to increase the transparency of our performance as well as to build trust with our stakeholders.

KMG once again confirmed the title of the most ecologically transparent and responsible company in Kazakhstan, leading for the third straight year the environmental rating of oil and gas companies on the results of 2019, granted by the World Wildlife Fund (WWF) Russia and the group of Capital and the National Rating Agency with the support of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and in partnership with the United Nations Environment Program in Central Asia (UNEP- CA).

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2019	December 31 2019	Yes	3 years

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Georgia
Kazakhstan
Romania

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.
USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.
Operational control

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain
Upstream
Midstream
Downstream
Chemicals

Other divisions
Please select

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?
Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	In 2018, KMG Board of Directors established separate health, safety, environment and sustainable development committee (BoD HSE&SD Committee) to enhance governance in this area. This demonstrates the Board's commitment to best practices and improves our performance in these areas. The primary function of the committee is to provide support to BoD members regarding the implementation of sustainable development principles in strategic planning, social and economic development of KMG, as well as ensuring environmental efficiency throughout the entire company. BoD HSE & SD Committee is also responsible for the development of recommendations for the BoD on the following matters: - implementation of new, environmentally friendly and energy-efficient technologies; − development and monitoring of sustainable development KPIs. − integration of sustainable development principles in the company's key processes, including risk management, planning, human resource management, investments, and business strategy. In 2019, the Committee began its work.
Other, please specify (Board of Directors)	BoD reviews and approves the annual sustainable development report and other corporate documents associated with health, safety, environment and sustainable development following the recommendations provided by BoD Committees.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Sporadic - as important matters arise	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	BoD makes decisions on the allocation of responsibilities relating to SD, and on the establishment of the SD management system. BoD's functions are as follows: - annual approval of the SD report that discloses information on GHG emissions performance, GHG reduction, and energy efficiency initiatives; methane leaks prevention projects; - approval of risk reports (risk matrix) quarterly; -biannual review and approval of the energy efficiency reports; - review of progress reports for the programs implemented to prevent the routine gas flaring in our upstream companies. The reports are provided quarterly and disclose information on APG utilisation rates; - monthly reviews of the company's HSE performance. In 2019, the BoD approved the roadmap – 2020 for HSE management improvement in KMG. Three meetings of the Committee were held in 2019, resulting in decisions and assignments, including: • Ensuring safety, health and the environment; • Integration of sustainable development principles into the strategic planning and socio-economic development of KMG; • Create environmental efficiency of CMG. BoD HSE&SD Committee key issues on the climate change agenda in 2019: 1. Recognition of climate risks, such as those associated with the use of water resources, the risks associated with greenhouse gas emissions to the atmosphere and the APG flaring, and the risks associated with changes in the environmental legislation of the Republic of Kazakhstan, 2. Implementation of the UN Global Sustainable Development Goals 3. Establishment of key performance indicators balanced system for the company as a whole and its individual managers in sustainable development areas. 4. Adoption of the Committee's Work Plan for 2020, which includes six meetings for the discussion of environmental issues, such as promotion of the beneficial APG use and the management of water resources, as well as a separate climate session. Information on climate risk management was presented at the Committee's 2 meetings in April and November 2019.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Environmental, Health, and Safety manager	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise
Safety, Health, Environment and Quality committee	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise
Risk committee	<Not Applicable>	Assessing climate-related risks and opportunities	<Not Applicable>	As important matters arise
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise
Other, please specify (Strategy Chief Operations Managing Director)	<Not Applicable>	Managing climate-related risks and opportunities	<Not Applicable>	As important matters arise

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

HSE Managing Director reports directly to the KMG Board Chairman. HSE MD has the responsibility for developing and ensuring the effective implementation of HSE strategies and policies. HSE MD also responsible for the review of energy efficiency programs and GHG emission reduction measures and initiatives. HSE MD oversees the implementation of GHG emissions management policy following its development and implementation.

The HSE Managing Director is responsible for:

- HSE planning (development of a functional HSE strategy, policy and corporate standards; development of HSE programmes and plans; HSE risk management);

- Implementation of HSE activities (HSE documentation management);

- Development of competences and training of employees;

- Organization of a communication process with contracting organizations and stakeholders;

- Organization of the incident management process;

- Emergency preparedness and response;

- Organization of the HSE managing process, HSE management system monitoring and improvement, and the identification of opportunities for improvement.

In addition to KMG HSE corporate governance, HSE MD actively participates in activities organised by industry associations and heavily contributes to the overall HSE and sustainable development of the oil and gas industry in Kazakhstan.

To continue our HSE transformation program, we have also introduced a three-tier system of HSE committees:

- HSE Committee at the level of KMG BoD;

- HSE Functional Committee at the KMG Management level;

- HSE Committees at the level of subsidiaries.

The HSE functional committee is chaired by the Chairman of the Management Board of KMG. The committee is composed of Directors of corporate departments, regional Managing Directors and the experts from the regional HSE departments. One of the primary functions of the Committee is to develop proposals for the improvement of legislation on key environmental and climate-related issues, including energy efficiency, air emissions, and the GHG Emission Trading Scheme. The committee comprises of several sub-committees, so-called functional groups (FG), of which there are separate GHG emissions management FG and energy efficiency FG.

Risk committee

The purpose of the Committee is to assist the KMG Board in ensuring the effective functioning of the KMG Group of Companies corporate risk management system, to give prompt and in-depth consideration to risk management issues. The main tasks of the Committee are:

1) Preparation of recommendations and proposals to establish and maintain an effective corporate risk management and internal control framework;

2) The development of processes to identify, assess, monitor and control the risks of the KMG Group of Companies;

3) Coordination of the risk management process for the KMG Group of Companies;

4) To ensure the continuous interaction on the risks of the KMG Group of Companies among the members of the Committee in order to upgrade the risk culture, transparency and effectiveness of corporate risk management.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment
All employees	Monetary reward	Behavior change related indicator	The incentive is held as part of the annual “HSE Chairman Award”. The Award is organised to identify the best HSE and sustainability ideas and practices as well as to increase engagement and raise awareness of HSE matters among our employees.
All employees	Non-monetary reward	Behavior change related indicator	Recognition is carried out in the form of awarding the employees with certificates of honour and gratitude letters for active participation in environmental and sustainable activities and international forums. The Human Resources Management Unit offers international training to employees. For example, an employee of the HSE unit responsible for climate change issues was trained in 2019 in the international 3-week program «Environmental Management» in Tokyo (Japan) in partnership with JCCP (Japan Cooperation Center, Petroleum), and has also received an EIMA (Institute of Environmental Management and Assessment) Expert Institute certificate, after taking a course in Nur-Sultan (Kazakhstan) and passing an EIMA exam.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	5	In the Roadmap for improving the state of HSE, approved in the KMG Group of companies- 2020, in September 27th, 2019, placed strategic initiatives for environmental protection and sustainable development. On an annual basis in order to implement the Roadmap an Action Plan is developed and approved. The company annually builds new facilities for gas utilization, performs reconstruction of existing plants, invests in construction of pipelines and infrastructure. For example, construction of complex gas processing, construction of main gas pipeline «Saryraka», which is to gasify the capital of Kazakhstan, central and northern regions of the country. The changeover from traditional fuel sources to natural gas will have a positive impact on the ecological status of settlements, reducing emissions of pollutants into the atmosphere and conserving land and water resources.
Medium-term	5	10	In the reporting period, KMG is guided by the Code of Corporate and Social Responsibility of KMG adopted on 10.12.2012 for the period 2012-2022. The environmental management objectives are directly related to the Company’s Development Strategy. "KMG-2028" Strategy, approved by the Board of Directors on October 4, 2018, includes strategic initiatives to increase environmental responsibility. The Company’s environmental priorities include greenhouse gas emissions management and flaring reduction, water management, waste management and energy efficiency. The NAMA climate project plans to further increase the share of gaseous road transport and special machinery in its own vehicle fleet as part of the action «Conversion of motor vehicles from traditional fuel to the use of compressed natural gas (park renewal)». Between 2020 and 2024, the share of gas vehicles (not less than Euro-3 class) should increase to 35 per cent by modernizing the structure of the vehicle fleet. Improvement in fuel consumption and vehicle class due to the upgrading (acquisition) of 16 new vehicles using liquefied hydrocarbon gases and 46 vehicles using compressed natural gas, will significantly reduce transport emissions. In 2018, the emissions from transport amounted to 17,962 tons, and in 2024, after the planned activities finished, which will require about 600 million tenge for the whole period of five years, these emissions can be reduced to 17,144 tons/year, or by 4.6%, respectively.
Long-term	10	30	In the reporting period we carry out the Concept in the field of sustainable development of KMG, adopted on 19.03.2014 in accordance with the RK Presidental Message "Strategy: Kazakhstan-2050": new political course of the established state», promoting innovation in corporate social responsibility and sustainable development. The implementation of the Concept enhances the contribution of the Company to the sustainable development of society in the social, economic and environmental spheres, eliminating damage, reducing the negative impact of production on the environment and the population through the introduction of resource-efficient and non-waste technologies, reducing the energy intensity of production in order to increase energy efficiency and reduce greenhouse gas emissions.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

As a member of the United Nations Global Compact, we recognize the importance of mitigation actions and intend to make our contribution into achieving of SDG 13 "Climate action". In accordance with the Corporate Risk Management System Policy of KMG and its subsidiaries and dependent organizations, identified risk factors are evaluated when determining the impact of risk on business in the Company. An assessment is then made of the production/non-production risk associated with the identified risk factors in order to determine the extent of its impact on the achievement of the Company's production/non-production efficiency. Production/non-production risks and associated risk factors are analysed according to their probability (likelihood of realization) and degree of influence (potential damage). The selection of methods to respond to production/non-production risks, the development of production/non-production risks Management Plan to ensure an acceptable level of residual risk includes standard methods. For risk/risk-factors that may suspend the operations and operations of the Company, Business Continuity Plans are developed and approved, providing for consistent action by employees to restore the operating activities of the Company. Factors for the continuity of the Company's activities are: greenhouse gas emissions, weather conditions, droughts, floods, water scarcity in the region, the system of emissions accounting, natural disasters, potential damage from industrial accidents, consumer expectations, reliability of information on the state of the environment, decision-making by shareholders, requirements of international standards, court proceedings, «fragile» supply chain, regulators and legislation, etc. Risk management measures are applied so that the aggregate level of risk across the Company does not exceed the acceptable level.

The Company's risk appetite is characterized by its level of risk retention, within which the Company can achieve its stated strategic and operational objectives. Risk appetite determines the critical risk/risk ceiling at the consolidated level that the KMG is willing to accept. It also affects the allocation of resources, the organization of processes and the infrastructure within the organization needed to effectively monitor and respond to risk events.

The Company's risk appetite (risk appetite statement) for the planning period is approved on a consolidated basis by the KMG Board of Directors and has the following characteristics:

1) reflects the KMG Development Strategy, including objectives, business plans, financial restrictions and stakeholder expectations;

2) covers all key aspects (activities);

3) takes into account the desire and possibility to take risks;

4) defines the KMG's relationship to risk;

5) periodically reviewed according to industry and market conditions; 6) requires effective monitoring of the risk itself;7) includes both quantitative and qualitative indicators.

2019 annualization of the risk appetite statement was approved by a decision of the KMG Board of Directors dated 7 March 2019 (Protocol 3/2019 p.33).

Environmental/climate risk factors are identified and assessed via KMG's corporate framework using the following methods (inclusive, but not an exhaustive list of methods):

- Process safety assessment, including the assessment of the asset integrity and safety of technical processes; compliance assessment with process standards and rules;

- Collection and analysis of historical data on the realised risks, review of previous reports (for example, history of environmental non-compliances, offenses and fines, production or financial losses as a result of accidents and equipment failures);

- Method of expert interviews to identify and assess the existing and potential risk factors. In-depth discussions of risks associated with the introduction of new GHG emission regulations or climate change adaptation legislation are the relevant examples of 'expert method' application for risk identification and assessment.

Identified risks and risk factors are evaluated based on the three indicators: frequency/probability, time horizon, and impact. We also differentiate the impact assessment approaches when it comes to operational and non-operational risks. More specifically, the assessment of the impact of operational risks based on the determination of damage in absolute physical terms is carried out at the asset/facility level, whereas assessment of the impact of non-operational risks based on the determination of damage in monetary terms is implemented at the corporate level.

The impact of risks in financial indicators is assessed on a scale from 1 (insignificant) to 5 (catastrophic) and is based on an assessment of potential financial damage of the risk. Furthermore, the degree of financial damage is assessed concerning the quantitative risk appetite of the company. If the assessment of the financial impact of risks is impossible, we use non-financial indicators.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered
Direct operations

Risk management process
Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment
More than once a year

Time horizon(s) covered
Short-term
Medium-term
Long-term

Description of process
According to the Emission Manegement Policy KMG Group Risk management corporate system collects reliable data on GHG emissions, water abstraction, water use and wastewater discharges, polluting substances, and includes a reliable monitoring, reporting and verification mechanism. Allows cost-effective management of carbon assets (quotas), including sale, purchase, transfer between installations within the same period. Emission management processes have been defined and implemented, and internal regulations and operating instructions for emissions management have been adopted. Potential damage due to climate change is projected. Carbon assets (quotas) are managed by specialized management and technical staff through: - inventory of greenhouse gas emissions and external and internal reporting management system; - data archiving and storage systems; - interface with the State cadastre and register; - interface with the financial trading platform. To meet the obligation to comply with legislative and other obligations in the field of emissions management: - Legal requirements and other obligations are being identified, systematically updated and changes are monitored; - Information on the legal requirements and other obligations of the Company is being informed to the employees and contractors of the KMG. KMG annually develops and approves the Raw Gas Development and Processing Programme and obtains a raw gas combustion permission in a timely manner. The KMG plants do not exceed the approved gas flaring norms on the flare and carry out the reduction activities on the basis of Zero Routine Flaring Roadmap. The activities of the Roadmap are carried out as part of the business planning process. «Carbon Footprint» was calculated and indicators for annual reduction of «Carbon Footprint» were set due to the efficient use of resources and introduction of technologies with greenhouse gas emissions low level. The Company's emission reduction activities consider the following critical aspects: reduction of power, heat and steam losses as well as equipment operation time, introduction of energy-saving technologies, introduction of alternative energy sources, vehicles conversion to gas fuel, optimization of the compressor stations operation modes, etc. The energy management system to track and improve energy efficiency, which reduces emissions per unit of output was developed and implemented. We calculate gas emission volume after energy efficiency activities as approved in the KMG Energy Saving and Energy Efficiency Action Plan. The Company takes activities to prevent production plants from methane leaks, which include survey of methane leaks, floating roof installation at new tank farms, installations of vapour recovery unit, and use of mobile compressor stations for gas pipelines repair operations. The Company invests into the advanced innovative technologies focused on operations and products efficiency and sustainability enhancement. The Company shall support international cooperation and climate change initiatives and join them.

Value chain stage(s) covered
Direct operations

Risk management process
Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment
More than once a year

Time horizon(s) covered
Short-term
Medium-term
Long-term

Description of process
In 2019, the Corporate Standard on Cooperation with Contracting Organizations in the Field of health, safety and environment was developed. Approval is expected in early 2020. The requirements of the Standard are binding on all contracting organizations for the supply of goods, work and services, including all related works and services at the production facilities of the KMG group of companies. The management of HSE contractors consist of following three main stages: 1) Prior to commencement of work at the stage of preparation and conclusion of the contract by pre-qualification of the contractor, taking into account criticality in the HSE area; 2) During the mobilization/admittance phase of the contracting organizations through on-site monitoring and collaboration; 3) Upon completion of the work by evaluating the activities of the contracting organizations and establishing a rating. The critical areas of HSE in the implementation phases are aimed at identifying, assessing and reducing risks when interacting with contracting organizations at the KMG group of company facilities, such as: 1) Pre-qualification – compliance of contracting organizations with HSE requirements (questionnaire and audit); 2) Pre-assessment of risk – determination of criticality of works and services according to HSE; 3) Responsibility of the contracting organizations – signing the HSE agreement to the contract; 4) Pre-mobilization audit – compliance of equipment, technicians and personnel with HSE requirements; 5) Safe execution of work and services accomplishment – development of a HSE Contract Plan with KMG and subsidiary entities; 6) Performance evaluation of contracting organizations – completion of a scorecard on the performance of contracting organizations in the area of HSE. Performance criteria are as follows: 6.1. The performance of goods, work and services critical contracts in accordance with the Legislative Requirements and the requirements of Standard. 6.2. Improved Contracting Organizations' key performance indicators for goods, work and services. 6.3. Establishment of a Contracting Organizations database on key performance indicators for goods, work and services.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	18 KMG subsidiary entities are covered by Kazakhstan Emissions Trading Scheme and 3 subsidiary entities are covered by European Emissions Trading Scheme, therefore the risks of current regulation are included in the KMG Key Risk Map, assessed and identified as political and regulatory factors: - Implement carbon pricing/pricing mechanisms to reduce greenhouse gas emissions; - Adoption by the State of the method of allocation of quotas only through the use of specific emission factors, which may result in a quota deficit for some enterprises; - Reduce energy consumption in order to reduce emissions; - Energy efficiency in decision-making; - Strengthening water efficiency measures and promoting sustainable land management practices. Risk monitoring is carried out on a quarterly basis. Subsidiary entities greenhouse gas emissions are monitored. Subsidiary entities must submit annual verified reports on the inventory of greenhouse gas emissions to the authorized environmental protection body and apply for additional quotas in proper time if necessary. In case if problems are detected, the Kazenergy Association participates in the search for solutions, as well as in the relevant negotiations with the authorized body. Minimization of current regulation risks is managed through internal regulations such as: - 2018-2028 Development Strategy - HSE Management Guidance - Emission Management Policy “8 environment principles”, - Zero Routine Flaring, - Carbon Footprint - “8 ‘blue’ rules”.
Emerging regulation	Relevant, always included	The risk associated with the adoption of the new Environmental Code is identified as critical, as the issues of the new Environmental Code draft were discussed at the 31st meeting of the Committee of Oil and Gas Industry of the Presidium of the National Chamber of Entrepreneurs of Kazakhstan. The meeting was held at the Sovereign Wealth Fund “Samruk-Kazyna” at the initiative of the KMG under the chairmanship of the Chairman of the Board, with the participation of the KMG, “Samruk-Energy” JSC, the national chamber of entrepreneurs “Atameken”, Kazenergy Association, Association of Legal Entities “Republican Association of Mining and Metallurgical Enterprises” and the Minister of Ecology, geology and natural resourceswhere concerns and risks regarding the implementation of the draft Code in the area of best available technology, automated monitoring system, increased fines and taxes were raised. The need for accurate economic calculations of the impact of environmental reform was raised. KMG representatives are included in Working Group on the development of a new Environmental Code and are actively participating in the discussions on its provisions. The risk of change in greenhouse gas credits allocation is also taken into account. If a State adopts the quota allocation method based on the use of intensity emission factors, some of our subsidiary entities may have a quota deficit, which would entail financial costs. This risk is identified and assessed on a quarterly basis.
Technology	Relevant, always included	The risk of environmental damage due to production incidents is identified as visible, with 2 accidents recorded in 2019, gas kick and fire. The risk of oil spills during maritime operations was identified as significant as it is low-probability. In 2019, there were no reported cases of risk realization. In order to manage the technological risks associated with technological improvements or innovations that facilitate the transition to a low-carbon and energy-efficient economic system, new technologies are being developed and used, such as RES, energy efficient technologies, best available technology, carbon capture and storage technologies, etc.
Legal	Relevant, always included	The risk of environmental damage due to breach of legislative and other environmental requirements is identified as a major, as in 2019 there were 5 reported cases of risk of exceeding emission limits, spilled reagents, extra standard flaring emissions. In order to manage the risk in the subsidiary entities were developed and approved Emission Management Policies to implement the KMG 2028 Development Strategy.
Market	Relevant, always included	The risk associated with the reduction or interruption of the oil, oil products, liquefied gas and dry (general) cargoes supply is identified as noticeable because it is highly probable, although it has not significant financial impact. In 2019, there was a deviation from the planned output. The risk of adverse oil prices in 2019 led to a decline in planned revenues. Risk identified as medium probable, critical. Realized risk of decline in petroleum products sales in 2019 resulted in 8% loss of revenue, identified as highly probable, insignificant.
Reputation	Relevant, always included	The risk of negative media exposure is identified as highly probable and critical. In 2019, the reputational risks associated with the change in perception of the Company by stakeholders in terms of its contribution to the transition to a low-carbon economy, or the avoidance of this transition, were not realized. Negative publications concerned only the quality of petrol supplied under the KMG franchise (downstream).
Acute physical	Relevant, always included	The risks directly related to critical physical climate change is identified as medium probable and visible. In 2019, no cases were recorded.
Chronic physical	Relevant, always included	Chronic physical risks are identified together with acute physical risks. The risks directly related to physical changes of climate are assessed and controlled in our subsidiaries under the operational/industrial risk management programs. Thus, risks of flooding, including flooding of plugged and abandoned wells, as well as the risks of changes in weather conditions are managed through the programs and measures for industrial safety. These risks significantly affect the integrity of our production facilities and technical equipment (e.g. power failures on one of our facilities, where 30% of failures were caused by weather conditions).

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Legal	Exposure to litigation

Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

In 2019, KMG paid a fine at a rate of about 70,546 USD for excess emissions.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
53476159

Potential financial impact figure – maximum (currency)
106952318

Explanation of financial impact figure
In order to calculate the figure of KMG activities potential financial impact was used a quantitative value of the total risk-appetite at the beginning of 2020 in the amount of 106,952,318, which is the basis for the calculation of the risk limits

Cost of response to risk
20901371

Description of response and explanation of cost calculation
In column "Cost of response to risk" maximum fines for the last few years paid for environmental violations are disclosed. Moreover, the following activities have been carried out to prevent risk: 1 A plan of activities to increase the gas beneficial use was developed; 2 Work on compressor mode is carried out. Equipment inspection. A plan of action to prevent limit-exceeding emission is drawn up. 3 Project documents are revised 4 Document package to obtain additional greenhouse gas credits for new sources is developed and verified 5 The range of potential financial impact is overestimated compared to actual expenditure used to eliminate the consequences of non-compliance with environmental requirements risk realization. The main reason is that depending on the violation, the costs of managing the risk realized may increase (for example, the demand to recover the environmental condition of the affected territory, to adopt innovative technology, to implement risk management measures

Comment
1 In our subsidiary entities were developed and approved Emission Management Policies to implement the KMG 2028 Development Strategy (in the transition to environmentally responsible companies) 2 HSE unit carried out at subsidiary entities production facilities inspections to ensure compliance with the requirements of environmental protection legislation in the field of industrial safety and environment. Recommendations were prepared. 3 Gas production and flaring amount are monitored on a monthly basis. Flaring intensity figure in 2019 was 2.95 ton per 1000 ton of hydrocarbons produced (IOGP figure – 10.5). There has been a 51% decrease in intensity compared to 2018, and 67% for the last 5 years. 4 Greenhouse gases intensity monitoring. CO2 emission intensity figure in 2019 year was 93 ton per 1000 ton of hydrocarbons produced (IOGP figure – 130). There has been a 8% decrease compared with 2018 year and 23% for the last 5 years. 5 Monitoring of verified greenhouse gas emission inventory reports submission by subsidiary entities. 6 Monitoring of up to date obtained additional quotas for new emission sources and assets.

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Enhanced emissions-reporting obligations

Primary potential financial impact
Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
With the introduction of new environmental legislation in Kazakhstan, operators of industrial facilities will have to introduce resource-saving, energy-efficient and environmentally safe BATs to comply with the requirements of the integrated permitting system. This will require significant CAPEX. Even though we are continuously working on the modernisation of our assets and the application of the best production and management practices, we are exposed to technological risk associated with the high costs for the introduction of innovative technologies. The risk may be especially high for those mature fields that have been operated since Soviet times and are at a late stage of development. The introduction of new technologies and/or premature write-off of fixed assets due to non-compliance with new technological standards of BATs may significantly increase the cost of oil production. This, in turn, will affect the financial performance of our company.

Time horizon
Medium-term

Likelihood
Very likely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
336391.9

Potential financial impact figure – maximum (currency)
448522.53

Explanation of financial impact figure
In order to calculate the figure of KMG activities potential financial impact was used a quantitative value of the total risk-appetite at the beginning of 2020 in the amount of 448,522.53, which is the basis for the calculation of the risk limits.

Cost of response to risk

Description of response and explanation of cost calculation

Due to the uncertainty associated with future developments of the environmental legislation in Kazakhstan, we cannot estimate the exact financial impact figure. Nevertheless, considering the extent of our operational activities across Kazakhstan and the high regulatory requirements of BATs implementation, we assume that the cost of compliance will be substantial. More precise data on the cost of response to risk calculation can be calculated no earlier than 2024, when the best available technologies manuals and the Corporate Eco-efficiency Programmes will be approved.

Comment
KMG explores the market of green, energy-efficient and resource-saving technologies regularly. To ensure the environmental and economic efficiency of the application of new technologies, we engage local and international experts. Thus, in 2018, we continued working on pilot programs to detect and measure methane leaks in our industrial facilities. Those pilot projects allow us to assess the cost-effectiveness of the implemented technologies and assist our decision making in regards whether to expand the implementation of technology on a large scale.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?
Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Use of new technologies

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
69 km + 10 km infield road

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
106324.06

Strategy to realize opportunity and explanation of cost calculation
Emissions are expected to decrease up to 3,87 tons/year+1000m3

Comment
Dust control activities in the excavation operations and on infield roads

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of more efficient production and distribution processes

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description
KalamaksMG ZhetybuniayMG

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
1010697.29

Strategy to realize opportunity and explanation of cost calculation
99% of gas is expected to be recycled

Comment
Gas recovery from the plant’s fields and its use as fuel for heating water for industrial needs

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Identifier
Opp3

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resilience

Primary climate-related opportunity driver
Resource substitutes/diversification

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
Kalamkas Field

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
1426211.54

Strategy to realize opportunity and explanation of cost calculation
Audit, repair and maintenance of process and gas equipment. Emissions are expected to decrease

Comment
Production manufacturing equipment repair

Identifier
Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of more efficient production and distribution processes

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
Installation of gas-dynamical span system operations

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
51647.28

Strategy to realize opportunity and explanation of cost calculation
Emissions are expected to decrease up to 20%

Comment
Introduction of catalysts (converters in power plants)

Identifier
Opp5

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Use of new technologies

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
Introduction of technology at 3 sites

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
2360.51

Strategy to realize opportunity and explanation of cost calculation
Emissions are expected to become stable

Comment
Modernization of equipment

Identifier
Opp6

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of more efficient production and distribution processes

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
Development of sites of gas operator, track heater, compressor unit, etc.

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
43425.21

Strategy to realize opportunity and explanation of cost calculation
GHG emissions are expected to decrease

Comment
Development of internal projects to reduce greenhouse gas emissions

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Identifier
Opp7

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Participation in carbon market

Primary potential financial impact
Returns on investment in low-emission technology

Company-specific description
Reduces harmful emissions, eliminates leakage of hydrocarbons to the environment, ensures maintenance of specified technological parameters

Time horizon
Long-term

Likelihood
Very likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity
106312.21

Strategy to realize opportunity and explanation of cost calculation
99% of light leakage to the atmosphere is expected to be eliminated

Comment
Introduction of automatic light fraction capture

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?
Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?
No, but we anticipate using qualitative and/or quantitative analysis in the next two years

C3.1c

(C3.1c) Why does your organization not use climate-related scenario analysis to inform its strategy?

KMG continuously improves its HSE management system and develops policies and strategies, aimed to reduce GHG emissions, eliminate routine gas flaring activities and improve energy efficiency. KMG seeks to implement the best international practices and standards into its business processes. Climate-related scenario analysis is a new and unexplored practice for KMG. Its application requires financial and human resources, certain expertise, management buy-in and availability of robust data. We are aware of the importance of climate-related scenario analysis in business decision-making. Therefore, we will consider the possibility of performing this analysis and integrating its results into our strategy in the future upon the results of the feasibility assessment.

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	As the largest national oil and gas producer in Kazakhstan, we significantly contribute to the economic growth of the country. We understand the extent of our environmental impact and the responsibility we have towards society. KMG also understands its role towards the fulfilment of the country's obligations under the Paris agreement given its role as one of the key national companies and contributors to the development of climate legislation in Kazakhstan. Therefore, climate-related issues are aligned with our business interests and integrated into our Business Strategy - 2028 following three key areas: • GHG emissions management; • reduction of gas flaring; • energy efficiency improvement. The key mechanisms for implementing these climate aspects are: • national legislation on energy efficiency, GHG emissions and subsoil use; and • our goals on reducing the environmental impact of our activities. In accordance with the priorities of the Development Strategy, the Company approved the Environmental Policy in 2019. KMG chief executives follow the principle of zero tolerance for environmental loss and damage. In 2015, KMG supported the World Bank's GGFR initiative to completely stop the regular burning of APG by 2030. Within the framework of the initiative, was approved the KMG Emission Management Policy in 2019. The policy, consisting of eight key principles, six of which are directly related to climate change, aims at zero routine gas flaring in hydrocarbon production. KMG is implementing the roadmap for improving the state of HSE in the group of companies of JSC NC "KazMunayGas" - 2020, which contains major strategic initiatives for environmental protection and sustainable development.
Supply chain and/or value chain	No	
Investment in R&D	Yes	Through an integrated and systematic approach to GHG emissions management, and with the support of our operational and financial departments, we aim to significantly reduce carbon footprint across the company. The NAMA climate project plans to further increase the share of gaseous road transport and special machinery in its own vehicle fleet as part of the action «Conversion of motor vehicles from traditional fuel to the use of compressed natural gas (park renewal)». Between 2020 and 2024, the share of gas vehicles (not less than Euro-3 class) should increase to 35 per cent by modernizing the structure of the vehicle fleet. Improvement in fuel consumption and vehicle class due to the upgrading (acquisition) of 16 new vehicles using liquefied hydrocarbon gases and 46 vehicles using compressed natural gas, will significantly reduce transport emissions.
Operations	Yes	The company annually builds new facilities for gas utilization, performs reconstruction of existing plants, invests in construction of pipelines and infrastructure. For example, construction of complex gas processing, construction of main gas pipeline «Saryraka», which is to gasify the capital of Kazakhstan, central and northern regions of the country. The changeover from traditional fuel sources to natural gas will have a positive impact on the ecological status of settlements, reducing emissions of pollutants into the atmosphere and conserving land and water resources.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Acquisitions and divestments Assets	Climate-related risks and opportunities have a significant impact on the financial planning of the company. Those impacts will arise from external factors such as changes in oil prices and other commodities and internal processes such as the implementation of programs for reducing GHG emissions. The impact on profitability will be both positive and negative. Thus, increasing demand for low-carbon products in the market may substantially impact on our business. However, the increase in production and sales of gas due to the expansion of APG processing capacity will allow us to increase revenue in the long term. As noted above, changes in consumer attitudes, as well as the introduction of stringent legislation for the oil and gas industry, could have a significant impact on the growth of CAPEX and OPEX in our subsidiaries. Thus, for example, failure to timely meet the requirements for the BATs implementation may result in increased compliance costs and increased tax payments. On the other hand, the implementation of measures on improvement of energy efficiency has already resulted in significant reductions in production costs in our major subsidiaries. Transition to a low-carbon economy could have a significant impact on investment in new technologies across KMG. Thus, commitments to implement BAT in Kazakhstan from 2020 may increase our CAPEX, particularly in our large fields and refineries. We have not evaluated future investments due to the uncertainty of further development of the new environmental legislation in Kazakhstan. However, we expect that implementation of BAT will substantially affect the allocation of our financial resources in the future. Environmental assessment of M&As and divestments is a common procedure in our company. HSE unit is actively involved in decision-making processes for the acquisition of any companies and assets. Our environmental and energy experts examine the environmental performance of companies and identify all environmental and financial risks associated with the acquisition and divestment of assets. As a result, we issue a comprehensive report for our management team outlining the information on environmental risks, such as the possibility of exceeding emission limits and permitted gas flaring volumes, the possibility of environmental damage, investment in technology, etc. Environmental assessment of the acquisition of assets is a common practice in our company. HSE team is actively involved in decision-making processes for the acquisition of any companies and assets. Our environmental and energy experts examine the environmental performance of companies and identify all environmental and financial risks associated with the acquisition and divestment of assets. As a result, we issue a comprehensive report for our management team outlining the information on environmental risks, such as the possibility of exceeding emission limits and permitted gas flaring volumes and the possibility of causing environmental damage.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

No target

C4.1c

(C4.1c) Explain why you did not have an emissions target, and forecast how your emissions will change over the next five years.

	Primary reason	Five-year forecast	Please explain
Row 1	We are planning to introduce a target in the next two years	We predict an increase in our GHG emissions due to the increase in production activities at our facilities. We have not conducted a quantitative assessment of GHG emission dynamics over the next five years. Therefore, we cannot provide a five-year forecast estimate in CO2 tons.	There are several reasons why KMG has not yet set GHG reduction targets at the corporate level: • In 2020 Kazakhstan legislation on GHG emissions control is expected to amend substantially. We understand that our targets should be aligned or more stringent than those defined by national requirements. Therefore, KMG plans to define appropriate GHG emissions reduction targets after the introduction of the new Environmental Code in Kazakhstan. • In 2018, GHG emissions data from our international assets were collected, consolidated and reported as part of our corporate GHG emissions performance for the first time. We recognise that the process of defining the GHG targets should account for emissions from all significant sources, regardless of the geographical location and presence of GHG emission control regulation. Therefore, we need to closely study the management and legislative practices in European countries and Georgia to align the methodology for GHG emissions accounting and reporting, as well as to identify the appropriate measures for reducing GHG emissions. • We recognise that science-based targets are the best international practice of defining and setting targets to reduce GHG emissions in the long-term. However, this practice is unfamiliar to companies in Kazakhstan. We are planning to explore this international practice and the possibility of determining targets following the methodology of science-based targets in the following years.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2016

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)
Please select

Target denominator (intensity targets only)
<Not Applicable>

Base year
2016

Figure or percentage in base year
0

Target year
2020

Figure or percentage in target year
7.2

Figure or percentage in reporting year
5.5

% of target achieved [auto-calculated]
76.3888888888889

Target status in reporting year
Underway

Is this target part of an emissions target?
KPI is not a part of the emissions target

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain (including target coverage)
“Decrease in fuel and energy resources consumption” by 2020 is one of the KMG HSE improvement roadmap KPIs. The KPI is designed to ensure the rational use of energy resources, increase the involvement of leadership in energy efficiency matters, and to fulfil legal requirements on energy saving and energy efficiency. Our regulated facilities (14 major subsidiaries of KMG) that annually consume energy resources in an amount equivalent to more than 1,500 tonnes of fuel, must achieve this KPI and implement relevant energy efficiency measures. KPI was defined by the following process: • Independent organisations conducted energy audits to assess the energy savings potential on our facilities; • Following the energy audit, energy efficiency plans were developed by each KMG subsidiary; • Energy experts from the corporate centre of KMG assessed the efficiency of each measure and estimated a planned reduction in fuel and energy consumption for each reporting year. These estimations formed the basis for determining our corporate target for energy efficiency up to 2020. We are going to continue improving energy efficiency after 2020 following the outcomes of future energy audits that must be conducted at least once every five years. Thus, energy efficiency targets will be updated every five years, ensuring continuous improvement of our energy management system at KMG facilities.

Target reference number
Oth 2

Year target was set
2018

Target coverage
Company-wide

Target type: absolute or intensity
Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

Energy productivity	ton of oil equivalents (TOE)

Target denominator (intensity targets only)
Other, please specify (ton of oil equivalents (TOE) of hydrocarbons produced)

Base year
2018

Figure or percentage in base year
6

Target year
2019

Figure or percentage in target year
4

Figure or percentage in reporting year
2.95

% of target achieved [auto-calculated]
152.5

Target status in reporting year

Achieved

Is this target part of an emissions target?
KPI is not a part of the emissions target

Is this target part of an overarching initiative?
Other, please specify (World Bank Initiative “Zero routine flaring”)

Please explain (including target coverage)
In 2015, KMG endorse the World Bank’s GGFR initiative of zero routine gas flaring in hydrocarbon production to by 2030. As part of the Company’s corporate goal to minimise associated petroleum gas flaring by 2028 in 2019 was established KPI “Zero routine gas flaring in hydrocarbon production” for HSE Managing Director. KMG assessed and reported the indirect GHG emissions (scope 2 & 3) and accounted for direct GHG emissions of international assets for the second straight year. This will make it possible to track developments and make a trend for further work. We strongly believe that the process of defining and setting corporate GHG emissions targets, including methane reduction targets, requires a deep understanding of best international practices and accurate accounting for direct and indirect emissions from our operations. We also calculate and analyze the rate of upstream methane emissions. The rate of methane emission was 1.8 tons per 1000 TOE of hydrocarbons produced (2018 indicator = 2.14). There is a decrease of 44% compare to 2015.

C-OG4.2c

(C-OG4.2c) Indicate which targets reported in C4.1a/b incorporate methane emissions, or if you do not have a methane-specific emissions reduction target for your oil and gas activities, please explain why not and forecast how your methane emissions will change over the next five years.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.
Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation		
To be implemented*		
Implementation commenced*		
Implemented*	69	210040.78
Not to be implemented		

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
210040.78

Scope(s)
Scope 1

Voluntary/Mandatory
Mandatory

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)
5196460

Payback period
4-10 years

Estimated lifetime of the initiative
3-5 years

Comment
The data is presented for 69 energy efficiency measures implemented in upstream companies in 2019.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Strict legal requirements on gas flaring and GHG emission control, including high tax rates and penalties, are one of the key mechanisms for driving investments in emission reduction activities. KMG takes all necessary steps to prevent non-compliance with legislative requirements and standards. We also strive to implement proactive measures to improve our overall environmental performance, regardless of the legislative requirements. Research for assessing the possibility of production of own biofuels in our European refinery is an excellent example of how the legal requirements for the mandatory production of biofuels affected our investment decisions. As part of the research project, our engineers examined different biomaterials available in Europe and calculated the required CAPEX for the retrofitting of existing technologies.
Dedicated budget for energy efficiency	The objectives for the HSE management are connected with the Group's Development Strategy. The strategy of JSC "KazMunayGas" -2028 includes strategic initiatives to increase environmental responsibility. Priorities for KMG in the field of greenhouse gas management include greenhouse gas emissions management, gas flaring reduction and energy efficiency improvement. In order to achieve corporate-wide objectives, a plan incorporating the necessary budget, time frame and efficiency of activities is periodically approved by subsidiary entities. Thus, for 2019 the planned annual saving of fuel and energy resources reached 0.8 million GJ, or 11,3 million kW of electricity, 91,3 thousand. Gkal thermal energy and 8,5 thousand m3 of natural gas.
Financial optimization calculations	Cost-benefit analysis of GHG and/or energy efficiency projects is one of the methods to drive investment in emissions reduction activities. This mechanism is particularly relevant to our shareholders and the Management Board who make decisions on cost optimisation and allocation of funds. We thoroughly examine the economic benefits of the implementation of energy efficiency projects by estimating the payback periods and ROI. Therefore, the decisions to carry out organisational, technological or technical measures are based not only on the assessment of environmental and energy performance but also with consideration of the financial benefit/loss.
Employee engagement	KMG annually holds an HSE Directors forum. The forum is organised to discuss the annual HSE performance and determine the future vision and HSE goals. We also use this platform to exchange knowledge and lessons learnt among employees as well as to recognise the best HSE improvement practices and reward our employees for their achievements in HSE. To support our people, we also allocate a special budget for the implementation of their ideas and projects. For example, in 2018, the idea of the "Green office" proposed by our employee was implemented in one of the KMG subsidiaries.
Partnering with governments on technology development	As a national company that represents the interests of the government in the oil and gas industry in Kazakhstan, we work closely with local government authorities and international intergovernmental organizations on the implementation of green and energy-efficient projects. With support from the Norwegian and US agencies for environmental protection and international consultants, we implemented several pilot projects for direct detection and measurement of methane leaks in six subsidiaries of KMG. Following the results of the projects, we estimated that KMG would require about 8 million US dollars for the implementation of the vapour recovery units (payback period — 4 years). For LDAR projects in 10 KMG subsidiaries — CAPEX of 1,4 million US dollars is required (the payback period is approximately 2 years, depending on the size of the project). To carry out full-scale methane emission projects in KMG, we are actively discussing investment opportunities with our Management Board and shareholders.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation
Product

Description of product/Group of products
Use of natural gas instead of coal

Are these low-carbon product(s) or do they enable avoided emissions?
Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions
Please select

% revenue from low carbon product(s) in the reporting year

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
Over the past decade, our midstream company has been extensively implementing gasification in regions and modernising gas distribution networks in several cities of Kazakhstan. For example, the project of gasification in Almaty, Kazakhstan, initiated in 2018, provides gas to the residential areas not yet connected to the gas supply system. The project will connect about 4.1 thousand customers to the gas supply system with an average annual consumption of 15.8 million m3 of gas. During the two years of project implementation (2018, 2019), were built 265 km of new gas pipelines (170 km in 2019), reconstructed 76 km (34 km in 2019) of existing gas pipelines, installed 21 gas-distributing plant and 1 distribution pressure reducing station. Thus, the gasification project in Almaty only will allow avoiding emissions of about 20 thousand tonnes of CO2 equivalent per annum due to the usage of natural gas instead of coal. The NAMA climate project plans to further increase the share of gaseous road transport and special machinery in its own vehicle fleet as part of the action «Conversion of motor vehicles from traditional fuel to the use of compressed natural gas (park renewal)». Between 2020 and 2024, the share of gas vehicles (not less than Euro-3 class) should increase to 35 per cent by modernizing the structure of the vehicle fleet. Improvement in fuel consumption and vehicle class due to the upgrading (acquisition) of 16 new vehicles using liquefied hydrocarbon gases and 46 vehicles using compressed natural gas, will significantly reduce transport emissions.

Level of aggregation
Product

Description of product/Group of products
Distribution of fuel containing bio-components

Are these low-carbon product(s) or do they enable avoided emissions?
Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions
Other, please specify

% revenue from low carbon product(s) in the reporting year

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
Our Romanian refinery supplies low-carbon products to European markets: Euro plus 10 ppm Bio Gasoline and Euro 5 Diesel, mixed with bio-diesel. We believe that our commitment to the production and distribution of fuel mixed with bio components is a good start to the production of low-carbon products. This will minimise the negative environmental and human health impacts from the use of our sold products. In 2018, we were very proud to receive the international certification of ISCC (International Sustainability and Carbon Certificate) for our fuel containing biocomponents. The NAMA climate project plans to further increase the share of gaseous road transport and special machinery in its own vehicle fleet as part of the action «Conversion of motor vehicles from traditional fuel to the use of compressed natural gas (park renewal)». Between 2020 and 2024, the share of gas vehicles (not less than Euro-3 class) should increase to 35 per cent by modernizing the structure of the vehicle fleet. Improvement in fuel consumption and vehicle class due to the upgrading (acquisition) of 16 new vehicles using liquefied hydrocarbon gases and 46 vehicles using compressed natural gas, will significantly reduce transport emissions.

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.

In 2014, with the support of the Ministry of Energy of Kazakhstan, the Norwegian EPA Agency and international consultants, we began extensive work on identifying opportunities for reducing methane emissions through the implementation of projects on detection and measurement of methane leaks.

As part of a large-scale project on reduction of GHG emissions, we have put into operation vapour recovery units that processed light hydrocarbon vapour from the oil filling, transportation and storage facilities. We also pay special attention to programs for detection and elimination of methane leaks at our midstream facilities.

For example, in 2019 four vehicle complexes based on Toyota Hilux were purchased to prevent unpermitted emissions and to preserve the lives and health of consumers. These vehicle complexes are instrumented with «PERGAM» methane leaks digital detectors. Thus, during service 235 leaks were detected in dwellings and social facilities, a total of 8,766 leaks.

Our corporate policy on emissions management contains the following measures to prevent methane leaks at production facilities by:
- carrying out programs for detection and measurement of methane leaks;
- installation of floating lids on new tanks;
- introduction of vapor recovery units;
- use of mobile compressor stations.

Additionally, KMG joined the Global Methane Initiative in 2017 and is actively involved in the promotion of new technologies, policies, and opportunities associated with the cost-effective methane emission reduction measures.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

KMG monitors methane leaks on an ongoing basis. Inspections are carried out in three main areas: the main gas pipeline, compressor stations and gas distribution stations. The company formed working groups for site inspections to identify possible leaks. To identify methane leaks, we use a visual method, by-pass inspections of sites (once per month), walkthroughs (twice a year); and instrumental method using distant laser methane detectors (once a year). During the inspections, the following devices are used:
1. FLIR GasFindIR based on infrared cameras for rapid detection of methane leaks. The device is able to scan large sections of pipelines at high speed and provide thermal images of gas leaks in real-time.
2. Flow Sampler PVT is designed to measure the intensity of leaks. The device allows to accurately measure the volume and intensity of leaks from any control valves, compressor seals in main lines, storage facilities, and compressor stations for natural gas.

KMG also uses a mobile methane leak detection system equipped with a distant laser detector DLS-Pergam. Its main objective is to detect the slightest gas leaks. This device is used to detect gas leaks from underground and above-ground main, distribution and urban gas pipelines of high and low pressure. The device detects natural gas leaks at a distance of up to 60 meters. Laser and built-in GPS accurately record locations of leaks on the map and save GPS coordinates of the route. The obtained data are provided to the teams, which then carry out repair work on the gas leak sites.

The main reason for leaks at the facilities is the long service life of the equipment (over 40 years). The period within which we fix methane leaks depends on the nature and location of the leak, the volume, and the gas transportation mode. Most detected methane leaks are micro-leaks, which are eliminated immediately after the detection.

KMG systematically modernises technological equipment to minimise methane leaks, which, in turn, reduces not only GHG emissions but also financial losses.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

Reduction of routine gas flaring is one of the priorities of our business strategy, as well as a key principle of corporate emission management policy.

Over the years, KMG has implemented various programs and projects aimed at elimination of routine gas flaring by 2030.

In 2019, KMG reached the highest level of APG utilization – 97%. Produced amount of APG in 2019 was 2,357.2 million m3 (2,049.5 million m3 in 2018), and amount of gas flared was 79,4 million m3 (148,9 million m3 in 2018). Despite a 15% increase in APG production compared to 2018, gas flaring has declined by 47%. We achieved this by fully setting into operation the integrated gas treatment plant of Prorvinskaya cluster of fields and integrated gas treatment plant at Kozhasay field.

Thus, since the setting into operation one of the integrated gas processing plants at the field (Kozhasai) in 2019, the gas flaring reduced from 173 million m3 to 40 million m3, representing a 70 per cent emissions reduction.

In 2019 was established KPI "Zero routine gas flaring in hydrocarbon production" for HSE Managing Director. Target: APG flaring intensity figure – 4 TOE per 1000 TOE of hydrocarbons produced. Flaring intensity figure reached 2.95 TOE per 1000 TOE of hydrocarbons produced.

KMG is in the upper quartile of IOGP compared to other oil and gas organizations in the world. Emissions are also reduced due to the reduction of gas flaring. In 2019, the intensity figure of CO2 emissions was 93 tons per 1000 tons of hydrocarbons produced.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start
January 1 2018

Base year end
December 31 2018

Base year emissions (metric tons CO2e)
14695106

Comment
As 2018 is the first year for which we have verified data for both direct and indirect emissions, it has been chosen as a base year.

Scope 2 (location-based)

Base year start
January 1 2018

Base year end
December 31 2018

Base year emissions (metric tons CO2e)
3241891

Comment
As 2018 is the first year for which we have verified data for both direct and indirect emissions, it has been chosen as a base year.

Scope 2 (market-based)

Base year start
January 1 2018

Base year end
December 31 2018

Base year emissions (metric tons CO2e)
3296542

Comment
As 2018 is the first year for which we have verified data for both direct and indirect emissions, it has been chosen as a base year.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other, please specify (Details are provided in C5.2a)

C5.2a

(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

In addition to the standards and methodologies specified in C5.2, the*National guidelines for the calculation of GHG emissions* were used to assess direct emission amounts for our facilities located in Kazakhstan. These guidelines include 19 methodologies for various types of industrial activities. In particular, we have used methodologies intended to assess emissions associated with specific oil and gas operations, such as stationary combustion, exploration, production, transportation, storage, and oil and gas refining.

For the assessment of scope 2 emissions, we also considered detailed recommendations provided in the*GHG Protocol Scope 2 Guidance* and *CDP Technical Note: Accounting of Scope 2 emissions*.

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
15240134

Start date
January 1 2019

End date
December 31 2019

Comment
Gross global Scope 1 emissions for the reporting year.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
14695106

Start date
January 1 2018

End date
December 31 2018

Comment
Gross global Scope 1 emissions for 2018.

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)
13893254

Start date
January 1 2017

End date
December 31 2017

Comment
Gross global Scope 1 emissions for 2017.

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)
12848185

Start date
January 1 2016

End date
December 31 2016

Comment
Gross global Scope 1 emissions for 2016.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based
We are reporting a Scope 2, market-based figure

Comment
Location-based Scope 2 emissions for our assets located in Kazakhstan and Georgia are calculated using available national energy production emissions factors. Market-based Scope 2 emissions for our assets in Romania are calculated using RE-DISS residual mix factors.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based
3351740

Scope 2, market-based (if applicable)
3406853

Start date
January 1 2019

End date
December 31 2019

Comment
Gross global Scope 2 emissions for the reporting year.

Past year 1

Scope 2, location-based
3241891

Scope 2, market-based (if applicable)
3296542

Start date
January 1 2018

End date
December 31 2018

Comment
Gross global Scope 2 emissions for 2018.

Past year 2

Scope 2, location-based
2654313

Scope 2, market-based (if applicable)
2708327

Start date
January 1 2017

End date
December 31 2017

Comment
Gross global Scope 2 emissions for 2017.

Past year 3

Scope 2, location-based
2466298

Scope 2, market-based (if applicable)
2517272

Start date
January 1 2016

End date
December 31 2016

Comment
Gross global Scope 2 emissions for 2016.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?
Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source
Transport

Relevance of Scope 1 emissions from this source
Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source
No emissions from this source

Relevance of market-based Scope 2 emissions from this source (if applicable)
No emissions from this source

Explain why this source is excluded
GHG emissions from mobile sources are excluded due to the regulatory requirements of Kazakhstan and EU Emission Trading Schemes. Analysis of data of fuel consumption by the company-owned vehicles allows us to make a conclusion that the GHG emissions from the mobile sources are insignificant in relation to our gross Scope 1 emissions (less than 1%).

Source
GHG emissions other than CO2

Relevance of Scope 1 emissions from this source
No emissions excluded

Relevance of location-based Scope 2 emissions from this source
Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)
Emissions are not relevant

Explain why this source is excluded
Indirect GHG emissions in CO2e were estimated without consideration of CH4 and N2O contributions due to the limitations associated with emission factors availability.

Source
Filling stations in Romania, Georgia, Moldova and Bulgaria

Relevance of Scope 1 emissions from this source
Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source
Emissions are not evaluated

Relevance of market-based Scope 2 emissions from this source (if applicable)
Emissions are not evaluated

Explain why this source is excluded
We are currently unable to collect reliable data and quantify emissions on our entire network of filling stations in Europe, with over 600 stations in Romania and over 200 stations in Bulgaria, Georgia and Moldova. We believe that scope 1 emissions from KMGI retail network are not significant for our total GHG emissions, while scope 2 emissions require a more detailed assessment. We are actively exploring the possibility of improving the data collection process from our retail operations in Europe in order to be able to disclose information in the near future.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status
Relevant, not yet calculated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
A very large range of purchased goods and services, for which it is not possible to accurately calculate indirect emissions, as there are no established factors for calculating emissions from different categories of goods (services) under national programs.

Capital goods

Evaluation status
Relevant, not yet calculated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
There is no data from producers and national established factors for calculating emissions from different categories of goods (services).

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Fuel-related activities occur only during the operation of vehicles. GHG emissions from mobile sources are excluded due to regulatory requirements of Kazakhstan and EU emissions trading schemes. Fuel consumption by mobile sources is insignificant in relation to fuel consumption by stationary sources (less than 1%).

Upstream transportation and distribution

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Whereas GHG emissions from mobile sources are excluded due to regulatory requirements of Kazakhstan and EU emissions trading schemes, KGM suppliers also do not calculate GHG emissions from transport

Waste generated in operations

Evaluation status
Relevant, not yet calculated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
It is possible to calculate in the future when the system of accounting of initial data for all KMG subsidiaries and affiliates will be introduced.

Business travel

Evaluation status
Relevant, not yet calculated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
It is possible to calculate in the future, when the system of accounting of actually made business trips of employees in kilometers will be introduced, as well as tracking data on indirect emissions from hotel activities.

Employee commuting

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
As GHG emissions from mobile sources are excluded due to regulatory requirements of Kazakhstan and EU emissions trading schemes, providers of transportation of workers from home to work also do not calculate GHG emissions from transport.

Upstream leased assets

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Emissions from the leased property are not classified under Scope 3, as the leased property is operationally taken under the control of KMG and emissions from it are considered in Scope 1,2.

Downstream transportation and distribution

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
As GHG emissions from mobile sources are excluded due to regulatory requirements of Kazakhstan and EU emissions trading schemes, KGM suppliers also do not calculate GHG emissions from transport.

Processing of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We assume that emissions associated with the processing of goods sold fall within the “use of goods sold” section of our main Scope 3 emissions, as the use of hydrocarbons involves processing. Emissions from goods processed by KMG's subsidiaries and affiliates are accounted for in Scope 1.

Use of sold products

Evaluation status
Relevant, calculated

Metric tonnes CO2e
71735497

Emissions calculation methodology
GHG emissions were calculated using a production method. Data on the activities is data on clean production. Our evaluation of Scope 3 emissions does not include production data from refineries in Kazakhstan in accordance with the specific business model of our operations in Kazakhstan. The carbon content in the products was calculated based on the results of laboratory analyzes of the gas composition. Specific GHG emission factors are taken from the Order of the Minister of Energy of the Republic of Kazakhstan dated June 28, 2017 No. 222 "On Approval of the List of Specific GHG Emission Factors". Standard CH4 and N2O emission factors were determined based on the 2006 IPCC guidelines and national publications. The latest GWP values reported in the Fifth IPCC Assessment Report were used to estimate emissions in tons of CO2 equivalent.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain
There is a slight increase in emissions from the use of products sold due to an increase in manufactured products.

End of life treatment of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
There is no data on disposal of products purchased from KMG by third-party consumers. We have independently assessed the end-of-life emissions of our polymer products. These emissions account for less than 4% of our gross Scope 3 emissions.

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Emissions from the leased property are not classified under Scope 3, as the leased property is operationally taken under the control of KMG and emissions from it are considered in Scope 1,2.

Franchises

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
We assume that emissions from retail network of filling stations operated by franchised companies are not relevant compared to our main Scope 3 emissions related to “use of goods sold”, especially since the number of franchised companies decreased in 2019 compared to 2018.

Investments

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
For GHG emissions from those JVs in which the share of KMG’s investments is more than 50%, KMG reported 100% as Scope 1, 2, 3 emissions. We assume that the emissions associated with our investments are operationally less than 50% irrelevant compared to our main Scope 3 emissions related to “use of goods sold”.

Other (upstream)

Evaluation status

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Other (downstream)

Evaluation status

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?
No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure
0.00106

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
18591874

Metric denominator
unit total revenue

Metric denominator: Unit total
17593812689

Scope 2 figure used
Location-based

% change from previous year
0.4

Direction of change
Increased

Reason for change
Intensity figure is about the same as in 2018

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

Unit of hydrocarbon category (denominator)
Thousand barrels of refinery throughput

Metric tons CO2e from hydrocarbon category per unit specified
27

% change from previous year
4

Direction of change
Increased

Reason for change
Emissions rates increased from 26 tons of CO2e per thousand barrels of actual production at our refineries in 2018 to 27 tons of CO2e per thousand barrels, respectively. The change is due to an increase in crude hydrocarbon processing volume.

Comment
In 2019, the specific energy consumption in oil refining sector, on average for the refineries, was 3.7 GJ per ton (3.5 GJ in 2018). This figure is 19% higher than that of European refineries, this is primarily due to the severe climatic conditions of the location of oil refineries.

Unit of hydrocarbon category (denominator)
Other, please specify (Thousand tonnes of processed hydrocarbon crude)

Metric tons CO2e from hydrocarbon category per unit specified
148

% change from previous year
10

Direction of change
Decreased

Reason for change
Emissions rates decreased from 165 tons of CO2e per thousand tons of hydrocarbon produced in 2018 to 148 tons of CO2e per thousand tons of hydrocarbon produced in 2019. The decrease was due to a decrease in gas flaring volumes.

Comment
The unit of measurement “Other” was chosen for the hydrocarbon category, as it is not possible to breakdown GHG emissions in production processes by product type.

Unit of hydrocarbon category (denominator)
Other, please specify (Thousand tonnes of processed hydrocarbon crude)

Metric tons CO2e from hydrocarbon category per unit specified
229

% change from previous year
6

Direction of change
Increased

Reason for change
Emissions rates increased from 216 tons of CO2 per 1,000 tons of processed crude hydrocarbon in 2018 to 229 ton of CO2 per thousand tons of processed crude hydrocarbon in 2019. The 6% growth is due to an increase in the capacity of the oil refining industry.

Comment
The reported value corresponds to the emission rate data, which we calculate by analogy with the IOGP. Therefore, the emission rate is estimated based on data provided by only our three refineries in Kazakhstan.

Unit of hydrocarbon category (denominator)
Other, please specify (Thousand tonnes of hydrocarbon crude production)

Metric tons CO2e from hydrocarbon category per unit specified
93

% change from previous year
8

Direction of change
Decreased

Reason for change
Emissions rates decreased from 101 t CO2 per 1,000 t of hydrocarbon production in 2018 to 93 t CO2 per 1,000 t of hydrocarbon production in 2019. The decrease in the intensity of CO2 emissions in the oil industry is caused by the measures taken to reduce the volume of gas flaring.

Comment
The reported value corresponds to the emission rate data we provide to IOGP. Thus, the emission rate is estimated based on data provided by only seven upstream companies (in the upper segment).

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Oil and gas business division
Upstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division
1.67

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.22

Comment
The reported values are obtained by dividing the total methane emissions of our upstream companies by gas production and hydrocarbon production volumes, respectively. To calculate the indicator, methane emissions and production volumes were given in metric tons.

Oil and gas business division
Midstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division
0.17

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.1

Comment
The reported values are obtained by dividing the total methane emissions of our upstream companies by gas production and hydrocarbon production volumes, respectively. To calculate the indicator, methane emissions and production volumes were given in metric tons.

Oil and gas business division
Downstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division
2.08

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.004

Comment
The reported values are obtained by dividing the total methane emissions of our upstream companies by gas production and hydrocarbon production volumes, respectively. To calculate the indicator, methane emissions and production volumes were given in metric tons.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?
Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	9734620	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	5480674	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	24840	IPCC Fifth Assessment Report (AR5 – 100 year)

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Emissions category
Combustion (excluding flaring)

Value chain
Upstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
2093872

Gross Scope 1 methane emissions (metric tons CH4)
995

Total gross Scope 1 emissions (metric tons CO2e)
2126318

Comment
Emissions refer to all upstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Flaring

Value chain
Upstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
193140

Gross Scope 1 methane emissions (metric tons CH4)
176

Total gross Scope 1 emissions (metric tons CO2e)
198115

Comment
Emissions refer to all upstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Venting

Value chain
Upstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
0.288

Gross Scope 1 methane emissions (metric tons CH4)
219

Total gross Scope 1 emissions (metric tons CO2e)
6126

Comment
Emissions refer to all upstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Fugitives

Value chain
Upstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
5801

Gross Scope 1 methane emissions (metric tons CH4)
51957

Total gross Scope 1 emissions (metric tons CO2e)
1460552

Comment
Emissions refer to all upstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Process (feedstock) emissions

Value chain
Upstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
0.6

Gross Scope 1 methane emissions (metric tons CH4)
0

Total gross Scope 1 emissions (metric tons CO2e)
0.6

Comment
Emissions refer to all upstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Combustion (excluding flaring)

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
2665643

Gross Scope 1 methane emissions (metric tons CH4)
7601

Total gross Scope 1 emissions (metric tons CO2e)
2890982

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category
Flaring

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
0

Gross Scope 1 methane emissions (metric tons CH4)
0

Total gross Scope 1 emissions (metric tons CO2e)
0

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category
Venting

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
0

Gross Scope 1 methane emissions (metric tons CH4)
0

Total gross Scope 1 emissions (metric tons CO2e)
0

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category
Fugitives

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
912

Gross Scope 1 methane emissions (metric tons CH4)
130993

Total gross Scope 1 emissions (metric tons CO2e)
3668746

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category

Process (feedstock) emissions

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
912

Gross Scope 1 methane emissions (metric tons CH4)
130993

Total gross Scope 1 emissions (metric tons CO2e)
3668746

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category
Process (feedstock) emissions

Value chain
Midstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
24

Gross Scope 1 methane emissions (metric tons CH4)
2997

Total gross Scope 1 emissions (metric tons CO2e)
83946

Comment
Emissions refer to all oil transportation assets operated by KMG.

Emissions category
Combustion (excluding flaring)

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
4126256

Gross Scope 1 methane emissions (metric tons CH4)
714

Total gross Scope 1 emissions (metric tons CO2e)
4150215

Comment
Emissions refer to all downstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Flaring

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
59774

Gross Scope 1 methane emissions (metric tons CH4)
1

Total gross Scope 1 emissions (metric tons CO2e)
63049

Comment
Emissions refer to all downstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Fugitives

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
0

Gross Scope 1 methane emissions (metric tons CH4)
25

Total gross Scope 1 emissions (metric tons CO2e)
700

Comment
Emissions refer to all downstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

Emissions category
Process (feedstock) emissions

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
589198

Gross Scope 1 methane emissions (metric tons CH4)
59

Total gross Scope 1 emissions (metric tons CO2e)
591383

Comment
Emissions refer to all downstream assets operated by KMG. We are unable to disaggregate GHG emissions from upstream activities by product type.

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Kazakhstan	14189851
Romania	1043505
Georgia	6778

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.
By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Oil and gas exploration and production activities (upstream)	3791112
Oil and gas transportation activities (midstream)	6643675
Oil and gas refining activities (downstream)	4805347

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	3791112	<Not Applicable>	Upstream scope 1 value considers emissions from our midstream activities.
Oil and gas production activities (midstream)	6643675	<Not Applicable>	Midstream Scope 1 value considers emissions from our midstream activities.
Oil and gas production activities (downstream)	4805347	<Not Applicable>	Downstream emissions include emissions from oil and gas refining activities, as well as petrochemical production.
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Kazakhstan	3110392	3110392	3870879	10718
Romania	240566	295679	601665	262507
Georgia	782	782	6683	5213

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By activity

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Oil and gas exploration and production activities (upstream)	1159830	1159830
Oil and gas transportation activities (midstream)	1861929	1917042
Oil and gas refining activities (downstream)	329981	329981

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	1159830	1159830	Upstream scope 2 value considers emissions from our upstream activities.
Oil and gas production activities (midstream)	329981	329981	Midstream Scope 2 value considers emissions from our midstream activities.
Oil and gas production activities (downstream)	1861929	1917042	Downstream emissions include emissions from oil and gas refining activities, as well as petrochemical production.
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	17417	Decreased	0.9	In 2019, in addition to the subsidiaries in Romania and Georgia, energy consumption from renewable energy sources was implemented by a number of subsidiaries and affiliates. In addition, technologies were introduced for the production of own energy for economic needs from renewable energy sources.
Other emissions reduction activities	119484	Decreased	45	An integrated gas processing unit was implemented into full-scale operation in the Aktobe region, as a result of which there is a decrease in greenhouse gas emissions from the flare. The reduction in emissions from this subsidiary and dependent organization is 45%.
Divestment	0	No change		
Acquisitions	0	No change		
Mergers	0	No change		
Change in output	651058	Increased	3.6	Changes in production volume contributed to an increase in the total emissions of scope 1, 2 by 651,058 tonnes of CO2-eq. The volume of emissions of KMG of scope 1 and 2 in 2018 amounted to 17,940,816 tons of CO2-eq. Therefore, the percentage decrease is 651058/17940816 * 100 = 3.6%. An increase in the volume of production in almost all types of production activities, an increase in emissions takes place in the business areas of processing (due to new sources) and transportation (due to an increase in the volume of gas expert)
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	
Change in physical operating conditions	0	No change	0	
Unidentified	0	No change	0	
Other	0	No change	0	

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	35421516.2	35421516.2
Consumption of purchased or acquired electricity	<Not Applicable>	231878.06	4071431.18	4303309.2
Consumption of purchased or acquired heat	<Not Applicable>	0	46754.78	46754.8
Consumption of purchased or acquired steam	<Not Applicable>	0	1726406.87	1726406.9
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	1797.89	<Not Applicable>	1797.9
Total energy consumption	<Not Applicable>	233675.9	41266109	41499785

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

4066222

MWh fuel consumed for self-generation of electricity

134298.4

MWh fuel consumed for self-generation of heat

45159.3

MWh fuel consumed for self-generation of steam

209438.2

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor

0.00197

Unit
metric tons CO2e per m3

Emissions factor source
Emission factors are presented in the form of weighted average values for each type of fuel.

Comment

Fuels (excluding feedstocks)
Other, please specify (Associated Petroleum Gas (APG))

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
5954345.8

MWh fuel consumed for self-generation of electricity
8190.4

MWh fuel consumed for self-generation of heat
145616

MWh fuel consumed for self-generation of steam
371932.6

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor

Unit
Please select

Emissions factor source
Emission factor refers to Associated Petroleum Gas (APG). Emission factors are presented in the form of weighted average values for each type of fuel and rates 40.77 mJ per m3

Comment

Fuels (excluding feedstocks)
Refinery Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
199469.4

MWh fuel consumed for self-generation of electricity
8190.4

MWh fuel consumed for self-generation of heat
145616

MWh fuel consumed for self-generation of steam
371932.6

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
0.00206

Unit
metric tons CO2e per m3

Emissions factor source
Emission factors are presented in the form of weighted average values for each type of fuel

Comment

Fuels (excluding feedstocks)
Fuel Oil Number 1

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
77671

MWh fuel consumed for self-generation of electricity
1189.7

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam
5383.3

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
3.17

Unit
metric tons CO2e per m3

Emissions factor source
"National guidelines for the calculation of GHG emissions from thermal power plants and boilers, Astana, 2010".

Comment

Fuels (excluding feedstocks)
Coke

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
505548.7

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
51745

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
35.17

Unit
Please select

Emissions factor source
Emission factors are presented in the form of weighted average values for each type of fuel and rates 35.17 mJ per m3

Comment

Fuels (excluding feedstocks)
Petrol

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
5261

MWh fuel consumed for self-generation of electricity
428.4

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
3.1

Unit
metric tons CO2e per m3

Emissions factor source
"National guidelines for the calculation of GHG emissions from thermal power plants and boilers, Astana, 2010".

Comment

Fuels (excluding feedstocks)
Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization
13564.7

MWh fuel consumed for self-generation of electricity
1134692.3

MWh fuel consumed for self-generation of heat
417.2

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
2.68

Unit
metric tons CO2e per m3

Emissions factor source
"National guidelines for the calculation of GHG emissions from thermal power plants and boilers, Astana, 2010".

Comment

Fuels (excluding feedstocks)
Fuel Oil Number 2

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2400810

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
3142.6

MWh fuel consumed for self-generation of steam
207494.1

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
2.8

Unit
metric tons CO2e per m3

Emissions factor source
"National guidelines for the calculation of GHG emissions from thermal power plants and boilers, Astana, 2010".

Comment

Fuels (excluding feedstocks)
Liquefied Petroleum Gas (LPG)

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2.7

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor
0.87

Unit

metric tons CO2e per m3

Emissions factor source
"National guidelines for the calculation of GHG emissions from thermal power plants and boilers, Astana, 2010".

Comment

Fuels (excluding feedstocks)
Other, please specify (Net gas)

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2652089.7

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
221743.2

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Emission factor

Unit
Please select

Emissions factor source
Emission factors are presented in the form of weighted average values for each type of fuel and rates 43.06 mJ per m3

Comment

Fuels (excluding feedstocks)
Fuel Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
5914837.1

MWh fuel consumed for self-generation of electricity
28937.7

MWh fuel consumed for self-generation of heat
1954.6

MWh fuel consumed for self-generation of steam
514759.4

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
0

Emission factor

Unit
metric tons CO2e per m3

Emissions factor source
Emission factors are presented in the form of weighted average values for each type of fuel

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	15405680	875354	1797.89	
Heat	4902969.13	4902969.13	0	0
Steam	15115818.88	0	0	0
Cooling				

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method
Other, please specify (Grid mix of renewable electricity)

Low-carbon technology type
Low-carbon energy mix

Country/region of consumption of low-carbon electricity, heat, steam or cooling
Europe

MWh consumed accounted for at a zero emission factor
262507

Comment
According to the European Residual Mix data, 43.63% of the energy consumed by our Romanian assets was classified as renewable with the following breakdown: solar - 3.17% , wind - 10.2% , hydroelectric power plants - 12.03%.

Sourcing method
Other, please specify (Purchasing or production of low-carbon emission factor heat, power or electricity)

Low-carbon technology type
Hydropower

Country/region of consumption of low-carbon electricity, heat, steam or cooling
Georgia

MWh consumed accounted for at a zero emission factor
5213

Comment
According to «IPCC Special Report on Renewable Energy and Mitigation of Climate Change Impacts» (2011) Power Factors for River Systems lie in a range (20-95%) depending on geographical and climate conditions, technology and performance.

Sourcing method
Other, please specify (Purchasing or production of low-carbon emission factor heat, power or electricity)

Low-carbon technology type
Solar

Country/region of consumption of low-carbon electricity, heat, steam or cooling
Kazakhstan

MWh consumed accounted for at a zero emission factor
7014

Comment
Solar energy from the renewable energy provider. The RES consumption rate is taken as 100% because the figure is given for RES only

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Sourcing method
Other, please specify (Purchasing or production of low-carbon emission factor heat, power or electricity)

Low-carbon technology type
Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling
Kazakhstan

MWh consumed accounted for at a zero emission factor
3704

Comment
Solar energy from the renewable energy provider. The RES consumption rate is taken as 100% because the figure is given for RES only

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Sourcing method
Other, please specify (Combination of renewable energy sources)

Low-carbon technology type
Other, please specify (Solar PV, Wind, Hyrdopower, Biomass (including biogas))

Country/region of consumption of low-carbon electricity, heat, steam or cooling
Romania

MWh consumed accounted for at a zero emission factor
262507

Comment
According to EuropeanResidualMixdata, 43.63% of the energy consumed by our Romanian assets was classified as renewable with the following decomposition: solar - 3.17%, wind - 12.03%, hydropower - 27.95% and biomass - 0.48%

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description
Waste

Metric value
298

Metric numerator
thousand tonnes

Metric denominator (intensity metric only)

% change from previous year
5

Direction of change
Increased

Please explain
The volume of waste generated in 2019 amounted to 298.2 thousand tonnes. Around 280.6 thousand tonned of waste was classified as "hazardous". "Non-hazardous" waste amounted to 16.6 thousand tonnes. Around 67% of hazardous waste consisted of drilling waste such as drill cuttings and drilling mud.

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

	In-year net production	Comment
Crude oil and condensate, million barrels	177.02	Hydrocarbon production volumes are presented in the form of gross production, taking into consideration the production rates equity-accounted entities. The volume is at the same as last year.
Natural gas liquids, million barrels		
Oil sands, million barrels (includes bitumen and synthetic crude)		Not applicable for upstream companies located in Kazakhstan.
Natural gas, billion cubic feet	298.84	Hydrocarbon production volumes are presented in the form of gross production, taking into consideration the production rates of equity-accounted entities.

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

Reaffirming its commitment to transparency, KMG, for the first time ever, disclosed a summary of its reserves report prepared under the internationally used PRMS guidelines. According to the reserves audit by the international independent consulting firm DeGolyer & MacNaughton, KMG's proved plus probable hydrocarbon (2P) reserves were at 676 mln tonnes of oil equivalent (5,220 mmboe) as of 31 December 2019.

The proved reserves (1P) life of oil and condensate is 16 years (based on 2019 production level), far exceeding the average for the global oil majors (about 12 years).

2P reserve life ratio of oil and condensate at 2019 production level is 23 years.

The results of the assessment of KMG's hydrocarbon reserves (1P, 2P, 3P) as of December 31, 2019 can be found in our Annual Report at https://www.kmg.kz/uploads/reports/KMG_AR19_RU.pdf

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

	Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)	Comment
Row 1	5220	6089		Net Reserves are defined as that portion of the gross reserves attributable to the interest held by KMG after deducting all interests held by others, as well as interests that are not held by KMG, but which KMG controls.

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment
Crude oil/ condensate/ natural gas liquids	76	77	77	Net Reserves are defined as that portion of the gross reserves attributable to the interest held by KMG after deducting all interests held by others, as well as interests that are not held by KMG, but which KMG controls.
Natural gas	4	4	7	Net Reserves are defined as that portion of the gross reserves attributable to the interest held by KMG after deducting all interests held by others, as well as interests that are not held by KMG, but which KMG controls.
Oil sands (includes bitumen and synthetic crude)				

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

C-OG9.3a

(C-OG9.3a) Disclose your total refinery throughput capacity in the reporting year in thousand barrels per day.

	Total refinery throughput capacity (Thousand barrels per day)
Capacity	521.92

C-OG9.3b

(C-OG9.3b) Disclose feedstocks processed in the reporting year in million barrels per year.

	Throughput (Million barrels)	Comment
Oil	147.6	Throughput is presented taking into consideration our equity share % in joint venture entities.
Other feedstocks	6.9	Throughput is presented taking into consideration our equity share % in joint venture entities.
Total	154.46	Throughput is presented taking into consideration our equity share % in joint venture entities.

C-OG9.3c

(C-OG9.3c) Are you able to break down your refinery products and net production?

Yes

C-OG9.3d

(C-OG9.3d) Disclose your refinery products and net production in the reporting year in million barrels per year.

Product produced	Refinery net production (Million barrels) *not including products used/consumed on site
Liquified petroleum gas	0.85
Gasolines	14.25
Naphtha	0.68
Other, please specify (heating oil)	0.13
Diesel fuels	23.87
Fuel oils	7.94
Asphalt and tar	1.4
Petroleum coke	0.69
Other, please specify (jet fuel)	3.6
Other, please specify (vacuum gas oil)	1.27
Other, please specify (Sulphur)	0.11
Other, please specify	8.6

C-OG9.3e

(C-OG9.3e) Please disclose your chemicals production in the reporting year in thousand metric tons.

Product	Production, Thousand metric tons	Capacity, Thousand metric tons
High value chemicals (Steam cracking)	267.66	
Other, please specify (Polymers)	126.78	
Other, please specify (Solvents)	132.94	
Other, please specify (Suplhur)	112.7	

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Smart systems	Pilot demonstration	Please select	53780000	Today, digital technologies are permeating all sectors of the economy, offering fundamental improvements in efficiency and safety. The use of digital technologies contributes to: • reduction of capital and operating expenses; • improved profitability amid volatile oil prices; • increasing efficiency, including through data analysis; • predicting failures; • ensuring safety at work. Given the growing relevance of digitalization in the world, in order to ensure the country's competitiveness, a state program is being implemented in Kazakhstan "Digital Kazakhstan". Within the framework of the Digital Kazakhstan program of the KMG group of companies, the Smart Field project is being implemented. The Smart field project is an automated oil and gas field management system that allows achieving maximum efficiency by integrating isolated systems into a single information system. The production monitoring system allows to respond to technological failures timely and appropriately, as well as to make decisions on well intervention and workover based on the results of costbenefit analysis. Since its implementation, the project allowed to automate production processes, provided additional oil production and significantly improved the energy efficiency performance. Additionally, we also aim to reduce carbon footprint by introducing renewable energy sources at our smart fields. We have already deployed solar panels on one of our fields to support the monitoring, measurement and lighting systems. The payback period of smart field projects is 8 years.
Steam turbine and/or other component upgrades	Small scale commercial deployment	Please select	10604412	Data on such activities as repair, technical support and modernization of the main and auxiliary equipment of gas preparation and transportation shops, installation of catalysts in power plants, replacement of radiant furnaces, optimization of the operating mode of steam condensate systems are presented.
Carbon capture and storage/utilisation	Small scale commercial deployment	Please select	2637.88	In the reporting year, the volume of investments fell on the Expansion of the gas utilization system (Utilization of raw gas) at two of our fields.
Methane detection and reduction	Small scale commercial deployment	Please select	4180.27	Pilot projects on the detection and direct measurement of methane leaks at production facilities of KMG subsidiaries are implemented within the program on reduction of methane emissions. We expect substantial financial savings in case of full commercialisation of those projects in our production facilities.
Other, please specify (Energy efficiency in transport)	Full/commercial-scale demonstration	Please select	2294685	CNG filling station construction project in the western region of Kazakhstan is ultimately aimed at the promotion of natural gas use as an alternative transportation fuel. With the expansion of CNG filling station network we expect more customers to convert their vehicles to use more affordable and eco-friendly CNG instead of conventional fuels such as gasoline or diesel. Eco-fuel is widely sold in our filling stations in Europe. Moreover, we have introduced the EV charging station one of the filling stations in Romania where free charging service is available to all customers who own electric or hybrid vehicles.
Other, please specify (Other energy efficiency measures in the oil and gas value chain)	Full/commercial-scale demonstration	Please select		In 2018, we deployed Oracle Cloud Infrastructure and Oracle Cloud Platform in our Romanian enterprises. The systems allowed us to significantly reduce IT operational costs, improve the efficiency of documentation and administration, cut our energy consumption and reduce GHG emissions. More specifically, these resulted in a significant reduction in energy consumption (by 4,500 KWh per month), while reducing operating costs to 35,000 USD per year.

C-OG9.7

(C-OG9.7) Disclose the breakeven price (US$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No third-party verification or assurance

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Moderate assurance

Attach the statement

Page/ section reference
More detailed information is provided in C15

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
95

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?
No, we do not verify any other climate-related information reported in our CDP disclosure

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?
Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.
EU ETS
Kazakhstan ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS
100

% of Scope 2 emissions covered by the ETS

Period start date
January 1 2019

Period end date
December 31 2019

Allowances allocated
800232

Allowances purchased
210000

Verified Scope 1 emissions in metric tons CO2e
1043505

Verified Scope 2 emissions in metric tons CO2e

Details of ownership
Facilities we own and operate

Comment
The figures in this section are presented in tons of CO2 per year in accordance with the requirements of Directive 2003/87 / EU. The difference was ensured from the account existing certificates.

Kazakhstan ETS

% of Scope 1 emissions covered by the ETS
100

% of Scope 2 emissions covered by the ETS

Period start date
January 1 2019

Period end date
December 31 2019

Allowances allocated
26787006

Allowances purchased

Verified Scope 1 emissions in metric tons CO2e
8433246

Verified Scope 2 emissions in metric tons CO2e

Details of ownership
Facilities we own and operate

Comment
Quotas for plant operators were allocated for a period of 3 years for the period of validity of the National Plan, 18 subsidiaries and affiliates of KMG are included in the quota system of the Republic of Kazakhstan. Data on allocated quotas for 2019 in this section is presented in tons of CO2 per year, in accordance with the National Quota Allocation Plan for 2018-2020. 3 subsidiaries and affiliates received additional quotas from the government on a free basis in the amount of 425,494 tons due to an increase in production capacity and the launch of new stationary sources. Subsidiaries and affiliates are forecasting a deficit / surplus of quotas based on the results of 3 year performance of the National Quota Allocation Plan, and exact data on the necessity to purchase quotas will be determined in 2021 based on the results of verified reports for 2018-2020.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

KMG commits to reducing its carbon footprint, complying with the climate legislation, reasonably using natural resources and constantly improving the environmental performance of its operations.

We conduct our operations following the climate change regulations of regions where we operate. More specifically, we own and operate 18 facilities and three refineries that are regulated under the Kazakhstan and European cap and trade systems, respectively.

To ensure compliance with the schemes mentioned above, we are committed to our GHG reduction strategies consisting of the following core aspects:

1. GHG emissions monitoring, reporting and verification.

GHG emissions monitoring, reporting and verification is the key mechanism of ensuring regulatory compliance and data transparency. Thus, our facilities that are regulated under emission trading schemes conduct the following activities on an annual basis:

- Inventory of GHG emissions sources;
- Monitoring and assessment of GHG performance (for direct emissions only);
- Third-party verification of GHG emissions, and
- GHG emissions reporting to the competent authorities in Kazakhstan and Romania.

2. GHG performance analysis and control.

At the corporate level, we conduct continuous monitoring and control of activities related to emission reduction projects implemented by our operational facilities. Moreover, the corporate HSE department identifies and analyses potential risks associated with the deficit of GHG allowance holdings. We conduct risk assessment activities to proactively manage identified risks, adjust our strategic decisions when needed and direct our investments appropriately.

It is worth mentioning that our Kazakhstan facilities can apply for the additional cap-and-trade allowances in the following cases:

- introduction of new GHG emissions sources/installations;
- increases in capacity of existing installations.

3. Emission reduction activities.

Our emission reduction activities are mainly focused on the implementation of energy efficiency measures, methane leaks management and gas flaring reduction in our upstream companies.

As part of the modernisation of refineries, we have implemented several measures such as the launch of vapour recovery unit and installation of floating lids on new tanks. Additional emission reductions have been achieved as the result of energy efficiency measures, such as switching fuel for boilers from diesel to gas, workload optimisation of compressor stations with gas turbine drive, reconstruction of manufacturing equipment and fueling our company-owned vehicles with gas. To reduce methane emissions, we implemented pilot projects on the detection and measurement of methane leaks with support of the Norwegian EPA and international consultants.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism

Code of conduct featuring climate change KPIs

% of suppliers by number

100

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

Contractors make up over 50% of our workforce, and their increased focus on climate change will ultimately influence on KMG's overall performance. The company strives to increase the criteria for selecting potential suppliers to ensure that the work is performed at a high level and with full transparency of the entire service cycle.

Impact of engagement, including measures of success

The main indicator of success is the implementation of mechanisms for managing certain types of risks, control procedures associated with the implementation of processes supervised by the owners of KMG risk factors aimed at reducing the risk level. At the moment, we are not able to determine the level of effect of interaction with suppliers based on the implemented Standard, as its final approval and entry into force is planned for 2020, however this is undoubtedly a big step towards increasing the involvement of our suppliers in the process of managing climate issues.

Comment

In 2019, the Committee on Health, Safety, Environmental Management and Sustainable Development, reviewed and approved the Corporate standard for interaction with contracting companies in the field of health, safety and environmental protection at KMG which is a structural element of the management] system and contains requirements for agreements with contractors, including: - HSE agreement for compliance with the HSE requirements and penalties for their violation; - pre-mobilization audit of machinery and equipment readiness, contractor personnel; - assessment of the contractor based on the results of activities in the field of HSE. In addition, the Company regularly holds forums, meetings with potential service providers to discuss future joint partnerships and KMG requirements in the field of health, safety and environmental protection

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

% of customer - related Scope 3 emissions as reported in C6.5

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

KMG encourages its clients to implement energy efficiency measures. As the major supplier of gas to the population in the regions where it operates, KMG is constantly striving to modernize the supply process, both from an economic and environmental point of view. In 2019, gasification and reconstruction of gas distribution systems in Almaty was carried out. The project will enable to connect about 4.1 thousand new subscribers to gas supply with an average annual consumption of 15.8 million m³ of gas. The transfer of boiler houses and the private sector from coal heating to gas heating will reduce GHG emissions by 20-30%. Also, in October 2019, the construction of the 1st stage of the Saryarka main gas pipeline was completed and on December 27, 2019, a certificate of operational acceptance was signed. It is expected that it will ensure a stable supply of gas to the central regions and the capital of Kazakhstan, comprising about 2,710 thousand people. The main gas pipeline "Saryarka" will enable to switch to inexpensive and high-quality fuel - gas, significantly improving the environmental situation in the country. Since 2015, during the implementation of the project for the modernization, reconstruction and new construction of gas distribution networks in settlements of the Mangistau region, five settlements and 2.5 thousand new subscribers received access to gas.

Impact of engagement, including measures of success

As of January 1, 2020, 265 km (170 km in 2019) of new gas pipelines were built, 76 km of existing gas pipelines were reconstructed (34 km in 2019), 21 gas distribution plants, 1 block-type gas control unit were installed. The throughput capacity of the 1st stage of the Saryarka gas pipeline is up to 2.2 billion m³ per year. The total length of the gas pipeline is 1,060.6 km. 1,347 km of gas pipelines were built and upgraded (25 km in 2019), six automatic gas distribution stations, 34 gas distribution plants, 45 block-type gas control units were installed. As a result, gasified. During the implementation of the project in the Mangistau region, 1,347 km of gas pipelines were built and upgraded (25 km in 2019), six automatic gas distribution stations, gas distribution plants, 45 block-type gas control units were installed.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support	KMG subsidiaries and affiliates carry out an inventory of GHG emissions and submit verified reports as required by the Environmental Code on an annual basis. The reports are prepared both for the entities subject to quota and administration, as well as on installations with insignificant emissions. On July 29, 2019, KMG published for the first time a verified Report 1 on greenhouse gas emissions for 2018 as part of the CDP Climate Program (Carbon Disclosure Project 2), which included data on the volumes of direct and indirect greenhouse gas emissions for all KMG assets, including subsidiaries and affiliates in Romania and Georgia.	KMG is one of the key stakeholders in developing the environmental legislation. KMG is an active member of associations and working groups at the ministerial level and takes an active part in the development and discussion of the new edition of the Environmental Code of the Republic of Kazakhstan. On November 19, 2019, a Strategic Session was held at KMG on the draft of the new Environmental Code of the Republic of Kazakhstan. Within the framework of the meeting, the current status of the draft of the new Environmental Code of the Republic of Kazakhstan, the accompanying draft law (key changes, unresolved issues) was presented, as well as proposals were worked out for further steps to improve the environmental legislation of the Republic of Kazakhstan, taking into account the interests of the oil and gas industry, including the regulation of carbon reporting.
Cap and trade *GHG emissions regulation*	Support with minor exceptions	In 2019 KMG has written off 8,433,246 (Kazakhstan ETS) carbon units in the Kazakhstan Emission Trading Scheme. The purchase of emission quotas was not made, but according to the application from the government, quotas in the amount of 425,494 tons were additionally received on a gratuitous basis due to the expansion of production. KMG takes part in the discussion of the emission trading scheme in the process of developing the Environmental Code, as well as in the framework of the current legislation.	At present, the General Classifier of Economic Activities (OKED) of the Tax Code of the Republic of Kazakhstan 03-2019, intended for the classification and coding of all types of economic activities in the quasi-public sector, does not have a type of activity related to trading in emission quotas. KMG came forward with an initiative to include this type of activity in the classifier. Also, taking into account the existing experience and the identified risks and opportunities, the responsible KMG specialists made a proposal to change the method of allocating quotas by revising specific emission factors for oil and gas companies.
Clean energy generation	Support with minor exceptions	KMG participates in the implementation of the Concept of Kazakhstan on transition to a "green" economy, introduces renewable energy sources at its enterprises. In 2019, the company's own RES sources generated 1,797.89 MWh of energy and 245,067.92 MWh from renewable energy sources were received from third-party suppliers, as well as from Kazakhstan suppliers - 23,907.6 MWh	On December 24, 2019, the Government of the Republic of Kazakhstan approved the draft of the new Environmental Code of the Republic of Kazakhstan. At the end of 2019, the draft, with due consideration given to the public opinion and the best practices of OECD countries, was submitted for consideration to the Mazhilis of the Parliament of the Republic of Kazakhstan. The document review is still going on. Entry into force is scheduled for January 1, 2021. To implement the provisions of the new Environmental Code, the Government of the Republic of Kazakhstan started developing the best available technique (BAT) reference documents with the involvement of NJSC “International Center for Green Technologies and Investment Projects”. In 2020
Energy efficiency	Support with minor exceptions	Participates in the implementation of the Concept of Kazakhstan on transition to a "green" economy, makes proposals for the development and implementation of national strategies on improving energy efficiency. Since 2017, KMG has a Roadmap for energy saving and energy efficiency of subsidiaries and affiliates, as well as jointly controlled organizations and joint ventures of KMG for 2017-2020. In 2019, 69 energy saving and energy efficiency measures were implemented, the planned annual savings of fuel and energy resources amounted to 0.8 million GJ, in volume terms - 11.3 million kW of electricity, 91.3 thousand Gcal of thermal energy, 8,508 thousand m³ of natural gas.	In accordance with the Roadmap for energy saving, KMG comes forward with initiatives to ensure energy efficiency in the procurement of construction, reconstruction, overhaul of power equipment; attracting private investments to improve energy efficiency; improving the control system for compliance with the requirements and indicators of energy efficiency; The main proposal in the field of energy efficiency was to reduce the burden or abolish environmental taxes for entities that introduce clean technologies.
Climate finance	Support with minor exceptions	KMG Group of Companies steadily adheres to the principles of social responsibility, which are: creation of new jobs, implementation of social programs for personnel, sponsorship and charity, environmental and educational campaigns.	In 2019, for the KMG Group of Companies, the volume of social investments within the framework of subsoil use contracts amounted to USD 19 856 303 (KZT 7.6 billion). A number of organizations are considering the possibility of signing an agreement with international banks on the implementation of green projects.
Regulation of methane emissions	Support with minor exceptions	KMG takes an active part in the flaring reduction program, providing technical consultancy in developing legal and regulatory requirements for methane regulation. One of the most important tasks to reduce greenhouse gas emissions, in particular methane, is to increase the beneficial use and utilization of associated petroleum gas, and to minimize flaring. Salvaging of associated petroleum gas in 2019 amounted to 97%, the rate of gas flaring is at the level of 2.95 tons per 1,000 tons of crude hydrocarbons produced (11 in 2017, 6 in 2018), which is almost 51% lower than in 2018 and 10.5% lower than IOGP indicators. The company annually builds new disposal facilities, reconstructs existing facilities, invests in the construction of pipelines and infrastructure. On November 25, KMG took part and made a speech at the workshop of the Asian Development Bank and Carbon Limits on monitoring greenhouse gas emissions in the oil and gas sector, in particular, methane. 30 representatives of KMG subsidiaries and affiliates attended the workshop	KMG proposed to discuss the possibilities of implementing projects to reduce methane emissions and interacting with international organizations on similar projects.
Other, please specify (GHG emissions regulation)	Support with minor exceptions	On November 26, 2019, the first KMG Forum on Greenhouse Gas Emissions Management (Climate Session) was held in Nur-Sultan. It was attended by about 100 representatives of various industry enterprises. The Forum has become a place for constructive dialogue between professionals, a platform for the exchange of experience and knowledge. Lively discussions at the Forum revolved around the issues of greenhouse gas emissions management for KMG, expected changes in legislation in the field of greenhouse gas emissions regulation, trading in emission quotas, KMG's reporting under the CDP Climate Program, etc.	KMG proposed to include projects aimed at reducing methane emission in the oil and gas sector, in the national list of domestic projects to reduce GHG emissions.
Other, please specify (General issues)	Support	On August 6, 2019, JSC NC “KazMunayGas” (hereinafter referred to as KMG) and the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan (hereinafter referred to as the Ministry of Ecology) signed a Memorandum of Cooperation in the field of environmental protection (hereinafter referred to as the Memorandum). The memorandum was signed in order to improve the quality of the environment, ensure environmental safety and strengthen cooperation.	As per the provisions of the Memorandum, KMG, together with subsidiaries and affiliated companies, ensure mandatory observance of the environmental requirements and standards, carry out an inventory of wastes in contract areas, involve advanced methods and environmentally friendly technologies for waste processing, reclamation and restoration of oil-contaminated lands, and also ensure the subsequent utilization of waste products (treated soil) in economic activities, etc. In its turn, the Ministry of ecology monitors compliance with the requirements of environmental legislation, coordinates the implementation of measures to reduce the negative impact of the KMG group of companies on the environment. The Ministry also plans to implement a whole range of measures aimed at environmental protection.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association
“KAZAKHSTAN ASSOCIATION OF OIL-GAS AND ENERGY SECTOR ORGANIZATIONS “KAZENERGY”

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association’s position
KAZENERGY Association unites over 80 major energy companies in Kazakhstan and its overall aim is to support the sustainable development of its members and represent the energy sector’s interests at the country level. The Association is actively involved in the development of environmental legislation in the country. It ensures a unified position of the Association members on the further developments of environmental and climate legislation in Kazakhstan.

How have you influenced, or are you attempting to influence their position?
KMG management participates in several committees and working groups of the Association. KMG sees chairmanship in KAZENERGY Coordination Council as an opportunity for promoting sustainable development in the oil and gas sector in Kazakhstan. KMG also plays a significant role in the development and implementation of the Association’s programs and initiatives. Since 2017, KMG and KAZENERGY have been working together under the memorandum of cooperation. In the reporting year, KMG co-financed KAZENERGY’s research project on best international practices of environmental regulation, including climate law in the developed countries such as Canada, the UK, Norway, Germany and the United States. This work allowed Association and its members to deepen their knowledge about the international practices of GHG emission trading, carbon taxing, banking, carbon pricing and EITE in OECD countries. This project was implemented as a part of the ongoing work of the drafting of proposals for the new Environmental Code in Kazakhstan.

Trade association
National Chamber of Commerce "ATAMEKEN", Kazakhstan

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association’s position
Atameken is a not-for-profit organization established to enhance relationships between the Government and business community in Kazakhstan. The Chamber represents the interests of small, medium and large companies from all business areas, including internal and external trade. The main function of the Chamber is to protect the rights and interests of the business community and to ensure the active involvement of all entrepreneurs in the process of legislation development in Kazakhstan. https://atameken.kz/en/

How have you influenced, or are you attempting to influence their position?
In 2017, KMG and Atameken signed a cooperation agreement on legal matters. The agreement provides for cooperation in the following areas: − improvement of legislation; − implementation of joint programs and projects; − legal support in cases of disputes, etc. KMG actively participates in Atameken activities related to the development of commercial, tax, environmental and climate law in Kazakhstan.

Trade association
International Association of Oil & Gas Producers (IOGP)

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association’s position
IOGP supports the commitment of the international community in addressing the global challenge of climate change. IOGP believes that an effective policy should: - reduce emissions most cost-effectively; - promote global participation; - maximise transparency; -provide flexibility for adaptation to future changes in climate science and the economic effects of climate policies. KMG supports the vision, objectives and initiatives of IOGP for HSE improvement on a global scale.

How have you influenced, or are you attempting to influence their position?
Since 2014, KMG has been disclosing its HSE performance data as per the IOGP standards. It also conducts benchmarking with peer companies in the oil and gas sector for identifying areas for improvement. Since 2018, KMG has been a member of IOGP and provides the Association with the annual reporting, including the data on GHG emissions and gas flaring.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

In accordance with the Development Strategy of KMG, the Managing Director for HSE at KMG is responsible for the development of long-term priorities and targets of the KMG group of companies in the field of labor protection, industrial safety and environmental protection in strict accordance with the requirements of the legislation of the Republic of Kazakhstan. Thus, our corporate team ensures consistency in KMG’s activities, directly or indirectly influencing government policies. Thus, the activities affecting the state policy on climate change are coordinated by the HSE functional committee with representatives of all major KMG subsidiaries. One of their key roles of the Committee is to align and build KMG’s vision regarding the development of environmental legislation. Committee considers the production specifics of upstream, midstream and downstream companies, and evaluate all environmental and legal risks associated with legislation developments. Responsibility of the corporate centre is to develop corporate objectives and policies on GHG emission management, energy efficiency improvement, reduction of gas flaring, as well as protection of interests of our companies in Associations and industry working groups.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication
In mainstream reports

Status
Underway – previous year attached

Attach the document
KMG_NC_OUR_2018_EN_1105_1540.pdf

Page/Section reference
https://www.kmg.kz/self/report_2018/en/index.html

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment
The attached KMG report on sustainable development for 2018. The sustainable development report for 2019 will be available to the public in the second half of 2020.

Publication
In mainstream reports

Status
Complete

Attach the document
KMG_AR_2019_ENG_30.04_1451.pdf

Page/Section reference
https://www.kmg.kz/uploads/reports/KMG_AR_2019_ENG_30.04_1451.pdf

Content elements
Governance
Strategy
Risks & opportunities

Comment
The attached KMG Annual report for 2019.

Publication
In mainstream reports

Status
Underway – previous year attached

Attach the document
KazMunayGas_CDP_Climate Change 2019.pdf

Page/Section reference
http://ir.kmg.kz/storage/files/b1ff3da8c543439e/CDP%20Climate%20Change.pdf

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures

Comment
The attached 2018 GHG Emissions Report. The 2019 GHG emissions report will be available to the public in the second half of 2020.

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

KMG sincerely thanks the Carbon Disclosure Project for giving an opportunity to participate in the global climate-related disclosure system. The preparatory stage and the process of completion of the Climate Questionnaire form is a crucial moment in the daily activities of KMG, therefore, from its end, KMG would like to thank the executive employees of CDP who provide the necessary methodological and informational support in preparing for completion of the Questionnaire form.

It should be mentioned that at the beginning of the year, when planning to complete the CDP Climate Questionnaire form, the process of data verification, namely greenhouse gas emissions, was incorporated into the project. However, due to the instability of the economic situation in the country, the lack of an opportunity for a third-party inspection of our facilities throughout Kazakhstan due to restrictions on movement, as well as the main responsible KMG employees being under lockdown, KMG was forced to give up on data verification. Nevertheless, at the end of the reporting year 2019 (April 1, in accordance with the requirements of the environmental legislation of the Republic of Kazakhstan and the EU), 100% of our subsidiaries and affiliates went through the process of verification of Category 1 direct emissions by third-party organizations and provided reliable information to KMG, which was used in answering the questions of the CDP Climate Questionnaire 2020.

Thus, KMG is aware of its responsibility for providing any indicators in the CDP Climate Questionnaire and looks forward to further development and improvement of its answers. The percentage of Category 1 emissions tested was 95%.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Environmental, health and safety Managing Director	Environmental, health and safety manager

Submit your response

In which language are you submitting your response?
English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

Please confirm below
I have read and accept the applicable Terms