

Oil transportation



KMG completed the expansion of its oil transportation infrastructure to supply hydrocarbons to export markets. Medium-term priorities:

- increase existing capacity utilisation by making KMG's oil transportation systems more attractive and competitive;
- develop additional export routes;
- improve operating-cost control.

The two oil transportation modes at KMG are trunklines and the marine fleet.

| Indicator | Trunkline transportation | | | | Marine fleet transportation |
|---------------------------|--|-------------------------------------|-----------------------------------|-----------------------------|---|
| | KazTransOil | Kazakhstan–China Pipeline | MunaiTas | Caspian Pipeline Consortium | Kazmortransflot |
| Interest, % | KMG: 90% ¹ | KazTransOil: 50% | KazTransOil: 51% | KMG: 20.75% | KMG: 100% |
| Key destinations | Exports to Europe and China, domestic market | Exports to China, domestic market | Exports to China, domestic market | Exports to Europe | Exports to Europe |
| Key routes | <ul style="list-style-type: none"> ■ Kazakhstan's refineries ■ Uzen–Atyrau–Samara ■ Oil transshipment to the CPC and Atasu–Alashankou pipelines, oil transshipment in the Port of Aktau | Atasu–Alashankou Kenkiyak–Kumkol | Kenkiyak–Atyrau | Tengiz–Novorossiysk | <ul style="list-style-type: none"> ■ Black Sea ■ Mediterranean Sea ■ Caspian Sea |
| Total length, km | 5,373 | 1,759 | 449 | 1,510 | n/a |
| Capacity, mln tonnes p.a. | 17.5 ² 5.2 ³ | 20 | 6 | 81.5 | n/a |

Pipeline infrastructure

Kazakhstan's pipeline infrastructure is owned by KazTransOil – the national oil pipeline operator, its two joint ventures (Kazakhstan–China Pipeline and MunaiTas North-West Pipeline Company), and Caspian Pipeline Consortium. The existing pipeline infrastructure in Kazakhstan has adequate potential to support increased oil transportation volumes from promising projects.

KazTransOil (KTO) is the national oil pipeline operator of the Republic of Kazakhstan. The company owns an extensive network of oil trunklines with a total length of 5,373 km, to which virtually all oil fields in Kazakhstan are connected. The company transports oil to Kazakhstan's four major refineries, pumps oil for export via the Atyrau–Samara pipeline, transships oil to the CPC and Atasu–Alashankou export pipelines, and ships oil to tankers in the Port of Aktau and by rail. Oil transportation via trunklines is supported by 36 oil pumping stations, 67 heaters, and a tank farm for oil storage with a total capacity of 1.4 mln m³. KazTransOil also provides operation and maintenance services for the trunklines of Kazakhstan–China Pipeline, MunaiTas North-West Pipeline Company, Karachaganak Petroleum Operating, Caspian Pipeline Consortium-K, and Turgai Petroleum, as well as for the trunk water line of Main Waterline.

Kazakhstan–China Pipeline is the owner of the Atasu–Alashankou (965 km) and Kenkiyak–Kumkol (794 km) oil pipelines. The company transports Kazakhstan's oil and transit Russian oil to China and to the domestic market.

MunaiTas North-West Pipeline Company (MT) is the owner of the 455 km Kenkiyak–Atyrau oil trunkline. In 2018, the company started implementing the trunkline reverse project to support supplies of West Kazakhstan's oil to domestic refineries and to compensate production declines in the Aktobe and Kyzylorda Regions, as well as to support exports to China. From mid-2021, reverse transportation of up to 6 mln tonnes per year of West Kazakhstan's oil was enabled at the Aman oil pumping station.

Caspian Pipeline Consortium (CPC) is an international oil transportation project involving Russia, Kazakhstan and the world's leading industry players. It was established for the construction and operation of a 1,510 km trunkline (452 km are within Kazakhstan). The CPC oil pipeline is a priority export route for Kazakhstan's oil supplies, connecting Kazakhstan's Tengiz oil field with the Yuzhnaya Ozereyevka oil terminal on the Black Sea (near the Port of Novorossiysk). Oil transportation via the CPC pipeline is supported by 15 oil pumping stations, an oil storage tank farm with a total capacity of 1 mln m³ and three single-point moorings at the marine terminal.

In 2019, in view of the increases in oil production from Tengiz and Kashagan, CPC shareholders resolved to launch a debottlenecking project for the pipeline system. Starting 2023, pumping capacity is on track to increase to 81.5 mln tonnes per year (including up to 72.5 mln tonnes per year in Kazakhstan).

¹ 10% of shares are owned by minority shareholders who acquired them under the People's IPO programme.

² Capacity of the Atyrau–Samara section.

³ Capacity of the Port of Aktau (large-capacity vessel berths, oil loading).



Trunkline oil transportation

Volume of oil transportation¹, thous. tonnes

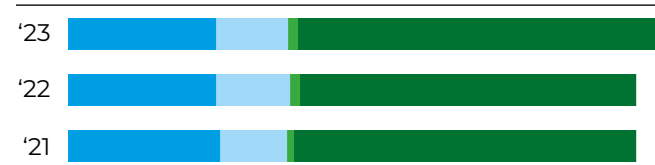
| Company | 2021 | 2022 | 2023 |
|---|---------------|---------------|---------------|
| KazTransOil (100%) | 41,224 | 40,656 | 44,188 |
| ■ export | 14,296 | 12,762 | 16,618 |
| ■ transit | 9,989 | 9,989 | 10,143 |
| ■ domestic market | 16,939 | 17,905 | 17,426 |
| Kazakhstan–China Pipeline (100%) | 17,412 | 19,236 | 18,806 |
| ■ export | 967 | 1,290 | 1,209 |
| ■ transit | 9,979 | 9,980 | 9,979 |
| ■ domestic market | 6,465 | 7,966 | 7,618 |
| MunaiTas (100%) | 4,273 | 5,606 | 5,527 |
| ■ export | 1,572 | 1,188 | 1,114 |
| ■ domestic market | 2,701 | 4,418 | 4,413 |
| Caspian Pipeline Consortium (100%), export | 60,728 | 58,711 | 63,474 |

Volume of oil transportation (net to KMG)², thous. tonnes



| Company | 2021 | 2022 | 2023 |
|--------------------------------------|---------------|---------------|---------------|
| KazTransOil (100%) ³ | 41,224 | 40,656 | 44,188 |
| Kazakhstan–China Pipeline (50%) | 8,706 | 9,618 | 9,403 |
| MunaiTas (51%) | 2,179 | 2,859 | 2,819 |
| Caspian Pipeline Consortium (20.75%) | 12,601 | 12,183 | 13,171 |
| Total | 64,710 | 65,316 | 69,581 |

Oil transportation turnover, mln tonnes × km



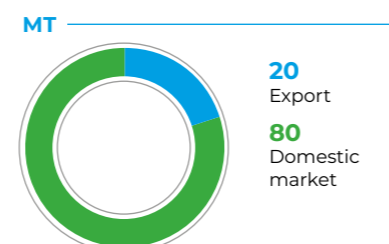
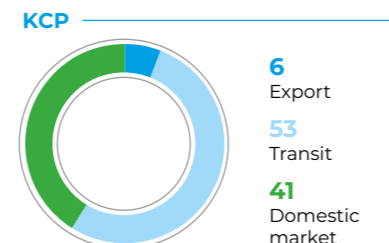
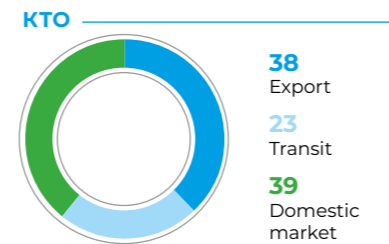
| Company | 2021 | 2022 | 2023 |
|------------------------------------|--------|--------|--------|
| KazTransOil (100%) | 35,162 | 34,261 | 34,208 |
| Kazakhstan–China Pipeline (100%) | 15,592 | 17,314 | 16,872 |
| MunaiTas (100%) | 1,725 | 2,265 | 2,236 |
| Caspian Pipeline Consortium (100%) | 79,446 | 78,154 | 83,959 |

Oil transportation turnover (net to KMG), mln tonnes × km



| Company | 2021 | 2022 | 2023 |
|--------------------------------------|--------|--------|--------|
| KazTransOil (100%) | 35,162 | 34,261 | 34,208 |
| Kazakhstan–China Pipeline (50%) | 7,796 | 8,657 | 8,436 |
| MunaiTas (51%) | 879 | 1,155 | 1,141 |
| Caspian Pipeline Consortium (20.75%) | 16,485 | 16,217 | 17,422 |

Structure of oil transportation by destination in 2023, %



In 2023, KMG's share in the consolidated volume of trunkline oil transportation was up by 6.5% to 69,581 thous. tonnes. This growth can be attributed to an uptick in oil exports via the KazTransOil network to Germany, increased shipments from the Port of Aktau towards the Baku–Tbilisi–Ceyhan pipeline, and a surge in oil delivery from the Kashagan field to the CPC network.

Oil transportation using KazTransOil trunklines grew by 3,533 thous. tonnes year-on-year to 44,188 thous. tonnes, with exports being the key contributor. Domestic

oil transportation to Kazakhstan's refineries diminished year-on-year as a result of scheduled repairs at both Shymkent Refinery in March 2023 and Pavlodar Refinery mid-summer.

The Caspian Pipeline Consortium (CPC) saw a 8.1% rise in transportation volumes in the reporting year predominantly credited to higher oil throughput from the Kashagan field. In 2023, the CPC faced shipment restrictions due to adverse weather impacting operations at the marine terminal.

¹ Consolidated volume of oil transported includes the volume of each individual pipeline company, including the operating share of KMG (excluding KTO). Part of the oil volumes can be transported by two or three pipeline companies, and these volumes are accordingly counted more than once in the consolidated volume of oil transportation.
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³ Since KTO is fully operated by KMG, transportation volumes are reported as 100%.

Tariffs for trunkline oil transportation

The tariffs for crude oil transportation to Kazakhstan's domestic market are regulated by the Government.

According to Law of the Republic of Kazakhstan No. 204-VI on Natural Monopolies dated 27 December 2018, oil transportation services to support transit via the Republic of Kazakhstan and exports outside the Republic of Kazakhstan are beyond the scope of natural monopolies.

Tariffs for oil transportation to the domestic market, KZT per tonne per 1,000 km

| Company | 2021 | 2022 | 2023 |
|---------------------------|------------------------------------|-------|-------|
| KazTransOil | 4,356 (4,328 from 1 December 2021) | 4,356 | 4,602 |
| Kazakhstan–China Pipeline | 4,323.7 | 4,359 | 4,359 |
| MunaiTas | 5,912 | 5,912 | 5,912 |

Weighted average tariffs for oil transportation for export

| Company | 2021 | 2022 | 2023 |
|---|-------|-------|-------|
| KazTransOil, KZT per tonne per 1,000 km | 7,359 | 8,831 | 9,490 |
| Kazakhstan–China Pipeline, KZT per tonne per 1,000 km | 6,799 | 6,799 | 6,799 |
| MunaiTas, KZT per tonne per 1,000 km | 5,912 | 5,912 | 5,912 |
| Caspian Pipeline Consortium, USD per tonne | 36 | 36 | 36 |

Tariffs for transit to China, USD per tonne

| Company | 2021 | 2022 | 2023 |
|---------------------------|-------|-------|-------|
| KazTransOil | 4.23 | 4.23 | 4.23 |
| Kazakhstan–China Pipeline | 10.77 | 10.77 | 10.77 |

In 2023, the Company implemented the following key energy efficiency initiatives:

1. Replaced TM power transformers with energy efficient ones of TMG type: Pavlodar Oil Pipeline Department. Priirtyshsk pipeline maintenance depot – 2;
2. Pavlodar–Shymkent trunkline: upgraded linear control and monitoring stations and cathodic protection means, reconstructed electricity supply systems at the trunkline (1,499.9–1,572.1 km);
3. Upgraded a booster pumping station at Zhetybai oil pumping station. The equipment was supplied in 2023 and the upgrade is slated for completion in 2024.

In 2024, the Company plans to implement the following initiatives:

1. Mangystau Oil Pipeline Department, Zhetybai oil pumping station: upgrading a booster pumping station. Implementation / completion;
2. Replacing booster pump NGPNA 3600–120 with ANTsN-E 1600–100–1. Pavlodar Oil Pipeline Department. Pavlodar head oil pumping station;
3. Completing a scheduled energy audit at KazTransOil.

Diversification of oil transportation routes

KMG consistently takes steps to develop alternative export routes for Kazakhstan's oil.

Oil exports to Azerbaijan through the Port of Aktau

In November 2022, KMG and Azerbaijan's SOCAR inked a general agreement on crude transit providing for the transportation of 1.5 mln tonnes of Kazakhstan's oil per year through the Port of Aktau and further on via the Baku–Tbilisi–Ceyhan pipeline. An important step for both Kazakhstan and Azerbaijan, the agreement is set to strengthen partnership between the nations, diversify export routes for Kazakhstan's oil, and expand the country's oil infrastructure.

Tengiz oil shipments towards Baku commenced from the Port of Aktau in March and from the Port of Ceyhan in April 2023. In 2023, the Port of Aktau dispatched a total of 1,057 thous. tonnes.

Oil supplies to Germany

The first shipments to the refinery in Schwedt via the Druzhba pipeline commenced in February 2023. In 2023, oil transportation from KPO resources totalled 993 thous. tonnes. The German partners are keen on amplifying oil imports from Kazakhstan to 200 thous. tonnes per month (2.4 mln tonnes per year). In December 2023, the existing contract for KPO resources was extended for six months, spanning January to June 2024 at a rate of 100 thous. tonnes per month, potentially extendible until the year-end. Efforts to find additional oil volumes are underway.

Kazakhstan–China oil pipeline expansion

In May 2023, KMG and CNPC agreed to conduct a preliminary research to expand the Kenkiyak–Atyrau and Kenkiyak–Kumkol oil pipelines, an initiative anchored in the Agreement on Expanding Strategic Cooperation in the oil and gas industry. To bring this Agreement to life, KMG held working sessions with CNPC, alongside participants from KazTransOil, Kazakhstan–China Pipeline, and MunaiTas North-West Pipeline Company. In conjunction with the Ministry of Energy, KMG took steps to identify the resource base needed for the Kazakhstan–China oil pipeline. In view of the long-term equilibrium of oil production and distribution, the Ministry established a fundamental long-term supply model for oil supplies to PKOP. This entails plans to expand the Atyrau–Kenkiyak pipeline's capacity to 15 mln tonnes per year and the Kenkiyak–Kumkol pipeline to 20 mln tonnes per year. Currently, the stakeholders are contemplating a feasibility study for these expansions.

Oil transportation by sea

Transportation assets

NMSC Kazmortransflot (KMTF) is the National Sea Carrier

Engaged in:

- oil transportation in the Caspian Sea and open seas;
- dry and container cargo transportation;
- provision of fleet support services for offshore operations.

The main routes for oil transportation by sea go across:

- Caspian Sea;
- Black Sea and Mediterranean Sea.

Its assets include:

- oil transportation fleet: Alatau and Altai Aframax oil tankers, each with a deadweight of 115,000 tonnes, Astana, Almaty, and Aktau oil tankers, each with a deadweight of 12,000 tonnes, Taraz and Liwa oil tankers, each with a deadweight of 8,000 tonnes;
- container fleet: Barys, Sunkar, and Berkut with a capacity of 350 TEUs each,
- dry cargo fleet: Beket Ata and Turkestan vessels, each with a deadweight of 5,000 tonnes;
- towing fleet: Talas, Emba, and Irgiz.

Collaborating with the Abu Dhabi Ports Group (ADP), KMTF created a combined tanker fleet for open-seas navigation, specifically in the Black Sea and the Mediterranean Sea. The project seeks to optimise oil transportation costs, create new opportunities for KMG to export oil, and solidify cooperation between KMG and AD Ports Group. The fleet includes four Aframax tankers, with ownership split evenly (2/2) between KMTF and ADP. KMG is currently in negotiations with Chevron Tankers over a long-term contract for open-sea oil transportation initiating from the ports of Novorossiysk and Ceyhan. Should these negotiations be successful, the fleet will add one or two more Aframax tankers. This cooperation is important for KMG's growing export potential.

Performance highlights

In 2023, total sea transportation rose by 1,435 thous. tonnes year-on-year to 10,778 thous. tonnes. The surge in transportation volumes predominantly stemmed from

higher exports of Kazakhstan's oil routing from the Port of Aktau to the Port of Baku, and then through the Baku–Tbilisi–Ceyhan pipeline.

Marine fleet transportation, thous. tonnes

| Sea | 2021 | 2022 | 2023 |
|---------------------------------|--------------|--------------|---------------|
| Black Sea and Mediterranean Sea | 9,318 | 8,733 | 10,045 |
| Caspian Sea | 537 | 610 | 733 |
| Total | 9,855 | 9,343 | 10,778 |

Activities completed in 2023

In 2023, NMSC Kazmortransflot made significant progress in implementing its investment projects set to develop additional routes for Kazakhstan's oil exports, reinforce investment ties with international partners, and expand the naval merchant fleet of the Republic of Kazakhstan.

KMTF's key achievements of 2023

- A joint venture with Abu Dhabi Ports Group (ADP):
 - In January 2023, KMG and ADP signed a strategic partnership agreement.
 - In February 2023, the parties set up Caspian Integrated Maritime Solutions Ltd. (CIMS), a joint venture headquartered in the Astana International Financial Centre, with KMTF and ADP ownership split of 49% and 51% respectively.
- Acquisition of two oil tankers:
 - In April 2023, CIMS acquired two oil tankers each with a deadweight of 8,000 tonnes.
 - Taraz and Liwa tankers reached the Caspian Sea in November 2023 and commenced operations in December 2023.
- Kazakhstan's oil transportation via the Aktau–Baku route:
 - KMTF was designated as a maritime transport operator for Kazakhstan.

- Signing a freight contract to transport Tengizchevroil's oil:
 - In May 2023, KMTF signed a freight contract with Chevron Tankers.

Activities planned for 2024

In 2024, NMSC Kazmortransflot is set to continue developing alternative transport routes and implementing initiatives for fleet modernisation and business diversification. KMTF is weighing the following prospective projects:

- building three oil tankers, each with a deadweight of 12,000 tonnes;
- building two multifunctional ferries;
- establishing a ship building and repair facility in Kazakhstan.

These projects are set to boost KMTF's competitive edge in the global maritime transport market and make a sizeable contribution to advancing Kazakhstan's economy.

Downstream



The Company has completed a number of major modernisation projects across its oil refineries in Kazakhstan and Romania, successfully achieving higher refining depths. KMG's 2022–2031 Development Strategy sets the following goals:

- improving the refining depth at Kazakhstan refineries to at least 89%;
- increasing the output of high-margin petrochemicals at Kazakhstan refineries;
- ramping up vertical integration at KMGI by adding more filling stations across its footprint to boost margins.

Oil and condensate marketing

In 2023, sales of own oil and gas condensate to meet domestic demand amounted to 8,311 thous. tonnes, including 4,980 thous. tonnes of crude oil supplied from operating assets (Ozenmunaigas, Embamunaigas, Kazakhturkmunay, Urikhtau Operating) to Atyrau, Pavlodar and Shymkent refineries for further refining and oil product sales.

Sales of KMG-produced oil and condensate, thous. tonnes

| Assets | 2021 | | | 2022 | | | 2023 | | |
|--|---------------|-----------------|---------------|---------------|-----------------|---------------|---------------|-----------------|---------------|
| | Exports | Domestic market | Total | Exports | Domestic market | Total | Exports | Domestic market | Total |
| Operating assets ¹ | 6,126 | 7,916 | 14,042 | 5,472 | 8,412 | 13,884 | 5,406 | 8,302 | 13,708 |
| including subsidiaries and associates ² | 3,805 | 4,458 | 8,262 | 3,173 | 4,907 | 8,080 | 2,955 | 4,980 | 7,935 |
| Megaprojects ³ | 7,619 | 0 | 7,619 | 8,240 | 3 | 8,243 | 9,978 | 9 | 9,987 |
| Total | 13,745 | 7,916 | 21,661 | 13,712 | 8,415 | 22,126 | 15,384 | 8,311 | 23,695 |

¹ Ozenmunaigas, Embamunaigas, Karazhanbasmunai, Kazgermunai, PetroKazakhstan Inc., Kazakhturkmunay, Kazakhoil Aktobe, Mangistaumunaigaz, Amangeldy Gas, Urikhtau Operating, Dunga
² Ozenmunaigas, Embamunaigas, Kazakhturkmunay, Urikhtau Operating, Dunga
³ KMG Kashagan, KMG Karachaganak, Tengizchevroil