KAZAKHSTAN’S EXPANDING CROSS-BORDER GAS LINKS
Implications for Europe, Russia, China and other CIS countries

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Overview

Kazakhstan is gradually becoming one of the pillars of energy security in Asia and Europe, as it plans to produce 3.5 million barrels of oil a day (mbd) and 60-80 billion cubic meters (bcm) of associated gas by 2015, in the words of its President Nursultan Nazarbaev2.

1 The first version of this paper was presented at the Windsor Energy Group’s Regional Pipelines Roundtable, Almaty, Kazakhstan, 2 October 2006. In writing this paper the author has benefited from his earlier articles and books on Caspian energy, as well as papers/discussions from the Windsor Energy Group of which he is an international advisory board member. The views expressed in this paper are his own personal and do not necessarily reflect those of any Organisation he is associated with.


Over the past decade, the development of new oil and gas fields in Kazakhstan has also generated an increasing interest in new export routes to Europe and more recently to China, in addition to its historic dependence on Russian pipelines. Kazakhstan views multiple pipelines as key to its efforts to ensure that no regional power can exercise strategic control over its energy routes and its broader economic and political ties to western, Mediterranean, and Asian partners. US, European and Asian energy companies too favour multiple pipelines to ensure reliable market access and predictable commercial regime so as to avoid excessive transit fees set by any one pipeline operator and mitigate geopolitical risks.

Furthermore, since gaining its independence fifteen years ago, Kazakhstan’s importance has considerably increased as a geopolitical power on the former Soviet geography, sandwiched between China and Russia, due to its “multi-vectoral” relations with powerful neighbours, the US, the EU and Japan. It is now recognised as a key power to reckon with in Eurasia. Kazakhstan’s expanding cross-border energy linkages to Russia, China, other Central Asian countries, and possibly westward to Europe via Turkey will likely enhance its independence, economic development/diversification and geopolitical standing.

This paper begins with an overview of the growing importance of natural gas and supply security concerns before elaborating on high demand regions to which Kazakh gas could possibly be shipped. Then, the focus shifts to Kazakhstan’s gas reserves, current and projected production, as well as on export routes available or under consideration. The paper concludes with a number of signals, positive and negative, for governments, corporations and multinational organizations to watch.

**Significance of gas and growing concerns for supply security**

The global economy is now starting to see the full extent of a growing energy (particularly oil) scarcity and high energy prices with all its geopolitical consequences. Although an energy transition is taking place towards renewable and more environmentally friendly resources including natural gas and eventually hydrogen, a significant shift away from oil is decades away. Even a transition to natural gas, which accounts for substantial reserves, would not be without cost as entirely new distribution infrastructures are required, including additional LNG carriers, terminals and processing facilities.

Natural gas is clearly becoming increasingly popular throughout the world as a less expensive, more efficient and environmentally friendly type of fuel. The gas industry worldwide is now at a turning point in many respects: (i) gas demand is changing with a new demand wave triggered by gas to power; (ii) the gas sectors are opened up to more competition with a new market design, and increased interlink between the gas market and the electricity market; (iii) the global gas trade is shifting to more LNG trade allowing more flexibility and the mobilization of more reserves; and (iv) most OECD countries except Australia, Canada and Norway are now becoming import dependent.
Natural gas resources are largely located outside the main consumption regions, hence a growing concern about growing import dependency, especially in the countries where other, less favoured energy sources such as coal or lignite are abundant. In case of a supply disruption from a large gas supplier, we will face a risk of a domino effect in gas-fired electricity systems, threatening security of electricity supply. However, these concerns are countered by the arguments that external plentiful gas reserves from several suppliers are available at competitive costs, so there is no fundamental danger to security of gas supply.

In the current debate and plans for energy security, Kazakhstan and other Central Asian/Caspian producers figure prominently as a new artery in both Western as well as Eastern import dependent economies. Let's have a look at the following gas-demanding countries and regions which Kazakhstan could possibly feed if energy infrastructure could be put in place at affordable prices.

**EU wants non-Russian gas suppliers**

Russia is the largest single external supplier to the EU of oil (30%) and gas (44%). European gas imports are expected to grow from 187 to 632 bcm between 2000 and 2030, a larger than three-fold increase. Nevertheless, the number of suppliers to the EU is also expected to increase, so the system may gain in diversification. The EU has been talking to Russia in order to explore viable ways of ensuring its supplies at affordable prices and without interruption including through the signing of the Energy Charter Treaty, which the Russians have so far refused to ratify.

There was no breakthrough on this matter at the recent European Summit in Lahti, Finland, which aimed at reaching a new understanding on the Euro-Russian energy partnership. Russian President Vladimir Putin and EU leaders did emphasise their ‘mutual dependence’ and shared interest for ‘predictability’ in energy trade – nothing new from the exchange of rhetoric seen at the July 2006 Saint Petersburg G8 Summit, which focused on global energy security. Putin remained firm with EU leaders, saying that he would refuse to ratify in its current form the 1991 Energy Charter that would secure much-needed Western investments in exchange for access to Russian oil and gas pipelines. He was "quite confident" that the EU and Russia will be in a position to develop common approaches on energy cooperation that would be incorporated in a "new document".

Judging from where we are, plus the recent announcement that the Stockman gas reserves could be allocated to the European – rather than the US as initially intended - markets, decreasing the EU's dependence on Russian energy supplies appears increasingly unlikely in the foreseeable future. As a matter of fact, there is no serious real choice because oil and gas production among EU member countries is decreasing; Algeria (the “third artery”) and Russia are developing strategic partnership in gas vis-à-vis Europe; political problems in Iran and the situation in Iraq are rather odd; although Caspian/Central Asian oil and gas resources are attractive, supplies are limited compared with import volumes coming out of Russia.

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Therefore, any interruption of supplies from Russia will pose a serious security challenge to the EU not only because Russia is the single largest supplier in aggregate terms, but also because it is the dominant or sole supplier of some of the new member countries. There is, for instance, no way that security of supply can presently be guaranteed to the Baltic republics, Finland, Poland\(^4\), the Czech Republic or Slovakia in the event of total interruption of Russian supplies. Even assuming that other member countries\(^5\) could spare gas from other sources (they themselves would be seriously hit, though less seriously), the infrastructure to redirect flows is not available.

It appears that it would be inaccurate to attribute the emergence of the security issue entirely to market liberalization, although the Commission has frequently argued that a unified EU gas market would be intrinsically more secure than the individual member countries’ markets\(^6\). The reasoning here appears to be based primarily on scale: a larger market, served by a wider and well-interconnected network that receives supplies from a larger number of exporters, may be expected to be more stable.

**China’s gas demand will more than double by 2030**

Energy security for China is not only about oil, though oil supply security has the strongest international dimension as it is the largest traded commodity. It also involves other types of energy, such as electricity, natural gas and coal. Gas supply security needs particular attention as the gas supply network is very rigid: once you have the system in place, it is very difficult to change.

China’s central government has placed security of supply, along with affordability, as its most vital energy priorities. In the gas sector, the current strategy presently calls for domestic resources to supply 65% of demand, limiting gas imports to less than 35%\(^7\). Such restrictions may not be compatible with the vision of a dramatic shift to gas, as they would require accelerated development of China’s scarce domestic natural gas resources. Thus, any vision for a large role for gas in China may require new thinking about energy security.

The central government, while aspiring to promote natural gas, insists that the gas must be affordable because of the developing nature of the Chinese economy. In the absence of supportive policies to keep gas cost competitive (vis-à-vis coal in power generation), it may be difficult for gas demand to reach levels called for in the central government’s projections. Natural gas currently accounts for only around 3 percent of total energy consumption in China, but consumption is expected to nearly double by 2010. By 2020,

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\(^4\) Poland, however, covers about 30% of its requirements by domestic production. All other countries listed are 100% dependent on imports.

\(^5\) The two EU member countries most dependent on the second-most important supplier, which is Algeria, are Portugal (85% dependent on Algeria) and Spain (55% dependent). The former would be the only critical case, as Spain imports almost as much Algerian gas as liquefied natural gas (LNG) by pipeline and may succeed in finding alternative sources of LNG. Indeed, Spain may in the end even be in a position to support Portugal. In other words, the total interruption of supplies from Russia is probably the only event that may precipitate a critical situation for the security of European gas supplies.

\(^6\) The EU has been trying to encourage the establishment of new import capacity through the Trans-European Networks or other initiatives such as the Interstate Oil and Gas Transport to Europe (INOGATE) programme. The effectiveness of these efforts has been limited.

China is expected to be consuming 200 bcm of natural gas a year, with half that demand met by imports.

Proven reserves amount to over 1.5 trillion cubic meters (tcm), less than four per cent of the estimated potential\textsuperscript{8}. Annual production was 25 bcm in 2000 (from 22.3 bcm in 1997) and increased to almost 30 bcm in 2005. Longer-range official targets suggest output of 72 bcm in 2010 and 95 bcm in 2020, although the IEA projections hold to about half those levels mainly due to delivery problems and premature gas market. China’s consumption of natural gas will likely increase almost fivefold by 2030, according to IEA, from 32 bcm in 2000 to 61 bcm in 2010 and 162 bcm in 2030.

The role of gas in the country’s primary energy supply, nonetheless, remains small, 3 percent today and 7 percent by 2030. These projections are subject to considerable uncertainty, particularly with respect to the cost of supply. Equally uncertain is China’s ability to raise funding to develop gas fields, to build LNG regasification terminals and to create an integrated national transportation and distribution network. The competitiveness of gas against coal in power generation will also be a key determinant of gas demand growth.

Connecting the producing fields in the west to the main potential markets in the east will require the construction of long-distance transmission lines and the expansion of distribution networks. CNPC completed construction of its main natural gas backbone, the "West-to-East Pipeline," in January 2005. It transports natural gas to demand centers in the southeast from deposits in the western Xinjiang province to Shanghai, picking up additional gas in the Ordos Basin along the way.

China is also looking into gas pipeline links from Russia’s far east and Siberia. ExxonMobil has recently agreed to begin full-scale negotiations with China to sell gas from another Russian project, the Sakhalin I\textsuperscript{9}. Japan will most likely lose out to China in the competition to secure a regular supply of natural gas from this major development project\textsuperscript{10}. Coming on top of the stalled Sakhalin II project and a large cut in Japan's rights to an Iranian oil field, the move is yet another setback in Japan's efforts to secure a stable supply of energy. Both Sakhalin I and II are oil and gas developments off the northern shores of the Russian island north of Hokkaido. Japanese companies are part of both consortiums in charge.

\textsuperscript{8} Roughly 59 percent of China’s total gas resources is located in the western and central provinces. Three basins – Tarim, Sichuan and Ordos –hold 52 percent of national resources. The Sichuan basin accounted for most of the country’s gas output of 30.5 bcm in 2000, but output from Tarim, Ordos, Qinghai and offshore fields is growing. The government recently announced a 200-bcm discovery in the northern part of the Tarim basin in Xinjiang province.

\textsuperscript{9} The Sakhalin I consortium is led by ExxonMobil. Earlier this month, the company signed a memorandum with the CNPC as a step toward a formal deal. Japan had hoped to import 6 million tons of natural gas annually from Sakhalin I, which would represent about 10 percent of its annual imports. If China closes the deal, those hopes would be dashed. The Sakhalin I project consortium consists of five companies from Japan, the United States, India and Russia. An ExxonMobil subsidiary is in charge of contract negotiations.

**Kazakhstan’s gas reserves and production**

Kazakhstan’s proven gas reserves are 3 tcm and projected gas reserves are 5 tcm\(^{11}\). The country also has significant amounts of oil associated gas. Every new ton of oil is expected to bring 1000 cubic meters of gas (with 100 million tons of new oil it is about 100 bcm of gas). Hence important is the task of rational utilisation of gas not only by its re-injection but through exports and internal use (liquefication, development of internal gas pipeline infrastructure).

Despite Kazakhstan's sizeable proven natural gas reserves, the country spent most of the time following independence as a net natural gas importer. Natural gas production has increased significantly since 1999, when the Kazakh government passed a law requiring subsoil users (such as oil companies) to include natural gas utilization projects in their development plans. As a result, natural gas production has been on a steady increase since 1999, and by 2000 it eclipsed its pre-independence production levels. By 2003, however, Kazakhstan's production had reached parity with its consumption level (approximately 550 Bcf), and the country had 40 Tcf in net exports of natural gas during the first half of 2005.

In 2005, natural gas production in Kazakhstan reached 26.2 bcm and the country plans to produce 27.6 bcm in 2006. According to the 15-year strategy of the Kazakh Ministry for Energy and Mineral Resources, the country plans to boost gas output by more than 40 bcm (with exports up to 15 bcm) by 2010\(^{12}\). Kazakh energy officials estimate that internal consumption of around 900 Bcf in 2010 will leave 700 Bcf for export (USEIA, 2006). The remaining volume will be reinjected and used for domestic consumption, including power generation needs\(^{13}\).

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\(^{11}\)http://www.kazakhstanembassy.org.uk/cgi-bin/index/66  
\(^{13}\)Kazakhstan to Up Oil Production 1.6%, Gas 5.3% in 2006, Interfax, Astana, 26 February 2006.
Kazakhstan’s Gas Production

Most of Kazakhstan's natural gas reserves are located in the west of the country, with roughly 25 percent of proven reserves situated in the Karachaganak field. Natural gas in Kazakhstan is almost entirely "associated" gas. For this reason, several fields including Karachaganak reinject significant quantities of gas into the ground to maintain crude wellhead pressure for liquids extraction. In the long term, when the liquids are exhausted, this gas can be recovered. Flaring has declined steadily, but in May 2005 the government ordered all 34 oil producing firms to reduce oil production to levels that would avoid natural gas flaring. Many of the companies that produce associated gas have made pledges to develop ways to use the gas (such as for electricity generation).

There are two other important gas fields. The Tengiz field, which produced 202 bcf in 2005, is one of the largest contributors to natural gas. Amangeldy, another gas field, is situated in the south of the country, near Zhambyl. Exploratory drilling indicated reserves of up to 1.8 Tcf. The field is being developed primarily by Kazmunaigas, and the company expects initial production of roughly 35 Bcf/y. The Amangeldy fields that have been developed are producing approximately 10.6 bcf/y. The new commissioning of wells at the Amangeldy field has provided a large share of the natural gas production increases over the last year. Plans to build a 120-mile pipeline connecting to the rest of the natural gas distribution structure will help lessen the southern region's import dependency.

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14Karachaganak is located in the northwest region of Kazakhstan and is one of the world’s largest oil and gas condensate fields. This oil and gas condensate field reportedly has proven natural gas reserves of 16-20 Tcf. The consortium developing Karachaganak expects to produce 900 Bcf by 2012. Covering an area of over 280 square kilometres, it holds more than 1,200 million tonnes of oil and condensate and over 1.35 trillion cubic metres of gas. To date, the expansion of the field has involved an investment of over $4.3 billion and it is currently the biggest internationally funded project in Kazakhstan. The field development is being overseen by four international partners - BG Group and Eni, each with a 32.5 percent interest, Chevron with 20 percent, and Lukoil with 15 percent. They came together to form Karachaganak Petroleum Operating B. V. (KPO).
Kashagan too is expected to produce significant amount of gas once it will become on stream.

Towards multiple gas export routes

Lack of available gas export infrastructure is the primary inhibitor to larger scale exports from Kazakhstan. The country became a net natural gas exporter in 2004. Development of internal gas distribution lines connecting the northern and southern areas of the country is expected to help expand natural gas development.

Kazakhstan has two separate domestic natural gas distribution networks, operated by Kazmunaigas subsidiaries, one in the west which services the country's producing natural gas fields, and one in the south which mainly delivers imported natural gas to the southern consuming regions. The lack of internal pipelines connecting these gas-producing areas to the country's industrial belt (between Almaty and Shymkent) has hampered the development of natural gas resources. However, the development of the Amangeldy gas field will help Kazakhstan's southern region cease importing Uzbek gas.

Natural gas development in Kazakhstan requires long-distance transit. Access to markets – not only in Russia and other Central Asian countries, but also in Central and Western Europe, Turkey, and China - is the key to further development. These transit requirements raise two issues:

Expanded Kazakh-Russian pipeline diplomacy

Undoubtedly, Russia is and will long remain Kazakhstan’s main export route for access to both Russian and international markets. Because of Kazakhstan's divided distribution network, Karachaganak's natural gas is exported northward to Russia's Orenburg processing plant, as opposed to being delivered to Kazakh consumers in the south. Karachaganak's gas condensate and other liquids are also exported through the CPC pipeline system.

Kazakhstan pursues a careful balancing act between Russia, its Central Asian/Caspian neighbours, China, the European Union and the United States at a time when their interests are increasingly seen as divergent, especially in the crucially important area of Eurasian energy politics. This “Great Game” in energy was on prominent display when Nazarbaev met with President Putin in Uralsk, Kazakhstan, on 3 October 2006, only a few days after his trip to Washington\textsuperscript{15}.

The highlight of the visit was an agreement to process gas from Karachaganak field at Orenburg processing plant. Under the deal, a parity joint venture between Kazmunaigas and Gazprom will upgrade Russia's Orenburg plant. In 2004, Orenburg processed 6.5 bcm of Karachaganak gas. By 2012, the plant will process 15 bcm of gas a year (7 bcm of

\textsuperscript{15} President Nazarbayev enjoys good relations with Putin. He was General Secretary of the Communist Party when Kazakhstan was part of the USSR, and is regarded as a master in terms of dealing with Moscow, while also keeping a clear distance from Moscow.
this will be returned to Kazakhstan). The remaining gas will be supplied to consumers in Russia, but export is also possible. Gas output from the Karachaganak field will be shipped to Orenburg for refining, with volumes expected to reach at least 530 Bcf per year.

The deal has mutually beneficial elements. For Russia it ensures continued access to the affordable Central Asian gas Russia needs to maintain its lucrative foreign exports as it faces declining yields at core domestic fields\textsuperscript{16}. It is no secret that Gazprom does not have enough gas, and that the Orenburg processing facility had a problem with raw material. With this agreement, the Russian company has solved the raw material problem at one facility at least. It is argued that Russia cannot fulfill its plan to become an "energy superpower" unless it ensures cooperation with Kazakhstan\textsuperscript{17}.

For Kazakhstan, the deal -- as described by Nazarbaev -- represents both a money-saving opportunity and a symbolic advance in its relations with Russia. On the pragmatic side, Nazarbaev noted that Kazakhstan would save $2 billion by acquiring a stake in the Orenburg plant instead of building its own processing facility. More importantly, Kazakhstan is poised to acquire a 50 percent stake in the Russian plant, which is expected to begin operations in 2007.

Furthermore, Nazarbaev said, "For the first time, Kazakhstan is investing big money in the Russian economy, and for the first time, Russia is making it possible to invest this money"\textsuperscript{18}. Kazakhstan will invest the equivalent of 9.5 billion rubles ($355 million) in the project. Kazakhstan's ability to acquire an equity stake in a Russian energy-sector processing facility points to Astana's strengthening hand in relations with Russia, even though the deal does not advance Kazakhstan's desire to diversify its export options.

According to the May 2006 agreement, Gazprom will pay $3.96 per thousand cubic feet (mcf), or $140 per thousand cubic meters, for Kazakh gas imports. Previously, the average weighted price for 1 cubic meter of exported gas from Kazakhstan stood at $31 per 1,000 cubic meters. On gas transit tariffs within Kazakhstan's borders, Astana also raised the tariff, starting 1 January 2006, by more than 50% from $0.7 to $1.1 per 1,000 cubic meters for 100 km\textsuperscript{19}.

**Kazakhstan-Central Asia-Russia partnership**

At the present, natural gas from Kazakhstan, Uzbekistan and Turkmenistan is supplied to European customers via Russia through the Central Asia-Center (CAC) pipeline network. The two branches of the CAC gas pipeline meet in the southwestern Kazakh city of Beyneu before crossing into Russia at Alexandrov Gay and feeding into the Russian pipeline system. Therefore, Kazakhstan is a major transit route for gas from Turkmenistan to Russia and on to other markets across the territory of the former Soviet Union.

\textsuperscript{16} Vedomosti and Gazeta.ru reports, 4 October 2006.
\textsuperscript{17} Russia, Kazakhstan Sign Energy Deal , TASS, 3 October 2006.
\textsuperscript{18} Izvestiya, 5 October 2006.
\textsuperscript{19} http://gasandoil.com/goc/frame_ntc_news.htm
If Russia intends to increase Turkmen exports to 80 bcm/year not to mention the expected increase in exports from Kazakhstan (15 bcm) and Uzbekistan (10 bcm) major refurbishment and expansion to the CAC system will be necessary. Gazprom would invest about $1 billion, according to Gazprom deputy chairman A. Ryazanov20; Kazakhstan too will invest over $800 million in the construction and modernization of its natural gas pipeline network in 2006-200821.

CAC investment would proceed in three phases: Phase Zero is committed to preparation of feasibility study which would be ready within the next few months. Phase one would introduce repairs and replacement of equipment to bring the functional capacity of the pipe up to 50 bcm. Phase Two, which should be completed by 2009, should make it possible to pump 80 bcm through CAC for sustained period22.

Gazprom hopes to be able to export 78 bcm through this pipeline. All of this capacity would not be available to Turkmenistan as Uzbekistan was ready to sell about 10 bcm from this pipe from 2005 on and Kazakhstan has also shown desire to put some additional volumes into the network. Most of Kazakhstan's natural gas imports come from Uzbekistan and Turkmenistan and are redistributed into the Russian natural gas pipeline system. Southern Kazakhstan receives its natural gas supplies from Uzbekistan via the Tashkent-Bishkek-Almaty pipeline. This pipeline snakes through Uzbekistan before reaching Shymkent, crosses Kyrgyzstan, and terminates in Almaty.

Dependence on imported natural gas for its southern regions has at times been problematic since erratic pricing and supplies from Uzbekistan, combined with illegal tapping of the pipeline by Kyrgyzstan, have resulted in significant supply disruptions to Almaty in the middle of the heating season. As a result, Kazakhstan is determined to end its dependence on imported supplies for its southern regions. Although Kazakhstan has considered the construction of an internal north-south pipeline, thereby alleviating import dependency, the prohibitive cost (at least $1 billion) of such a pipeline has delayed any decision to proceed with the project23.

Trans-Caspian gas pipeline: is it still realistic?

The 1,640km long Trans-Caspian Gas Pipeline (TCGP) is being revived again. It would run from Kazakhstan to Azerbaijan, underneath the Caspian Sea, with Turkmen gas, presumably from offshore or western Turkmen fields, eventually feeding into this pipeline. The project envisaged an annual export volume of 16 bcm annually in the first stage (mainly to Turkey) and 32 bcm in the second stage (to countries in southeastern and

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22 The CAC pipeline network made up of 5 different lines was designed and built over the period 1966-1987 with an overall capacity of about 90 bcm/year. Four lines of the system pass through Uzbekistan with the fifth branch through Kazakhstan. The lack of maintenance and investment over time has halved the capacity of the system. The Kazakh part of the system is estimated by KazTransGas to cost $2 Billion. Uzbekistan estimates investments needed for refurbishment of its lines at about that much. The Turkmenistan government estimates the cost of refurbishment at less than $1 Billion.
23 Energy: Experts Ponder Future 'Gas Wars', Breffni O'Rourke, 24 October 2006, RFE/RL
central Europe), but it was shelved in the face of Moscow’s opposition (in tandem with Tehran) and the Turkmen President Saparmurat Niyazov’s prevarications, which largely stemmed from fear of Russian reprisals against himself. The biggest blow to it being collapsed was the decision to go ahead with the Blue Stream project at that time.

Gazprom, which produces 530 bcm of gas a year, needs Turkmen gas to cover the costly development of new gas fields lying beyond the Arctic Circle. This points to an increasing role for the supply of Turkmen gas. Turkmenistan contains the fourth largest gas reserves in the world. The Russians pay special attention to keep Turkmenistan as a gas ally. Their purchase of Turkmen gas is expected to rise from 7 bcm in 2005 to 10 bcm in 2006, 60-70 bcm in 2007, and 63-73 bcm in 2008. Beginning with 2009, annual deliveries of Turkmen gas to Russia will be raised to 70-80 bcm, if the contract terms are to be respected.

Russia has indicated a willingness to buy all the gas that Turkmenistan produces. However, it is far from clear that Turkmen imports will prove cheaper over the long run than increased production by non-Gazprom producers within Russia, given that Turkmen gas reaches the Russian border at $100 per thousand cubic meter paying 50 percent in cash and 50 percent in goods and services. Moreover, while the Turkmen deal allows Gazprom to delay the exploitation of Yamal, it also enables the company to delay restructuring of the domestic sector in such a way as to encourage non-Gazprom production, while effectively removing Central Asian gas as a potential competitor on export markets.

In the current market environment, the gas export potential of Turkmenistan -- meanwhile augmented by that of Kazakhstan -- increases the commercial attractiveness of this project. Import requirements of the EU, Ukraine, and Central European and Balkan countries demand the project’s reactivation; and energy security considerations make it imperative. The EU has put its weight behind this project. Once the line would reach Georgia, two continuation options are possible and indeed are under consideration already: via Turkey to Greece and the Balkans or via the Black Sea to Ukraine and into EU territory. Russian objections to a trans-Caspian gas pipeline are on legal and environmental grounds, but in fact they are of a political nature with a view to halting any effort to endanger a Russian monopsony on Turkmen and other Central Asian gas.

The TCGP project, established as a joint venture between Shell and PSG (formed by Bechtel and General Electric), aimed to open a new export line towards Europe through Azerbaijan and Turkey. An agreement was signed in 1999 between Turkey and

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24 The two leaders also signed an agreement on co-operation in the security sphere and a protocol on ratifying the two states’ friendship treaty, which was concluded last year.

25 Overall, the proposed energy corridor’s supply costs are competitive to those of the existing EU’s external natural gas sources. Natural gas from Shah Deniz (1.027 $/MBTU), South Pars (1.109 $/MBTU) and Al–Anfal (0.637 $/MBTU) is U up to the Turkish borders). Additionally, gas from the Shatlyk field transported through the Caspian Sea (1.729 $/MBTU) is in the same order of magnitude as the Russian gas.

Azerbaijan and Iran are the most attractive natural gas suppliers of the proposed south energy corridor. Both countries have low supply costs and existing or under construction export pipeline networks. Turkmenistan apart from its traditional Russian buyers, on the other hand, is burdened by expensive transit fees through either Iran or Azerbaijan.
Turkmenistan to support this project in order to export 30 bcm/yr to Europe of which 16 bcm to Turkey. The estimated cost of the TCGP line to Baku was $2.5 bn.

One must remember that the United Gas Transmission System of the Soviet Union was built on the basis of two sources of natural gas reserves – major fields of West Siberia and those of Turkmenistan, Uzbekistan and Kazakhstan which then made up part of the Soviet Union. Although it is perhaps natural for Gazprom to rely on the principles on which the company and infrastructure was based, there are clear geopolitical repercussions to its actions which raise flags for security of gas supply as well as liberalization of energy markets within Russia and beyond its borders to the East.

Russia’s strategy to lock up vast amounts of natural gas in long-term contracts with Central Asian states is also geopolitical in nature. The need to provide breathing space before starting up expensive natural gas projects at home, could just as easily, if not more so, be met through more transparent and reliable access to its infrastructure by independent gas producers and oil companies. However, this would mean restructuring and reform. Gazprom has cleverly set up its chess pieces such that its continued dominance at home is integrally connected with Russia’s geopolitical outlook in Central Asia.

The Shah Deniz (Azerbaijan)-Tbilisi-Erzurum (Turkey) gas pipeline, due on stream in 2007, will be the first step to the larger TCGP pipeline. Proven reserves at Shah Deniz, considerably exceeding the earlier estimates, now suggest that exports of more than 20 billion cubic meters per year are realistic. With the Turkish market oversubscribed, Turkey's primary role in this project can change from that of a consumer to that of transit country for Azerbaijani’s gas en route to Greece and the Balkans.

However, Azerbaijani gas volumes -- even if augmented by volumes anticipated from Kazakhstan in the next few years -- are too small to meet the needs of markets targeted by Gazprom for its expansion. Governments in those countries do not seem convinced by the argument that they can hold off Gazprom while awaiting supplies from Azerbaijan and Kazakhstan26. Those volumes would need to be combined with volumes from Turkmenistan in order to compete with Gazprom.

The Trans-Caspian proposal gained a new lease of life because of concerns raised by Russia’s gas dispute with Ukraine last winter, and has been discussed at the highest level. The United States supports the idea, and it was on the agenda during Nazarbayev’s visit to Washington on 26-29 September 2006. However, it is too early to invest serious hopes in the scheme, because no new element with the potential to kick-start the project has appeared since it was first conceived back in the mid-1990s. Instead, they predict that it will remain a political pipe-dream that faces too many obstacles to ever become a reality.

The Caspian countries involved in the project -- Turkmenistan, Kazakhstan and Azerbaijan -- would have to bring foreign companies on board since they lack the

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26 See the IEA co-sponsored Conference on “Natural Gas Transit and Storage in Southeast Europe” (Istanbul, 31 May to 1 June, 2002); proceedings on www.iea.org/about/nmccee.htm
capacity to handle a project of this technical complexity. However, this would meet with strong opposition from both Iran and Russia, which regard the Caspian region as vital to their own energy security and would not want outsiders involved.

The “fourth artery” via Turkey to the European Markets

The Nabucco project is one that heavily draws on energy supply security scenarios aimed at reducing the dependence of the EU on Russian gas monopoly. Its aim is to bring not only Caspian/Central Asian gas but also volumes from Iran, Egypt and possibly Iraq. Such thinking underpins both the 285-km Turkey-Greece pipeline, through which the Azeri or Turkmen gas should start to flow in late 2006, and the much larger Nabucco project, by which gas from a variety of sources could start flowing to the Balkans as early as 2009, and eventually to Austria and the EU’s main consumer markets in central, northern and western Europe.

Kazakh-EU energy partnership

How the EU leaders will push for the creation of a “fourth gas artery” for their supply security is extremely important. Kazakh Foreign Minister Tokaev’s visit to Brussels in October 2006 served further notice of the country's intent to convert its vast energy resources into greater regional and global influence. Tokaev offered his country to become an important alternative energy supplier to European markets. Quoting the EU's own estimates, he said the wider Caspian region could provide up to 25 percent of Europe's energy needs.

European Commissioner for External Relations Benita Ferrero-Waldner met in Astana last October. Kazakhstan and the EU are expected to sign a partnership agreement on energy during Nazarbaev’s visit to Brussels in December 2006. Kazakhstan moves actively towards the EU not only because it has been dissatisfied with Russia’s policy on major energy projects, but also because it is in a hurry to join the WTO. Astana hopes to finish WTO negotiations by the end of 2006 or in the first half of 2007.

While it is important to note that Turkish officials view gas transit as a strategic objective which they are determined to address, the development of onward lines to Europe will obviously be shaped by commercial considerations as well as Turkish – or EU – strategic considerations. This is particularly true of the Nabucco project, which, if it is developed in the way its promoters envisage, would do most to establish Turkey as Europe’s “fourth artery”. However, it should also be noted that the EU’s consistent backing of a Turkey-Greece-Italy Interconnector has a strategic underpinning.

The extent of detailed planning and, in particular, its development by prospective gas importers makes it look increasingly probable that the next few years will see the development of at least one major pipeline system for delivery of Eurasian gas to Europe via Turkey: the Nabucco project. As much as 20-30 bcm/y would flow northwards to

27 Kazakhstan: Foreign Minister Seeks EU Energy Links, Ahto Lobjakas, Brussels, 4 October 2006, RFE/RL
markets in central, northern and Western Europe by means of this project, currently being developed by Austria’s OMV in partnership with Turkey’s Botas, Hungary’s MOL Transmission plc, Bulgaria’s Bulgargas and Romania’s Transgaz.

The 3,400 km line, €4.4 bn, Nabucco project offers a serious prospect for delivering Middle Eastern and Caspian gas to major European markets. The line is planned to have a capacity of 25-30 bcm/y. The transit countries would themselves take around 8-10 bcm/y, so deliveries to Baumgarten would be around 17-22 bcm/y. The partners in the project have all agreed to meet at least part of their own domestic demand by means of Nabucco.

In mid-2004, a new Vienna-based venture set up to coordinate the project, the Nabucco Company Pipeline Study GMBH, was incorporated, with gas companies in Austria, Turkey, Hungary, Romania and Bulgaria each holding a 20 percent stake – and with Gasunie showing interest in becoming a member.

The widespread view is that not only were producer countries providing an obvious push factor for such lines, but that the pull factor from consumers in Europe was becoming increasingly apparent. Since the development of pipelines from Turkey to the EU is overwhelmingly demand driven (whereas to a large extent the development of pipelines to Turkey is driven by a mixture of producer (supply) interests and availability of demand, and since the costs of such pipelines have to be spread between several potential purchasers), the development of gas importer consortia becomes crucial.

The establishment and the development of a reliable and cost effective East-West gas corridor to Europe will require new and major upstream and transportation investment. Among the potential suppliers for transit and export to Europe, Iran holds the most important reserves, a growing gas industry and has already built a connection to Turkey. Turkmenistan also has important reserves and a sizeable gas sector which is able to supply large volumes. However, its dependence on the Russian and Iranian transport systems and the recent long term contracts with CIS countries, together with a retrograde regime, largely prevent the country from playing a significant role in diversification and effectively benefiting from its resources.

**Kazakhstan-China gas pipeline**

China has joined the so-called “Great Game” in energy as an enthusiastic and successful player. The proximity of Kazakhstan to energy-hungry China makes it an obvious investment target.

In August 2005 Kazmunaigaz and CNPC signed an agreement to construct a gas pipeline to China from Kazakhstan. The route is still undetermined, but the parties agreed to design the pipeline for throughput of at least 1060 bcf per year (30 bcm) and with initial flows of 350 bcf per year. Turkmenistan is considering a separate pipeline route from eastern Turkmenistan, possibly through Kazakhstan or Uzbekistan to Guangdong province, located on the southern Pacific coast of China. Kazakh energy officials are reportedly studying the integration of these routes. Also, Russia is planning a natural gas pipeline to China.
The first phase of the Kazakhstan-to-China oil pipeline was completed in December 2005. The Kazakhstan-to-China pipeline will eventually stretch 2,860 kilometres across Kazakhstan once all phases are completed, connecting CNPC’s fields in western Kazakhstan’s Aktyubinsk region with western China. This represents one part of a massive Chinese plan to secure as much of Kazakhstan's oil riches as possible. The Chinese plan aims to connect several pieces of infrastructure -- some Soviet-built, some Chinese-built -- then reverse the flow of some of them and forge a new export corridor stretching from Kazakhstan's oil-rich Caspian basin, including Kashagan, through a series of western- and central-Kazakh oil zones, and ultimately into China. With completion of this major project, China will for the first time have secured a source of imported energy not vulnerable to US aircraft carrier battle groups, as is the case with oil deliveries from the Persian Gulf and Sudan at present.

When viewed from a long-term perspective, indications of the priority China places on finishing the pipeline projects with Kazakhstan are quite visible. First, the projected pipeline to Kazakhstan is well matched with the long awaited pipeline network built inside China. It is hoped that this network will help solve the chronic infrastructure bottlenecks in China's energy system—primarily the gap between the Xinjiang oil and gas bases in western China and the main consumers in the country's eastern and maritime provinces.

By connecting to the Central Asian transportation system in the near future, China will eventually gain strategic continental access to the Middle East through the future Central Asian networks. With these two pivotal links from the Middle East to Central Asia, and from Central Asia to China, Beijing could position itself at the center of a "Pan-Asian Global Energy Bridge" that will connect existing and potential suppliers to Asia (i.e., the Middle East, Central Asia, and Russia) with the key Asian consumers (China, Japan and Korea). China could certainly benefit from such a pivotal geostrategic position.

It goes without saying that constructing such interdependence within the structure of international energy flow appears to be the ideal solution to China's energy vulnerabilities. Of course, the idea of an "energy bridge" can only be considered a long-term future scenario with many economic and political "ifs" along the way. From the narrow, energy-focused view, this type of Pan-Asian network will require huge investments in pipeline infrastructure.

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In Central Asia—which some see as a massive extension of the Middle East and others treat as a new oil and gas region rivaling it—China made a major coup with its investments in Kazakhstan, not only signaling but also implementing its intention to function and be seen as a major player in the region’s oil and gas development. The resources it has acquired and probably will acquire in the future, by whatever path they may reach China (e.g. from the proposed visionary “Energy Silk Route” pipeline system), will considerably help China’s efforts to diversify import sources and bring them closer to home in a geopolitical sense. China has obvious foreign-policy interests in developing relations with the border countries of Central Asia, and they coincide with its energy security interests.

Compared to Russia, Central Asian oil resources seem more promising for China. Funding problems plague all Caspian pipeline projects, and the China connection offers no exception. According to one Chinese analyst, China may consider extending its Central Asian land routes from Kazakhstan and Turkmenistan down to northern Iran (around 250 km in length) to reach the Gulf ports. As a result, the China-Central Asia corridor could connect with the Gulf area as a Sino-Arabic oil passage. Also, a connection is considered possible from Kazakhstan to Russia. China would be willing to join the northern line transportation for its expected stake in Siberia or the Russian Far East, by some oil swap options between China, Kazakhstan and Russia.

Growing Chinese-Kazakh cooperation is in part a response to Russia’s manoeuvres; the recent negotiation over an oil pipeline from Siberia to China is a good example. Russian companies had discussed with China a pipeline route and timetable, but when the Russian side shelved the potential pipeline plans China expedited its own plans for an oil pipeline with Kazakhstan. Kazakhstan and China had first discussed an oil pipeline in 1997, but these plans did not move forward until the Russian-Chinese plan fell off the table.

That pipeline could undercut the geopolitical significance of the Baku-Tbilisi-Ceyhan oil pipeline which opened this past summer amid big fanfare. The geopolitical chess game for the control of the energy flows of Central Asia and overall of Eurasia from the Atlantic to the China Sea is sharply evident in the latest developments.

Making the Kazakhstan-China oil pipeline link even more politically interesting, from the standpoint of an emerging Eurasian move towards some form of greater energy independence, is the fact that China is reportedly considering asking Russian companies to help it fill the pipeline with oil, until Kazakhstan supply is sufficient. Initially, half the oil pumped through the new 200,000 barrel-a-day pipeline will come from Russia because of insufficient output from nearby Kazakh fields. That means closer China-Kazakh-Russia energy cooperation—the nightmare scenario of some geopolitical strategists.

Kazakhstan and China are looking at three possibilities for natural gas supplies from the gas-rich former Soviet republic to the energy-hungry Asian giant. The options included the expansion of the existing pipeline between the Uzbek cities of Bukhara and Tashkent to the Kazakh commercial capital, Almaty, via Taldy-Kurgan in Kazakhstan to Alashankou on the border with China. Another option is construction of a new gas pipeline connecting Ishim in Russia’s western Siberia and Alashankou through the Kazakh cities of Astana and Karaganda, while the third is building a pipeline from Chelkar in western Kazakhstan through Kyzyl-Orda to Shymkent where it would connect to the Bukhara-Tashkent-Almaty pipeline.

Kazakhstan has also offered to open up its territory for the transit of Turkmen natural gas to China and to discuss a pipeline across the Caspian Sea floor. Foreign Minister Tokaev

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35 Kazakhstan, China mull joint gas supply projects, 18 April 2006, Beijing, RIA Novosti.
36 Gazprom and are also in talks on construction of two gas pipelines from western and eastern Siberia to China to deliver 30-40 billion cubic meters of natural gas each annually starting in 2011.
said his country understood that energy-hungry China was interested in securing new energy sources and hoped that it would use his country as a transit country. "How this gas will be supplied to China and through which pipelines will be the subject of new agreements"37, he added.

In the grand scheme of things, the parties see China as increasing its role in Kazakhstan with rail projects, a gas pipeline and investment in the Caspian shelf. But the past suggests that we should probably be wary about the outlook for grand plans and be careful not to ignore the obvious. In this case, the obvious is still that, although China and Kazakhstan are neighbours, Kazakhstan’s biggest resources are in the extreme west of the country while China’s biggest consuming markets are in the extreme east at opposite ends of a continent.

When and if China becomes heavily invested in the Caspian offshore, it may still be tempted by the economics of shipping oil west rather than piping it east, all the way across Kazakhstan to its territory. An alternate view is that a steady but smaller flow of Kazakh oil could eventually be seen as a logical source for China’s planned strategic petroleum reserve, which may be built up slowly over the coming years, rather than Kazakh oil being used as a quicker and costlier fix for demand growth.

## Signals to watch

International preoccupation with security of supply and overall market strains point towards an amplified role for Kazakhstan on the world energy and geopolitical scene. The future development path of Kazakhstan in energy production and export is very promising, but there are also uncertainties for which no simple forecast seems possible.

The way to deal with this is to identify a number of "signals" which indicate and support either a positive path – towards investment, contribution to economic development and prosperity – or a negative path, towards stagnation and economically destructive political intrastate or interstate conflicts. These signals cannot be treated in isolation from external factors and drivers which have a bearing on Kazakhstan. Each and every signal may also not necessarily determine which path is taken, but taken together they point toward a likely direction.

“Positive signals” for Kazakhstan oil and gas development are:

- Oil and gas prices are relatively at high levels. This would provide a profit margin to counter the additional risk premium required. Apart from their role in technical and financial calculations, high oil prices have a way of making investors forget or disregard high political and transit risks – an element of mass psychology is always inherent in investor behaviour.

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37 Kazakhstan open for Russia's gas transit to China - minister MOSCOW, April 21 (RIA Novosti) -
• Shifting Russian policy from the "Great Power" syndrome to commercial common sense. This would help Kazakhstan to move as well from instincts of self-preservation to prosperity.

• Significant discoveries of reasonably low-cost oil and gas fields. This would make Kazakhstan more attractive for investors, in particular if it coincides with a high or reasonably high oil price.

• Willingness of China, the US and Turkey (the EU yet to be seen) to pay for their well known "strategic" interests by assuming cost risks of pipeline infrastructure, cost overruns and external and internal security risk. This would diminish the risk premium required for Kazakhstan projects.

• A clear transition towards "legal" and established international behaviour among the Caspian states concerned. This would include acceptance and practical implementation of the rules of the game established by the Energy Charter Treaty, investment protection treaties and GATT/WTO. In this case long-term investment and trade opportunities in the Caspian region will increase and become practically exploitable.

On the other hand, "warning signals" include:

• Political instability and insecurity in the neighbouring producer and transit countries. Regional instability and tensions could dampen Kazakhstan pipeline development for the foreseeable future and it would be imprudent to dismiss the region's large number of conflicts as "manageable". In a region with such high political risk, it would be ideal to establish an interlocking web of fields, pipelines and shipment contracts that binds all parties together and minimises opportunities for disruption38.

• Resumption of a "Great Power" game with intervention in producer and transit countries. This will eventually lead to "dead pipelines", large losses and the unwillingness of investors and banks to re-engage themselves financially. If a major pipeline project goes definitively sour for reasons of competing politics and insecurity – we have many cases of this in the Middle East – then new project investment is unlikely to become available for quite some time again.

Forward looking and progressive policies on 2nd generation upstream investment in the oil and gas sector of Kazakhstan that accommodate today’s favorable market signals, rather than muting them, are to boost its macroeconomic fortunes and geopolitical significance. If pursued correctly, 2nd generation investment will in fact support host-government policies in respect of its objectives regarding public and corporate capacity

38 In other words, politicians and diplomats should use pipelines as a force for reinforcing regional cooperation and stability. Inability to manage the political succession and neighbourly wars will enhance the risk and thereby cut-off investment projects except in high-profit situations.
building and engender economic development in other important sectors of the Kazakh economy.

The following observations can be made in respect to international demands on Kazakh oil and gas transport infrastructure:

- The oil and gas market potential of Kazakhstan will be driven by its export potential which is a function of location and size of upstream assets and energy demand trends in largely in adjacent regions (Russia, China, Europe, Asia and the world market generally).

- Transport infrastructure network to fulfill this markets potential is as much of a function as a driver of regional economic integration (Function: CPC Kazakhstan-Russia Black Sea, BTC Kazakhstan-Caucasus-East-Mediterranean Driver: Kazakhstan-China). The market modalities for each of these transportation regimes that will be dominated by the terms that are agreed with these adjacent countries provides the market signals for the quality and nature of 2nd generation investment in Kazakhstan and the economic underpinning of regional stability.

- International policy cohesion offered for instance by multilateral frameworks that deal with trans-boundary energy investment and commerce such as WTO and the Energy Charter Treaty remain very important. However outside these legal frameworks Kazakhstan must choose its foreign partners strategically to limit the economic distortion that will result from acting on ‘split signals’.

- Much progress is being made in finding access to international markets; expansion of the Caspian Pipeline Consortium, increasing oil volumes traded (not invested) in swaps with Iran, long-term but not necessarily market driven agreements with Russia’s Transneft and Gazprom, and further alignment of oil flows from Aktau through the Baku-Tbilisi-Ceyhan pipeline will augment market signals and have already accounted for strong upward pressure on the market valuation of upstream assets. The recently concluded pipeline deals with China will add further market momentum but may also work to dilute market transparency.

As the production of oil and gas from the upstream projects increases further, the question of the transport of additional volumes from this landlocked country to the international markets becomes more important. This will increase the hydrocarbon flow from East to West and West to East, in addition to the South-North flow to Russia and North-South flow in the Black Sea. The development of these routes will have effect on multiple dimensions including geopolitical, economic development, diversification, environmental aspects, regulatory and investment. Kazakhstan benefits most from its increasingly diversified, sound and multi-vectoral strategies in this volatile region of the world.