Karachaganak - Good to Great

Introduction

The Karachaganak oil-gas condensate field in West Kazakhstan is one of the world's largest oilfields. It is Kazakhstan's third-largest producer of liquid hydrocarbons (crude oil and condensate) and holds significant hydrocarbon reserves, making it a critical asset for the country's economy.

The Karachaganak oilfield is operated by Karachaganak Petroleum Operating B.V. under the Final Production Sharing Agreement, effective until January 2038. The investors in the development and operation of the Karachaganak oilfield [hereinafter – the Project] include four foreign investors and the national company KazMunayGas [hereinafter – the Consortium]. Despite a history of arbitration disputes, the Consortium and the Government of Kazakhstan have consistently managed to resolve these issues, ensuring continuous operations and oilfield development.

The Project's future development is now focused on increasing natural gas production, having achieved stable liquid hydrocarbon output. The construction of the Karachaganak Gas Processing Plant will increase gas production and sales while maintaining liquid hydrocarbon production levels. This will, in turn, strengthen the country's energy security, ensure stable tax revenues for Kazakhstan, and expand the resource base for the domestic petrochemical industry.

Karachaganak and its footprint in Kazakhstan

The Karachaganak oil-gas condensate field, located in the West Kazakhstan region, is one of the largest in the world, with initial geological reserves of over 1.7 billion tons of liquid hydrocarbons and more than 1.7 trillion cubic meters of natural gas. The oilfield was discovered in 1979, and pilot development began in 1984. Karachaganak is situated in northwest Kazakhstan, near the border with Russia. The development plan envisioned that all sour gas extracted would be processed at the Orenburg Gas Processing Plant [OGPP]. Following the collapse of the Soviet Union, Gazprom offered the Government of Kazakhstan a joint development of the oilfield. However, the Kazakh authorities declined, expressing their intention to attract foreign companies as partners.

From 1992, negotiations with potential investors took place over five years. In 1997, the Final Production Sharing Agreement [FPSA] was signed between the Government of Kazakhstan and a consortium of companies, including British Gas (now Shell), Agip (now Eni), Texaco (now Chevron), and LUKOIL. The FPSA, signed on November 18, 1997, for a duration of 40 years, came into effect on January 27, 1998.

The Karachaganak oilfield is operated by Karachaganak Petroleum Operating B.V. [KPO], with current investors in the Project including Eni (29.25%), Shell (29.25%), Chevron (18%), LUKOIL (13.5%), and KazMunayGas (10%). Eni and Shell (through a 100% affiliate, BG Karachaganak Limited) are joint operators of the Karachaganak oilfield. KazMunayGas acquired its stake in the Project following the 2011 settlement of a dispute between Kazakhstan and the Consortium over tax claims and export customs duty payments.

Currently, the Project is in an oilfield maintenance phase, aimed at sustaining the achieved liquid hydrocarbon production plateau. Since the signing of the Final Production Sharing Agreement [FPSA], more than 31.3 billion US dollars has been invested in the development of the oilfield.

Sour gas produced at Karachaganak is transported to Orenburg, Russia, where it is processed at the Orenburg Gas Processing Plant [OGPP]. The processed commercial gas is then delivered back to Kazakhstan. For this operation, KazMunayGas and the Russian company Gazprom established a joint venture, KazRosGas, which buys sour gas from KPO, processes it at the OGPP, and sells the commercial gas back to Kazakhstan. This agreement is valid until 2038, aligning with the end of the FPSA period.

The majority of liquid hydrocarbons produced are exported via the Caspian Pipeline Consortium pipeline system (89%), with the remaining volume transported through the Uzen-Atyrau-Samara long-distance pipeline.

KPO is Kazakhstan's third-largest liquid hydrocarbon producer, following Tengizchevroil [TCO] and North Caspian Operating Company [NCOC]. Production at Karachaganak began in 1984; the following provides information for the last 10 years.

Production, million ton	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Kazakhstan	79	78	86	90	91	86	86	84	90	88
KPO (2024 - forecast)	12	12	12	12	11	12	11	11	12	12
KPO share, %	15%	15%	15%	13%	12%	14%	13%	13%	13%	14%

Source: compiled by ENERGY Insights & Analytics

KPO demonstrates stability in production volumes and maintains its market share among Kazakhstani players. In 2024, it is expected to produce approximately 12 million tons of liquid (unstabilized) hydrocarbons, representing 14% of the country’s total production. As of January 1, 2023, KPO's recoverable liquid hydrocarbon reserves stood at 307 million tons [categories A+B+C1+C2 according to Kazakhstan's classification], or 6% of Kazakhstan's total recoverable oil and condensate reserves. Based on 2023 production levels, the reserves-to-production ratio is approximately 25 years. KPO's natural gas reserves, at 833 billion cubic meters as of the end of 2022, are the second largest after NCOC, accounting for 22% of Kazakhstan's total recoverable natural gas reserves.

As the third-largest producer in Kazakhstan and with significant hydrocarbon reserves, KPO is a crucial asset for the national economy. However, despite positive developments, it is important to note that the Government of Kazakhstan has filed a claim for recoverable costs of the Project against the companies involved in the oilfield's development, amounting to 3.5 billion US dollars. The Ministry of Energy stated that details of the arbitration dispute remain confidential. In an interview, Beket Izbastin, General Director of the Authorized Body of PSA LLP [PSA], noted that Kazakhstan's claim is based solely on fundamental procedures and FPSA requirements, the rights of investors are fully respected, the FPSA stability provisions have not been violated, and the practice of resolving disputes through an independent and neutral arbitration tribunal reflects Kazakhstan's commitment to globally accepted mechanisms for dispute resolution within the business community.

The claims from both sides were settled without disrupting the development and operation plans of the Karachaganak oilfield. A recent example of such a settlement is the agreement between KazRosGas LLP and KPO, which ensures uninterrupted oil production and the supply of commercial gas to the domestic market.

Previously, claims from both sides were resolved without affecting the development and operation plans of the Karachaganak oilfield. A recent example is the agreement reached between KazRosGas LLP and KPO, which will ensure uninterrupted oil production and the supply of commercial gas to the domestic market.

Karachaganak Expansion Projects

The oilfield development is being carried out as part of the Karachaganak Expansion Project [KEP], which consists of two phases: KEP1A and KEP1B. At the Karachaganak oilfield, as hydrocarbons are extracted and reservoir pressure drops, the gas/oil ratio [GOR] increases, leading to a higher gas content in the produced liquid hydrocarbons. Both phases aim to enhance the capacity to treat and inject sour gas back into the reservoir, thereby maintaining the production plateau at the Karachaganak oilfield at current levels.

The KEP1A phase, which involved the construction of the fifth gas re-injection compressor, was successfully completed and inaugurated in September 2024. This phase, initiated in 2020, was implemented despite the challenges posed by the COVID-19 pandemic and geopolitical instability and was completed on schedule. Completing KEP1A is critical to maintaining oil production levels, effectively managing GOR, and increasing profits for all Consortium participants.

KEP1B, authorized in 2022, is the second phase of the KEP and involves constructing a sixth compressor for gas re-injection. This project is currently under construction and, like KEP1A, is aimed at sustaining liquid hydrocarbon production levels at the Karachaganak oilfield.

The completion of the KEP1B project opens up prospects for further development of the Karachaganak oilfield by increasing its GOR. However, Kazakhstan's current limitations in processing capacity for gas from Karachaganak and periodic restrictions on gas reception at the OGPP hinder increased gas production and sales, making the construction of a new gas processing plant a strategically important step.

The project to constructing the Karachaganak Gas Processing Plant [Karachaganak GPP], with a capacity of 4.5 billion cubic meters of sour gas per year, is under consideration. However, its economic feasibility depends on the price of the commercial gas the plant will produce. This price is expected to exceed current domestic market levels, complicating decision-making regarding construction. In July 2024, during a government meeting, Minister of Energy Almassadam Satkaliyev stated that the Karachaganak GPP construction project will be carried out at the expense of KPO, the document submission process for participation in the EPC (Engineering, Procurement and Construction) tender was finalized in February 2024, and the evaluation of tender bids from potential suppliers is underway. The preliminary investment estimate for the Karachaganak GPP is 3.5 billion US dollars.

According to KPO's estimates, the new gas processing plant will allow sour gas production from the oilfield to increase from 9 to 13 billion cubic meters per year, without significantly affecting liquid hydrocarbons production, until the end of the FPSA. KPO, in collaboration with PSA, has developed a roadmap for implementing the gas strategy, which includes an accelerated plan for the Karachaganak GPP construction, with the plant's launch scheduled for 2028.

Significant natural gas reserves can (and should) be leveraged to develop the domestic gas-derived chemicals industry. For instance, Kazakh Invest website mentions the investment project for construction of a gas chemical complex based on resources of the Karachaganak oilfield. The completed complex, designed to process separation and stabilization gases containing acid gas (CO_2 + H_2S), would enable the production of liquefied petroleum gas, polyethylene, and pyrolysis gasoline as finished products.

Karachaganak Fiscal Regime

Disclaimer: The terms of Karachaganak's PSA have not been disclosed by its counterparties. The exact investment amounts and other specifics of the Project's execution remain unknown. The information presented in this analytical article about the Project and its cash flows is prepared based on open-source information, including statements by officials related to the Project.

A Production Sharing Agreement is a contractual framework commonly used in the oil and gas industry, where an international investor finances the exploration and development of a resource, such as the Karachaganak oilfield in Kazakhstan. Under a Production Sharing Agreement, the investor recovers their costs from the revenue generated by the project, with the remaining profits shared between the government and the investor. This arrangement is designed to attract foreign investment by offering a structured approach to cost recovery and profit sharing. In contrast, a subsoil use contract typically involves a direct lease or license to extract resources, with the investor paying royalties and taxes to the government while retaining ownership of the extracted resources. Production Sharing Agreements, such as the one for Karachaganak, often include specific terms for cost recovery and profit sharing, making them more complex and tailored to large-scale projects. Information on the terms of the PSA for another megaproject – Kashagan – is provided in our article "Exceptional Kashagan – Terms and Prospects", while the article "Tengiz Effect – 2033 and beyond" outlines the terms of the stabilized Tengiz contract. The FPSA for Karachaganak includes provisions related to cost recovery and profit sharing, income tax, and special triggers that adjust the profit-sharing ratio over time.

The tax regime of Karachaganak is a complex framework that determines how revenues from the sale of hydrocarbons are distributed between the Consortium and the Government of Kazakhstan. The calculation of the shares is based on the division of profit into Cost Oil and Profit Oil.

Cost Oil covers the expenditures incurred by the Consortium members during the current period, and up to 60% of free cash flow is to be distributed after the complete recovery phase achieved in 2009. Currently, Cost Oil corresponds to the actual costs (both operating and capital) incurred by the Consortium.

Profit Oil is the net cash receipts available for distribution, less the Cost Oil, and at least 40% of free cash flow must be distributed. Profit Oil is then divided between the Republic of Kazakhstan (at least 20%) and the Consortium members (no more than 80%), with the distribution ratio determined by the Fairness Index. This index is linked to the payback of the Project through the value of the Internal Rate of Return [IRR], on a scale from 0 to 20%. As the Project's IRR increases, the Consortium's share of Profit Oil decreases from 80% to 20%. Once the IRR exceeds 20%, the Consortium's share of Profit Oil drops to 10%, leaving Kazakhstan with 90%.

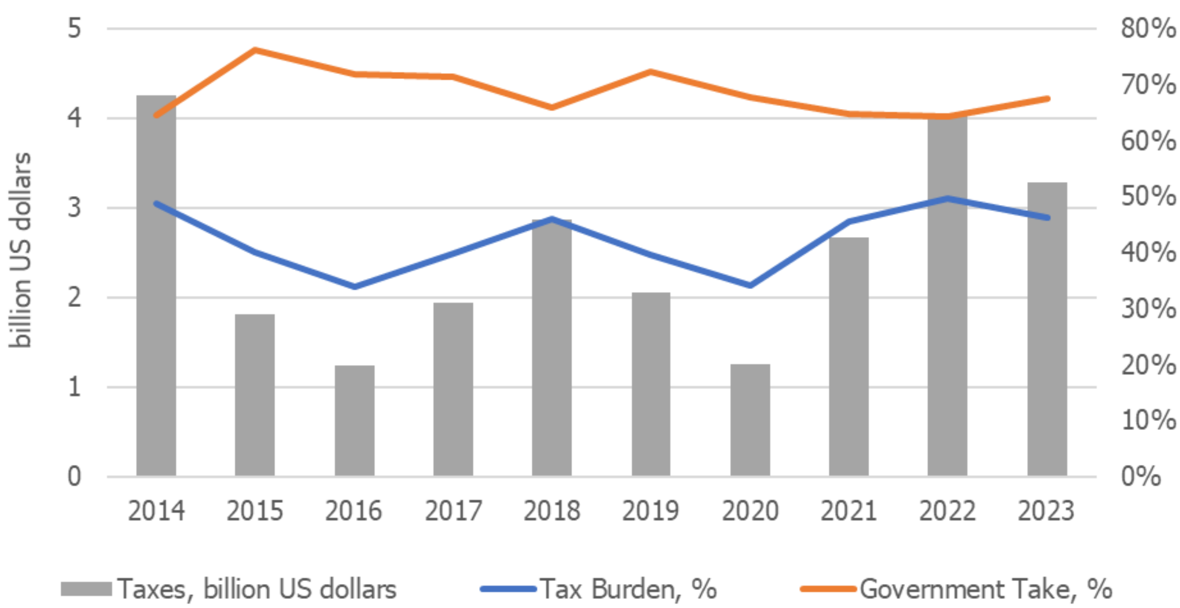
Additionally, the Government imposes an income tax of 30% on the taxable income of the Consortium members.

Beyond these revenue-sharing mechanisms, the Government also holds a 10% stake in the Project through the national oil company, KazMunayGas.

Karachaganak and Government Take

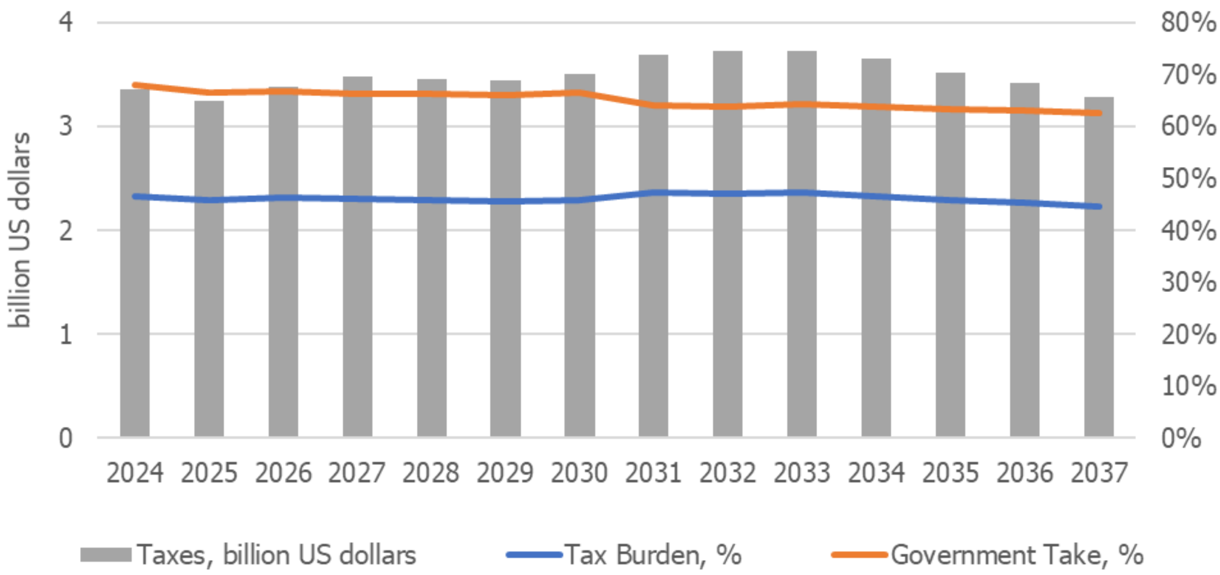
As we noted in our article "Tax burden – Order of Merit 2023", KPO, alongside TCO, is not only the largest taxpayer in absolute terms but also the leader in taxes paid per ton of oil produced. To better understand the context, let's examine the trend of Kazakhstan's receivables from KPO over the past ten years. Tax Burden is calculated as the sum of taxes divided by revenue, while Government Take is the sum of taxes divided by divisible cash flow [Revenue – Operating Expenses – Capital Expenditures].

The chart below highlights the high sensitivity of total payments and taxes to crude oil prices, with the highest levels recorded in 2014 and 2022. The period from 2015 to 2021 was marked by much lower average crude oil prices, resulting in significantly lower payments and taxes. At the same time, Tax Burden and Government Take remained relatively stable throughout the period.



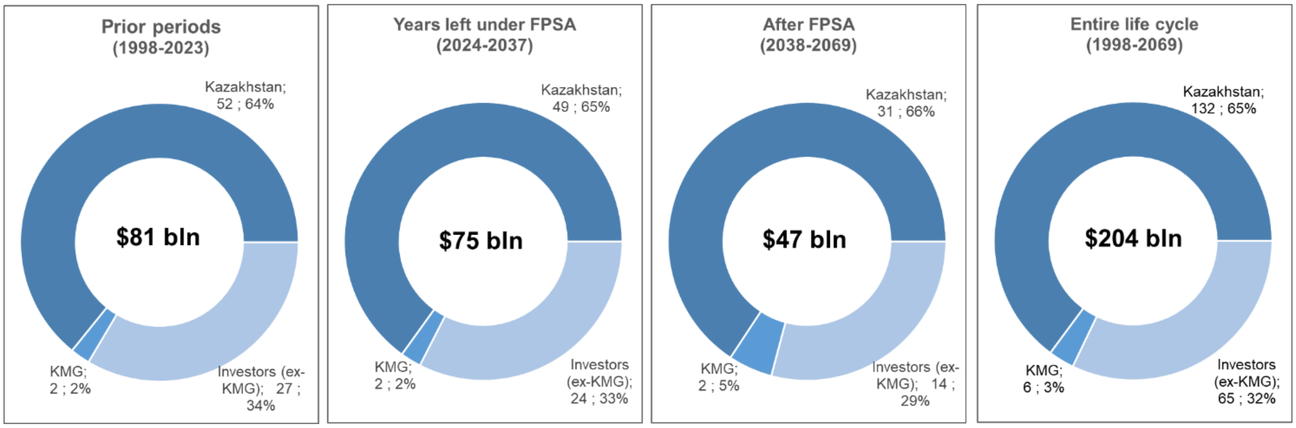
Source: compiled by ENERGY Insights & Analytics

In our assessment, maintaining the production plateau and favorable oil prices will ensure that tax payments, Tax Burden, and Government Take remain stable, benefiting the Republic of Kazakhstan.



Source: compiled by ENERGY Insights & Analytics

The cash flow to be distributed to the Government and investors of the Project is detailed in the pie charts below, broken down by the conditional stages of the Project. Over the historical period from 1998 to 2023, a total of 81 billion US dollars was received for distribution, of which Kazakhstan received 64%, or 52 billion US dollars. From 2024 to 2037, i.e., until the end of the FPSA, the total projected cash flow to be distributed is 75 billion US dollars. In the post-FPSA period, from 2038 to 2069, the projected cash flow to be distributed is 47 billion US dollars. Thus, the total cash flow expected to be distributed during the Project's development period from 1998 to 2069 is 204 billion US dollars. These estimated values are based on the successful maintenance of the production plateau through the KEP projects and do not include cash flows related to the construction and operation of the Karachaganak GPP.



Source: compiled by ENERGY Insights & Analytics

The details of the calculations presented above, including the projected production profile of KPO, specific performance indicators, and assumptions regarding key macroeconomic variables, are provided in the Investment Potential section of our analytical report, Kazakhstan Energy Outlook 2024.

The Bottom Line

The size and stability of tax revenues from the Project underscore the company's importance to Kazakhstan's economy. As the second largest taxpayer in the country, KPO plays a key role in financing government programs and services. As two thirds of the FPSA term is passed, it is critical to maintain a fiscal environment that supports continued investment and productive activities.

Negotiations between Kazakhstan and investors regarding the terms of the new concession, which will take effect after 2037, are a crucial strategic issue for the country, with significant economic implications for the coming decades. The acceleration of the Karachaganak GPP construction, along with investments in the development of the domestic gas chemical industry, could be integral to finding a mutually beneficial, long-term framework for continued cooperation.

ENERGY Insights & Analytics

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The key tool and product of ENERGY Insight & Analytics is internally developed software - the Analytical Platform EXia, aimed to identify, localize, format, and present data most efficiently for the specified use cases.

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