C0. Introduction

C0.1

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

JSC National Company “KazMunayGas” (KMG) is a vertically integrated national oil and gas company that operates across upstream, midstream and downstream segments, representing the interests of the state in the oil and gas industry of Kazakhstan. 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, 56% 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 83 thousand people.

We recognise 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.

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. In 2018, we received a Sustainability excellence award for our achievements in environmental management and sustainability reporting. This award was 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 Energy 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
Row 1	January 1 2018	December 31 2018	Yes	3 years

C0.3

(C0.3) Select the countries/regions 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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas 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. 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.
Other, please specify (Board of Directors)	BoD reviews and approves the annual SD report and other corporate documents associated with SD 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	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	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 2018, the BoD approved the roadmap – 2020 for HSE management improvement in KMG.

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)	Responsibility	Frequency of reporting to the board on climate-related issues
Environmental, Health, and Safety manager	Both assessing and managing climate-related risks and opportunities	As important matters arise
Safety, Health, Environment and Quality committee	Both assessing and managing climate-related risks and opportunities	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 Chairman of the Management Board of KMG. 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 will oversee the implementation of GHG emissions management policy following its development and implementation in 2019.

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. For example, the KMG HSE MD chaired a meeting of the Environmental and Social Responsibility Coordination Council under the Kazakhstan Association of Oil, Gas, and Energy Sector Organisations (KAZENERGY), where major energy companies discussed the upcoming environmental legislation amendments and associated risks and opportunities for the 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.

C1.3

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

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).

Who is entitled to benefit from these incentives?
All employees

Types of incentives
Monetary reward

Activity incentivized
Behavior change related indicator

Comment
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. In 2018, the Award was granted to our colleague with the idea of the “Green office” project that involves the implementation of resource and energy-efficient technologies in one of our subsidiaries.

Who is entitled to benefit from these incentives?
All employees

Types of incentives
Recognition (non-monetary)

Activity incentivized
Behavior change related indicator

Comment
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.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term			KMG does not specify an exact time horizon for short-, medium- and long-term risks. However, risks are classified as long-term and actual (which can occur from the moment of identification and during the risk control).
Medium-term			KMG does not specify an exact time horizon for short-, medium- and long-term risks. However, risks are classified as long-term and actual (which can occur from the moment of identification and during the risk control).
Long-term			KMG does not specify an exact time horizon for short-, medium- and long-term risks. However, risks are classified as long-term and actual (which can occur from the moment of identification and during the risk control).

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.
Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	Unknown	To minimise the potential impact of the climate-related risks, including risks associated with extreme climate conditions, KMG pays special attention to measures aimed to ensure process safety and asset integrity. KMG manages risks through the implementation of a corporate risk management system at all levels of the group of companies. The risk management process at a corporate level involves the collection and monitoring of operational, financial and HSE data as well as a review of risk prevention reports quarterly. All the information collected by the Risk Management Department is submitted to the Risk Committee for the review and preparation of recommendations to the KMG Management Board. Thus, the Corporate team identifies and assesses the climate risks every quarter, while the risk control measures are implemented continuously at the subsidiary level.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

KMG's methodology for identification, assessment, monitoring, and management of environmental and climate-related risks follows an integrated approach of the Corporate Risk Management System (CRMS).

KMG Risk Committee has been established to assist the KMG Management Board in ensuring efficient corporate risk management and achieving the strategic and operational KPIs at the KMG level. The committee's responsibilities include the monitoring of all operational and non-operational risks quarterly, as well as monitoring and assessment of the implementation of risk control measures being undertaken at the subsidiary level.

The risk of negative environmental impact, that includes climate risk factors, is one of the key corporate risks of KMG. KMG's HSE and operational departments are the owners of corporate environmental risk and, therefore, are accountable for ensuring the risk is managed appropriately and effectively.

How climate-related risks are identified and assessed at a company and an asset level?

Environmental/climatic 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.

The assessment process is closely related to determining the potential impact of risks on the achievement of KMG's strategic goals. Risks can be assessed qualitatively and quantitatively. Qualitative assessment is used in cases when risk factors cannot be assessed numerically. Examples of the quantitative assessment of environmental/climate risks/risk factors include the following methods:

- assessment of the value of the property, exposed to the risks of damage due to extreme weather conditions. The quantitative assessment, in this case, will be based on the estimated cost of recovery measures, property repair or replacement;
- assessment based on the estimation of lost revenue due to the risk occurrence;
- results of comparative analysis of costs of regulatory non-compliance and the cost of environmental damage.

The process you have in place for assessing the potential size and scope of identified risks

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.

How your organisation defines substantive financial and strategic impact on your business + The process by which your organization determines the relative significance of climate-related risks in relation to other risks

Based on the assessments of frequency, impact and time horizon, we estimate the ***level of significance*** of risk factors [(frequency + time horizon) * impact]. These indicators of risk significance demonstrate the extent of the impact of risk realisation on the company's financial and operational performance (see the description of *levels of significance* in C2.2d).

It is should be noted that our Corporate framework for risk management does not account for the relative significance of climate-related risks in relation to other risks. Operational and non-operational risks, including environmental and climate-related risks, are managed within the single Corporate Framework and their significance in relation to the fulfillment of the Company's strategic goals depends on their ***level of significance***.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	As KMG operates in several countries of Eurasian Customs Union, the European Union, and Georgia, our company is exposed to various regulatory risks. Strict legislation on APG flaring and excessive tax rates on emissions for oil and gas companies in Kazakhstan directly affect the capital and operating costs of our operations. The risks associated with gas flaring and the inability to properly utilise APG are included in our corporate risk register as priority risks. This is because they directly affect our production and financial performance, as well as the level of our regulatory compliance. Regulated under the European ETS, our Romanian assets are also subject to any changes in the prices for GHG emission allowances.
Emerging regulation	Relevant, always included	Since 2018, a new Environmental Code is being developed in Kazakhstan. The development of environmental legislation, based on the adaptation of regulatory practices of OECD countries, may result in significant costs and risks posed by unavailability of several facilities to implement the best available techniques (BAT). To comply with the requirements of the new legislation, our mature fields that have been operating since the 60s will have to develop long-term investment projects for BAT implementation. The regulatory uncertainty associated with GHG emissions is also one of the potential risks that we assess and manage in our subsidiaries. In 2020, benchmarking applications will be a default method of allocating emission allowances to companies participating in the Kazakhstan ETS (as opposed to a method based on historical activity). This will result in the potential risks of exceeding the established benchmarks by some of our facilities in the future, that in turn, will lead to an increase in operating costs of compliance.
Technology	Relevant, always included	Our technological risks are assessed and managed comprehensively within the corporate RMS. Technological risks are directly related to the fulfilment of environmental, climate, energy efficiency and subsoil use legislative requirements. More specifically, technological risks are related to our obligations to modernise the technological processes and introduce advanced and innovative technologies. Technological risks are more commonly assessed in financial losses, which may follow from delayed execution of equipment modernisation programs as well as inefficient investments or high capital investments in new technologies. One of the examples of potential technological risks that KMG is exposed to is the delayed launch of APG processing and utilisation unit. This may result in significant compliance costs, review of our permits and failure to achieve our production KPIs.
Legal	Not evaluated	
Market	Relevant, always included	Changes in global oil prices present a significant risk to KMG. The high volatility is explained by factors affecting the global balance of demand and supply. Low oil prices over a long period will inevitably affect the financial performance of many energy companies, especially in case of a drop in prices below the production costs. Fluctuations in oil prices are one of the key corporate risks, which is also monitored within the corporate risk management system. As part of the risk management measures, KMG models the price risk and compares the results with planned indicators for further optimisation of costs and capital investments as required.
Reputation	Relevant, always included	KMG continuously manages reputational risks affecting our relationships with partners, investors, authorities, public and other stakeholders. Being an important player in the Kazakhstan and European markets, as well as a key contributor to the development of the Kazakhstan economy, we are aware of our responsibility to the company's internal and external stakeholders. Therefore, KMG continuously assesses the reputational risks related to the expectations and concerns of our stakeholders in terms of compliance with environmental legislation, as well as the development of plans and strategies for low-carbon transition.
Acute physical	Relevant, always included	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)
Chronic physical	Relevant, always included	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)
Upstream	Not evaluated	
Downstream	Not evaluated	

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Climate/environmental risk at corporate and asset levels are also managed within the CRMS described above in section 2.2b. Environmental risks and opportunities are also integrated into our business strategy and umbrella documents.

The decision-making procedure for environmental risk control is managed by the corporate Methodology for identification, assessment and control of risks. The Methodology defines standard risk management practices, such as:

- risk mitigation;
- risk acceptance;
- risk transfer;
- risk prevention.

During our decision-making process in regards to the risk control and management measures, we consider the following:

- compliance with our strategy, plans and budget;
- availability of required resources;
- the results of cost-benefit analysis;
- compliance with regulatory requirements.

For example, ***the acceptance of risk*** or ***risk transfer*** is carried out if the application of other methods is not economically viable in comparison with the damage arising from the risk occurrence. Another example is a ***risk control*** method that is commonly applied for compliance purposes.

We assess the efficiency of risk/risk factor control measures on an ongoing basis. Performance evaluation allows us to adjust our decisions and allocate our resources according to the results of cost-benefit analysis. To ensure the efficiency of the risk management process and reduce the costs associated with their implementation, the Company focuses on critical risks with the most significant impact on our financial and strategic performance. Thus, RM programs are developed based on ***levels of significance*** of risk factors, which are presented in five categories (from extremely high to extremely low). The risk factors with the estimated ***levels of significance*** from 0 to 1 are controlled at the asset level, but the implementation of response measures are not required. Risk factors with high and extremely high priority are managed at the corporate level at the stage of project planning or immediately after its occurrence during the project implementation. In other words, control measures are developed and implemented for all risk factors located in the yellow and red zones of the risk map/matrix.

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

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact
<Not Applicable>

Company- specific description
In 2018, about 97% of our direct emissions were regulated by the Kazakhstan and European ETS. Due to changing GHG emission allowances allocation method in Kazakhstan from 2021 (application of benchmarks for all regulated facilities), there is a potential risk of exceeding quotas in subsidiaries, where GHG allowances were previously determined based on a less stringent, 'historical activity method'. For example, the difference in allocated amounts between the two methods for our entities may vary from 20 to 80% in favour of the historical activity method. As a result, we are exposed to the risk of a significant increase in operating costs associated with the need to compensate for the allowances deficit.

Time horizon
Unknown

Likelihood
Unknown

Magnitude of impact
Unknown

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
Calculation of potential financial impact is currently not possible due to the continuous change of the price level per unit of allowances/quotas on Kazakhstan ETS. Another reason for this is the uncertainty associated with upcoming changes in GHG emission control legislation.

Management method
Risk is managed through the implementation of technological activities. At the level of all major KMG subsidiaries, we implement projects on reducing GHG emissions by reducing gas flaring, implementing energy efficiency programs and upgrading our equipment and processes. Since 2015, KMG has been a member of the World Bank's 'Zero Routine Flaring by 2030' initiative. To support the initiatives of the World Bank and the Global Gas Flaring Reduction Partnership (GGFR), we plan to develop a roadmap to eliminate routine gas flaring by 2030. In 2018, we continued increasing APG utilisation through the construction of the required infrastructure. For timely response and strategic decision-making, the gas utilisation intensity in KMG is estimated and monitored regularly. In 2018, the utilisation rate amounted to 93%. Another management measure is a continuous improvement of skills and knowledge of our workforce. We are also actively working on the advancement of the environmental legislation in Kazakhstan to increase the transparency and efficiency of GHG emission trading system and other climate-related regulations.

Cost of management

Comment

Identifier
Risk 2

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

Risk type
Transition risk

Primary climate-related risk driver
Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact
<Not Applicable>

Company- specific description
KMG is an integrated company with several subsidiaries, affiliated companies and joint ventures. Some of our upstream companies

in Kazakhstan do not have the necessary infrastructure for beneficial use of APG (for purposes other than flaring). This creates potential risks of exceeding the permitted volumes of gas flaring. Considering the international initiatives supported by Kazakhstan, as well as the planned enforcement of APG flaring legislation, we estimate that KMG is potentially exposed to risks such as payment of significant fines and taxes, delay in issuing gas flaring permit/emission permit, and a decrease of production activities.

Time horizon
Unknown

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
We estimate our financial impact figures based on the previous cases of exceeding permitted gas flaring volumes (historical method).

Management method
At the level of all upstream assets, we carry out projects aimed at increasing the beneficial use of APG. Since 2015, KMG is a member of the World Bank's initiative “Zero Routine Flaring by 2030”. To support the initiatives of the World Bank and the GGFR, we plan to develop a Roadmap for the complete elimination of routine gas flaring by 2030. In 2018, we fulfilled our strategic goal of increasing the beneficial use of APG in our upstream companies through the construction of gas pipelines and gas treatment plants. For example, in 2018, the Integrated Gas Treatment Facility (GTU) at the Prorvinskaya group of fields (Atyrau region, Kazakhstan) began its full-scale operation. By the end of 2018, another gas treatment plant UKPG-40 was put into operation in the Aktobe region. Both projects resulted in increased amounts of beneficial use of gas, significantly reducing GHG emissions (e.g. by 80% in the Atyrau region). For timely response and strategic decision-making, the gas utilisation intensity in KMG is estimated and monitored regularly. In 2018, we were able to adjust the Programs for the Development of APG utilisation (PDAU) at two facilities and obtain additional permits for gas flaring to avoid the violation of subsoil use and environmental legislation. As a member of the Association of oil and gas companies, we are also actively involved in the improvement of subsoil use and tax legislation in Kazakhstan.

Cost of management

Comment

Identifier
Risk 3

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

Risk type
Transition risk

Primary climate-related risk driver
Technology: Costs to transition to lower emissions technology

Type of financial impact
<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
Unknown

Likelihood
Unknown

Magnitude of impact
Unknown

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
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.

Management method
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.

Cost of management

Comment

Identifier
Risk 4

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

Risk type
Physical risk

Primary climate-related risk driver
Chronic: Rising sea levels

Type of financial impact
Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description
We are aware of the impacts of physical risks on our operations. This is particularly important in regions where we operate near the Caspian sea. Since the 1980s, the Caspian Sea levels have changed substantially, posing the risk of flooding. The risks of sea-level rise may have the following negative consequences for our facilities located nearby: - increased capital and operating costs; - pollution of marine ecosystems due to flooding of plugged and abandoned wells; - increased costs of environmental insurance.

Time horizon
Unknown

Likelihood
Unknown

Magnitude of impact
Unknown

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

Management method
KMG was one of the first companies in Kazakhstan to implement the management program for flooded wells. Also, to prevent pollution of the Caspian Sea, we build protective dams, as well as constantly monitor oil wells in Atyrau region. We also plan to implement decommissioning projects aimed at wells that are under threat of flooding.

Cost of management

Comment

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?
No

C2.4b

(C2.4b) Why do you not consider your organization to have climate-related opportunities?

	Primary reason	Please explain
Row 1	Not yet evaluated	We do not assess and manage climate-related opportunities, though we understand that we are exposed to them, especially to those related to current and emerging regulation. This is explained by the absence of a procedure for the identification and assessment of opportunities and their integration into the company's strategy. This practice is new for KMG and we plan to introduce a system for identification, assessment and management of opportunities in 2019.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Not impacted	In 2018, our products and services were not significantly affected by climate-related risks and opportunities. Our products are the main energy resources on the market, especially in Kazakhstan. This is due to the growing demand for affordable fuel and energy, as well as the slow development of renewables in the region. However, we expect that changes in environmental legislation in Kazakhstan and the EU, increase in GHG allowances pricing and increase in expectations of our stakeholders to develop low-carbon products may result in the following: • increase in production costs, leading to the increase pricing for our products; • the potential risk of litigation; • changes in the consumer preferences in the European market; decline in demand for products that have a significant negative environmental impact. We will continue assessing and monitoring regulatory, technological and reputational risks directly related to climate change as part of our corporate risk management system. This is to ensure timely control and management of the consequences of any changes in the market and in the regulation of the countries in which we operate.
Supply chain and/or value chain	Not yet impacted	In 2018, we started working on the improvement of cooperation with suppliers and other partners in the value chain. We will start collecting the environmental and climate-related information once all necessary policies and strategies for supplier management are developed. At this stage, we expect our partners not to be exposed to significant climate-related risks.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	Our business in the western regions of Kazakhstan may be significantly affected by climate change, resulting in increased costs for adaptation to climate change. As noted in C2.3a, we implement all required measures to ensure industrial safety of facilities impacted by the physical implications of climate change. We control this risk through the assessment of the integrity of processes along with the allocation of required funds for the risk management measures.
Investment in R&D	Not evaluated	Though we have not assessed the impact of climate aspects on business for investment in R&D, we are confident that in the future KMG expects to increase investments in this area. The continuous development of green technologies, changes in market mechanisms, as well as the introduction of new requirements for the quality of oil products in the Customs Union and the EU, may significantly affect our R&D strategy.
Operations	Impacted	Reducing GHG emissions and improving energy efficiency at all production facilities are corporate goals integrated into KMG business strategy. Our operational activities to a large extent depend on how effectively and timely we manage our climate-related risks and opportunities. Non-compliance with regulatory requirements may result in enforcement measures ranging from administrative fines to temporary suspension of operations. We also assess the impact of the implementation of technological risks on the cost of our products, which may potentially affect our revenue.
Other, please specify	Please select	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	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.
Operating costs	Impacted	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.
Capital expenditures / capital allocation	Impacted	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.
Acquisitions and divestments	Impacted	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.
Access to capital	Not evaluated	
Assets	Impacted for some suppliers, facilities, or product lines	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.
Liabilities	Not evaluated	
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

No, but we anticipate doing so in the next two years

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

No, we do not have a low-carbon transition plan

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

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.

Climate - related issues are not only integrated into our overall business strategy. In 2018, KMG developed a separate emissions management policy, consisting of eight key principles, six of which are directly related to climate issues:

- compliance with the requirements of Emission Trading Schemes we participate in;
- GHG inventory, accounting, monitoring and reporting;
- commitment to 'Zero Routine Flaring by 2030' initiative in our upstream companies;
- implementation of carbon footprint reduction measures;
- carbon management;
- continuous improvement of emission management activities (e.g. forecasting, prevention and climate change mitigation).

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. Since 2015, we have been actively reducing gas flaring through utilisation of APG and its beneficial use at production sites. From 2018, our subsidiaries have been developing a roadmap to meet the commitments of the World Bank "Zero Routine Flaring by 2030" initiative.

Climate-related issues are also considered during the business planning process when new investment projects are reviewed. HSE team actively participates in the assessment of technical documentation for environmental and climate compliance purposes. It also assesses all environmental risks associated with investments. In 2018, KMG reviewed about 10 investment projects aimed at reducing APG flaring and improving energy efficiency.

We also strive to reduce emissions occurring from the use of sold products. For example, as a result of recent modernisation of our refineries in Kazakhstan, we are producing gasoline and diesel with eco-standards of K4 and K5 (equivalent to Euro 4 and Euro 5).

Since 2014, our subsidiary KazTransGas has been significantly expanding gasification in regions of Kazakhstan. This allowed the local population and major industrial facilities to switch to the consumption of more ecological fuel (natural gas). In 2018, we continued expanding the use of CNG as a motor fuel in company-owned vehicles in the western and southern regions of Kazakhstan.

In 2018, the percentage of consumption of fuel and energy resources decreased by 3,6% compared to the base year 2016 (see C4.2). This was due to implementation of energy-efficiency measures in the 14 largest, most energy-intensive facilities of KMG. These activities have been performed as part of the corporate roadmap for HSE improvement.

Under the KMG business strategy, we aim to reduce our energy consumption by 4,5 million GJ by 2021 and further by at least 1 % annually by 2028. The KPI will be achieved through the introduction of energy-efficient technologies; modernisation, reconstruction and overhaul of major assets; energy audits, as well as through the leadership awareness of energy efficiency at our production facilities.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business 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.

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 do not have 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 tonnes.	There are several reasons why KMG has not yet set GHG reduction targets at the corporate level: • In 2019-2020 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) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

Target
Energy usage

KPI – Metric numerator
KPI is defined in %

KPI – Metric denominator (intensity targets only)
NA

Base year
2016

Start year
2016

Target year
2020

KPI in baseline year
0

KPI in target year
7.2

% achieved in reporting year
53

Target Status
Underway

Please explain
“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.

Part of 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

C-OG4.2a

(C-OG4.2a) If you do not have a methane-specific emissions reduction target for your oil and gas activities or do not incorporate methane into your target(s) reported in C4.2 please explain why not and forecast how your methane emissions will change over the next five years.

As described in C4.1c, we need to thoroughly study the international practices of determining GHG emission reduction targets as well as bringing into line the practice of accounting and reporting GHG emissions from our Kazakhstan and international facilities. We shall also develop value chain management system to enhance engagements with our partners. As noted previously, KMG assessed and reported the indirect GHG emissions (scope 2 & 3) and accounted for direct GHG emissions of international assets for the first time in 2018. As part of our ongoing improvement of GHG emission management, we need to provide training to our environmental and energy experts to continue our efforts on enhancing the GHG emissions accounting and reporting transparency and accountability. 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.

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*	57	42000
Not to be implemented		

C4.3b

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

Initiative type

Energy efficiency: Processes

Description of initiative

Other, please specify (Energy efficiency measures implemented in upstream companies)

Estimated annual CO2e savings (metric tonnes CO2e)

16000

Scope

Scope 1

Voluntary/Mandatory

Mandatory

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

200000

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

800000

Payback period
4 - 10 years

Estimated lifetime of the initiative
6-10 years

Comment
The data is presented for 22 energy efficiency measures implemented in upstream companies in 2018.

Initiative type
Energy efficiency: Processes

Description of initiative
Other, please specify (Energy efficiency measures implemented in midstream companies)

Estimated annual CO2e savings (metric tonnes CO2e)
22000

Scope
Scope 1

Voluntary/Mandatory
Mandatory

Annual monetary savings (unit currency – as specified in C0.4)
1300000

Investment required (unit currency – as specified in C0.4)
3200000

Payback period
1-3 years

Estimated lifetime of the initiative
1-2 years

Comment
The data is presented for 25 energy efficiency measures implemented in midstream companies in 2018.

Initiative type
Energy efficiency: Processes

Description of initiative
Other, please specify (Energy efficiency measures implemented in downstream companies)

Estimated annual CO2e savings (metric tonnes CO2e)
4000

Scope
Scope 1

Voluntary/Mandatory
Mandatory

Annual monetary savings (unit currency – as specified in C0.4)
100000

Investment required (unit currency – as specified in C0.4)
300000

Payback period
1-3 years

Estimated lifetime of the initiative
1-2 years

Comment
The data is presented for 10 energy efficiency measures implemented in downstream companies in 2018.

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	In 2018, our subsidiaries allocated about 2,5 million US dollars to implement energy efficiency measures. These investments allowed to save about 540 thousand GJ of energy (1,1 million US dollars). The most effective measures were the introduction of smart systems for well control, deployment of LED lightening systems and automation of energy consumption monitoring and accounting systems.
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 organisations 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
Other, please specify

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

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. 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.

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

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.

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 (see C-OG4.7a).

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.

COG4.7

(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. Thus, in 2018, the beneficial use of APG in KMG amounted to 93% and is significantly higher than our 2017 indicator of 85%. The gas flaring intensity amounted to six tonnes per 1,000 tonnes of oil produced, which is almost 50% lower than the global IOGP average. Our success is a result of the implementation of the following projects:

- gas usage for energy generation purposes and other technological needs;
- expansion of gas processing infrastructure;
- construction of gas pipelines and expansion of gas distribution network.

In the western region of Kazakhstan, we have launched the APG treatment plant with an annual capacity of 150 million m3. This plant will allow to utilise APG in an environmentally efficient way and produce commercial gas and gas condensate for further sale in the market.

In addition to investment projects, we are also actively working with regulators, international organisations and industry associations on the complete elimination of routine gas flaring at our production facilities. As noted before, KMG is a participant in the World Bank's initiative, as well as a key player in promoting this initiative among oil and gas companies in Kazakhstan. As part of the global initiative, we report on gas flaring performance on a regular basis, demonstrating our commitment to achieving this goal.

In the future, we also plan to establish a working group and develop a roadmap to fulfil our goal of 'Zero Routine Flaring by 2030'.

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 Scope 1 and Scope 2 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 (Information is 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 Scope 1 and Scope 2 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)
14695106

Start date
January 1 2018

End date
December 31 2018

Comment
Gross global Scope 1 emissions for the reporting year.

Past year 1

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 2

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.

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)
11633948

Start date
January 1 2015

End date
December 31 2015

Comment
Gross global Scope 1 emissions for 2015.

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
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 the reporting year.

Past year 1

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 2

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.

Past year 3

Scope 2, location-based
2451480

Scope 2, market-based (if applicable)
2504145

Start date
January 1 2015

End date
December 31 2015

Comment
Gross global Scope 2 emissions for 2015.

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
In 2018, we were not able to collect reliable data to assess emissions from our retail network represented by 600 filling stations in Romania and more than 200 filling stations in Georgia, Moldova, and Bulgaria. In terms of Scope 1 emissions, we assume that direct emissions are not relevant in comparison to our gross Scope 1 emissions. In terms of Scope 2 emissions, a more thorough study is needed to assess its materiality. We actively consider the possibility of improving the data collection process for our retail operations in Europe to be able to disclose its emissions in the next few years.

C6.5

(C6.5) Account for your organization’s 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>

Explanation
Considering the complexity of KMG's procurement system, as well as significant costs associated with the data collection from suppliers, we conclude that the assessment of emissions of "Purchased goods and services" was not feasible for us in 2018. We are planning to improve the suppliers' management system as well as to analyse available emission factors from external databases to be able to estimate emissions from category 1 in the next few years.

Capital goods

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>

Explanation
We assume that emissions associated with the purchasing of capital goods are not relevant compared to our main category of scope 3 emissions "Use of sold products".

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

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>

Explanation
Since more than 85% of the energy consumed by our operational and administrative facilities is own-produced, emissions from fuel-and-energy-related activities are considered insignificant in relation to our gross scope 3 emissions.

Upstream transportation and distribution

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>

Explanation
We assume that emissions associated with the upstream transportation and distribution are not relevant compared to our main category of scope 3 emissions "Use of sold products".

Waste generated in operations

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>

Explanation
More than 80 % of the waste generated in our facilities is transferred for disposal by third-party companies. Landfilling is considered as the main waste disposal method. GHG emissions assessment from waste decomposition and degradation allows us to conclude that they contribute less than 1% to our gross scope 3 emissions and, therefore, are considered insignificant.

Business travel

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>

Explanation
We assume that emissions from business travels are not relevant compared to our main category of scope 3 emissions "Use of sold products".

Employee commuting

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>

Explanation
We assume that emissions from employee commuting are not relevant compared to our main category of scope 3 emissions "Use of sold products".

Upstream 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>

Explanation

We assume that emissions associated with the upstream leased assets are not relevant compared to our main category of scope 3 emissions "Use of sold products".

Downstream transportation and distribution

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>

Explanation

We assume that emissions associated with the downstream transportation and distribution are not relevant compared to our main category of scope 3 emissions "Use of sold products".

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>

Explanation

We assume that most parts of the emissions associated with the processing of sold products have been accounted for in our main scope 3 category 11 “Use of sold products”.

Use of sold products

Evaluation status
Relevant, calculated

Metric tonnes CO2e
71305005

Emissions calculation methodology
GHG emissions were calculated based on the production method. Activity data is net production. Our scope 3 emissions assessment did not consider the production data from Kazakhstani refineries following the specific business model of our downstream operations in Kazakhstan. We operate in accordance with the tolling contracts that we have with our supplying partners from Russia. Hence, we mostly provide oil refining services and emissions from “use of sold products” occur outside of our value chain boundaries. Therefore, the assessment of scope 3 emissions from downstream operations considered only Romanian refineries. Products included in the calculation: Upstream: • Oil and NGLs: 20673 thousand tons; • Gas (natural and associated gas): 1760 thousand tons. Downstream: • Diesel: 2747 tons; • Gasoline: 1567 thousand tons; • Jet fuel: 317 thousand tons; • LPG: 265 thousand tons; • Fuel oil: 158 thousand tons; • Petroleum coke: 268 thousand tons. The calculations were made following the recommendations of the CDP Technical Category: 11 emissions for oil and gas companies (hereinafter “CDP Technical Note”). Higher tier was used for Kazakhstani assets, and Tier 1 for our assets in Romania. The carbon content of the products was calculated based on the results of gas composition laboratory analyses. The average carbon content for gas is 73%, for oil is 85%, for NGLs - 83% and for LPG - 82%. Default effective oxidation rates (EO) were taken from Appendix A2 of the CDP Technical Note. Tier 1 and Tier 2 approach was used to calculate CH4 and N2O emissions. Default emission factors for CH4 and N2O were derived from the 2006 IPCC guidelines and national publications. The latest GWP values from the Fifth IPCC Assessment Report were used to assess emissions in tonnes of CO2 equivalent.

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

Explanation
We have verified scope 3 category 11 emissions from our facilities regulated under emission trading schemes in Kazakhstan and EU. Detailed information on verification of scope 3 emissions is provided in C10.1b.

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>

Explanation
We have assessed the emissions associated with the end of life treatment of products made from polymers we produce. The contribution of these emissions is less than 4% to 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>

Explanation
We assume that emissions associated with the downstream leased assets are not relevant compared to our main category of scope 3 emissions "Use of sold products".

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>

Explanation
We assume that emissions from our retail network of filling stations operated by franchisees are not relevant compared to our main category of scope 3 emissions "Use of sold products".

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>

Explanation
We assume that emissions associated with our investments into the largest oil and gas exploration and production projects in Kazakhstan are not relevant compared to our main category of scope 3 emissions "Use of sold products".

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>

Explanation

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>

Explanation

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered 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
0.00105

Metric numerator (Gross global combined Scope 1 and 2 emissions)
17936997

Metric denominator
unit total revenue

Metric denominator: Unit total
17040623317

Scope 2 figure used
Location-based

% change from previous year
7

Direction of change
Decreased

Reason for change
The decrease in the intensity of emissions per unit of total revenue is associated with an increase in income by 17% compared with the previous year. At the same time, the growth of our scope 1 and scope 2 emissions was not significant and amounted to 8%.

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
26

% change from previous year
7

Direction of change
Decreased

Reason for change
The CO2e intensity of our downstream operations has decreased from 28 tonnes CO2e per thousand barrels of refinery throughput in 2017 to 26 tonnes CO2e thousand barrels of refinery throughput in 2018. The decrease of intensity figure is related to improved energy and production efficiency of our refineries, as well as increased refinery throughput.

Comment
In 2018, as a result of energy efficiency measures at Kazakhstan refineries, more than 34 thousand GJ of energy was saved.

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

Metric tons CO2e from hydrocarbon category per unit specified
165

% change from previous year
5

Direction of change
Decreased

Reason for change
The CO2e intensity of our upstream operations has decreased from 173 tonnes CO2e per thousand tonnes of hydrocarbon crude production in 2017 to 165 tonnes CO2e thousand tonnes of hydrocarbon crude production in 2018. The decrease of 4.62% is a result of a decline in hydrocarbon production by 130 thousand tonnes.

Comment
The unit of hydrocarbon category "Other" was selected as we are unable to disaggregate GHG emissions from our upstream operations 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
216

% change from previous year
2

Direction of change
Decreased

Reason for change
Emission intensity has decreased from 221 tonnes CO2 per thousand tonnes of processed hydrocarbon crude in 2017 to 216 tonnes CO2 thousand tonnes of processed hydrocarbon crude in 2018. The decrease of 2.26% is related to the growth of refining throughput by more than 1.2 mln tonnes.

Comment
The presented value is aligned with the emissions intensity data that we disclose to IOGP. Hence, the intensity value is estimated based on the data provided by three of our Kazakhstan refineries only.

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

Metric tons CO2e from hydrocarbon category per unit specified
101

% change from previous year
8

Direction of change
Decreased

Reason for change
Emission intensity has decreased from 110 tonnes CO2 per thousand tonnes of hydrocarbon crude production in 2017 to 101 tonnes CO2 thousand tonnes of hydrocarbon crude production in 2018. The decrease of 8% is a result of a decline in hydrocarbon production by 102 thousand tonnes.

Comment
The presented value is aligned with the emissions intensity data that we disclose to IOGP. Hence, the intensity value is estimated based on the data provided by seven upstream companies only.

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
1.82

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.23

Comment
The values presented were determined by dividing gross methane emissions from our upstream activities by natural gas production and total hydrocarbon production respectively. Both CH4 emissions and production values were given in metric tonnes.

Oil and gas business division
Midstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division
0.14

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.09

Comment
The values presented were determined by dividing gross methane emissions from our midstream activities by natural gas transportation and total oil and gas transportation volumes respectively. Both CH4 emissions and production values were given in metric tonnes.

Oil and gas business division
Downstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division
1.66

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division
0.003

Comment
The values presented were determined by dividing gross methane emissions from our downstream activities by natural gas refining throughput and total hydrocarbon refining throughput respectively. Both CH4 emissions and production values were given in metric tonnes.

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	9307815	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	5362173	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	25118	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)
2235027

Gross Scope 1 methane emissions (metric tons CH4)
257

Total gross Scope 1 emissions (metric tons CO2e)
2186530

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)
250046

Gross Scope 1 methane emissions (metric tons CH4)
27576

Total gross Scope 1 emissions (metric tons CO2e)
1084793

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

Gross Scope 1 methane emissions (metric tons CH4)
0.33

Total gross Scope 1 emissions (metric tons CO2e)
9

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)
3600

Gross Scope 1 methane emissions (metric tons CH4)
34107

Total gross Scope 1 emissions (metric tons CO2e)
958609

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
Oil

Gross Scope 1 CO2 emissions (metric tons CO2)
173545

Gross Scope 1 methane emissions (metric tons CH4)
3

Total gross Scope 1 emissions (metric tons CO2e)
174428

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

Emissions category
Fugitives

Value chain
Midstream

Product
Oil

Gross Scope 1 CO2 emissions (metric tons CO2)
0.06

Gross Scope 1 methane emissions (metric tons CH4)
0.7

Total gross Scope 1 emissions (metric tons CO2e)
19.69

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

Emissions category
Combustion (excluding flaring)

Value chain
Midstream

Product
Gas

Gross Scope 1 CO2 emissions (metric tons CO2)
2264776

Gross Scope 1 methane emissions (metric tons CH4)
478

Total gross Scope 1 emissions (metric tons CO2e)
2288692

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

Emissions category
Venting

Value chain
Midstream

Product
Gas

Gross Scope 1 CO2 emissions (metric tons CO2)
66

Gross Scope 1 methane emissions (metric tons CH4)
2273

Total gross Scope 1 emissions (metric tons CO2e)
63717

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

Emissions category
Fugitives

Value chain
Midstream

Product
Gas

Gross Scope 1 CO2 emissions (metric tons CO2)
661

Gross Scope 1 methane emissions (metric tons CH4)
126176

Total gross Scope 1 emissions (metric tons CO2e)
3533588.7

Comment
Emissions refer to all gas 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)
3489672

Gross Scope 1 methane emissions (metric tons CH4)
59

Total gross Scope 1 emissions (metric tons CO2e)
3497858

Comment
Emissions refer to all oil and gas refining assets operated by KMG. We are unable to disaggregate GHG emissions from our downstream activities by product type.

Emissions category
Flaring

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
96357

Gross Scope 1 methane emissions (metric tons CH4)
2

Total gross Scope 1 emissions (metric tons CO2e)
96722

Comment
Emissions refer to all oil and gas refining assets operated by KMG. We are unable to disaggregate GHG emissions from our downstream activities by product type.

Emissions category
Venting

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
4

Gross Scope 1 methane emissions (metric tons CH4)
52

Total gross Scope 1 emissions (metric tons CO2e)
1471

Comment
Emissions refer to all oil and gas refining assets operated by KMG. We are unable to disaggregate GHG emissions from our downstream activities by product type.

Emissions category
Fugitives

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
11

Gross Scope 1 methane emissions (metric tons CH4)
521.7

Total gross Scope 1 emissions (metric tons CO2e)
14618.6

Comment
Emissions refer to all oil and gas refining assets operated by KMG. We are unable to disaggregate GHG emissions from our downstream activities by product type.

Emissions category
Process (feedstock) emissions

Value chain
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
794050

Gross Scope 1 methane emissions (metric tons CH4)
0

Total gross Scope 1 emissions (metric tons CO2e)
794050

Comment
CO2 emissions from the catalyst regeneration, sulfur, and hydrogen production processes in oil and gas refining assets operated by KMG. We are unable to disaggregate GHG emissions from our downstream 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	13670221
Romania	1015015
Georgia	9870

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)	4229941
Oil and gas transportation activities (midstream)	6060445
Oil and gas refining activities (downstream)	4404720

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 generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	10290386	<Not Applicable>	Upstream scope 1 value considers emissions from our midstream activities.
Oil and gas production activities (downstream)	4404720	<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 in market-based approach (MWh)
Kazakhstan	2993617	2993617	4872982	0
Romania	247529	302180	974774	209180
Georgia	745	745	6365	0

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 emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Oil and gas exploration and production activities (upstream)	1300600	1300600
Oil and gas transportation activities (midstream)	112029	112029
Oil and gas refining activities (downstream)	1829262	1883913

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)	1412629	1412629	Upstream scope 2 values consider emissions from our midstream activities.
Oil and gas production activities (downstream)	1829262	1883913	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	0	No change	0	
Other emissions reduction activities	42783	Decreased	0.26	In 2018. the implementation of energy efficiency measures resulted in the reduction of 42,783 tonnes CO2e. KMG's scope 1 and scope 2 emissions in 2017 were amounted to 16,547,567 tonnes CO2e. The percentage decrease is therefore: 42,783/16,547,567*100=0.26%. In 2018, as a result of 57 energy-efficient measures undertaken, about 542 thousand GJ of energy were saved.
Divestment	0	No change	0	
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	1389430	Increased	8.4	Changes in output contributed to an increase of 1,389,430 tonnes CO2e. KMG's scope 1 and scope 2 emissions in 2017 were amounted to 16,547,567 tonnes CO2e. The percentage decrease is therefore: 1389430/16547567*100=8,4%. The increase is mostly explained by the growth of gas transportation by main pipelines by 14%, as well as the increase in throughput of our refineries in Kazakhstan after their technical upgrade by 8%.
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 undertakes this energy-related activity
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 MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	45106254.4	45106254.4
Consumption of purchased or acquired electricity	<Not Applicable>	214145.06	3638345.21	3852490.3
Consumption of purchased or acquired heat	<Not Applicable>	0	130802.85	130802.85
Consumption of purchased or acquired steam	<Not Applicable>	0	1870827.97	1870827.97
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	194635.15	<Not Applicable>	194635.15
Total energy consumption	<Not Applicable>	408780.2	50746230.5	51155010.7

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
22070868.2

MWh fuel consumed for self-generation of electricity
5698845.8

MWh fuel consumed for self-generation of heat
14616019.7

MWh fuel consumed for self-generation of steam
758407.4

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

MWh fuel consumed for self-cogeneration or self-trigeneration
997595.2

Comment

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

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
6294770.1

MWh fuel consumed for self-generation of electricity
92089.6

MWh fuel consumed for self-generation of heat
2917457

MWh fuel consumed for self-generation of steam
3285223.5

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

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

Comment

Fuels (excluding feedstocks)
Refinery Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2378945

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
2166453.3

MWh fuel consumed for self-generation of steam
212491.7

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

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

Comment

Fuels (excluding feedstocks)
Fuel Oil Number 1

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization
224969.8

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
147371.9

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
77597.9

Comment

Fuels (excluding feedstocks)
Petrol

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
46.2

MWh fuel consumed for self-generation of electricity
45.2

MWh fuel consumed for self-generation of heat
1

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
0

Comment

Fuels (excluding feedstocks)
Diesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
108412.1

MWh fuel consumed for self-generation of electricity
76251.1

MWh fuel consumed for self-generation of heat
30780.1

MWh fuel consumed for self-generation of steam
1381

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

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

Comment

Fuels (excluding feedstocks)
Fuel Oil Number 2

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2828795.7

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
2037525.4

MWh fuel consumed for self-generation of steam
791270.3

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

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

Comment

Fuels (excluding feedstocks)
Liquefied Petroleum Gas (LPG)

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
2003.1

MWh fuel consumed for self-generation of electricity
5.4

MWh fuel consumed for self-generation of heat
1997.7

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
0

Comment

Fuels (excluding feedstocks)
Crude Oil

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
55607.2

MWh fuel consumed for self-generation of electricity
1346.3

MWh fuel consumed for self-generation of heat
54260.9

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
0

Comment

Fuels (excluding feedstocks)
Fuel Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
11141837.1

MWh fuel consumed for self-generation of electricity
99593.8

MWh fuel consumed for self-generation of heat
7503763

MWh fuel consumed for self-generation of steam
3247543.8

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

MWh fuel consumed for self-cogeneration or self-trigeneration
290936.4

Comment

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Crude Oil

Emission factor
2.997

Unit
metric tons CO2e per metric ton

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

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

Diesel

Emission factor
2.68

Unit
metric tons CO2e per metric ton

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

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

Fuel Gas

Emission factor
0.00194

Unit
metric tons CO2e per m3

Emission factor source
Specific company data on the fuel composition

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

Fuel Oil Number 1

Emission factor
3.17

Unit
metric tons CO2e per metric ton

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

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

Fuel Oil Number 2

Emission factor
2.8

Unit
metric tons CO2e per metric ton

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

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

Liquefied Petroleum Gas (LPG)

Emission factor
0.87

Unit
metric tons CO2e per metric ton

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

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

Natural Gas

Emission factor
0.00197

Unit
metric tons CO2e per m3

Emission factor source
Specific company data on the fuel composition.

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

Petrol

Emission factor
3.1

Unit
metric tons CO2e per metric ton

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

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

Refinery Gas

Emission factor
0.00206

Unit
metric tons CO2e per m3

Emission factor source
Specific company data on the fuel composition.

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

Other

Emission factor
0.00195

Unit
metric tons CO2e per m3

Emission factor source
Specific company data on the fuel composition.

Comment
Emission factor refers to Associated Petroleum Gas (APG). Emission factors are presented in the form of weighted average values for each type of fuel.

C8.2e

(C8.2e) 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	6704481	6704481	78.19	78.19
Heat	29475629.93	29475629.93	194557	194557
Steam	8926143.52	8926143.52	0	0
Cooling	0	0	0	0

C8.2f

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

Basis for applying a low-carbon emission factor
Grid mix of renewable electricity

Low-carbon technology type
Solar PV
Wind
Hydropower
Biomass (including biogas)

Region of consumption of low-carbon electricity, heat, steam or cooling
Europe

MWh consumed associated with low-carbon electricity, heat, steam or cooling
209180

Emission factor (in units of metric tons CO2e per MWh)
0

Comment
According to the European Residual Mix data, 42.6% of the energy consumed by our Romanian assets was classified as renewable with the following breakdown: solar - 2.9% , wind - 10.2% , hydroelectric power plants - 29% and biomass - 0.5%.

C9. Additional metrics

C9.1

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

Description
Waste

Metric value
283

Metric numerator
thousand tonnes

Metric denominator (intensity metric only)

% change from previous year
15

Direction of change
Decreased

Please explain
The volume of waste generated in 2018 amounted to 283.4 thousand tonnes. Around 264.4 thousand tonnes of waste was classified as “hazardous”. “Non-hazardous” waste amounted to 19.4 thousand tons. Around 67% of hazardous waste consisted of drilling waste such as drill cuttings and drilling mud. The reduction in total waste generation compared to 2017 was primarily due to the reduction in the amount of drilling waste generated in 2018.

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	176.74	Hydrocarbon production volumes are presented in the form of gross production, taking into consideration the production rates of equity-accounted entities.
Natural gas liquids, million barrels		
Oil sands, million barrels (includes bitumen and synthetic crude)	0	Not applicable for upstream companies located in Kazakhstan
Natural gas, billion cubic feet	287.35	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.

Proven KMG hydrocarbon reserves (with equity-accounted entities) are evaluated based on the results of exploration activities and field development stage following the approved instruction of the Ministry of Energy of Kazakhstan. Oil and gas reserves and resources classification in Kazakhstan is aligned with the Russian Federation Classification Scheme (2005) and is based on the geologic certainty of in-place volumes and the extent of commercial development of the field. Thus, the oil and gas reserves are classified by exploration maturity into proven categories (developed, explored) and inferred (non-explored) C2 category. Proven reserves comprise of the following categories:

- Category A reserves — reasonably assured
- Category B reserves — identified
- Category C1 reserves — estimated

As the portfolio of the group of companies mainly consists of mature fields, and due to a significant budget reductions for geological exploration activities, we do not evaluate prospective and predicted resources.

Please see the details of hydrocarbon reserves (A, B, C1) as of 31 December 2018 in our annual report:
http://ir.kmg.kz/storage/files/272ede75d8454f06/KMG_ANNUAL_REPORT_2018_ENG.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				

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				
Natural gas				
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 year.

	Total refinery throughput capacity (Thousand barrels per day)
Capacity	512.33

C-OG9.3b

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

	Throughput (Million barrels)	Comment
Oil	137.36	Throughput is presented taking into consideration our equity share % in joint venture entities.
Other feedstocks	10.24	Throughput is presented taking into consideration our equity share % in joint venture entities.
Total	147.6	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	9.57
Gasolines	41.15
Naphtha	1.12
Kerosenes	4.4
Diesel fuels	48.72
Fuel oils	17.66
Asphalt and tar	3.32
Petroleum coke	3.38
Other, please specify (Gasoil)	5.64
Other, please specify (White spirit)	0.05
Other, please specify (Oil fuel)	1.81

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)	38.26	
Other, please specify (Polymers)	147.95	
Other, please specify (Solvents)	144.44	
Other, please specify (Sulphur)	101	

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

(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

Investment start date
January 15 2017

Investment end date
December 31 2020

Investment area
Equipment

Technology area
Smart systems

Investment maturity
Small scale commercial deployment

Investment figure
53780000

Low-carbon investment percentage
Please select

Please explain
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 cost-benefit 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.

Investment start date
January 1 2018

Investment end date
December 31 2018

Investment area
Services

Technology area
Other energy efficiency measures in the oil and gas value chain

Investment maturity
Full/commercial-scale demonstration

Investment figure

Low-carbon investment percentage
Please select

Please explain
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.

Investment start date
June 14 2017

Investment end date
December 31 2018

Investment area
Products

Technology area
Energy efficiency in transport

Investment maturity
Full/commercial-scale demonstration

Investment figure
2294685

Low-carbon investment percentage
Please select

Please explain
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.

Investment start date
January 1 2015

Investment end date
December 31 2017

Investment area
Equipment

Technology area
Methane detection and reduction

Investment maturity
Pilot demonstration

Investment figure
1300000

Low-carbon investment percentage
Please select

Please explain
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.

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)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope
Scope 1

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
KMG_Verification statement_2018.pdf

Page/ section reference
Verification Statement represents the consolidated GHG emissions data for KMG subsidiaries and joint ventures regulated under the GHG Emissions Trading Schemes in Kazakhstan and the EU.

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
97

Scope
Scope 2 location-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
KMG_Verification statement_2018.pdf

Page/ section reference
Verification Statement represents the consolidated GHG emissions data for KMG subsidiaries and joint ventures regulated under the GHG Emissions Trading Schemes in Kazakhstan and the EU.

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
99

Scope
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
KMG_Verification statement_2018.pdf

Page/ section reference
Verification Statement represents the consolidated GHG emissions data for KMG subsidiaries and joint ventures regulated under the GHG Emissions Trading Schemes in Kazakhstan and the EU.

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
99

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope
Scope 3- at least one applicable category

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Attach the statement
KMG_Verification statement_2018.pdf

Page/section reference
Verification Statement represents the consolidated GHG emissions data for KMG subsidiaries and joint ventures regulated under the GHG Emissions Trading Schemes in Kazakhstan and the EU.

Relevant standard
ISO14064-3

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, but we are actively considering verifying within the next two years

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 systems in which you participate.

EU ETS

% of Scope 1 emissions covered by the ETS
100

Period start date
January 1 2018

Period end date
December 31 2018

Allowances allocated
816560

Allowances purchased
210000

Verified emissions in metric tons CO2e
1015015

Details of ownership
Facilities we own and operate

Comment
The purchase of additional allowances is explained by the deficit in the amount of 202,255 tonnes of CO2 in 2018. Data in this section is presented in CO2 tonnes per year as required by Directive 2003/87/EC.

Kazakhstan ETS

% of Scope 1 emissions covered by the ETS
97

Period start date
January 1 2018

Period end date
December 31 2018

Allowances allocated
26447782

Allowances purchased
0

Verified emissions in metric tons CO2e
8145531

Details of ownership
Facilities we own and operate

Comment
Data in this section is presented in CO2 tonnes per year as required by the Kazakhstani National allocation plan for 2018-2020. Data in cell "Allowances allocated" is presented for the allocation period of 2018-2020 (three years).

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

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?

No, we do not engage

C12.1d

(C12.1d) Why do you not engage with any elements of your value chain on climate-related issues, and what are your plans to do so in the future?

Since 2018, KMG has been actively developing and implementing corporate policies on GHG emissions management and reduction of APG flaring. Engagement of our suppliers, customers and partners in efforts on the reduction of the environmental impact of our activities is planned after the successful implementation of appropriate standards and policies.

As of 2018, our contractors confirm their compliance with our internal HSE requirements as part of our suppliers/contractor's management process. In 2018, we developed an HSE contractors/suppliers management standard and we are planning to implement it in the coming years. The standard outlines pre-qualification requirements for potential contractors/suppliers as well as management tools that should be applied by KMG once contracts are signed. Evaluation criteria for contractors include implementation of HSE requirements, availability of internal HSE control systems, and involvement of senior staff in HSE activities.

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

Other

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
Cap and trade	Support with minor exceptions	KMG is actively reviewing suggested amendments to GHG emissions regulations, especially, those associated with the implementation of ETS in Kazakhstan. In 2017, Kazakhstan approved a list of specific emission factors (benchmarks). GHG emission allowances have been allocated based on those benchmarks since 2018. However, due to certain shortcomings of the methodology, we expressed the need to expand and revise the values of existing benchmarks.	KMG proposed a change in the allowances/quota allocation method by revising specific emission factors for oil and gas companies. KMG believes that GHG allowances allocation based on benchmarks should consider factors such as modernisation of equipment, an increase in refinery yield, and growth of production. KMG also justified the need to develop additional benchmarks for upstream companies with the account for the different GHG emissions intensity of separate production processes, such as steam/gas/water injection, sulphur production and gas flaring.
Other, please specify *GHG emissions regulation*	Support	KMG is a member of the Working Group established for the improvement of the Concept on the green economy transition (Kazakhstan).	The Concept was updated with provisions related to the need for gasification expansion in Central and Northern regions of Kazakhstan. Our energy experts heavily contributed during the drafting process of those provisions, proposing a transition from coal-based energy production to cleaner-burning gas. We believe that our proposals to the green Concept and their further implementation on a national level will result in significant reductions of air polluting and GHG emissions. It will also have an overall positive impact on the urban environment in cities of Kazakhstan.
Regulation of methane emissions	Support with minor exceptions	KMG is implementing pilot projects on the detection and quantitative measurement of methane leaks at production sites. It is a promising area in terms of the significant potential for reducing GHG emissions in the oil and gas sector in Kazakhstan. KMG cooperates with government authorities on developing and providing support for methane emission reduction projects.	KMG proposed to include methane emission reduction projects in the oil and gas sector in the national list of internal GHG reduction projects.
Energy efficiency	Support with minor exceptions	KMG actively participates in the development of the legislative acts on energy saving and energy efficiency.	KMG proposed to introduce a mechanism for encouraging enterprises to switch to energy-efficient technologies by providing preferential emission tax rates.
Climate finance	Support	Proposals for fiscal and non-fiscal incentives for companies investing in and implementing green technologies.	KMG proposed to abate or eliminate environmental taxes for entities that implement green technologies.

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?
Unknown

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.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

The Ministry of Energy, Kazakhstan

KMG is a member of the working groups of the Ministry of Energy of Kazakhstan on the improvement of environmental legislation. It also participates in climate change projects on behalf of the government. Thus, KMG participated in the meeting of the oil and gas subcommittee of the Global Methane Initiative with the presentation on “Kazakhstan Introduction to the Global Methane Initiative, Oil and Gas Subcommittee” (Canada, 2018). Our GHG expert presented information on national plans for GHG emission control and trading systems. Besides, we are closely cooperating with the Ministry and the World Bank under the GGFR program.

The World Bank

In 2015, KMG supported the World Bank’s “Zero Routine Flaring by 2030” initiative. The initiative brings together governments, oil companies and development organisations that seek to eliminate the routine gas flaring by 2030. As part of the annual reporting, KMG discloses its APG flaring rates. Also, KMG holds workshops with representatives of the World Bank Group to discuss the status of implementation of the initiative and possible cooperation to further reduce gas flaring in the company.

International consultants

Since 2014, KMG has been actively cooperating with the Norwegian company to detect and measure methane leaks at the production facilities of KMG subsidiaries. This project is implemented within the program for reducing methane emissions with the support of the government of Norway and the Ministry of Economy of Kazakhstan.

In 2017, KMG joined the Global Methane Initiative project network. In 2018, with the support of GMI and Norwegian company, we conducted pilot projects on the production facilities of KMG for the assessment of methane leaks. As a result, the KMG subsidiary and the GMI team plan to conduct a joint study to (1) identify and measure methane emission reduction opportunities, and (2) to identify and analyse methane emission reduction projects.

UNECE

KMG participated in the UNECE project to prepare recommendations for reporting methane emissions in the oil and gas sector and to prepare a report on best practices for reducing methane emissions. This project is being implemented to prepare recommendations for future methane emissions management in all countries.

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?

Although KMG does not have a separate climate strategy, 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 voluntary sustainability report

Status
Underway – previous year attached

Attach the document
KMG Sustainability Report 2017.pdf

Page/Section reference
p. 79-84, Section on 'Climate Change and Air Quality'

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Other metrics
Other, please specify (Other environmental metrics such as waste generation, water consumption, biodiversity etc.)

Comment
Attached is the KMG Sustainability Report for 2017. Sustainability Report for 2018 will be publicly available in August 2019.

Publication
In mainstream reports

Status
Complete

Attach the document
KMG Annual Report 2018.pdf

Page/Section reference
p. 98-101, 'Climate Change' section p. 106, 'Ecological Responsibility' section, subsection on 'Reduction of GHG Emissions' p. 107, 'Ecological Responsibility' section, subsections on 'APG Recycling' and 'APG Flaring intensity'

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Other metrics
Other, please specify (Financial statements)

Comment
Attached is the KMG Annual Report for 2018.

C14. 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.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	HSE 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

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

Please confirm below

I have read and accept the applicable Terms