

SECTOR OVERVIEW

A. Background

1. Kazakhstan is the largest economy in Central Asia because of its abundant natural resources, including fossil fuels. Its reserves of oil, coal, and uranium all rank among the top 12 or so in the world, while its natural gas reserves are in the top 20. Kazakhstan's oil production represents 2.0% of global production while its gas production represents 0.6%.¹ The oil and gas segment contribute 21.3% of gross domestic product (GDP) and 70% of exports.² In 2017, coal represented 44.8% of the country's total primary energy supply,³ followed by natural gas (34.9%) and oil (19%).⁴ Natural gas gross production increased by 48% from 37.4 billion cubic meters (bcm) in 2010 to 55.5 bcm in 2018. Oil production increased from 79.7 million metric tons (MMt) to 90.4 MMt during the same period (footnote 2). Kazakhstan is a significant transit country, transporting natural gas from Uzbekistan and Turkmenistan to the Russian Federation, the People's Republic of China (PRC), and Europe.

2. Kazakhstan's economy is dominated by the extractive sector, so its energy and carbon intensity—units of energy and carbon emissions per unit of GDP—are high. In 2017, Kazakhstan's energy intensity was 0.2 tons of oil equivalent over GDP on power purchasing parity almost double the rate of the Organisation for Economic Co-operation and Development (OECD) (0.11 tons of oil equivalent/GDP PPP). In the same year, its carbon intensity was 0.6 kilograms of carbon dioxide/GDP PPP, 2.6 times higher than the OECD's 0.23 kilograms of carbon dioxide/GDP PPP (footnote 4). The energy sector is responsible for 78% of Kazakhstan's carbon emissions. The power industry is highly reliant on coal, which generates nearly 70% of the country's electricity, while renewables excluding hydro make a small contribution (less than 1%). In 2014, the Government of Kazakhstan adopted the General Scheme of Gasification of Kazakhstan for 2015–2030, with the aim of bringing gas to 13 oblasts (regions) across the country and gradually replacing coal with gas for power generation. Gasification is also expected to entail a shift toward cleaner fuels, along with ecological and socioeconomic welfare and enhanced economic competitiveness, through widened gas connection for both domestic use and exports.

3. **Gas industry structure.** The Ministry of Energy leads energy sector governance, including that of the oil and natural gas industry in Kazakhstan. It was created in August 2014 following a merger of the functions of the Ministry of Oil and Gas and parts of the functions of the Ministry for Industry and New Technologies and the Ministry for Environment and Water Resources. The national oil and natural gas company, Joint Stock Company National Company KazMunayGas (KMG) was created in 2002 and is owned by Samruk-Kazyna Sovereign Wealth Fund, which holds a 90.42%, and 9.58% by the National Bank of the Republic of Kazakhstan. KMG holds equity interests in the significant Karachaganak, Kashagan, and Tengiz fields, as well as various ranges of interest in other production fields.⁵ KMG's subsidiary Joint Stock Company KazTransGas (KTG) oversees the midstream and downstream gas subsectors and is engaged in international gas trade.

4. In 2012, to promote gasification and enhance the economy's market competitiveness, the government placed the responsibility for developing the gas market with a "national operator" by

¹ BP. 2019. [BP Statistical Review of World Energy 2019: An Unsustainable Path](#). Press release. 11 June.

² KAZENERGY. 2019. [The National Energy Report 2019](#). Astana.

³ Total primary energy supply equals the total supply of energy that is consumed domestically, either in transformation or in final use.

⁴ International Energy Agency. [Data and Statistics](#) (accessed 24 February 2020).

⁵ KMG. 2019. [KMG Investor Presentation](#). Astana.

creating a single-buyer model under the Law on Gas and Gas Supply. KTG performs this role. Having a national operator allows the government to capture any upside in the gas industry while maintaining a single channel for export—hence balancing the monopolistic conditions of neighboring gas markets. KTG has a 92.5% share in the local market for the distribution and supply of natural gas to all 10 oblasts where a gas distribution network is available. It also has a 100% share of gas imports and a 47% share of gas exports. Under the legislation, KTG has preferential rights to purchase the associated gas from producers. KTG and its subsidiaries deliver nearly 100% of the piped gas that reaches domestic consumers, of which 95% is delivered through KTG's trunk pipeline. KTG manages more than 49,000 kilometers (km) of gas distribution networks and over 19,000 km of gas transmission pipelines.

5. **Gas production.** Kazakhstan's gas output mainly comes from the Karachaganak,⁶ Kashagan,⁷ and Tengiz fields,⁸ which together represent nearly 70% of the country's total production. Currently, the most gas production in Kazakhstan is associated gas that is produced along with oil. As a result, gas production is driven by liquid oil operations, making it difficult to scale gas output in response to demand. A sizable chunk of Kazakhstan's gross natural gas production is reinjected (34% in 2018) to enhance oil production. Much of the natural gas produced in Kazakhstan has a high sulfur content, requiring a costly handling process. While the Tengiz field has a natural gas processing plant, the Karachaganak field has insufficient natural gas processing capacity. Thus, most of the production from the Karachaganak field must be sent for processing to the Russian Federation.⁹

6. **Gas transportation.** Kazakhstan is a landlocked country, dependent on pipelines to transport its hydrocarbons to global markets. It is also a transit country for oil and gas pipeline exports from Central Asia to the Russian Federation and the PRC. Gas transmission capacity is an important economic factor for Kazakhstan, and expansion of the capacity has become a priority area for the government. The country has expanded its national gas transmission system and local distribution pipeline networks to increase overall gasification (currently about 50%) and create a unified gasification system.

7. In August 2007, the government signed a 33-year intergovernmental agreement with the PRC to develop two gas pipeline projects—the Asia Gas Pipeline LLP and the Beineu-Shymkent Gas Pipeline LLP (BSGP)—as 50:50 joint ventures between KTG and Trans Asia Gas Pipeline, a subsidiary of China National Petroleum Corporation. The Asia Gas Pipeline LLP project exports Turkmen and Uzbek gas through Kazakhstan to the PRC. The BSGP connects Kazakhstan's existing pipelines to the Asia Gas Pipeline, creating a single system spanning almost 1,143 km. Following the intergovernmental agreement, the BSGP launched a three-phased pipeline development project. Phase 1 was completed in 2017 and phase 2 was completed in 2019. (Confidential information deleted.) In addition to allowing increased gas exports to the PRC, the BSGP brings domestic benefits by supplying gas to people in south, central, and east Kazakhstan who previously had limited access to domestic natural gas.

8. **Domestic consumption.** End-of-pipe gas consumption in the country increased steadily from 9.0 bcm in 2010 to 15.1 bcm in 2019. In terms of the structure of consumption, power generation represents 50% of total consumption, followed by residential-commercial users (36%) and industry (14%). The gasification of Kazakhstan has made substantial progress. In

⁶ Operated by Eni (29.25%), Shell (29.25%), Chevron (18%), Lukoil (13.5%), and KMG (10%).

⁷ Operated by Eni (16.81%), KMG (16.88%), Shell (16.81%), Total S.A. (16.81%), ExxonMobil (16.81%), China National Petroleum Corporation (8.4%), and Inpex (7.56%).

⁸ Operated by Chevron (50%), Exxon Mobil (25%), KMG (20%), and Lukoil (5%).

⁹ An investment project for a high-capacity gas processing plant in Karachaganak is under preparation by KTG.

December 2019, the first phase of the Saryarka gas pipeline from the Kyzylorda region in southern Kazakhstan to the capital Nur-Sultan (more than 1,061 km) was completed, providing access to natural gas to nearly 2.7 million people in Nur-Sultan, Temirtau, and Zhezkazgan. The gas demand in Kazakhstan is expected to continue to grow, although gradually, because of the large investment need for gasification and fuel switching from coal to gas.

9. Retail sales of gas are carried out by gas distribution companies, owners of automatic gas filling compressor stations, operators, producers, and owners of imported gas for retail sales to industrial consumers. KazTransGas Aimak, a 100% subsidiary of KTG, is responsible for retail gas sales and covers more than 90% of the domestic market. It has nearly 2 million customers comprising households at private houses; apartment blocks; and legal entities (government, commercial, and industrial customers).

10. **Gas tariff.** Kazakhstan's gas price for local consumers is governed by the Law on Gas and Gas Supply, 2012, which stipulates that the price shall include the cost of production, processing, transportation and a fixed margin for KTG. To maintain an affordable price for consumers, the State Committee for Regulating Natural Monopolies and Competition Protection (KREMiZK) regulates the tariffs for domestic gas transport and storage. The end-user price varies by consumer type and region, depending on the cost of delivery.

11. **Challenges.** The government is determined to reduce its carbon footprint. Kazakhstan's nationally determined contribution under the 2015 Paris Agreement targeted an unconditional reduction in greenhouse gas emissions of 15% (25% conditional) by 2030 compared with the 1990 baseline. The government has also set various targets under the Green Economy concept to foster sustainable growth and improve environmental performance.¹⁰ According to the OECD, the country will need to spend \$292 billion (or 3.93% of GDP) on infrastructure until 2040. This leaves a gap of \$84 billion compared with the current investment level, which is most prevalent in cross-border infrastructure, energy, and road transport.¹¹

12. **Opportunities.** To close the existing gaps in the energy sector, Kazakhstan would need strategic infrastructure investment and knowledge support to foster the development of renewable energy, improve energy efficiency, and promote green growth using a comprehensive long-term approach to development. The government has made improvements in the investment climate and business environment by paying close attention to them, and its recent reforms have brought it closer to international standards in several aspects. Kazakhstan is the main recipient of foreign direct investment in the region and represents more than two-thirds of Central Asia's foreign direct investment. The foreign investment mostly goes to resources, such as coal, oil, and gas, and the metal industry.

B. Policy and Regulatory Framework

13. **Key legislation and policies.** Kazakhstan has taken significant steps toward developing a focused energy policy. The Concept for Transition of Kazakhstan to Green Economy was created because of the strong political momentum (footnote 10). Under the green economy concept, the government plans to maximize hydrocarbon resources management while observing

¹⁰ Green Economy concept aims to address the country's high dependence on the fossil fuel industry and the resulting carbon intensive footprint, with one of the targets being to improve efficiency in gas consumption. Decree of the President of the Republic of Kazakhstan No. 577. 2013. *Concept of Transition of the Republic of Kazakhstan to "Green Economy"*. Nur-Sultan.

¹¹ OECD. 2019. [Sustainable Infrastructure for Low-Carbon Development in Central Asia and the Caucasus Hotspot Analysis and Needs Assessment](#). Green Finance and Investment. Paris.

environmental standards. The overall energy goal is to increase the use of renewable and alternative energy and to reduce the energy intensity of the economy. The concept projects the share of cleaner (compared with coal) gas power plants in electricity production to reach 20% by 2020, 25% by 2030, and 30% by 2050. As of 2017, the share of gas in power generation was about 19% (footnote 4). In December 2014, the government approved the Concept on Development of the Fuel and Energy Complex of Kazakhstan until 2030 (Energy Concept 2030).¹² The Energy Concept states that the next step in infrastructure development will be in gas transportation to enhance the connectivity required to increase gas trade.¹³

14. The gas industry is governed by various pieces of legislation, including the following:¹⁴
 - (i) The Law on Gas and Gas Supply, 2012 provides a regulatory framework for gas supply and puts Kazakhstan's gas production at the disposal of a single national operator, KTG. KTG operates most of the gas infrastructure in the country and has preferential rights under the legislation to purchase associated gas from producers.
 - (ii) The Concept on Development of the Fuel and Energy Complex of Kazakhstan (footnote 12) describes Kazakhstan's plans to increase domestic gas consumption. It calls for the extension of piped gas supply to 13 oblasts by 2030 from the 10 in 2014. The plan's objective is to create the conditions for phased development of the gas transportation system and to increase domestic gas demand as an environmentally cleaner fuel, mainly using indigenous resources.
 - (iii) The Subsoil and Subsoil Use Law, 2010 regulates the usage rights of natural resources. The law aims to protect Kazakhstan's interests, and provide for rational and comprehensive investigation, and use of, subsoil. It also provides specifications related to the utilization of associated gas.
 - (iv) The Law on Natural Monopolies and Regulated Market, 1998 defines the legal basis for state regulation of natural monopolies such as gas, power, and railroads to balance the interests of consumers and natural monopolies. The law aims to encourage the development and improvement of conditions of production and delivery of services in the sphere of the natural monopolies.

C. ADB Sector Experience and Assistance Program

15. The Asian Development Bank (ADB) has not had any lending operations in Kazakhstan's gas industry to date. The first ADB loan in the energy sector was under private sector operations—the Akmola Electricity Distribution Network Modernization and Expansion Project (\$25 million) was approved on 2 September 2013.¹⁵ The aim of the project was to increase reliable power supply to existing residential and commercial clients (indirectly through sales companies) and to increase connections to 35,000 additional households in rural areas of Akmola Province and Astana. In December 2017, ADB approved a \$120 million loan for the Samruk-Energy Restructuring and Transformation Project,¹⁶ ADB's first nonsovereign loan in Kazakhstan with a state-owned enterprise financed in local currency. The project, jointly processed by ADB's Private Sector Operations Department and Central and West Asia Department, supported the state power

¹² Government of Kazakhstan. 2014. [*Energy Concept 2030. Concept on Development of the Fuel and Energy Complex of Kazakhstan Until 2030*](#). Astana.

¹³ Asia Pacific Energy Portal. [Kazakhstan: Concept for the Development of the Fuel and Energy Sector until 2030](#) (accessed on 24 February 2020).

¹⁴ KAZENERGY. 2017. [The National Energy Report 2017](#). Astana.

¹⁵ ADB. 2013. [Report and Recommendation of the President to the Board of Directors: Proposed Loans to Akmola Electricity Distribution Company and Central-Asian Electric Power Corporation for the Akmola Electricity Distribution Network Modernization and Expansion Project in Kazakhstan](#). Manila.

¹⁶ ADB. 2017. [Report and Recommendation of the President to the Board of Directors: Proposed Loan to Samruk-Energy for the Restructuring and Transformation Project in Kazakhstan](#). Manila.

generation company in (i) reducing foreign exchange risks, (ii) improving the operational efficiency of core businesses, and (iii) identifying renewable energy opportunities. ADB has continued providing local currency financing. It approved a \$12 million loan for the Baikonyr Solar Power Project in May 2018, which provided long-term tenge financing for a 50-megawatt solar power plant that will eventually help the country replace electricity imports in its southern region.¹⁷ In January 2019, it approved a \$41.38 million loan in local currency for the 100-megawatt Solar Project of M-KAT Green Limited Liability Partnership. The project aims to demonstrate the viability of solar power projects and to strengthen the momentum toward long-term local currency financing of renewable energy assets.¹⁸

16. In terms of nonlending products, ADB provided technical assistance supporting the preparation and design of a framework for the auction of renewable energy.¹⁹ It also supported the government in helping to achieve its intended nationally determined contribution and renewable power generation targets.²⁰ ADB's ongoing assistance includes support to increase intermittent renewable energy generation (solar and wind power) by providing training to transmission grid operators on modernized control techniques to address renewable energy intermittency, and by analyzing regional²¹ cooperation arrangements.²² Further, ADB is working closely with the government to increase cross-border energy trade within the Central Asian Power System.²³ In the gas segment, ADB is providing technical assistance to improve KTG's operational²⁴ and energy efficiency as well as to develop its corporate reform plans.²⁵

¹⁷ ADB. 2018. [*FAST Report: Loan to Baikonyr Solar Limited Liability Partnership for the Baikonyr Solar Power Project in Kazakhstan*](#). Manila.

¹⁸ ADB. 2018. [*Report and Recommendation of the President to the Board of Directors: Proposed Loan to M-KAT Green Limited Liability Partnership for the Total Eren Access M-KAT Solar Power Project in Kazakhstan*](#). Manila.

¹⁹ ADB. 2017. [*Country Operations Business Plan: Kazakhstan, 2018–2020*](#). Manila.

²⁰ ADB. 2017. [*Technical Assistance to the Republic of Kazakhstan for Fostering the Development of Renewable Energy*](#). Manila (TA 9301-KAZ, \$1.4 million, approved on 6 March, financed by the Clean Energy Fund under the Clean Energy Financing Partnership Facility).

²¹ Includes Afghanistan, Kazakhstan, the Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

²² ADB. 2017. [*Technical Assistance for Regional Cooperation on Renewable Energy Integration to the Grid*](#). Manila (TA 9365-REG, \$1.5 million, approved on 7 September, financed by the Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility).

²³ ADB. 2018. [*Technical Assistance for Regional Cooperation on Increasing Cross-Border Energy Trading within the Central Asian Power System*](#). Manila (TA 0036-REG, \$4.5 million, approved on 29 November, financed by the Technical Assistance Special Fund, High Level Technology Fund, Regional Cooperation and Integration Fund, and the Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility). Subproject 2: Provision of Solutions to Bottlenecks to the Regional Power Trade.

²⁴ ADB. 2019. [*Technical Assistance to the Republic of Kazakhstan for Gas Sector Development in Kazakhstan*](#). Manila (TA 9785-KAZ, \$225,000, approved on 9 August, financed by the Technical Assistance Special Fund).

²⁵ ADB. 2019. [*Technical Assistance to the Republic of Kazakhstan for Kazakhstan Gas Sector Transformation Initiative Support*](#). Manila (TA 9816-KAZ, \$225,000, approved on 3 October, financed by the Technical Assistance Special Fund).