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The Future Supply of Gas From Central Asia to Russia: An Expert Assessment

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Key Points

* Since 2003 the supply of gas from Central Asia to Russia has been progressively increasing, with Russia using the gas both for domestic consumption and for re-export. Maintaining and increasing the flow of Central Asian gas is of vital importance to Moscow, given the high price of energy and the slow rate and difficulty in developing Russia's own gas-extraction industry.

* Many uncertainties surround this supply, however, even in the immediate future. These are compounded in the medium term by other complications such as the active development of international projects for hydrocarbon extraction and by the commissioning of pipelines designed to bypass the territory of Russia.

* In the short term (i.e. up to 2010) it seems likely that exports of gas from Central Asia (not only Turkmenistan and Uzbekistan but also Kazakhstan) to or via Russia will amount to between 60 and 80 billion cubic metres per year.

* It is more difficult to forecast for the medium term (i.e. up to 2020). Some studies have estimated that the supply of gas could rise to between 80 and 110 billion cubic metres per year.

* It is clear that the supply of Central Asian gas to Russia will continue to grow in importance, and that Russia will do everything it can to increase its gas imports. One of the main levers which Russia can use to exert pressure is, as before, to modernise the pipeline infrastructure, which it can do quite quickly. In recent years, Gazprom has been applying a more flexible tariff and pricing policy. Russia is also skilful at linking cooperation in the gas sector to other economic, political or security cooperation.

* The Russian leadership also seems prepared to consider entering the European gas market in conjunction with the countries of Central Asia. There is already an agreement to this effect between Russia and Kazakhstan.

* All these factors mean that Russia will be a key player in the Central Asian gas market for a long time to come. It is clear, however, that all Russia's leverage will be insufficient to halt the disintegration of the post-Soviet economic, political and military space, even if the Russian and Central Asian zone was the most stable segment. Thus

although Russia may continue to dominate the Central Asian gas market in the short term, it may not prevail over external competitors in the longer term.

* It would be in Russia's interests to invest in hydrocarbon processing projects and products with higher added value. This can be done both on a bilateral basis and multilaterally, for example within the Eurasian Economic Community.

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Introduction

Since 2003 the supply of gas from Central Asia to Russia has been progressively increasing, with Russia using the gas both for domestic consumption and for re-export. Given the high price of energy and the slow rate and difficulty of developing Russia's own gas-extraction industry, maintaining and increasing the flow of this Central Asian gas is of vital importance to Moscow:

- to satisfy increasing domestic demand;
- to fulfil numerous export obligations, mainly to Europe.

The supply of gas from Central Asia will thus play an important role for Russia for many years to come.

The main suppliers of gas in the region have traditionally been Turkmenistan and Uzbekistan. In the period 2003-2006 the quantity of gas exported from these two countries to Russia more or less tripled, rising from 6.5 to 19 billion cubic metres, and (if the gas routed through Russia for Ukraine is included) the total figure for gas exported to and via Russia increased by 20%, going from 42.5 to 51 billion cubic metres. Until 2006, Russia, represented by Gazprom, calculated separately the quantities of gas destined for Russia and for European (mainly Ukrainian) customers.

Until 2006, the main role of Kazakhstan was to provide a transit route for gas from Turkmenistan and Uzbekistan to Russia. There was no trade in gas between Russia and Kazakhstan, apart from the small amounts of gas produced in the two countries, used in energy swap arrangements.¹

In 2007 there were significant changes to this pattern. Departing from all precedent, Gazprom became the purchaser of all the gas from Turkmenistan and Uzbekistan supplied to Russia (for its own use or for forwarding to other countries). Kazakhstan reached an agreement in principle with Russia on the joint exploitation of gas produced at the Orenburg gas processing plant on the basis of raw materials from Kazakhstan. Furthermore, Russia and the gas-exporting countries of the region announced plans to move towards market-led price setting within a few years.

For forecasting the possible quantities of gas to be exported to and via Russia the analysis is based on the following elements:

- the main economic indicators of the gas sectors of the countries of Central Asia (known reserves, and quantities extracted, exported or used for

- domestic consumption) and officially-announced plans for gas extraction and export (see table 1);
- an expert assessment of the politics of the countries of Central Asia and how they may develop;
 - an expert assessment of the prospects for developing the pipeline infrastructure for supplying gas to and via Russia.

Table 1. Main performance indicators of gas sectors of Central Asian countries and future plans²

Indicator	Turkmenistan	Uzbekistan	Kazakhstan
	billion cubic metres	billion cubic metres	billion cubic metres
Known reserves	2900	1900	1800
1990			
Quantity extracted	90.6	45.5	3
Quantity exported (within USSR)	70.6	10.8	-
2006			
Extraction	66	60	15
Export	50	11.9	-
Import	-	-	1.8
Domestic use	16	48.1	16.8
2020			
Extraction	240	60-65	45-50
Export	170-220	20	25-30

Note: (-) means that there were no gas imports or exports.

It is clear that forecasting is like trying to balance a complex set of variables of unknown magnitude. Many assumptions must be made to arrive at what can only be considered a rough estimate, even for the short term (i.e. the period up to 2010), and even more so for the medium term (up to 2020). As far as the supply of gas from Central Asia to Russia (and via Russia for other destinations) is concerned, the main assumptions are as follows:

- Russia and all the countries of Central Asia will continue to pursue their present foreign and economic policies, and the amounts of gas they extract, export and consume will stay at realistic levels, i.e. broadly similar to present-day ones;
- the trends seen today in the formation of bilateral and multilateral cooperation relationships between Russia and the countries of Central Asia will continue, as will the increasing foreign competition for hydrocarbon resources;
- there will not be any discoveries or developments of major new deposits which could have a significant influence on the present developments in the regional gas market;
- there will not be serious social or economic upheavals or geopolitical cataclysms in the region, nor will there be major scientific breakthroughs in the gas extraction field. Any of these could have a major effect on the

extraction, transportation or consumption of gas and on price-setting mechanisms for gas.

Central Asian countries: their policies, reserves and export capacities

Turkmenistan

Turkmenistan today extracts about 66 billion cubic metres of gas per year, of which it exports about 50 billion cubic metres. In the Soviet period (1990) the corresponding figures were 90 and 70 billion cubic metres per year.³ After the disintegration of the Soviet Union, Turkmenistan put a lot of its reserves into preservation and substantially reduced the quantity of gas it exported.

Although Turkmenistan possesses considerable reserves and could potentially export more, Ashgabat has taken on numerous obligations which may be difficult to fulfil. It is also not clear how realistic the plans for development of the country's gas industry are. Turkmenistan is planning to provide a stable supply of 70-80 billion cubic metres of gas a year to Russia by the year 2010, maintaining or even increasing this supply in the period up to 2028.⁴

On the other hand, such a dramatic increase in the supply of gas from Turkmenistan (compared with the 42 billion cubic metres supplied at present) seems unlikely, particularly in the short term. Firstly, supplying 70-80 billion cubic metres to and via Russia is impossible due to the limited capacity of the arterial pipelines in Turkmenistan.

Secondly, Turkmenistan has assumed export obligations not only to Russia but also to China and Iran. To meet these obligations and satisfy its own domestic requirements, by 2010 Turkmenistan will have to double (or more than double) the quantity of natural gas it extracts (from the present 66 to 113-141 billion cubic metres). Only if this happens, and the pipeline infrastructure is developed, will Turkmenistan be able to meet the following level of exports:

- to and via Russia - 70 billion cubic metres per year (including gas destined for re-exporting to Ukraine);
- to China - rising from 10 billion cubic metres (initially) to 30 billion cubic metres per year⁵ (over a 30-year period starting in 2009);
- to Iran⁶ - 10-15 billion cubic metres per year;⁷
- for domestic consumption - at least 16 billion cubic metres per year.⁸

It seems very unlikely that Turkmenistan will be able to increase the quantity of gas it extracts and exports by such a great extent and in such a short timescale. It is relevant to note that in 2003 Turkmenistan was planning to extract about 100 billion cubic metres by 2007.

Nor can the previously-announced plans for an increase by 2020 in the volume of gas extracted to 240 and the volume exported to 220 billion cubic metres be considered a convincing argument for actual growth in the quantity of gas to be

supplied. From today's perspective, these plans look unrealistic, in spite of Turkmenistan's significant reserves (which some estimates put at 5 trillion cubic metres or more).

Nevertheless, in the medium term (up to 2020), as distinct from the short term, there are prospects for Turkmenistan to increase both the volume of gas extracted and the volume exported. The main justification for this assertion is that in this timescale several new gas deposits will start being exploited, notably Turkmenistan's section of the Caspian shelf. The Malaysian company Petronas alone is planning to extract about 10 billion cubic metres a year by 2012.⁹

Overall, then, it does seem reasonably likely that Turkmenistan will be able to increase the quantity of gas it extracts to 120 billion cubic metres in the period 2015-20.¹⁰ In this case, about 100 billion cubic metres could be exported.

Uzbekistan

Today Uzbekistan extracts just over 60 billion cubic metres of gas, of which it keeps about 47-49 billion for domestic consumption and exports 11-13 billion.

It will only be possible to envisage significant growth in the quantity Uzbekistan exports if it takes a whole set of measures to increase its extraction, and/or if it reduces domestic consumption and the losses associated with extraction, transportation and storage. This loss reduction would require the widespread incorporation of energy-saving technology (for example, by means of a large-scale government programme in the context of a "Clean Development Mechanism" of the Kyoto Protocol to the United Nations framework convention on climate change).

It is clear that with these considerations Uzbekistan plans to increase the volume of gas it exports to an annual level of 20 billion cubic metres in the next few years (mainly before 2010).¹¹ Some increase in the volume extracted is also planned: to 65 billion cubic metres.¹²

Uzbekistan intends to increase its gas exports by reducing domestic consumption to an annual level of 32 billion cubic metres by the year 2020. It plans to do this in the context of a national energy saving programme.¹³ In this case, and if the volume of gas extracted stays at present levels (60 billion cubic metres), Uzbekistan will be capable of exporting about 30 billion cubic metres a year by 2020.

Several Russian experts say, however, that while it is possible that Uzbekistan could reduce domestic gas consumption to 39 billion cubic metres a year by 2010, the opposite trend should be expected after 2012. By 2020 the domestic demand could have grown to 43.4 billion cubic metres per year.¹⁴ This forecast is probably based on the following considerations:

- the expected growth in Uzbekistan's industry, with a consequent demand for more electrical energy (which will be derived from gas);¹⁵
- continuing population growth in the country (present population is 27 million), which will lead to increased demand for gas both directly and through increased demand for electricity;¹⁶
- the planned switchover to gas fuel for vehicles, referred to in the government programme for the period 2007-12.

It is thus not clear that plans to increase gas exports on the basis of reducing domestic consumption are justified. At the same time it can be said that Uzbekistan is the most stable supplier of gas in Central Asia, with a sound base of reserves, and that Uzbekistan does not enter into export agreements it cannot honour. It is therefore likely that Russia will remain the principal destination for gas exports from Uzbekistan in the medium term.

Kazakhstan

At present the gross quantity of gas extracted in Kazakhstan is about 27 billion cubic metres per year, but the quantity of marketable gas produced is only about 15 billion.¹⁷ This difference is due in large part to the fact that the technology to process by-product gas (i.e. the gas produced as a by-product of oil, which is the source of most of the gas in Kazakhstan) is still undeveloped. For this reason a lot of the gas extracted is burnt off in flares and/or is pumped back into the well. Kazakhstan is also still short of plant for processing gas up to commercial standards.

The accounts for 2006 show that domestic consumption of gas in Kazakhstan was about 16.8 billion cubic metres, of which 15 billion came from sources in Kazakhstan and about 1.8 billion were imported from Uzbekistan. Since 2007 the supply of gas from Uzbekistan (about 3.5 billion cubic metres) has not been direct. The Russian Gazprom and the Kazakh KazMunayGaz companies have an agreement with Uzbekneftegaz to use Uzbekistan gas in swap operations. The provision of gas under energy exchange arrangements from Russia to the northern parts of Kazakhstan (the Kostanay and Ural oblasts) which used to take place has now been replaced by supplies of Kazakh gas from the Karachaganak field.

There is conflicting information about gas exports from Kazakhstan. Some sources claim (and this version is supported by official statistics) that Kazakhstan does not have the potential to export gas, did not export any gas before 2007, and in fact was an importer of gas.¹⁸ Other sources, however, claim that Kazakhstan does have the potential to export up to 8 billion cubic metres.¹⁹

Notwithstanding this and other contradictory information, one thing is clear: within a few years Kazakhstan will become an important player in the gas market. Astana plans to treble the quantity of gas it extracts by 2015, rising from the present 15 billion cubic metres to 45-50 billion, raising the export figure to 25-30 billion.²⁰ These plans may seem ambitious, but in general they are not unrealistic or unattainable.

Other experts estimate that Kazakhstan will be in a position to extract 40-45 or even 50 billion cubic metres of gas by 2010²¹ (exporting at least 15 billion), and 80 billion by 2015²² (increasing the quantity exported, correspondingly, to about 40-50 billion). These estimates look unrealistic from today's viewpoint.

In general, Kazakhstan is clearly capable of making a significant contribution to an increase in the volume of gas exported from Central Asia to Russia. Since 2002, Kazakhstan has been supplying gas to the Orenburg gas processing plant in Russia. About 6.5 billion cubic metres of gas were processed at this plant in 2004 (and 2.9 million tonnes of gas condensate),²³ 7 billion cubic metres in 2005 and about 7-8 billion in 2006.²⁴ After processing, this gas is handled by Gazprom and KazMunayGaz via the KazRosGaz joint venture. The main recipients of this gas are CIS countries, including Ukraine, and the Baltic states.

In 2007 an agreement was signed to operate in accordance with this plan for another 15 years. The volume of gas processed by the Orenburg plant is expected to be about 8 billion cubic metres by 2010, 12 billion by 2011²⁵ and at least 15 billion per year by 2012.

Another factor which may contribute, if indirectly, to a significant increase in the quantity of gas exported from Kazakhstan to and via Russia is Kazakhstan's probable increased participation in the construction in the near future of the Caspian coast gas pipeline (which will pass through Russian territory).

It is nevertheless likely that Kazakhstan will continue to pursue a policy of cultivating alternative markets. In the immediate future the main destination for the gas from Kazakhstan will, for practical reasons, be the Russian pipelines. But later on, as more gas is extracted and energy-saving technology is introduced, and as the internal and external pipeline systems are developed, Kazakhstan's gas will be divided between Russia and China, and in the future, also to Europe, bypassing Russia.

Like Turkmenistan, Kazakhstan is actively studying its options for participation in a wide variety of pipeline projects. One of the most significant projects is the construction of a Turkmenistan - Uzbekistan (transit) - Kazakhstan - China pipeline by 2009. This pipeline is expected to have a capacity of 10 billion cubic metres per year initially, eventually rising to about 30 billion. Initially this gas will be provided only by Turkmenistan, but as the pipeline infrastructure of Kazakhstan is developed, Kazakhstan will also contribute to this supply.

It is also possible that Kazakhstan will participate in the Trans-Caspian gas pipeline project (taking gas to Azerbaijan and onward to Turkey) and will be connected to the existing pipeline from Turkmenistan to Iran (and onward to Turkey).²⁶

According to various estimates, if all its export plans are to be fulfilled, Kazakhstan will have to increase its exports to 66 billion cubic metres by 2015²⁷ (rather than the more realistic estimate of 25-30 billion). It is not at all clear how Kazakhstan will reach anything like this level.

Regional gas transportation system

The main pipelines supplying gas to (and via) Russia are five main runs of the Central Asia-Centre (CAC) pipeline²⁸ and two main runs of the Bukhara-Ural pipeline. There are also a number of branches off the main line.

Four of the CAC runs (CAC-1, 2, 4 and 5) go from Turkmenistan via Uzbekistan (and then to Kazakhstan), while CAC-3 runs along the coast of the Caspian Sea via Kazakhstan (to the town of Beyneu and beyond).²⁹

There are also other branches of the CAC, most notably the one between Turkmenistan and Kazakhstan (Okarem-Beyneu) and the one between Kazakhstan and the Russian Caucasus (Makat-North Caucasus).

Then there are two branches of the Bukhara-Ural line running from Uzbekistan through Kazakhstan.³⁰

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There are also two other pipelines (Orenburg-Novopskov and Soyuz) carrying gas from the Siberian fields towards Europe.

The theoretical maximum capacity of all the arterial gas pipelines running into or via Russia is 100.5 - 122.8 billion cubic metres per year, based on adding the following contributions:

- CAC-1, 2, 4, 5 - up to 50³¹- 68³² billion cubic metres;
- CAC-3 - up to 10 billion cubic metres;³³
- Bukhara-Ural - up to 15³⁴- 19.3³⁵ billion cubic metres;
- Makat-North Caucasus - up to 25.5 billion cubic metres.³⁶

In practice, however, the capacity of the gas transportation system from Central Asia to (and via) Russia is only about 63-77 billion cubic metres per year, made up as follows:

- CAC-1, 2, 4, 5 - from 45 (via Turkmenistan) to 50 (via Uzbekistan) billion cubic metres;
- CAC-3 - about 3-5 billion cubic metres;
- Bukhara-Ural - about 5-7 billion cubic metres;
- Makat-North Caucasus - not known, but assumed to be about 10-15 billion cubic metres.

This figure is arrived at by considering the capacities of various national sectors of the system, as they vary considerably in condition.

The gas pipeline system of Turkmenistan (CAC) is the one in the worst condition, but even so it is capable of carrying up to 50 billion cubic metres of gas per year to (or via) Russia. There are, however, considerable losses from the system, and experts have estimated that more than 80% of the life of the pipeline has been used up.³⁷

The capacity of the CAC-1, 2, 4 and 5 pipelines in Turkmenistan is about 40-45 billion cubic metres per year and these branches are being used at practically full capacity already. The capacity of the CAC-3 branch, on the other hand, is not more than 4.2-5 billion cubic metres, but not more than one third of this is being used at the moment.³⁸

The results for 2006 show that the Turkmenistan export pipeline system pumped as much as 42 billion cubic metres of gas to or via Russia, of which 40.7 billion passed through Uzbekistan³⁹ and Kazakhstan (CAC-1, 2, 4 and 5), and the rest (estimated variously as between 400 billion cubic metres⁴⁰ and just under 1 billion cubic metres)⁴¹ - through the territory of Kazakhstan (CAC-3).

Plans for development of the Turkmenistan segment of the regional gas transportation system are primarily a matter of cooperation between Ashgabat and Moscow. It is also possible that gas extracted in the Turkmenistan part of the Caspian area will use the Okarem-Beyneu pipeline when it is connected to CAC-3. This is a question of interest to the Malaysian Petronas company, which already

extracts gas from the Turkmenistan part of the Caspian Sea shelf.⁴² It is also possible that in future the Bukhara-Ural pipeline will be used.

The gas pipeline system of Uzbekistan (CAC-1, 2, 4 and 5 and Bukhara-Ural) is generally in a satisfactory condition,⁴³ capable of transferring at least 55 billion cubic metres of gas per year.⁴⁴

Work is carried out regularly by Gazprom and other organisations to enlarge and repair the CAC and Bukhara-Ural pipelines. The Bukhara-Ural pipeline, however, needs more serious reconstruction, as it is between 50%⁴⁵ and 80%⁴⁶ worn out.

The results for 2006 show that about 50 billion cubic metres of gas were pumped from Turkmenistan and Uzbekistan to or via Russia. Uzbekistan plans to increase the capacity of this system by means of its own resources, by cooperation with Russia (i.e. Gazprom) and by attracting foreign credits and investment. In particular, Uzbekneftegaz plans to raise about 1.5 billion dollars for the development and reconstruction of its arterial pipelines (both for export and for internal use).⁴⁷

The gas pipeline system of Kazakhstan (CAC, Bukhara-Ural and Makat-North Caucasus pipelines) is in fairly good condition and is capable of transferring between 55 and 80 billion cubic metres of gas, possibly expanding to 120 billion cubic metres per year.

Reconstruction and modernisation of the CAC⁴⁸ has increased its capacity from 40 to 54.6 billion cubic metres.⁴⁹ Kazakhstan is planning to increase this to 60 billion cubic metres,⁵⁰ then (by 2010) to 80 billion⁵¹ and in the near future even to 100 billion per year.⁵²

Kazakhstan sees it as very important to develop other pipelines, especially the Makat-North Caucasus one (which has in theory a capacity of up to 25.5 billion cubic metres), and also the Orenburg-Novoposkov and Soyuz lines which pass through its territory. These could in fact be the main conduits for exporting Kazakh gas to the external market, via Russia. Kazakhstan is not however publicising these plans for expansion (which will of course be a joint programme with Russia) too widely.

Bilateral and multilateral agreements

It should also be noted that there is a whole series of bilateral and multilateral agreements (especially between Russia, Kazakhstan, Turkmenistan and Uzbekistan) on the reconstruction of old pipelines, on increasing their capacity and on the construction of new lines. It seems likely that the capacity of the CAC and Bukhara-Ural lines will increase to 80-90 billion cubic metres per year⁵³ in the period 2008-17, based on the following steps being taken:

- an expansion of the capacity of CAC (branches 1, 2, 4 and 5), although it is not clear what exactly will be done in Turkmenistan and Uzbekistan, or when, so it is not yet clear what the future capacity of the pipeline will be;
- repair and restoration of the Bukhara-Ural pipeline, but here again it is not yet clear what exactly will be done in Uzbekistan and Kazakhstan, or when, so the future capacity of this pipeline is also not yet clear;

- construction of the Caspian coast pipeline (passing through Turkmenistan, Kazakhstan and Russia). The original plan was initially to increase the capacity of the existing CAC-3 pipeline, in the period 2008-10, to 10-10.5 billion cubic metres per year. Subsequently the plan was to construct a second pipeline parallel to the existing one, with an initial capacity of 10, rising to 20 billion cubic metres per year. There were various estimates of the timescale for this: by 2014,⁵⁴ in the period 2010-2017⁵⁵ or in the period 2012-2017.⁵⁶ Eventually, in December 2007, Russia, Kazakhstan and Turkmenistan signed an inter-governmental agreement on the construction of the Caspian coast pipeline, based on CAC-3, to have a capacity of about 20 billion cubic metres per year.⁵⁷ Each country will undertake the work on its own territory.⁵⁸ Neither Turkmenistan nor Kazakhstan have yet given firm guarantees on the volume of gas to be carried, however, merely promising that each of them will supply "up to" 10 billion cubic metres per year.

Throughout the post-Soviet period the operation of the Central Asian gas pipelines has been a major preoccupation both of Russia and the countries of the Central Asian region. When it comes to plans for development of the pipeline system, however, there are still many uncertainties, the first of which is how foreign investment is to be attracted for modernising and expanding the network. Investment in the gas pipeline system of Turkmenistan is estimated at 3-5 billion dollars,⁵⁹ investment in that of Uzbekistan at 1.5-2 billion dollars and in that of Kazakhstan at 2 billion dollars.⁶⁰

The problem of attracting investment is particularly acute for Turkmenistan and Uzbekistan, which have limited resources of their own, unlike Kazakhstan. At present Gazprom is linking the possibility of investing in these countries with control over their national pipeline networks.⁶¹ In May 2007 Gazprom obtained agreement that it would be given responsibility for the routine running of the Turkmen section of the pipeline after it had been modernised and expanded.⁶²

At the same time, Turkmenistan and even more Uzbekistan have considerable untapped potential to attract other investment in their gas transportation infrastructures, namely in projects to reduce their losses of gas during transportation. Unlike Kazakhstan, both these countries have ratified the Kyoto protocol to the United Nations framework convention on climate change, which gives them considerable scope for attracting investment in new technologies. Practical work in this direction started in Uzbekistan at the end of 2006, but in Turkmenistan the necessary institutional changes still have to be made before Kyoto projects can be undertaken.

Forecast for gas supplies from Central Asia

Even in the short term there are many uncertainties surrounding the question of the supply of gas from Central Asia to Russia (and via Russia to other countries). What can be said with confidence is that in the medium term the situation will be more complicated by factors like the increasing pace of international projects for hydrocarbon extraction and the start of construction and operation of gas pipelines by-passing Russia.

The short term (up to 2010)

In view of the fact that the main supplier of gas to and via Russia will continue to be Turkmenistan, the main uncertainty will continue to be the state of relations between Russia and Turkmenistan. Russia has increased expectations, but these are in increasing contradiction to the main trends of Turkmen policy in regard to the development of its gas industry. Turkmenistan's non-Russian export obligations are increasing, to Iran, China and possibly, in the future, to Europe.

Kazakhstan will probably make a vital contribution to the gas supply for Russia, and for Ukraine and other countries in the post-Soviet sphere. This is all the more likely as Russia and Kazakhstan already work together closely in the gas sector.

Kazakhstan will also try to take on the role of key partner in the transit of gas from Turkmenistan and Uzbekistan and to establish itself as an independent supplier of gas to the European market.

Uzbekistan will probably fulfil its export obligations and bring at least some stability to the supply of Central Asian gas to Russia.

With this background it is to be expected that there will be an increasing number of agreements and that construction will start on gas pipelines from Turkmenistan and Kazakhstan to China. It is also possible that there will be a breakthrough in other projects such as the Trans-Caspian pipeline or a pipeline through Afghanistan. All this adds to the uncertainties surrounding the future supply of gas to the external market, including gas supplied to and via Russia.

It seems likely that the volume of gas to be exported from Central Asia (not only Turkmenistan and Uzbekistan but also Kazakhstan) to and via Russia will be between 60 and 80 billion cubic metres per year, depending on the state of the pipelines in the region.

Turkmenistan is likely to supply about 40-50 billion cubic metres per year. Official estimates for the period 2007-9 are now for only 50 billion cubic metres per year (and not 70-80 or even 60-70 billion).⁶³ There are some doubts among experts as to whether even this target will be reached.⁶⁴ This is indirectly confirmed by reports that Turkmenistan has reached preliminary agreement with Russia for the supply of only 30 billion cubic metres per year from 2010 onwards.⁶⁵

Kazakhstan could supply about 10-12 billion cubic metres per year. Of this total, the "export" of about 3-4 billion cubic metres could be in swap operations, which would not have any adverse effect on the strength of Russia's fuel and energy balance. The rest of the gas would probably be supplied from the Orenburg gas processing plant, within the framework of the Russian-Kazakh joint enterprise, and be provided by both countries to other countries (mainly in the post-Soviet area).

Uzbekistan will export a slightly increased volume of gas, probably about 13-15 billion cubic metres per year (including possible supplies to Kazakhstan).

The medium term (up to 2020)

The uncertainties surrounding the supply of gas from Turkmenistan to and via Russia will probably be reduced a bit in this timescale. On the other hand, the supply from Kazakhstan may become more uncertain. Against this background,

Uzbekistan will probably not seek alternative export customers or increase its gas exports very much, even in the medium term.⁶⁶

If the gas pipeline from Turkmenistan and Kazakhstan to China is constructed in 2009, it should be able to work to its full capacity of about 30 billion cubic metres per year by 2020. It is also likely that by 2020 the question of the status of the Caspian Sea will be resolved and the construction of the Trans-Caspian pipeline (via Azerbaijan to Turkey) will have started.

In the period 2012-2015 the Caspian coast pipeline (via Russia) should start working at full capacity (at least 20 billion cubic metres per year). This should maximise the supply of Central Asian gas to Russia and via Russia to other countries.

There are undoubtedly several ways in which this programme could be altered, and clearly not to Russia's benefit. These include changes in methods of producing and transporting gas (such as liquefied natural gas) and a number of construction projects like expanding and extending the gas pipeline from Turkmenistan to Iran and even to Turkey, or reviving the idea of constructing a gas pipeline through Afghanistan to Pakistan (and possibly also to India). However, in view of the current situation in Afghanistan and Iran and other areas, these pipeline schemes do not seem very likely to be realised.

In general, then, it is very difficult to make any quantitative assessment of the volume of gas to be exported to and via Russia in the medium term. Calculations based on an analysis of the resources and export potential of Turkmenistan, Kazakhstan and Uzbekistan indicate that exports from the Central Asian countries could amount to between 80 and 110 billion cubic metres per year.

Turkmenistan could supply 50-70 billion cubic metres, possibly more.

In contrast to its short term prospects, Turkmenistan clearly has chances to increase the quantity of gas it extracts in the medium term, particularly with the possibility it has of exploiting a considerable number of new fields. Even if it cannot increase extraction to its planned level of 240 billion cubic metres per year by 2020, it will certainly be able to increase from the present (2006) level of 66 billion cubic metres extracted and 50 billion exported.

It seems most likely that in the medium term Turkmenistan will continue to pursue a more wide-ranging foreign policy. Having large gas reserves and in conditions of a widening export market, Turkmenistan and Kazakhstan have an interest in maintaining the balance of external forces and interests, rather than prejudicing relations with any country (particularly Russia, China, Europe, the USA and the West in general).

Kazakhstan will probably be able to export at least 15-20 billion cubic metres of gas per year to and via Russia, "probably" as it is still not clear how much gas Astana will be able (or willing) to export via the projected Caspian coast pipeline. All that is known is that from 2012 onwards, at least 15 billion cubic metres per year will probably be supplied by the Russian-Kazakh Orenburg gas processing plant joint venture. As before, this gas will be marketed in conjunction with Russia.

As the volume of gas exported by Kazakhstan can reasonably be estimated at 25-30 billion cubic metres per year, the balance of 10-15 billion cubic metres left after supplying Russia should be enough for Kazakhstan to meet its future obligations

to China. Kazakhstan's contribution to the Trans-Caspian pipeline project, unlike that of Turkmenistan, will probably only be a nominal one.

This pattern could of course be substantially affected by Kazakhstan's plans to develop oil and gas fields in Turkmenistan (such as the Caspian Sea shelf and the right bank of the Amu Darya river) and on its own territory (including part of the Caspian shelf). If it is successful, Kazakhstan will be able both to export gas to China and to export it elsewhere in the context of the Caspian coast and Trans-Caspian projects.

Uzbekistan is planning to supply Russia with at least 16 billion cubic metres per year by 2015.⁶⁷ These plans are clearly realistic. It is quite possible that by 2020 Uzbekistan will be in a position to export a larger quantity to Russia, possibly as much as 20 billion cubic metres per year.

Some Russian experts, however, think it is possible that Uzbekistan will supply small quantities of gas to China. In general, the China project is concerned mainly with gas from Turkmenistan in the early stages and then gas from Kazakhstan later. In the medium term it does not seem likely that Chinese companies operating in Uzbekistan will extract significant volumes of gas. Some experts believe that Uzbekistan could supply about 700 million cubic metres of gas per year to China from 2015 onwards, rising to 2 billion by 2030.⁶⁸ These quantities would clearly not adversely affect Russian-Uzbekistan relations in the gas sector.

Conclusions

Supplies of gas from Central Asia to Russia are clearly going to become even more important in the future, and Moscow will do everything it can to increase its imports. Of the levers at Russia's disposal the main one is still the highly-developed pipeline infrastructure, which is capable of being modernised quickly. Furthermore, Gazprom has been adopting a more flexible tariff and pricing policy in recent years (although this has not been without problems).

Russia is also skilful at linking the gas supply question, and questions of cooperation in the gas sector generally, to development of cooperation in other areas, whether economic, political or security. There are also some signs that the Russian leadership is prepared to consider the possibility of entering the European gas market jointly with the countries of Central Asia. Russia and Kazakhstan have already agreed to work in this direction.

In principle these actual and potential levers should be enough to ensure Russia's position as a major player in the Central Asian gas market, even in the longer term. They have not however been enough to prevent the process of disintegration of the post-Soviet area in economic, political and military terms, even in the segment which until recently was the most stable one, the Russian and Central Asian zone. Therefore, while Russia will continue to have advantages over other foreign customers in the Central Asian gas market in the short term, in the longer term these advantages will probably disappear.

It is still likely that in the period up to 2020 the quantity of gas supplied to Russia (and through Russia to other countries) will increase. This will however be subject to the efforts of the leading Central Asian gas exporters, i.e. Turkmenistan and Kazakhstan, to obtain more favourable terms for using Russia as a transit country for exporting gas to the European market.

In the longer term the gas export situation will probably settle down at a level which will suit the main exporting countries, i.e. Turkmenistan, Kazakhstan and Uzbekistan, and the main foreign players (China, Europe, the USA and possibly Iran and Turkey). It can be imagined that the achievement of a certain status quo here will be followed by another round of competition for the resources of Central Asia, in conditions where the balance of forces and interests has changed, and not to Russia's benefit.

To stabilise its position in the region, it would seem to be in Russia's interests to invest in hydrocarbon processing projects such as the construction of chemical plants and plants for the manufacture of products with higher added value. This can be done both on a bilateral basis and multilaterally, for example within the context of the Eurasian Economic Community. The extent to which Russia is willing and able to defend its long-term interests in the hydrocarbon resources of Central Asia in an increasingly competitive situation will be the subject of future reports.

Endnotes

¹ There is still a great deal of interchange of energy resources (coal, fuel oil, electricity and natural gas) in the border areas of Russia and Kazakhstan. This is not surprising since the industrial enterprises in these areas were created and maintained as a single entity and were supported by a common energy supply network, which has continued to function to a great extent even after the disintegration of the USSR.

² Sources: data on gas supplies: *Oil & Gas Journal* No 103.47, 2005, pp. 24-25; L S Belyaev, V V Bushuev, M R Lastovskaya, A V Lebedev, O V Marchenko, P A Sergeev, S V Solomin, S V Filippov (edited by V V Bushuev) *The world's energy: situation, problems, prospects* Moscow: "Energiya" publishers, 2007, p. 587. Data on volumes of gas extracted and exported in 1990 - The World Bank, quoting national statistics offices (*Uzbekistan: Plan for Economic Reform*, The World Bank, Washington, D.C., 1993; *Kazakhstan: Transition of the State*, The World Bank, Washington, D.C., 1997; *Turkmenistan*, The World Bank, Washington, D.C., 1994). Data on volumes of gas extracted and used for export, import and domestic consumption in 2006 - Economist Intelligence Unit, quoting national statistics offices (*Kazakhstan: Country Report*, London: The Economist Intelligence Unit, June 2007; *Turkmenistan: Country Report*, London: The Economist Intelligence Unit, June 2007; *Uzbekistan: Country Report*, London: The Economist Intelligence Unit, June 2007). Data on planned quantities to be extracted and exported - national sources: research and analysis agencies, official publications and announcements: *Kazakhstan's energy strategy*, Economics Research Institute, Ministry of Economics and Budgetary Planning, Republic of Kazakhstan; Centre for Political Research (TsPI) Uzbekistan research project "The energy potential of Central Asia: estimation of reserves, processing and transportation of oil and natural gas" in *The Central Asian energy market: trends and prospects*, Proceedings of Science and Technology Conference, Tashkent, 6-7 December 2005. Tashkent: Patent-Press, 2006; "Uzbekistan's oil and gas". - *Journal Neftegazovaya Vertikal'* special issue, Moscow, № 9, June 2007.

³ "Export" of gas in the Soviet era refers to export within the Soviet Union only.

⁴ In accordance with the Russia-Turkmenistan intergovernmental agreement "Cooperation in the gas sector in the period up to 2028", signed in Moscow in 2003.

⁵ The gas transferred by the Turkmenistan-China pipeline in its early days could amount to 10 billion cubic metres per year.

⁶ "A form of exchange has been operating with Tehran - to reduce transportation costs Turkmenistan has supplied gas to the northern parts of Iran, and Iran has sold the equivalent amount on the world market" (Yu Sigov, 'Turkmenistan plays a solo on the gas pipe. The USA "discover" Ashkhabad again', Newspaper *Delovaya nedelya*, Almaty (Kazakhstan), № 10 (738), 16 March 2007),

<http://www.centrasia.ru/newsA.php4?st=1174166760>

⁷ The gas pipeline was commissioned in 2007. It was initially intended to supply about 8 billion cubic metres. The pipeline was enlarged in 2006 to give a capacity of 15 billion cubic metres (V Milov, "Turkmenistan's gas: geopolitics and business", Journal "Bol'shaya Igra", Moscow: Laboratory for the analysis of Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan and Kyrgyzstan, № 2, February 2007, p.8).

⁸ It seems possible that the domestic demand for gas in Turkmenistan in 2010 will be at least as high as in 2006, as Turkmenistan is not planning to reduce this domestic demand, which was for 16 billion cubic metres in 2006. Source: Economist Intelligence Unit, quoting the Turkmenistan national institute for state statistics and information (*Turkmenistan: Country Report*, London: The Economist Intelligence Unit, June 2007).

⁹ O Lukin. "Being a pioneer", *Neftegazovaya Vertikal'*, Moscow, № 1, January 2007, p.68.

¹⁰ In the opinion of D Lyutyagin, analyst with the Russian company Veles Capital, for 2015 this scenario is optimistic (R Fedoseev, "Turkmen gas bypasses Russia", "Vzglyad" Information Agency (Russia), 15 November 2007).

¹¹ Source: the national holding company Uzbekneftegaz (Sh. Mazhitov. "NKhK "Uzbekneftegaz": 15 years in the avant-garde of industrial development" 'Uzbekistan's oil and gas', *Neftegazovaya Vertikal'* special issue, Moscow, № 9, June 2007, p.20).

¹² Source: Uzbekneftegaz ("Uzbekistan plans to increase gas exports to 2 billion cubic metres", "Rosbalt" Information Agency (Russia)), <http://www.asia-a.ru/rusdoc/16792.htm>

¹³ Source: Uzbekneftegaz (Sh Kh Mazhitov. 'NKhK "Uzbekneftegaz" at its present stage of development', *The energy market of Central Asia: trends and prospects*, Proceedings of science and business conference, 6-7 December 2005. Tashkent: Patent-Press, 2006, p.45).

¹⁴ A Korzhubaev, I Filimonova, A Meshcherin, O Lukin, "Uzbekistan's oil and gas industry: a specialist survey", 'Uzbekistan's oil and gas' *Neftegazovaya Vertikal'* special issue, Moscow, № 9, June 2007, p. 58.

¹⁵ 86% of the electrical energy in Uzbekistan is generated in gas-fired thermal power stations. Natural gas accounts for 80% of the country's fuel and energy budget.

¹⁶ Especially in view of the active policy being pursued in Uzbekistan to convert energy users to gas.

¹⁷ "Gas extraction and processing", 'Kazakhstan's oil and gas, 2007' *Neftegazovaya Vertikal'* special issue, Moscow, № 17, October 2007, p.122.

¹⁸ Although this is still defined by the nature of the arterial pipelines passing through Kazakhstan, as they are not physically connected to each other. For this reason they cannot be used for pumping gas extracted in western Kazakhstan to the southern regions of the country (and before 2007, not to the northern parts either).

¹⁹ There is a lot of expert information to support this view, for example that provided by T Mitrova, "Central Asian gas - yesterday, today and tomorrow", *Bol'shaya Igra*, Moscow: Laboratory for the analysis of Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan and Kyrgyzstan, № 1, January 2007, p.9.

²⁰ Sources: Kazakhstan's energy strategy; Institute of economic research, Ministry of Economics and Budgetary Planning, Republic of Kazakhstan.

²¹ Source: KazMunayGaz national joint stock company and Kazinform information agency (Kazakhstan) ('KazMunayGaz is increasing the capacity of the "Central Asia - Centre" pipeline to 100 billion cubic metres per year', INFOLine agency. 13 September 2007), <http://www.neftegazexpert.ru/neftegazline/neftegztext28374.html>

²² T Mitrova, "Central Asian gas - yesterday, today and tomorrow", *Bol'shaya Igra*, Moscow: Laboratory for the analysis of Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan and Kyrgyzstan, № 1, January 2007, p.9.

²³ Source: Gazprom (SE Tsygankov. "Key problems and prospects for cooperation between Gazprom PLC and the countries of the Central Asian region" *The energy market of Central Asia: trends and prospects*, Proceedings of science and business conference, 6-7 December 2005. Tashkent: Patent-Press, 2006, p.121).

²⁴ "Gas extraction and processing", 'Kazakhstan's oil and gas, 2007' *Neftegazovaya Vertikal'*, Moscow, № 17, October 2007, p.125.

²⁵ A Kisykbasova, "The gas sector. Plans to form a Kazakh-Russian gas processing company take shape", *Liter* newspaper (Kazakhstan), 23 May 2007, <http://www.centrasia.ru/newsA.php4?st=1180004580>

²⁶ T Mitrova, op.cit.

- ²⁷ O Lukin, "From competition to integration", 'Kazakhstan's oil and gas, 2007', *Neftegazovaya Vertikal'*, Moscow, № 17, October 2007, p.35.
- ²⁸ The pipeline runs are numbered in chronological order, corresponding to the order in which they were commissioned: CAC-1 in 1966, CAC-2 in 1969, CAC-3 and CAC-4 in 1972 and CAC-5 in 1985. All five runs begin in Turkmenistan and meet in Saratov oblast' in Russia.
- ²⁹ Branches 1, 2, 4 and 5 run parallel to each other from Turkmenistan, through Uzbekistan (Karakalpakstan, Khorezm and Bukhara regions) into Kazakhstan. CAC-3 goes from Bekdash via Beyneu in Kazakhstan and then parallel to the other four lines.
- ³⁰ There are two branches of the Bukhara-Ural pipeline, running parallel to each other. They start near Gazli (Bukhara region) in Uzbekistan, pass through Navoi region and then cross Karakalpakstan, going via Kazakhstan to the South Urals. One branch goes to Chelyabinsk in Russia and the other one goes to Yekaterinburg (the former Sverdlovsk) in Russia.
- ³¹ Source: Cabinet of Ministers of the Republic of Kazakhstan ('On confirmation of the development programme for the gas sector in the republic of Kazakhstan, 2004-2010', Table 1.4, Technical condition of arterial gas pipelines in the Republic of Kazakhstan, http://ru.government.kz/docs/p040669_20040618.htm
- ³² Source: Neftegaz Ukrainy national company (M Kukhar, 'New gas routes'. *Delovye Vedomosti* newspaper, Ukraine, № 88 (2893), 22 April 2003, http://old.kv.com.ua/index.php?article=13351&number_old=2893
- ³³ Source: Cabinet of Ministers of the Republic of Kazakhstan, op. cit.
- ³⁴ Source: Gazprom (A Korzhubaev and others: op.cit. p.55).
- ³⁵ Source: Gazprom ('40 years ago, on 28 January 1964, an administrative authority for the "Bukhara-Ural" arterial gas pipelines was set up', <http://www.gazprom.ru/articles/article9561.shtml>
- ³⁶ Source: Cabinet of Ministers of the Republic of Kazakhstan, op. cit.
- ³⁷ T Mitrova, op. cit., pp 6, 10, 13.
- ³⁸ Another source claims that this pipeline is not in working order at all and has been closed: 'More gas pipelines, "several, good-quality pipelines"', NewTimes.ru information portal (Russia), 14 May 2007, <http://www.newtimes.ru/news/2007-05-14/2007-05-14-6>
- ³⁹ Source: Uzbekneftegaz (I Vagapov. "'Uztransgaz" Joint Stock Company', 'Uzbekistan's oil and gas' *Neftegazovaya Vertikal'* special issue, Moscow, № 9, June 2007, p.22).
- ⁴⁰ S Blagov: "Why did Russia agree to the new prices for gas from Turkmenistan?", "Eurasianet" information portal, 4 December 2007, <http://www.centrasia.ru/newsA.php4?st=1196755980>
- ⁴¹ O Lukin. "Be a pioneer" *Neftegazovaya Vertikal'*, Moscow, № 1, January 2007, p.68.
- ⁴² Ibid.
- ⁴³ This is indicated indirectly by the fact that according to official data more than 75% of the total length of Uzbekistan's pipelines (not just the arterial pipelines) has a service life of 15 years remaining (the standard amortisation period being 12.5 years). Source: I Vagapov, op.cit.).
- ⁴⁴ Not only to and via Russia, but also to Tajikistan and Kyrgyzstan (A Korzhubaev and others, op.cit.).
- ⁴⁵ Source: A Korzhubaev and others, op.cit.
- ⁴⁶ Source: A Korzhubaev and others, op.cit.
- ⁴⁷ Source: "Uzreport" news website (Uzbekistan) ('China Exim Bank extends credit to "Uzbekneftegaz"', Daily survey, "Avesta" information and analysis centre, Uzbekistan, 13 November 2007. p.2).
- ⁴⁸ Before 2001.
- ⁴⁹ Source: Ministry of Energy and Mineral Resources, Republic of Kazakhstan (A Tolumbaev, "Prospects for the gas industry", 'Kazakhstan's oil and gas – 2007' *Neftegazovaya Vertikal'* special issue, Moscow, № 17, October 2007 p.112).
- ⁵⁰ Ibid, p.113.
- ⁵¹ "'Kaztransgaz": the first seven years', 'Kazakhstan's oil and gas – 2007', *Neftegazovaya Vertikal'* special issue, Moscow, № 17, October 2007, p.117.
- ⁵² Source: "INFOLine" agency, <http://www.neftegazexpert.ru/neftegazline/neftegztext28374.html>

⁵³ In accordance with statements by Russian representatives such as the head of Gazprom, A Miller, and the Minister for Industry and Energy, V Khristenko (O Lukin, 'Trust in Russia lest you fall', *Neftegazovaya Vertikal'*, Moscow, № 12, June 2007, p.48).

⁵⁴ As announced by V Khristenko, the Russian Minister for Industry and Energy (L Slavinskaya, 'Is Russia going to redraw the pipeline map of Eurasia?', *Neftegazovaya Vertikal'*, Moscow, № 12, June 2007, p.39).

⁵⁵ As announced by V Khristenko, the Russian Minister for Industry and Energy (O Lukin, op.cit).

⁵⁶ O Lukin, 'From competition to integration', 'Kazakhstan's oil and gas – 2007' *Neftegazovaya Vertikal'* special issue, Moscow, № 17, October 2007, p.35)

⁵⁷ The cost of this project is estimated at about 1 billion dollars. Construction is expected to start in 2008 and to last between two and four years. An operating company is to be formed, responsible for both building and operating the pipeline. Russia and Kazakhstan are expected to have equal shares in the project, and Turkmenistan will have a minority share.

⁵⁸ As announced by V Khristenko, the Russian Minister for Industry and Energy ('Putin and Nazarbaev work towards a telephone call ... to the President of Turkmenistan', *Kommersant* newspaper, Russia, № 236 (3812), 21 December 2007,

<http://centrasia.ru/newsA.php4?st=1198194420>

⁵⁹ D Dokuchaev. 'The squabble over Turkmenistan's gas' Russian on-line newspaper *Prognozirovanie*, 21 February 2007,

<http://www.prognosis.ru/news/.ilru.com/news/46599/orpho.php>

⁶⁰ Source: Minister for Energy and Mineral Resources, Republic of Kazakhstan (A Karavaev, 'Turkmenistan - the lost jewel from Gazprom's crown', Political news agency, Kazakhstan, 19 June 2006), <http://www.apn.kz/publications/article356.htm>

⁶¹ L Slavinskaya, op.cit.

⁶² 'Gazprom and "Turkmengaz" sign agreement on routine running of "Central Asia-Centre" pipeline', "Neft' Rossii" information and analysis portal, 11 May 2007,

<http://www.oilru.com/news/46599/orpho.php>

⁶³ A contract to supply this quantity of gas by the end of 2009 was signed in September 2006 within the framework of the Russian-Turkmen inter-governmental agreement "cooperation in the gas sector up to the year 2028" (V Milov, op.cit, p.8).

⁶⁴ T Mitrova, op.cit. p.8.

⁶⁵ A preliminary agreement to this effect was initialled in February 2006 within the framework of the agreement "cooperation in the gas industry in the period up to 2028" (V Milov, op.cit., p.9).

⁶⁶ At the same time, one of the most important (or even vital) aims of Uzbekistan's national policy is still to develop its transport infrastructure and transport routes.

⁶⁷ Source: Uzbekneftegaz (Sh Kh Mazhitov, 'NKhK "Uzbekneftegaz" at its present stage of development', *The energy market of Central Asia: trends and prospects*, Proceedings of science and business conference, 6-7 December 2005. Tashkent: Patent-Press, 2006, p.49).

⁶⁸ A Korzhubaev and others: op.cit, p.58.

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