

Kazakhstan's Energy Sector Since Independence: Two Decades of Growth and Challenges Ahead?

Since its independence in 1991, Kazakhstan has tripled its oil production, taking its place among the top twenty oil producers globally. The country currently produces more than 1.7 million barrels per day (mbd), an amount roughly equal to Libya's 2010 production. Over the past decade, Kazakhstan's oil reserves estimates have nearly doubled, placing it among the top five countries that will account for more than half of the global liquids capacity growth to 2020. Kazakhstan's considerable resource base has been a critical factor in this success, but the government of Kazakhstan under President Nursultan Nazarbayev has also made strategic choices to attract investment into the energy sector and has successfully crafted a "multivectoral" energy policy with its neighbors, particularly in the case of energy transportation. This paper highlights key stages in Kazakhstan's emergence as a major energy producer, but points to challenges that lie ahead as the country continues to increase oil and gas production and exports.

Kazakhstan's Energy Sector at Independence

Oil industry experts identified during the Soviet period Kazakhstan's potential as an oil and gas producer, though the size of the country's resource base was not fully appreciated. In 1965 Kazakhstan produced approximately two million tons of oil (40,000 barrels per day, or bpd), but western Kazakhstan was already recognized by state planners as a potential source of incremental oil production. The 1966 to 1970 five-year plan indicated that over that period a total of 12 million tons of oil would be produced

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from fields around the Mangyshlak peninsula.¹ However, it was not until 1979 with the discovery of two giant fields—the Tengiz field in western Kazakhstan and the Karachaganak field in north western Kazakhstan near the Russian border—that the country's real potential began to be understood.

Technical difficulties and lack of funding complicated the development of these newly discovered fields, though, and Tengiz came on-stream only in 1991. Thus at the time of Kazakhstan's independence, nearly 60 percent of its gas production and 20 percent of its oil production came from one field, Karachaganak, which had been developed as

¹ Robert Campbell, "The Economics of Soviet Oil and Gas, Resources for the Future," Johns Hopkins University Press, Baltimore, MD, 1968, p. 125.

part of the Orenburg complex, now across the border in Russia. Gas and condensate produced at the Karachaganak field flowed across the border for processing in Russia's Orenburg processing facilities.

This situation typified the challenge facing Kazakhstan: the country's energy sector development had been funded and managed as part of a plan for the entire Soviet Union, and upon independence Kazakhstan needed to attract new sources of investment and expertise. However, the Kazakh government needed to strike a delicate balance, as the country remained intricately interconnected with its neighbors as a legacy of the Soviet era.

Kazakhstan Emerges as a Major Energy Producer

In 1991, as Kazakhstan became independent and moved out of the ruble zone, the Kazakh government prioritized attracting foreign investment into the country's oil and gas industry and the electric sector. Tenders were held for production licenses and even for the high voltage electricity grid. The terms initially offered to these investors were very favorable, and there was much interest. In particular, the country focused on attracting foreign knowledge and capital into both Tengiz and Karachaganak. In 1993, an agreement was signed by President Nazarbayev and Chevron's Chairman of the Board to found Tengizchevroil (TCO), an equal joint venture between Chevron Petroleum Overseas and the Tengizneftegaz Production Association.

Meanwhile, at Karachaganak discussions with BG and ENI had begun in 1992, and Gazprom—the owner of the Orenburg facilities—soon joined as well. However, Gazprom's stake was eventually transferred to Lukoil, and in 1997 a production-sharing agreement (PSA) was signed with Chevron (then Texaco), ENI, BG, and LUKOIL.² China also began its energy cooperation with Kazakhstan at this time with the purchase by Chinese National Petroleum Corporation (CNPC) in 1997 of a 60 percent stake in upstream producer AktobeMunayGas. In addition, a host of

2 Current shareholdings in Karachaganak are as follows: BG Group has 32.5 percent, ENI holds 32.5 percent, Chevron holds 20 percent, and LUKOIL 15 percent. The field's estimated gross reserves are 2.4 billion barrels of condensate and 16 Tcf of gas. However, from June 30, 2012 shareholdings will reflect KMG's recent acquisition of a 10 percent share in the project: BG and ENI will each reduce their stakes to 29.25 percent from 32.5 percent; Chevron will hold 18 percent (down from 20) and LUKOIL will hold 13.5 percent (down from 15) and KMG will have 10 percent.

European power companies showed interest in acquiring the country's national electric grid (although it was later decided that as a strategic asset, the grid should remain under state control).

But more was yet to come, as the resources offshore in the Caspian Sea had not yet been explored. By 1994 Kazakhstan's oil industry leaders had recognized the need for a consortium to gather seismic data on Kazakhstan's sector of the Caspian Sea, using state-of-the-art technology. The Kazakhstancaspiyshelf consortium was formed later that year and included six foreign partners—Shell, Total, ENI, BG, BP/Statoil, and Mobil—and Kazakhstan's national oil company Kazakh Oil was the seventh partner. The results of the seismic data indicated the potential of the Kashagan structure, and in 1997 a PSA was concluded that launched development of the prospect.³

By 2000, concern within Kazakhstan's oil industry over further privatization of the country's resources shifted attention to strengthening Kazakhstan's own national oil company and its presence in the industry. In 2002 national company KazMunayGas was formed, uniting the previously distinct companies responsible for oil and gas production and transportation. Over the past decade, KazMunayGas has bought back shares in Kashagan and most recently in Karachaganak. In addition, KazMunayGas has purchased large holdings in many of the smaller producing assets sold in the 1990s privatization program. These acquisitions have boosted the company's overall oil production by nearly 40 percent.

Independence Through Infrastructure

Over the past two decades, Kazakhstan has developed into a world-class oil producer. In 2011 Kazakhstan produced 1.7 mbd (80 mt), tripling its pre-independence levels. Oil exports in 2011 were 1.5 mbd (71 mt). Gross gas production has increased more than five times to near 40 billion cubic meters in 2011. The country is a destination for investment from Asian, European, Middle Eastern, US, and even Latin American companies.

3 Kazakhstan later sold its share to Phillips and to Inpex, and BG and BP/Statoil also later exited the project. The current members of the North Caspian Operating Company are: ENI, Shell, Exxon, Total, KMG, ConocoPhillips, and Inpex.

But it has not been an easy road, and one of the biggest challenges facing Kazakhstan has been the legacy of dependence on its neighbors that resulted from the interconnected energy infrastructure built during the Soviet period. Kazakhstan was inextricably linked to its neighbors through shared transportation routes and interdependent industrial processes. Karachaganak's reliance on Russia's Orenburg processing facilities mentioned above is a good example. Another example is the Pavlodar refinery in northern Kazakhstan, which was built to process Russian crude. Similarly, Russia's Orsk refinery was built to run on Kazakh crude.

This interdependence is not only true in the oil sector. Kazakhstan relies on natural gas imports from Uzbekistan to meet demand in Almaty and the southern regions, while gas imports from Russia supplied the Kustanai region in northern Kazakhstan. Because of the priorities of centrally-mandated resource development, the gas-producing regions in western Kazakhstan were not connected to the country's southern demand centers. Kazakhstan's power sector is perhaps the most notable example of this Soviet-era interdependence: Kazakhstan until recently did not have a unified electric grid. Western Kazakhstan was connected to the Russian system with no interconnection to the eastern and southern parts of the country. And while an 1150 kV line was built to connect Kazakhstan's coal fired power generation to Russia's Urals industrial region, only a much smaller line connected Kazakhstan's northern power generation to its own capital (then Almaty) and other southern demand centers.

Over the past twenty years, Kazakhstan has made remarkable progress on building new infrastructure in order to connect previously separate parts of the country as well as to pioneer new export routes. The following three major projects demonstrate how Kazakhstan, often with foreign investment, successfully achieved what would not have been thought possible two decades before:

The Caspian Pipeline Consortium. Shortly after TCO was established, Chevron and Kazakhstan recognized the need for a new pipeline to carry Tengiz crude to the Black Sea. The Caspian Pipeline Consortium (CPC) was established in 1993 to finance and oversee construction of a 1,500 kilometer oil pipeline connecting the Tengiz field directly to the major Russian Black Sea port of Novorossiysk. CPC shareholders initially included three governments together

holding 50 percent of the project—Oman (7 percent), Kazakhstan (19 percent), Russia (24 percent)—and several foreign companies holding the other 50 percent.⁴ Nevertheless, this was intended as a pipeline owned and operated by private companies, separate from the infrastructure monopolies that up until then had managed all oil exports from Kazakhstan. As the complex agreements regarding the pipeline project were elaborated, Tengizchevroil began to move record volumes of crude by rail across Kazakhstan, Russia, Azerbaijan, and Georgia. Construction on the pipeline finally began in 1999, and in 2001 the first volumes were flowing from Tengiz to the Black Sea. The CPC pipeline has operated at well over its design capacity of 560,000 bpd (28 mt) for the past several years, and expansion to 1.3 mbd (67 mt) is now underway.

The Atyrau to Alashankou Oil Pipeline. In 2009, the first segment of the Kazakhstan to China pipeline opened, carrying oil produced in Kazakhstan over the border to neighboring China. The construction of this pipeline represented the first pipeline connection between the formerly Soviet energy-producing countries and China. The pipeline has yet to be completed, as reversal of the western-most portion is expected in the next year, but in the meantime approximately 200,000 bpd (10 mt) of Kazakhstan crude is heading east to refineries in western China.

Turkmenistan to China Gas Pipeline. In December 2010, the first gas flowed through the 2,000 km gas pipeline connecting Turkmenistan, via Kazakhstan, to Chinese markets. In 2011 approximately 13 billion cubic meters flowed to China, but there are agreements in place according to which around 60 billion cubic meters of Central Asian gas—from Kazakhstan, Uzbekistan, and Turkmenistan—will reach Chinese markets. This new pipeline has enabled China to emerge as the main export destination for Central Asian gas, particularly Turkmen gas, and has given Kazakhstan a critical transit role. The Turkmenistan to China pipeline also fulfills a very important role for Kazakhstan: a secondary line of the pipeline system will connect the gas fields in Western Kazakhstan with demand centers in southern Kazakhstan which lie along the

4 Current shareholdings in CPC are as follows: Russian Federation 24 percent, Kazakhstan 19 percent, Chevron 15 percent, Lukarco 12.5 percent, Mobil Caspian pipeline company 7.5 percent, Rosneft Shell Caspian Ventures 7.5 percent, CPC company 7 percent, BG Overseas holding 2 percent, ENI International 2 percent, Kazakhstan Pipeline Ventures 1.75 percent, Oryx Caspian Pipeline Ltd 1.75 percent.

route to the Chinese border. Kazakhstan's long-sought goal of ending its reliance on gas imports from Uzbekistan to meet demand in the south could be achieved by 2013 as part of this larger project.

These new export routes have enabled Kazakhstan's oil and gas to reach new markets, forcing energy supply agreements onto a more commercial basis. It was not uncommon in the Soviet period for Russia to sell its gas and oil more cheaply to other CIS countries, and in turn to buy from them more cheaply. As new infrastructure allows Kazakhstan's oil and gas to penetrate markets such as China and Europe, prices for these commodities are rising, and barter payment, prevalent earlier, is now rare.

Energy Relationships Shape Regional Dynamics

The government of Kazakhstan has proven very adept over the past two decades at crafting a "multivectoral" energy strategy, which has allowed the country to engage in energy cooperation and thus maintain good relations with all of its neighbors. Astana has adroitly managed its evolving relationship with Russia, culminating in the recent formation of the Customs Union with Russia and Belarus. Yet at the same time Kazakhstan has ardently pursued alternative oil and gas export routes, such as the Caspian Pipeline Consortium, trans-Caspian routes, and the pipelines to China. The country's relationship with China already balances Russia's influence in the energy industry and other spheres, and Astana has managed to cooperate with both regional powers simultaneously.

The impressive speed with which these oil and gas export routes to China have been completed reflects China's growing role in Kazakhstan's energy sector. The initial acquisition of AktobeMunayGas in 1997 was followed by several more. Currently, more than 30 percent of Kazakhstan's oil is produced by companies with Chinese participation, and nearly 15 percent of Kazakhstan's gas. By the end of 2008 CNPC had invested around \$7 billion in Kazakhstan, and in 2009 Chinese banks provided Kazakhstan with a \$5 billion loan. Exports to China reached \$10 billion in 2010, accounting for 20 percent of Kazakhstan's export earnings, making China the largest destination for Kazakhstan's exports, at least in value

terms.⁵ Kazakhstan's President Nursultan Nazarbaev describes energy as "the first point in our relationship [with China]" and the two countries recently signed deals clearing the way for Kazakhstan to provide uranium to China.

Kazakhstan nevertheless has maintained its cooperation with Russia, and more than 75 percent of Kazakhstan's crude exports still transit Russia (including via the CPC pipeline, rail, and Transneft deliveries).⁶ However, unlike during the Soviet period, Russia is no longer the final destination for much of these exports, instead this oil is heading to ports on the Black Sea and to northern Russian ports for onward transit.

Kazakhstan has also cultivated relationships with other neighbors based on cooperation in the energy sphere. In the past decade Kazakhstan has increased crude exports across the Caspian Sea from Aktau to Baku in Azerbaijan, and from there by rail to the Georgian Black Sea ports or via the Baku-Tbilisi-Ceyhan pipeline to the Mediterranean Sea. This trans-Caspian cooperation has had its difficulties, but the amount of crude exiting via Baku could potentially double in the next fifteen years. The Caucasus route has slightly higher transportation costs, but the higher quality of Kazakhstan's oil is maintained, and thus these rail and pipeline routes can be more economically attractive than the Transneft routes.

Conclusion: Kazakhstan's Emergence as a Regional Leader, and Challenges Ahead

Kazakhstan's development since independence, driven in large part by development of oil and gas resources (and more recently uranium), has put the country into a position of regional leadership. The country has been viewed as comparatively politically stable in a volatile region, and as open to foreign investment.

However, the next two decades will present new challenges. Of immediate importance is the evolving relationship between Kazakhstan's government and its foreign investors in the energy industry. Since the end of the privatization program in the early 2000s, the government

⁵ IHS Global Insight Kazakhstan Country Intelligence Report.

⁶ In 2010 77 percent of Kazakhstan's oil exports by all routes transited Russian territory either by rail or pipeline.

has been reevaluating the terms of those initial deals and introducing ways to “level the playing field” for local investors. A new balance will likely be struck between the economic interests of foreign investors and Astana’s interest in taking a larger role in the energy sector. As this balance is achieved, however, some of the original foreign investors are exiting, although others—primarily national oil companies and sovereign wealth funds—are entering the country.⁷

Decisions regarding the pace and timing of resource development present another challenge for Kazakhstan and its energy industry. The country must balance its need for resource revenues and the return to foreign investors with the country’s own preferences regarding pace of development and desire to leave reserves intact for later generations. In addition, development of oil and gas for export should coincide with demand growth in target markets. For example, Kazakhstan is planning to send 5 to 10 billion cubic meters to China by 2015, if not sooner. This plan serves Kazakhstan well by providing a market for additional gas and filling the pipeline that will carry a portion of this production to Kazakhstan’s own southern regions. However, China’s own unconventional gas reserves could yet prove substantial, and could compete with Kazakhstan’s gas which could be more expensive due to high transportation costs across thousands of kilometers.

Another challenge will be the continued drive to diversify Kazakhstan’s economy away from dependence on revenues from the extractive industries. Foreign exchange earnings in 2010 from oil and gas exports accounted for approximately 35 percent of budget revenues and more than 20 percent of GDP.⁸ Furthermore, energy sector expansion has driven growth in other sectors of the economy, notably the construction sector. Consequently, as we saw in 2009, Kazakhstan’s economy could yet be vulnerable to a sharp drop in oil prices.⁹

Finally, stability in Central Asia is being tested by increased violence across the region, some of which is associated with events in Afghanistan. As the planned NATO

withdrawal from Afghanistan in 2014 draws near, regional leaders expect that this violence may intensify, affecting even Kazakhstan. In this context, continued regional cooperation will become even more important, no doubt spurred in part by collaboration in the energy sphere.

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7 Since 1995 Kazakhstan has seen the departure of some international companies, and over the same period new investors have entered the country including CNPC, Sinopec, ONGC, and Mubadala.

8 IHS Global Insight, Kazakhstan Country Intelligence Report.

9 The National Development Fund, established in 2001 to accumulate tax revenues and income from the extractive industries, currently has a balance of near \$40 billion.

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