PETROCHEMICALS

KMG's petrochemical strategy focuses on enhancing processing complexity, increasing the output of high value-added products, and reducing reliance on imported petrochemicals.

The Company's projects align with Kazakhstan's economic policy priorities and demonstrate notable advancements. Success of these initiatives will strengthen the Company's position in international markets and contribute significantly to the sustainable development of the national economy.

Key objectives of KMG's petrochemical projects:
- establish a petrochemical cluster in Kazakhstan;
- use the available large volumes of gas for the petrochemical complex;
- manufacture export-oriented products with high added value;
- produce polymers to diversify industry sectors.

Polypropylene

Kazakhstan Petrochemical Industries Inc. (KPI Inc.) operates the first phase of an integrated gas chemical complex in the Atyrau Region launched in 2022. The project is set to develop Kazakhstan's chemical industry and establish polypropylene production assets.

Project participants

- 49.5% – KMG;
- 40% – SIBUR Holding;
- 9.5% – Samruk-Kazyna Ondeu established to carry out the assignment of the nation's President to implement projects in the chemical industry;
- 1% – Firm Almex Plus, part of Holding Group ALMEX.

Production

In 2024, the KPI plant manufactured 10 product grades, including two new grades (PP H270 GP and PP H350 GP), with a total volume of 249 thous. tonnes of polypropylene. The most significant grades are:
- PP H030 GP – 130,163 tonnes;
- PP H253 FF – 18,092 tonnes;
- PP H270 FF – 11,646 tonnes.

The plant met Kazakhstan's domestic demand, supplying 22.5 thous. tonnes against a market size of 40 thous. tonnes, and helped reduce imports to 17% (from 34% in 2023).

Exports

A total of 230 thous. tonnes were exported, with the primary markets being China, Europe, Turkey, and Russia. The products have successfully passed homologation, confirming compliance with all the necessary safety and quality standards, and are sought after by international processing companies.

Polypropylene sales in 2022–2024 by region

Regions	2022	2023	2024
Kazakhstan	589	9,401	23,301
China	28,859	93,109	89,001
Europe	701	33,276	29,413
Turkey		11,509	63,818
Russia	351	25,411	46,143
Total	**30,499**	**172,706**	**251,676**

Impact on the domestic market

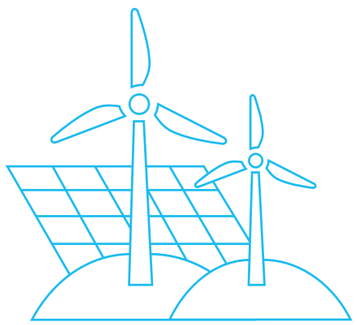
By increasing KPI's market share in Kazakhstan to 55%, we made a significant contribution to reducing the country's polypropylene imports.

Overdrive Programme

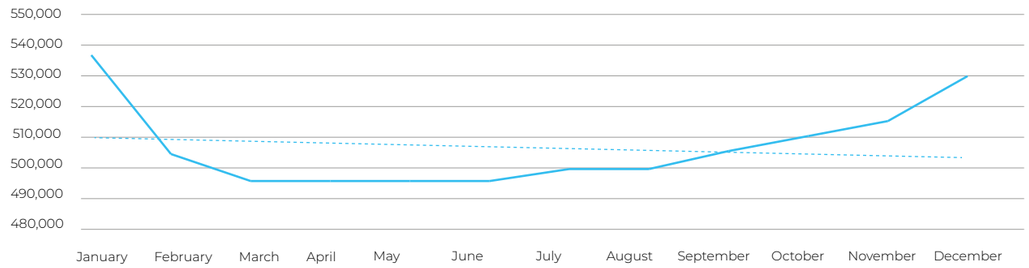
The programme provides special commercial terms to incentivise processing companies:
- Import Substitution Overdrive – product support for import substitution;
- Export Overdrive – ensuring competitive edge in international markets;
- Investment Overdrive – compensation for investments and support for lending interest rates.

Financial indicators and prices

The average market price for polypropylene in Kazakhstan in 2024, including VAT, was KZT 506.6 thous. per tonne, reflecting moderate growth due to inflation and higher demand.



Prices in 2024



Logistics and warehouse infrastructure

Logistics optimisation:
- The plant secured deliveries on FCA[1] terms (KPI warehouses in Atyrau and Almaty). Opening of a warehouse in Almaty helped:
  - increase sales in the southern regions of Kazakhstan (growth in December by 400 tonnes);
  - reduce logistics costs for processing companies that do not have access to railway infrastructure

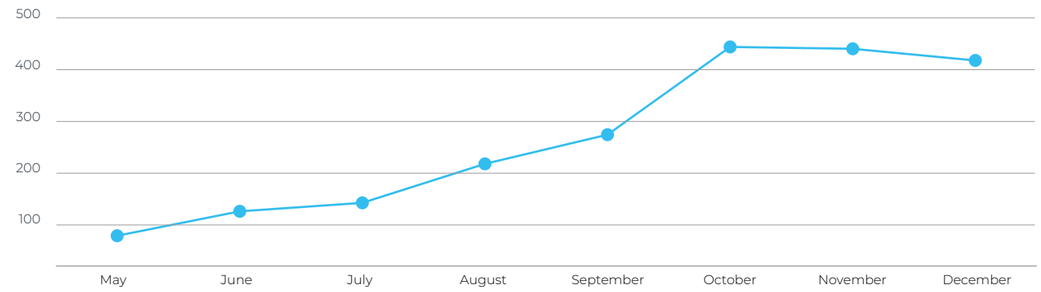
Partnership with international carriers

We organised export routes to China, Turkey and Europe, which bolstered supply chain stability.

Current challenges and measures to address them

No shipments from TCO:
- Propane shipments fell short by 27,425 tonnes in October–December. Alternative sources (33,250 tonnes from SIBUR and other suppliers) were engaged to offset the missing volume.
- Plans are in place to expand partnerships with additional suppliers and optimise contracts for 2025.

Supplies to warehouses in Almaty



[1] FCA means that seller seller is responsible for completing the export formalities and delivers the goods to the buyer's designated carrier at the agreed place and point.

Lengthy commissioning and reasons for the delay in signing the acceptance certificate for the facilities

In 2024, warranty tests of key process units at the plant were successfully accomplished. Testing of the propane dehydrogenation plant (PDH) and the propylene polymerisation unit (PP) was completed in May and October, respectively, confirming compliance with the stated production warranty. Final reports were signed between KPI, the EPC contractor, and the licensor, certifying that obligations have been fulfilled. A pilot run of the plant was also completed in October, confirming the stability of the equipment operation in the test mode. Pre-commissioning works were accomplished in January 2025. Technical and site supervision confirmed the plant's compliance with the established requirements, signalling its readiness for formal acceptance. KPI and the EPC contractor are currently continuing efforts to rectify the identified faults arising from increased equipment loads.

The delay in signing the acceptance certificate results from the complex and unique nature of the technologies and equipment used. Continuous operation of the plant requires time to reach the design capacities. Setting up and stabilising technologically complex facilities typically takes at least a year, as international experience shows, disregarding potential external factors such as economic climate, market environment, and power supply reliability.

Key stages of the production process:

1. Tengizchevroil ships feedstock gas by rail to a plant located 40 km away from the regional centre.
2. Propane (C_3H_8), treated from harmful impurities, is delivered to eight reactors of South Korean Wooyang HC which convert (dehydrogenate) propane into propylene (C_3H_6) with the release of hydrogen.
3. Polypropylene is produced by polymerisation at a Lummus Technology (USA) plant, there being only six such plants in the world.

Environmental efficiency

Production processes boast minimal water consumption: 82% of the liquid is re-used, minimising energy costs. The absence of emissions in the evaporation fields testifies to excellent environmental performance.

Polyethylene

The project for the construction of a new polyethylene plant with a capacity of 1.25 mln tonnes per year is a key initiative to boost Kazakhstan's petrochemical industry. The participants are KMG (29.9%), SIBUR Holding (30%), Sinopec (30%), and KMG PetroChem (10.1%). The total investment in the project is about USD 7.4 bln. It will strengthen the country's economy and reduce reliance on polymer imports.

The availability of cheap raw materials makes the project cost-effective. Ethane and propane supplied on favourable terms and supported by tax benefits in the NIPT special economic zone optimise production costs significantly.

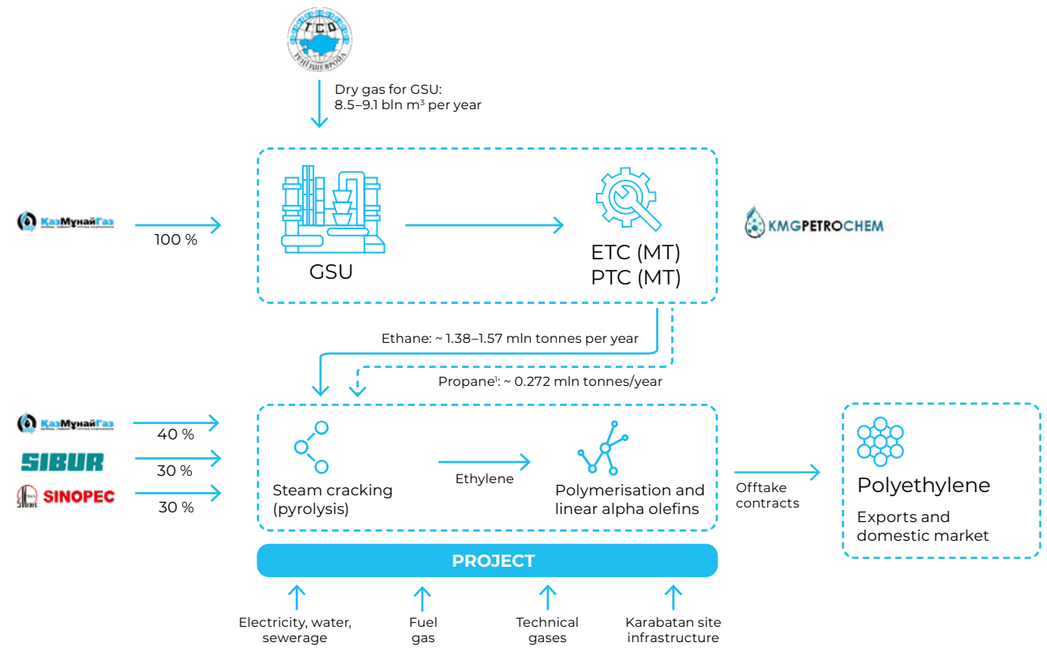
In the long term, sustainable growth of global demand for polyethylene is driven by the wide application of products in packaging, construction, healthcare, space, and other industries. Currently, Kazakhstan lacks domestic production, and all polyethylene is imported from Russia, Uzbekistan, China, Iran, Azerbaijan, South Korea, and other countries. In 2022, polyethylene imports amounted to more than 217 thous. tonnes. Currently, consumption stands at about 11 kg per capita and is expected to increase to 17–20 kg by 2028–2030, which corresponds to a domestic market size of 340–400 thous. tonnes per year. On top of that, with exports of up to 1 mln tonnes per year, the project could generate export revenues of up to USD 2.5 bln, bolstering the country's GDP by up to 1.2% and fostering SMEs.

About 20–24% of the plant's total production (200–300 thous. tonnes per year) is planned for the domestic market, with the rest to be exported.

The process flow of the integrated gas chemical complex includes several key stages: off-take contracts secure a stable supply of raw materials first, and then incoming dry gas (8.5–9.1 bln m³ per year) is fed to the gas separation unit (GSU). It extracts ethane from the gas at a rate of about 1.38–1.57 mln tonnes per year, which is then supplied to a steam cracker (pyrolysis) to be converted into ethylene.

It is fed to the polymerisation unit (including linear alpha olefin elements), where polyethylene is manufactured using modern licensed technologies and distributed between the export and domestic markets. Apart from that, the process flow includes logistic units (export terminal company, and production and transportation complex) that ensure efficient transport of raw materials and finished products. The project is seated in the National Industrial Petrochemical Technopark, a special economic zone, which offers tax benefits and optimisation of infrastructure costs.

Business model



Current status

As of today, engineering preparations have been completed at the sites of pyrolysis and polymerisation units, and logistics complex, with works ongoing at off-site facilities.

Additionally, the EPC contractor for the pyrolysis unit has started active work; the main equipment components have been ordered, and working design documents are being received and reviewed.

Raising investments and financing

The project has successfully attracted international investors, including Sinopec, our strategic partner, significantly enhancing financial resilience. A favourable ODI (Overseas Direct Investment) decision confirming readiness for the next stage has been awarded. Firm offers of USD 1.345 bln have been made by the Bank of China, ICBC, CCB, and CMBC, with the first instalment expected in 1Q 2025.

Design and documentation

All the key project documents have been finalised, including a feasibility study, process design package (PDP), environmental data collection, and western standard design (EBD/FEED). The design and estimate documents (DED) are currently underway and scheduled for completion in 1Q 2025.

EPC contract and infrastructure works

On 18 September 2024, an EPC contract was signed with a consortium of Sinopec Engineering Group and Tecnicas Reunidas, covering engineering design, equipment supplies, and construction of the facility. Infrastructure works at the pyrolysis site commenced on 11 September 2024 and include vertical planning and construction of on-site roads.

Plans for 2025

In 2025, the focus will be on finalising design and construction documents and proceeding to the active construction phase. We also expect the first financing instalment from international banks, providing the necessary liquidity for the project. Work will continue on soil excavation, construction of on-site and off-site roads, and site preparation for handover to the EPC contractors.

Deliverables

The new polyethylene plant will create approximately 8,000 jobs during the construction phase and 800 permanent jobs after it becomes operational. More than 20 grades of polyethylene are planned, with 40% of products being in the premium segment.

[1] The volume of undelivered ethane will be replaced by the supply of propane.

Gas separation unit

The gas separation unit (GSU) is a strategic asset within Kazakhstan's gas infrastructure, designed for deep processing of natural gas and separation of valuable components. The facility provides a stable supply of ethane and propane for the petrochemical industry, reduces harmful emissions, and improves the quality of commercial gas. The project is operated by KMG PetroChem, a subsidiary of KMG.

Design and approval phase

The project has successfully passed all the design stages, including FEED. Design and estimate documents received government approvals. Re-FEED was completed in August 2024 by WOOD KSS, with a preliminary EPC cost estimate of USD 2,299.5 mln, including VAT.

Financing and government support

Financing has been confirmed: 40% from the National Bank of Kazakhstan, 40% from Samruk-Kazyna, and 20% in an equity loan provided by KMG. State support measures include extension of the NIPT special economic zone term until 2048 (Government Resolution No. 595 dated 24 July 2024) and support for propane exports to ensure loan repayment (Ministry of Energy).

Agreements and arrangements

On 14 September 2024, KMG's Investment Committee resolved to proceed to the Implementation Phase (Minutes No. 15-24). On 11 December 2024, the key documents were signed, including Addendum No. 3 to the 2008 raw material supply agreement and an updated dry gas purchase and sale contract between KMG PetroChem and TCO to secure a stable ethane supply.

Integration of GSU into the project business model

GSU will supply ethane fraction from the Tengiz field by pipeline under the contract with KMG PetroChem.

The supply volume will be 1,573 thous. tonnes of ethane per year.

Updated schedule for the Implementation Phase

GSU construction and installation is scheduled to commence in 2Q 2025. The commissioning is scheduled for 2028.

Risks and mitigants

GSU's technological risks are mitigated through the use of licenced Honeywell UOP technologies[1]. Energy risks are minimised through the construction of a gas turbine power plant (GTPP) and partially through a connection to the TCO infrastructure.

Environmental effect

The project is designed to process 9.05 bln m^3 of dry gas per year, recovering 1,573 thous. tonnes of ethane and 355 thous. tonnes of propane. Gas treatment from hydrogen sulphide will reduce harmful emissions, improve commercial gas quality, and have a positive impact on the environment in the Atyrau Region.

Additional works

The development of FEED LGM (modification of TCO's fuel gas system) is phased. The Pre-FEED LGM (by Genesis) was completed in March 2024. FEED LGM is scheduled for September 2024 to May 2025 (WOOD KSS).

Plans for 2025

In 2025, the focus will be on completing the design phase and moving to construction activities.

[1] Honeywell UOP is a global leader in the development of licenced technologies for oil refining, petrochemical, and gas processing applications.

Urea

2024 was a landmark year for tightening ties between Kazakhstan's KMG and China's CNPC. A number of key agreements were reached to strengthen cooperation in the oil and gas industry.

The construction of a urea plant in Kazakhstan contributes to the development of the chemical industry, providing nitrogen fertilisers for agriculture and increasing export potential. The main raw material is natural gas, which is processed into ammonia and then into urea. Production targets the domestic and international markets, mostly China, Russia and Europe. Urea is used in agriculture as a fertiliser, in the chemical industry to make plastics and resins, in medicine and pharmaceuticals, and in the energy sector to minimise harmful emissions. The project reduces import dependence, creates new jobs, and promotes non-resource exports.

Signing of the framework agreement: On 3 July 2024, a framework agreement was signed between KMG and CNPC, paving the way for long-term cooperation in various domains of the oil and gas industry, including petrochemicals.

Pre-feasibility study development: China's HQC, a CNPC company, has finalised the pre-feasibility study documents. CNPC is currently deliberating whether to proceed to the next phase – FS or FEED.

Establishment of a joint venture: On 16 October 2024, the parties reached an agreement to establish a joint venture. This was an important step in running joint projects.

Raw material supply agreement: On 13 November 2024, an agreement of intent on raw material supply was signed between KMG PetroChem and CNPC International Aktobe Petroleum. This agreement will secure a stable supply of raw materials for joint projects.

Key aspects of the project

- **Location and resource base:** the plant will be located in the Aktobe Region and will use natural gas from the Zhanazhol gas processing plant.
- **Project financing:** the project is financed by the investments from the project participants and international partners.
- **Technologies:** we will use modern technologies ensuring high production efficiency and minimal environmental impact.
- **Cooperation:** partnership with CNPC provides access to advanced technologies and financial resources.
- **Plant capacity:** 1 mln tonnes of urea per year.
- **Investments:** the preliminary cost estimate for the project is USD 1.2–1.5 bln. A more precise estimate will be available as soon as the project's design documents are ready.
- **Project schedule:** 2024–2029.

Polyethylene terephthalate

KMG PetroChem, a KMG's subsidiary, is running a large-scale project to build a polyethylene terephthalate (PET) plant with a capacity of 735 thous. tonnes per year. The plant will be located in the Atyrau Region, next to the Atyrau Refinery, which will provide convenient logistics and access to the necessary raw material – paraxylene.

The project involves the use of cutting-edge technologies from global leaders. Technology designed by Koch Technology Solutions will be used for terephthalic acid production, while technologies by Chemtex Global Corporation and Polymetrix will be used to make polyethylene terephthalate. This guarantees high quality and production efficiency.

The project's key stages are completion of preFS, obtaining the necessary permits, raising financing, and construction of the plant. We are actively looking for a strategic partner for the project.
The project will address a number of important challenges:

- **Import substitution:** PET production will reduce reliance on imports and secure stable supplies to the domestic market;
- **Development of the petrochemical industry:** creation of a new high-tech production facility;
- **Job creation:** the project will create new jobs in the region;
- **Support for Kazakhstan's economy:** boosting the country's export potential.