OPERATING REVIEW

KMG is the national leader in Kazakhstan's oil and gas industry with a fully integrated value chain.

The proved reserves (1P)

▶ far exceeding the average for global oil majors (about 11 years).

16 years

RESERVES

According to the reserves audit report prepared by the international independent consulting firm DeGolyer and MacNaughton in line with the PRMS international standard, KMG's proved plus probable hydrocarbon reserves (2P) were 707 mln toe (5.478 mln boe) as of 31 December 2021. 2P reserves increased by 9% year-on-year. The increase is mainly attributable to comprehensive initiatives in hydrocarbon reserves management, including the recalculation of hydrocarbon reserves at the Kalamkas and other fields, as well as the increase of the share in the Kashagan field from 8.44% to 16.88% (on 15 September 2022, KMG acquired a 50% stake in KMG Kashagan B.V. from Samruk-Kazyna) and improved macroeconomic environment (higher oil prices).

EXPLORATION

In exploration, KMG pursues its Development Strategy until 2031 approved in 2021.

The Development Strategy provides for the strategic goal of the Resource base sufficient to support the Company's growth that envisages exploration at seven offshore and seven onshore projects, as well as further exploration at the key existing fields. The exploration is expected to increase the Company's recoverable reserves by 299 mln tonnes by 2031. We plan to achieve a reserve replacement ratio of 105%.

In the medium term, KMG will continue to ramp up its investment in exploration, with plans to invest approximately USD 900 mln between 2023 and 2030. The planned exploration programme includes 2D and 3D seismic surveys of more than 5.000 linear km and more than 2.400 sq km, respectively.
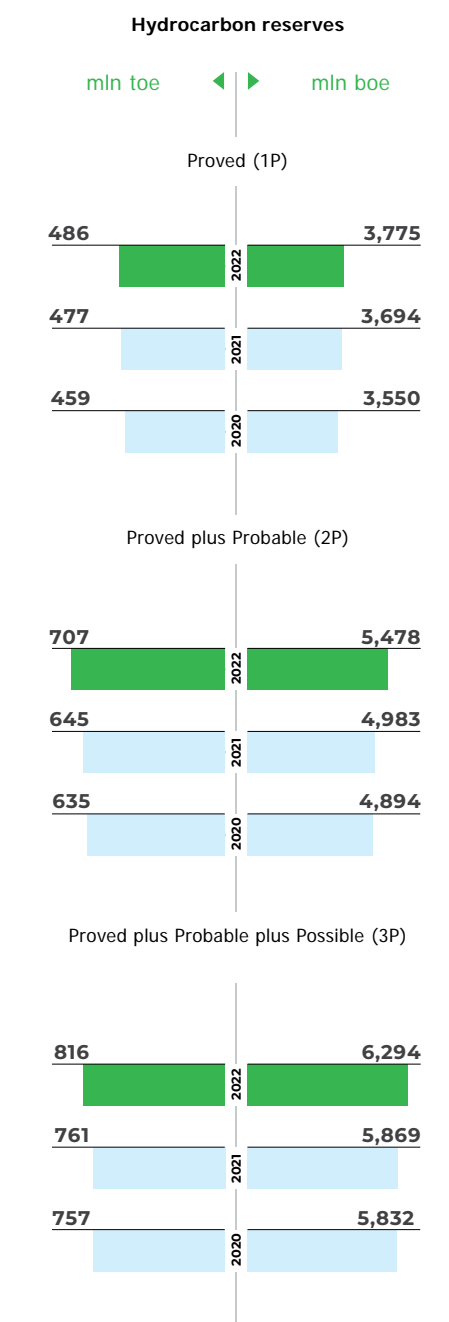
During this period, we expect 56 exploration and appraisal wells to be drilled, including:

- first prospecting wells at the Zhenis, Karaton Subsalt, Turgai Palaeozoic, Taisoigan, Abay and Al-Farabi exploration blocks with further drilling of related appraisal wells;
- more than 25 appraisal wells for continued further exploration and reserve replenishment at existing fields.

299 mln tonnes
recoverable reserves by 2031

105%
reserve replacement ratio

NET RESERVES[1] UNDER PRMS
as of 31 December 2022

Hydrocarbon reserves

mln toe ◀ ▶ mln boe

Proved (1P)

mln toe	year	mln boe
486	2022	3,775
477	2021	3,694
459	2020	3,550

Proved plus Probable (2P)

mln toe	year	mln boe
707	2022	5,478
645	2021	4,983
635	2020	4,894

Proved plus Probable plus Possible (3P)

mln toe	year	mln boe
816	2022	6,294
761	2021	5,869
757	2020	5,832

1 — Net Reserves are defined as the portion of gross reserves attributable to (1) the interest held by KMG after deducting all interests held by others, and (2) interests that are not held, but controlled by KMG.

Exploration highlights in 2022

In 2022, about KZT 35.5 bln (tentative) was invested in exploration (KMG's share accounts for KZT 5.9 bln, the rest came from partners as carry financing):

- more than 5.000 linear km and more than 300 sq km of historical seismic data were reprocessed;
- ten exploration and appraisal wells were drilled and tested;
- a drilling success rate of 80% was achieved (in 2021, the success rate was 73%);
- actual new reserves of 20 mln tonnes of oil were added, representing an 88% reserve replacement ratio (preliminary results). New reserves were added at existing fields as a result of further exploration.

Active exploration is ongoing both offshore and onshore.

- Drilling began in December 2022 in the Zhenis block in Kazakhstan's part of the Caspian Sea.
- We signed exploration and production contracts for the Taisoigan-1 and Taisoigan-2 blocks in the Atyrau Region. High-resolution 3D seismic surveying of these blocks carried out back in 2019 and unique to Kazakhstan helped locate 26 prospects with total geological resources of 328 mln tonnes (P50).

The analysis and modelling of main sedimentary basins identified five most prospective blocks that require further exploration. In 2023, we plan to conduct pro-active seismic surveying as part of the subsoil exploration programme. By the end of 2022, KMG intends to obtain a licence and start tendering procedures for KMG Barlau, a 100% subsidiary of KMG. This structure will allow both foreign and local investors to join the project going forward.

35.5 KZT bln

invested in exploration in 2022

Achievements in 5 years

- In 2018–2022, about KZT 165 bln was invested in exploration, including KMG's costs of around KZT 111 bln. Among the most notable results for this period was the discovery of new deposits – West Karasor and Bekturly Vostochny. Based on the outcome of high-resolution 3D seismic survey and drilling and testing of a prospecting well in the Bekturly Vostochny block, the prospects of non-structural traps were proved.
- In 2018, an unprecedented amount of 3D seismic surveying was carried out in the Taisoigan block. Following the processing and interpretation of seismic data, 36 prospects with a total geological potential of 328 mln tonnes were identified. In 2022, exploration and production contracts were obtained for the Taisoigan-1 and Taisoigan-2 blocks. These will be transferred to Embamunaigas to continue exploration.

- New subsoil use contracts were signed for the Al-Farabi, Abay and Zhenis blocks together with strategic partners. Exploration activities are carried out using carry financing provided by a strategic partner. In December 2022, drilling of a prospecting well (V-1, 3.300 m deep) started at the Zhenis block, the first well of this type in the Kazakhstan's part of the Caspian Sea in the recent five years. At the Al-Farabi block, a field 3D seismic survey is slated for 2023.
- A subsoil use contract was concluded for the Turgai Palaeozoic block in the Kyzylorda Region. Drilling of a 5.500 m prospecting well is scheduled for 2023.
- We achieved an impressive growth of oil reserves at the Uzen (+39.9 mln tonnes) and Kalamkas fields (+32.6 mln tonnes). Re-appraisal of the fields' reserves resulted from comprehensive efforts, including high-resolution 3D

seismic surveys, adjustment of the fields' geological concept, drilling of new wells, laboratory analysis of core samples and re-interpretation of geophysical well logs for the entire well stock.

- The total increase in recoverable oil reserves in 2018–2022 attributable to KMG amounted to 121.3 mln tonnes.

165 KZT bln

invested in exploration in 2018–2022

Plans for 2023

In 2023, a total of about USD 190 mln is planned to be invested in exploration, with only 40% of the costs attributable to KMG.

The first subsoil exploration projects will begin with 2D seismic surveys of the Northern Ozen and Zharkyn blocks in the Mangistau and Aktobe regions.

With LUKOIL, our partner, we intend to carry out an offshore seismic survey of the Al-Farabi block covering more than 500 sq km of the Caspian Sea. This decision is based on extensive analysis revisiting historical seismic data. Following the survey, we will find the optimal location of prospecting wells.

Further exploration of existing fields in the Mangistau Region will be continued. We will conduct a high-resolution 3D seismic survey at five fields of Mangistaumunaigaz to uncover additional prospects and extend the life of the fields in the later stages of development.

A total of 22 prospecting and appraisal wells will be drilled in 2023:

- completion of drilling of one prospecting well in the Zhenis offshore block;
- start of drilling of one deep technologically complex well (more than 5 km) for Palaeozoic deposits at the Karaton Subsalt and Turgai Palaeozoic blocks;
- for all the major operators (Embamunaigas, Mangistaumunaigaz, Ozenmunaigas, Kazgermunai), 19 appraisal wells are in the pipeline as part of the ongoing work to further explore mature fields and deposits discovered earlier.

190 USD mln

planned to be invested in exploration

500 km²

offshore seismic survey of the Al-Farabi block

22 wells

will be drilled in 2023

WEST KAZAKHSTAN REGION

ATYRAU REGION

Further exploration projects

1. Ozenmunaigas (2)
2. Embamunaigas (10)
3. Mangistaumunaigaz (12)
4. Kazgermunai (3)
5. Kazakhturkmunay (3)

Atyrau

Aktau

MANGISTAU REGION

KYZYLORDA REGION

CASPIAN SEA

Existing exploration projects

1. Turgai Palaeozoic
2. Bekturly Vostochny
3. Taisoigan
4. Abay
5. Isatay
6. Zhenis
7. Al-Farabi
8. Kurmangazy
9. Khvalynskoye
10. Tsentralnaya

Prospective exploration projects

1. Karaton Subsalt
2. Kalamkas-Sea / Khazar

Projects under the subsoil exploration programme

1. Northern Ozen
2. Zharkyn
3. Bolashak
4. Mugodzhary
5. Berezovsky

New exploration projects

In 2022, the Company continued to strongly focus on expanding its cooperation in exploration with international oil and gas companies:

- KMG and LUKOIL signed a number of agreements as part of the Kalamkas-Sea–Khazar–Auezov project in Kazakhstan's part of the Caspian Sea.
- We signed an Agreement of Intent with Tatneft for a strategic partnership on the Karaton Subsalt block. The project will employ carry financing, with the strategic partner incurring all costs at the exploration stage. The project documentation is being finalised. Drilling of a deep prospecting well (5.000 m) is scheduled to start in late 2023. The geological resource (P50) forecast is around 353 mln tonnes.
- To attract foreign investments and to share risks in exploration, KMG takes active steps to team up with strategic partners. For this purpose, KMG operates a virtual data room providing access to geological and technical data on prospective and existing assets. In 2022, we held 14

data room sessions for oil and gas majors, including Shell, SINOPEC, CNPC, LUKOIL, Tatneft and others.

- The Company continues technical sessions with Shell and SINOPEC on their possible entry into exploration projects.
- On top of attracting investment, following data room sessions companies provide their views on prospective sites, and leading international and domestic experts share their experience and expertise.
- In 2022, the list of the National Acreage Management Programme included four new blocks reserved for KMG, for which pro-active seismic surveys are planned as part of subsoil exploration. Apart from that, we filed an application to include one exploration block located in the Aktobe Region in the Programme's list.

Sanctions risks of Russian partners

The sanctions imposed on Russian companies and banks narrow down the range of contractors which provide services in the Caspian Sea, and therefore increase the cost of work. Thus, we conducted an analysis of the potential use of suppliers and service companies that are not subject to sanctions. We continue to gather information. KMG also included clauses stipulating withdrawal from projects and joint ventures, if US, EU, and UK sanctions are imposed on Russian partners, in the documents on joint activities with them.

Deploying new technologies, optimising exploration, and improving performance

Currently, there are three focus areas to introduce new technology in KMG's exploration efforts:

SEISMIC SURVEYING

High-resolution seismic surveys, which is wide-azimuth and hyperspectral surveying with increased density of data acquisition and application of new generation vibrators. This increases the geological probability of discovering hydrocarbon deposits. The results of high-resolution surveying have become the ground for re-appraising reserves at key fields. For example, comprehensive efforts at the Uzen field resulted in an increase in recoverable reserves of 39 mln tonnes in 2021. In 2022, new reserves at theKalamkas field of 32.6 mln tonnes were discovered. The technology is to be rolled out at Mangistaumunaigaz's and Karazhanbasmunai's fields. New offshore field technologies are also being considered for use at the Al-Farabi and Zhenis blocks.

PROCESSING AND INTERPRETATION OF SEISMIC DATA

New technologies in the processing and interpretation of seismic data are being introduced and rolled out on an ongoing basis by Professional Geosolutions Kazakhstan (PGS-K), our subsidiary. In 2022, we applied such advanced technologies as FWI, SWIM, SRME, Q-VMB, etc. in the processing and interpretation of seismic data for the Al-Farabi and Kashagan West exploration blocks. PGS-K has unrestricted access to the world's new technologies developed by the international company PGS Oslo.

DIGITAL GEOLOGY

We continue the development of the Digital Geology module within the ABAI information system. Under the module's hood are tools under development for automatic interpretation of geophysical well logs, automatic correlation of well tops, automatic interpretation of core samples, algorithms for dynamic and structural interpretation of seismic data and visualisation of 1D, 2D, and 3D geophysical data. In 2023, KMG plans to launch commercial introduction of sub-modules for automatic interpretation of geophysical well logs and automatic correlation of well tops in its upstream subsidiaries and associates.

To improve exploration efficiency, we introduced a quality control mechanism for drilling, well testing and kick-off jointly with KMG subsidiaries and associates, KMG Engineering and contractors. We also make sure that we learn the lessons from completed drilling operations by identifying the causes of unsuccessful drilling and follow-up measures to eliminate the flaws. As a result, the success rate of appraisal wells increased from 73% to 80% year-on-year in 2022.

32.6 mln tonnes

new reserves at the Kalamkas field

80%

rate of appraisal wells