

Geo-Economics in Central Asia and the 'Great Game' of Natural Resources: Water, Oil, Gas, Uranium and Transportation Corridors (WP)

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Summary

This Working Paper describes and analyses Central Asia from the standpoint of geo-economics, focusing especially on key questions in the region such as water, logistics, the direction of trade flows, hydrocarbons (oil and gas) and uranium. Its purpose is to estimate the involvement of the great powers and multinational companies in connection with these issues, assessing which countries or companies have the greatest presence or influence and showing how some of these players, especially Russia, play a dominant role in what some analysts have called the new ‘Great Game’.

(1) Introduction¹

For almost 200 years Central Asia was subjected to the plans and designs of Russia in its two versions of domination: the Tsars and the Soviets. In 1991, the dissolution of the USSR marked a new turning point in the political and economic life of the various peoples inhabiting Central Asia. The former Soviet republics became independent States and were no longer under the political, economic and military umbrella of the USSR. This situation seemed ideal for the new Central Asian countries to make their own way on the international stage and to decide their own priorities and goals. For Central Asia, the breakdown of the USSR was a time of economic, political and social crisis, but also of new opportunities, including the chance to seek new partners and allies. The US, Turkey, Iran, India, Pakistan, China and Russia itself were quick to establish relations with the new countries. The starting point is what is now known as the famous ‘New Great Game’, which is none other than a modern version of the traditional power plays in the region by the major empires (although the present game is rendered much more complex by the larger number of players involved). The renewed ‘Great Game’ is due to the increasing importance of Central Asia, stemming from the existence in the region of vast reserves of hydrocarbons (oil and gas) and minerals like uranium, and because of its age-old strategic position as a link between major markets (Europe and Asia).

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Central Asia is an area offering certain geo-economics advantages to countries or multinational corporations that have particular regional or global aspirations, due either to their own interests or to the need to neutralise other nations or companies which they see as rivals.

The aim of this document is not to detail the strategies and interests of each player in the region, but to evaluate their presence. In other words, it aims to describe and analyse the degree of influence or implication of countries or companies in regard to some strategic sectors both regionally (water and logistics) and internationally (oil, gas, uranium) and their importance in regional or global geo-economics.

(2) Water

Water is an essential resource for the economy and for social stability in Central Asia: 60% of the population of the former Soviet republics in Central Asia live in rural areas and 45% of the workforce is employed in agriculture. The only country that appears to be less dependent upon this sector is Kazakhstan. Just 8% of its GDP comes from agriculture, although this 8% employs no less than 33% of the country's active population. More than 80% of the cultivated land in Turkmenistan, Tajikistan, Kyrgyzstan and Uzbekistan is productive thanks to irrigation; the exception is Kazakhstan, where only 7% of cultivable land is irrigated.

Cotton farming is the economic activity that generates most jobs in the region, and in some cases, as in Uzbekistan, it is also the main source of foreign currency for its government, accounting for 60% of the total.

Water is therefore the main input in the economy of Central Asia and south Kazakhstan. However, the distribution of water resources in the region is not uniform, and this situation is decisively influencing interregional relations, which are determined by the different capacities of each country to access water, and the varying degrees of priority they afford to water's different uses. As a result of this situation, countries in the region may be classified into two groups

- (1) Countries like Uzbekistan, Turkmenistan and Kazakhstan, which depend on water surpluses from their neighbours and see agricultural irrigation as the priority use for water.
- (2) Countries like Tajikistan and Kyrgyzstan, which have major water surpluses, the use of which must be tailored to their national interests, in this case, hydroelectric power generation.

In the last few years, relations between these two groups of countries have become more strained and conflictive, due to the Tajik and Kyrgyz plans to build new dams, projects that are seen by their neighbours as a way to further tighten the control of Tajikistan and

Kyrgyzstan over water flows, thereby enabling them to use increasing amounts of water for hydroelectric production to the detriment of its use for crop irrigation.

In view of the lack of technological and economic resources to undertake new projects, Tajikistan and Kyrgyzstan have sought foreign help and, as shown in Table 1, the main financiers of these projects are Russia, Iran and China.

Table 1. Hydroelectric power projects

Dam	Capacity	Cost (US\$ bn)	Location	Comments
Rogun	3,600 MW	3	Vaskh River	Under construction. Negotiations: Russian and Tajik governments
Sangtuda I	670 MW		Vaskh River	Co-financed by the Russian and Tajik governments. Was scheduled for completion in 2009
Sangtuda II	220 MW		Vaskh River	Co-financed by Farab (Iran) and Barki Tajik (Tajikistan). Was scheduled for completion in 2009
Zeravsan	220-160 MW	0.3	Zeravsan River	Financed by Sinohydro (China)
Kambar-Ata I	3,300 MW	2		Under construction
Kambar-Ata I				Financing: Rao-Ues-Kazkuaty power plants in Kyrgyzstan

Source: based on Avilash Rould, 'The Elusive Yet Abundant Hydropower in the Kyrgyz Republic', *EcoWorld*. www.ecoworld.com/features/2009/01/15/hydropower-in-kyrgyzstan/, and Timur Valamat-Zade, 'Tajikistan Energy Sector: Present and Near Future', www.ca-c.org/journal/2008-01-eng/10.shtml.

Russia is the country with the largest presence in the new Tajik and Kyrgyz projects, with China and Iran clearly occupying a secondary position. However, some of these projects planned by Russian companies may be under threat, especially those to be executed in Tajik territory, since Uzbekistan, one of the main opponents of the construction of new dams, appears to have reached agreements with Russia to limit the impact of Tajik hydroelectric projects by imposing conditions on their construction.

In January 2009, at a meeting held in Tashkent between the Presidents of Uzbekistan and Russia, the Russian President Dimitry Medvedev told the press that the construction of hydroelectric power plants in Central Asia would have to take into account the interests of all the States, and in the event of not reaching a common agreement, Russia would pull out. Medvedev's visit to Tashkent concluded with a joint Russian-Uzbek communiqué stating: 'The parties have agreed with the need to consider the interests of all states located on trans-boundary water currents of the Central Asian region in implementing projects for building hydroelectric power structures on them, guided by generally accepted standards of international law'.

The remarks by the Russian President in Tashkent would therefore appear to support the Turkmen and Uzbek plans to impose certain conditions on the construction of hydroelectric facilities and shift away from its former position in which it appeared to unreservedly back the Tajik and Kyrgyz projects.

Why might the Russian position have changed? The change in Russia's position may be linked to another strategic resource in the region, namely gas. Ninety per cent of Central Asian gas exports use the Russian gas network, and its main supplier is Turkmenistan. The Russian government is interested in maintaining this significant flow of Turkmen gas (approximately 37.5 billion cubic metres –bcm– per year in 2007, more than the European Nabucco project's capacity) and in trying to involve Gazprom significantly in the operation and transportation of the new Turkmen reserves discovered in the South Yolotan area (estimated to total between 4 trillion and 14 trillion cubic metres –tcm– and are considered among the five largest recently discovered). At the end of January 2009, the Presidents of Russia and Uzbekistan signed bilateral agreements whereby Russia secured an Uzbek gas supply for the next few years. The Uzbek President undertook to increase the country's exports via Russia by 16 bcm, and Lukoil hopes to extract between 15 bcm and 31 bcm per annum from Uzbek fields currently in the exploration phase. The plan is to transport this gas by increasing the current capacity of the Central Asian gas pipeline network (CentGas) which runs through Turkmenistan, Uzbekistan, Kazakhstan and the Russian Federation. The gas business appears to take precedence over the Tajik and Kyrgyz hydroelectric resources, although the final outcome of this situation is not very clear.

There are a number of indicators that seem to suggest that Russia will indeed support Kyrgyzstan's plans, despite this potentially unleashing a crisis in its relations with Uzbekistan. In early February 2009, President Kurmanbek Bakiyev of Kyrgyzstan announced the closure of the US air base in Manas. The announcement coincided with the approval by Russia of a financial aid package worth US\$2 billion, which could perhaps be used to finance construction of new dams in Kyrgyzstan, which Uzbekistan strongly opposes.

Russia appears to be performing a complex balancing act as mediator in which it is trying to satisfy all stakeholders, and at the same time to maximise its own energy interests, obtaining new gas contracts and trying to convince Tajiks and Kyrgyz alike to adapt their hydroelectric power projects to the requirements of their neighbours downstream. If Russia manages to fulfil both objectives it will strengthen its global position as the world's largest gas exporter and as the main export route for Central Asian gas, edging out possible rivals, and it will also participate in the construction of hydroelectric power plants that could supply power to China, Pakistan and Afghanistan. In short, Russia's role as mediator in the region will be hugely reinforced, and from Central Asia Russia will be able to project its influence in the form of gas and electricity towards the Indian Ocean, as it currently does in Eastern Europe.

The execution of these projects would give a considerable boost to the Tajik and Kyrgyz economies, the most underdeveloped of all the former Soviet States, and hydroelectric power generation would become the industry with the best future outlook in these countries since, according to the *World Hydroelectric Engineering Atlas*, Tajikistan is the country with biggest hydro power potential in the world and Kyrgyzstan ranks the third, after the Russian Federation itself.

(3) Logistics and Trade

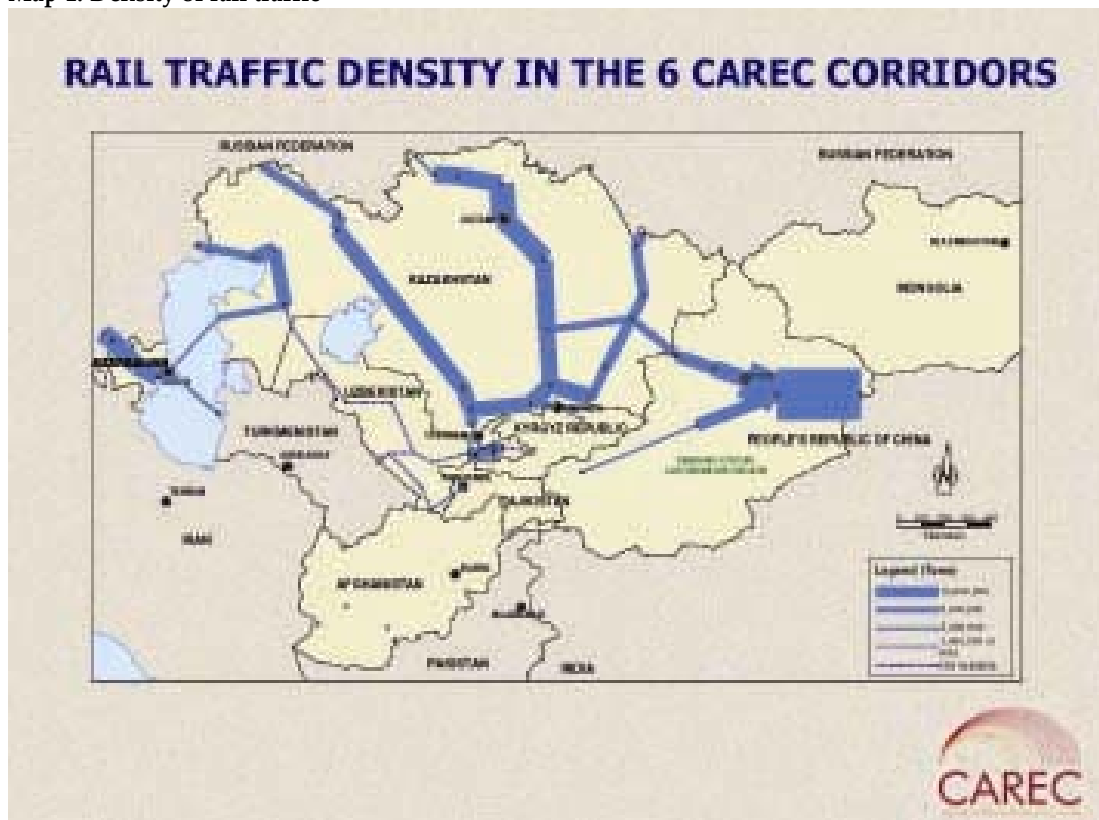
The geography and orography of Central Asia are as follows:

- (1) The area is vast, measuring more than 4,000,000 sq. km, larger than India and inhabited by just over 60 million people.
- (2) The population is highly concentrated in two areas very distant from each other: the Ferghana Valley and its periphery and the north of Kazakhstan. Between these two population hubs lies a distance of some 1,000 km.
- (3) Central Asian countries are far from the great oceans and seas: the distance by rail from Tashkent to the major sea ports is 5,421 km from the Pacific (Shanghai), 2,770 km from the Indian Ocean-Persian Gulf (Bander Abbas), 5,500 km from the Baltic (Riga) and 3,950 km from the Black Sea (Novorossiysk).
- (4) The eastern-southern edge of the region is bordered by large mountain ranges (Altai, Pamir, Hindu-Kush, Kopet-Dag, etc) that hamper communications with China, Iran, Afghanistan, Pakistan and India.
- (5) The alternation of large expanses of desert and mountain ranges has led to vast unpopulated areas lying alongside other relatively densely populated areas.

These characteristics have meant that historically Central Asian countries have been relatively isolated from the major trans-oceanic routes where most of world trade is transported, and that they depend on their neighbours to access this trade. Kazakhstan depends on the Chinese and Russian corridors to access the major oceans, and Turkmenistan depends on Iran. These are the two countries in Central Asia that depend on the fewest neighbours to connect to the global economy, and that even have a sea border along the Caspian Sea, which enables them to communicate directly with the Caucasus. However, in the case of Uzbekistan, Tajikistan and Kyrgyzstan their isolation is even greater. Uzbekistan depends on at least two countries to access the trans-oceanic routes and, in view of the steep terrain on the Chinese border with Kyrgyzstan and Tajikistan these countries in turn depend on another two or more to reach the oceans. Along with the constraints of the terrain, another factor that has influenced communications in Central Asia with other neighbouring regions has been that the current network of roads and rail built during the Soviet era followed a north-south pattern to converge with the so-called Siberian Corridor between Moscow and European Russia, including the Siberian cities of Yekaterinburg, Chelyabinsk, Omsk, Novosibirsk, Irkutsk, Chita and Khabarovsk to Vladivostok, on the shores of the Pacific. This corridor

is around 10,000 km long. This kind of design is still today determining the way goods are moved in Central Asia. The railway is the most widely used method in Central Asia to transport goods over long distances: approximately 90% of exports are transported by rail. The following maps show the most widely used sections of railway according to research by CAREC (Central Asia Regional Economic Cooperation). The thicker lines are the routes transporting the greatest tonnage.

Map 1. Density of rail traffic



Source: *Central Asia Regional Economic Cooperation*.

Map 1 shows that the two routes with the highest density in rail traffic are those that connect the cities of the Ferghana Valley and its periphery with the Kazakh border towns of Oral and Pavlodar, and from there they connect to the Russian cities of Omsk and Samara to link up with the trans-Siberian corridor towards European Russia and Eastern Europe. The other three routes being used, although less so, are those running towards Urumqi (China) and linking Atyrau (Kazakhstan) with the Russian Federation or crossing the Caspian Sea by ferry towards the Azerbaijan-Georgian corridor. As for the Turkmenistan-Iran route, we do not have data from the CAREC or any other source.

Rail routes towards Russia are currently the cheapest compared to alternative routes, as shown by studies conducted by the World Bank.

Table 2. Rail routes and prices

Corridor	Railway		
	Km	Days	US\$
Northern Russia (Almaty-Moscow)	4,050	17	1,100
Western Caucasus (Almaty-Baku)	3,934	18	1,800
Iran (Almaty-Teheran)	3,250	16	1,200
Eastern China (Almaty-Urumqi)	1,338	8	1,016

Source: H. Kerali, *Transport and Trade Linkages, Central Asia and Eastern Europe*, World Bank, Washington DC, 2001.

Some corridors towards Iran, China and the Caucasus are not yet in a position to compete price-wise with the Russian corridor (see Table 2). The Russian rail network is the main export and supply route for countries in Central Asia, even though some neighbouring countries have opened corridors towards the oceanic periphery of Asia² and some international infrastructure investment projects have been financed by ESCAP, TRACECA and the Asian Development Bank, aimed at diversifying access routes to Central Asia, especially on an east-west axis without running through Russian territory. However, these projects have not yet been sufficiently developed. They are currently less competitive than the Russian routes due to the slow pace of their construction, caused by a shortage of funds and by technical factors. The railway gauge via cross-border connections is variable, which prevents a continuous traffic of trains. Continuous train traffic is currently only possible towards the Russian Federation.

We will now analyse the direction of trade. Table 3 shows the main trade partners of Central Asian countries.

Table 3. Imports by country, 2007

Kyrgyzstan	Kazakhstan	Tajikistan	Uzbekistan	Turkmenistan
China 64.4%	Russia 34.5%	China 22.4%	Russia 25.8%	UAE 14.8%
Russia 15.5%	China 22.5%	Russia 20.6%	China 14.3%	Turkey 10.6%
Kazakhstan 4.5%	Germany 8.1%	Kazakhstan 9.2%	South Korea 13.7%	China 9.5%
		Uzbekistan 8.7%	Germany 6.7%	Ukraine 9%
		Azerbaijan 6.8%	Kazakhstan 6.6%	Russia 8.4%
		Turkey 5.1%	Ukraine 4.3%	Iran 7.2%
			Turkey 4.2%	Germany 6.8%
				US 5.8%

Source: *CIA Factbook 2008*.

The main markets supplying Central Asian countries, except Turkmenistan, are Russia and China: together they account for 79.9% of Kyrgyzstan's imports, 57% of Kazakhstan's imports, 43% of Tajikistan's imports and 30.1% of Uzbekistan's imports. Russia is the main commercial partner of Kazakhstan and Uzbekistan, while China is also a partner for

² The Iranian rail network was connected to the central Asian network in 1996 via the city of Saragt (Turkmen-Iranian border) linking Central Asia with the Persian Gulf (*Islamic Republic of Iran Railways*, <http://www.letsgoiran.com/iran-transportation/railways>). In parallel, the city of Aktogay (Kazakhstan) connected to the Chinese rail network towards the Pacific (*International Railroad Discussion. Kazakhstan Railways*, *Penn Engineer*, <http://www.trainorders.com/discussion/read.php?6,1707920>).

both Kyrgyzstan and Tajikistan. Russia and China compete fiercely for trade in Central Asia.

China and Russia have positioned themselves as the main suppliers of Central Asian countries (except in the case of Turkmenistan); Germany, Turkey and South Korea also play a role, although secondary. Turkmenistan is the only Central Asian country whose main suppliers are neither Russia nor China. It has a highly diversified supplier portfolio, headed by the United Arab Emirates (14.8%) and Turkey (10.6%).

Table 4. Exports by country, 2007

Kyrgyzstan	Kazakhstan	Tajikistan	Uzbekistan	Turkmenistan
Switzerland 26.1%	Germany 12.4%	Netherlands 40.7%	Russia 23.7%	Ukraine 47.7%
Kazakhstan 20.4%	Russia 11.6%	Turkey 31.7%	Poland 11.6%	Iran 16.4%
Russia 19.3%	China 10.9%	Iran 5.4%	China 10.4%	Azerbaijan 5.3%
Afghanistan 9.4%	Italy 10.5%	Uzbekistan 4.8%	Turkey 7.6%	
China 4.8%	France 7.6%	Russia 4.7%	Kazakhstan 5.9%	
	Rumania 4.9%		Ukraine 4.7%	
			Bangladesh 4.3%	

Source: *CIA Factbook 2008*.

As Table 4 shows, the most salient characteristic is that European countries are the main destination for Central Asian exports. Switzerland is Kyrgyzstan's main trade partner, Germany that of Kazakhstan, the Netherlands that of Tajikistan and Ukraine that of Turkmenistan; while Poland also ranks a notable second as a destination for Uzbekistan's exports. Europe is a priority area for Central Asian exports, while Russia and China occupy a secondary position.

Consequently, we may conclude that trade in Central Asia is conducted mainly with China, Russia and Europe. China and Russia are basically supplier markets for Central Asia and Europe is an export market for Central Asian products (Turkey and Iran are smaller markets). The value of goods exported to Central Asia by EU countries totalled €7.5 billion in 2007, while the value of goods imported from Central Asia totalled €15.4 billion. Most of the income from sales of central Asian products in Europe (hydrocarbons, minerals and cotton) is invested in purchasing Chinese products (consumer goods, machinery, textiles, processed foods, shoes, electronic products, pharmaceuticals, automobiles, etc) or Russian products (hydrocarbons, ferrous and non-ferrous metals, machinery and equipment, chemical products and processed foods). At present, Russia and China have a trade surplus with Central Asia, whereas the EU has a trade deficit. The US, India and Pakistan have scant trade relations in the region.

As a final conclusion, it is safe to assert that the Russian corridors are the main export channels for Central Asian countries, not only because they are more competitive, but also because their exports are largely destined for Europe, and the proposed alternative routes are slower and more costly than the Russian route, for obvious reasons. The Iran-Turkey route to Central and Western Europe, which is where Central Asian export markets are

located, is much longer than the Russian route and must cross many more countries than the Caspian route (Caspian Sea/Azerbaijan-Georgian corridor/Black Sea), requiring goods to be loaded and unloaded no less than eight times, making it extremely costly and slow.

Russia therefore appears to be the indispensable link between Central Asia and Europe, unless alternative corridors are created.

(4) Oil

In the 1990s the media declared Central Asia a new El Dorado for crude oil. The estimates for reserves in the region varied widely, depending on the source publishing them. According to estimates by some major corporations established in the region, such as ENI, the region contained only 7.8 billion barrels; Unocal, meanwhile, estimated some 60 billion barrels, and Lukoil put the figure at 200 billion barrels. This range of different figures stemmed from fierce competition between the major oil companies which were probably increasing or diminishing the real amount of reserves depending on their own corporate interests. Some publications called the region a second Persian Gulf, although today the figures evidence a very different reality.

Table 5. Reserves, consumption, production and exports of oil in Central Asia

Country	Proved reserves (2008) bbl Mn	Consumption/year (2008) bbl Mn/day	Production (2007) bbl '000/day	Net exports (2007) bbl '000/day
Kazakhstan	39,900	229	1,554	1,325
Turkmenistan	600	123	205	82
Uzbekistan	600	111	113	2

Source: *BP Statistical Review of World Energy 2009*.

Proved crude oil reserves total around 40 billion barrels, a very far cry from the reserves in other regions. Based on the regional classification of the *BP Statistical Review of World Energy 2009*, the region ranks sixth in the world, with figures comparable to those of Asia-Pacific and well below other regions (see Table 6).

Table 6. Ranking of global crude oil reserves by region

	bbl Mn	Percentage
Middle East	754,000	59.9
Africa	125,200	10
South and Central America	123,200	9.8
Eurasia (excluding Central Asia)	101,000	7.6
North America	70,900	5.6
Asia-Pacific	42,000	3.4
Central Asia	40,000	3.2

Source: *BP Statistical Review of World Energy 2009*.

Central Asian reserves rank sixth, and are comparable to reserves in the Asia-Pacific region. In export terms, the region markets 1,407,000 barrels (BP 2009) and Kazakhstan is

the leading exporter with 1,325,000 barrels, Turkmenistan second with 82,000 barrels and Uzbekistan third, with just 2,000 barrels. Compared with the world's major crude oil exporters, Kazakhstan ranks 14th, on a par with Mexico, and Turkmenistan 35th, on a par with Cameroon.

Based on the *BP Statistical Review*, Central Asian reserves currently account for 3.2% of total worldwide reserves and 1.2% of current global production. Overall, crude oil reserves and production in Central Asia are not very significant, and do not therefore play a pivotal role in international energy markets. However, crude oil reserves do have a significant geo-strategic value:

- (1) Because of their location close to large centres of consumption such as Europe, China and India.
- (2) Because of their vicinity with Russia and Iran, countries that contain vast reserves and are leading exporters of hydrocarbons and seeking to underpin their regional and international position in Central Asia and keep competing powers out of the region.
- (3) Because of the possibility for companies to position themselves in a region where there are supposed to be large undiscovered reserves.
- (4) As a supplementary source of crude oil in addition to other traditional areas, such as the Persian Gulf, which would help diversify supply sources (energy security) in consumer countries.

As Table 6 shows, the only country in the region with the real capacity to become a major crude oil exporter in the short term is Kazakhstan, and it is here that the multinational oil giants have set their sights. The distribution of its reserves among foreign companies is as follows:

Table 7. Distribution of reserves among foreign companies in Kazakhstan

Nationality of the company	Reserves (%)
US	45.7
Russian	22.4
Italian	9.8
British	9.8
Chinese	6.7
South Korean	1.3
Malaysian, Hungarian, Canadian, Omani	0.03

Source: the author based on data from the EIA, *Kazakhstan: Major Oil and Natural Gas Projects*, www.eia.doe.gov/emeu/cabs/kazaproj.html.

Overall, Euro-American companies control 65% of Kazakh oil reserves, with US companies leading the field (45.7%, 10.4 billion barrels). Russian companies come second with 22% (5.1 billion barrels) followed by China's CNPC, which controls 5.5% (1.29 billion barrels). The presence of Western countries in the breakdown of oil reserves is overwhelmingly larger than that of Russia and China. The latter may raise its stakes if it manages to reach an agreement on the distribution of oil reserves at the Darkhan Field,

which has some 11 billion barrels of proved crude oil reserves and where Spain's Repsol also wants to gain a foothold.

The Transportation of Crude Oil in Central Asia

The table below shows the various oil pipelines that cross Central Asia:

Table 8. Working export lines (oil pipelines)

Pipeline	Route	Capacity (bbl/day)	Length (km)	Operator	Comments
Atyrau-Samara Pipeline	Atyrau (Kazakhstan) to Samara (Russia)	310,000	695	Transneft	This pipeline connects to the Druzba line
Caspian Pipeline Consortium (CPC) Pipeline	Tengiz (Kazakhstan) to Novorossiysk Sea-Russia)	Field to 565,000 (Black)	1,593	Transneft	Planned capacity increase to 1 million bbl/day (2015)
Kenkyak-Orsk	Aktyubinsk (Kazakhstan) to Orsk (Russia)	130,000		Transneft	Transports crude oil from the Aktyubinsk Fields (Kazakhstan) to the Orsk refinery (Russia)
Russia-Kazakhstan-China Pipeline	Omsk (Russia)-Pavlodar (Russia)-Atasu (Kazakhstan) Alashankou (China)	200,000	2,896	Transneft, CNODC, KazTrans Oil	The oil pipeline initially only linked Kazakhstan and China, but Russia later joined the project

Source: EIA.

According to Table 8, 76.5% of Central Asian crude oil transported via oil pipeline goes through Russia; the remaining 23.45% is distributed between Kazakh-Iranian oil swaps, which account for 160,000 bbl/day and the Kazakh-Chinese line, with 200,000 bbl/day. It is via Russian territory that most Central Asian crude oil is transported to consumer markets, which are Europe, the Persian Gulf and China. The map below shows how most of the oil pipelines in the region cross Russian territory.

The Central Asia Observatory (OAC) was established in 2007 by three Spanish institutions involved in the area: Casa Asia, CIDOB and the Elcano Royal Institute.

Map 2. Oil pipelines: current and future routes



Source: EIA.

We will now look at the prospects of this situation changing in accordance with future projects to build new oil pipelines in Central Asia.

Table 9. New pipeline projects

Pipeline	Route	Capacity (bbl/day)	Length (km)	Cost (US\$ Mn)	Comments
Central Asia Pipeline	Kazakhstan via Turkmenistan and Afghanistan to Gwadar (Pakistan)	1 million bbl/day	4,000	2,500	A Memorandum of Understanding has been signed by all the stakeholders but there is no construction start date yet
Kazakhstan-Turkmenistan-Iran Pipeline	Kazakhstan via Turkmenistan to Kharg Island (Iran) in the Persian Gulf	1 million bbl/day	1,496	1,200	Feasibility study conducted by Total Fina Elf
Trans-Caspian	Aktau (west Kazakhstan, on the Caspian coast) to Baku, connected to the BTC	500,000 bbl/day	700	2,000 (4,000 if connected to Ceyhan)	Feasibility study conducted by Royal/Dutch Shell, Chevron Texaco, Exxon Mobil and Kazakhstan
Caspian Pipeline Consortium (CPC) Pipeline	Kazakhstan to Novorossiysk, Russian Federation	Extension from 500,000 to 1,000,000	940	1,500	

Sources: <http://www.zoomchina.com.cn/new/content/view/19541/81/>, <http://www.neurope.eu/articles/82173.php>; and EIA, 'Omsk-Pavlodar-Atasu-Alashankou Oil Starts Flowing', January 2008.

The projects facing most obstacles in the short term are the Iranian, Trans-Caspian and Afghan lines. The Iranian line is the cheapest and safest for exporting Central Asian crude oil, but it is blocked by US sanctions; the Trans-Caspian project, which consists of building a pipeline under the Caspian Sea, is opposed by Russia on the basis of environmental considerations; and the Afghan line towards the Indian Ocean has been halted by the conflict in Afghanistan.

The only project that looks viable in the short term is the CPC extension. Accordingly, in the short term Russia will further strengthen its position as an export route for Central Asian crude oil.

Euro-American oil companies have obtained control of most reserves in the superfields of Kazakhstan (Tengiz, Karachaganak and Kashagan), well ahead of Chinese and Russian companies. However, Russia is trying to close the gap by monopolising the transportation of Kazakh crude oil. It will achieve this aim if the proposed routes under the Caspian Sea or via Iran do not progress and if China does not implement its projects in the region, if no new alternatives are sought and if the planned projects are not carried out.

(5) Gas

The distribution of reserves, production and exports among Central Asian countries is as follows:

Table 10. Distribution of production and exports of gas reserves

	Reserves in 2007 (tcm)	Production (2007) (bcm)	Consumption in 2007 (bcm)	Available for export (bcm)
Kazakhstan	1.90	27.3	19.8	7.5
Turkmenistan	2.67	67.4	21.9	45.5
Uzbekistan	1.74	58.5	45.6	12.9
Total	6.31	153.2	87.3	65.9

Source: BP.

Reserves

Regional gas reserves, according to BP's figures, total 6.31 tcm, a figure that has increased in the last year due to new discoveries, mainly in Turkmenistan and Kazakhstan. The Turkmen field of South Yolotan has estimated reserves of 4-14 tcm and it is considered one of the richest four or five oil fields in the world, placing Turkmenistan among the top five in terms of reserves worldwide, while in Kazakhstan reserves are also increasing, but at a much more modest pace (1.9-2.83 tcm). Overall, newly-discovered gas reserves in the region total 11.21-21.21 tcm. Central Asia, compared with other regions (excluding the Russian Federation's reserves, which total 44.65 tcm, since it cannot be defined as a region), is the second largest reserve in the world, behind the Persian Gulf (73.21 tcm) and ahead of North America (7.9 tcm). Furthermore, most publications assert that the chances

of finding more reserves in the region are good, since much of it remains unexplored. Based on discovered reserves and their relative proximity to major consumption markets (Europe, China and India), Central Asian gas has become a considerable focus of attention for multinationals vying for a position in this lucrative business, and those major powers that, via their companies, aim to maximise their influence in gas transportation.

Let us look at how the reserves of Turkmenistan, which has the largest and is the biggest regional exporter, are currently broken down.

Table 11. Current distribution of Turkmenistan gas reserves

Companies	Concessions	Reserves (bcm)
Petronas (Malaysia)	Block 1, Diyarbekir	150
Dragon Oil (UAE, UK)	Cheleken, Jeitun, Dugalybek	90
Rosneft, Itera, Zarabzhneft (Russia)	Exploration block in the Caspian	N/A
CNPC (China) Bagtiyarlyk	South Yolatan	1,700
Canadian Buried Hill	Caspian Block 3	N/A
Wintershall, Maersk, ONGC-MITAL	Caspian Block 11-12	N/A
Austrian Mitro-Turkmenneft	Khazar Concession	N/A
Burren Energy	Nebigdag Concession	N/A
RWE	Caspian Block 23	N/A

Source: Marco Giuli, 'Nabucco Pipeline and the Turkmenistan Conundrum', *Caucasian Review of International Affairs*, vol. 2, No. 3, summer of 2008, http://cria-online.org/4_2.html; 'Turkmenistan: Energy Security and Energy Diplomacy – Part Four', May 2009, <http://www.newscentralasia.net/Articles-and-Reports/432.html>.

As Table 11 shows, most Turkmen gas reserves held by foreign companies belong to the Chinese state-owned oil and gas giant CNPC, which has a large stake in the South Yolotan field (1.7 tcm) in order to ensure supplies to the Turkmen-Chinese pipeline which is currently under construction and which will transport 30 bcm per annum.

The rest of reserves, very scant compared with China's share, belong to Petronas (Malaysia) and Dragon Oil (UAE and UK). Turkmen exploration fields without defined quantities are quite evenly distributed between American, European, Asian and Russian companies, with no multinational enjoying a hegemonic position in this connection.

Kazakh Gas Reserves

The main Kazakh gas reserves are in the superfields of Karachaganak, Tengiz and Kashagan. Gas reserves at Karachaganak (1.35 tcm) are distributed among concessionaires as follows:

Table 12. Breakdown of gas reserves in the Karachaganak field

Companies	Percentage
BG Group	32.5
ENI	32.5
Chevron	20
Lukoil	15

Source: Campaner and Yenikayeff (2008) and EIA.

Gas reserves at Tengiz (0.3 tcm) are distributed among concession-holders as follows:

Table 13. Breakdown of gas reserves in the Tengiz field

Companies	Percentage
ENI	16.67
Exxon-Mobil	16.67
Shell	16.67
BG	16.67
Total	16.67
Inpex	8.33
Conoco	8.33

Source: *APS Review Gas Market Trends*, 31/VIII/2006.

Gas reserves at Kashagan (0.48 tcm) are distributed among concession-holders as follows:

Table 14. Breakdown of gas reserves in the Kashagan field

Companies	Percentage
ENI	18.52
Exxon-Mobil	18.52
Shell	18.52
Total	18.52
ConocoPhillips	9.26
Inpex	8.33
Kazmuneigas	8.33

Source: http://kazakhembus.com/index.php?mact=News,cntnt01,print,0&cntnt_01articleid=122&c, 29/VIII/2007.

As the above tables show, Euro-American companies have gained control of gas reserves in the main Kazakh fields (Karachaganak and Tengiz), which account for 70% of the country's production, and also at Kashagan, where gas exports are expected to begin in 2010.

Russia has only a marginal position in Kazakh concessions, with a 15% stake in the Karachaganak fields and no stake in Tengiz or Kashagan, while China is not present in the gas business in Kazakhstan.

Uzbek Gas Reserves

Reserves and exploration blocks in Uzbekistan are distributed between the following gas companies:

Table 15. Breakdown of gas reserves and concessions in Uzbekistan

Companies	Concessions	Reserves (bcm)
Lukoil, Gazprom, UNG, CNPC	South Korea's KNOC Central Ustyurt Plateau	400
Soyuzneftegaz-Lukoil (Russia)	Ustyurt, Southwest Gissar	N/A
Gazpron (Russia)	7-Block	1,000
Daewo International (Korea)	North Western Uzbekistan	-
CNPC (China) Bagtiyarlyk	Namangan Province	N/A
Korea Gas (Korea)	Surgil field (Ustyurt region)	N/A

Source: *APS Review Gas Market Trends*, 6/X/2008 and 13/X/2008.

Most reserves sold by Uzbekistan have been acquired by Russian companies and all of its operating fields have been awarded to cartels comprising Russian, Chinese and Korean companies.

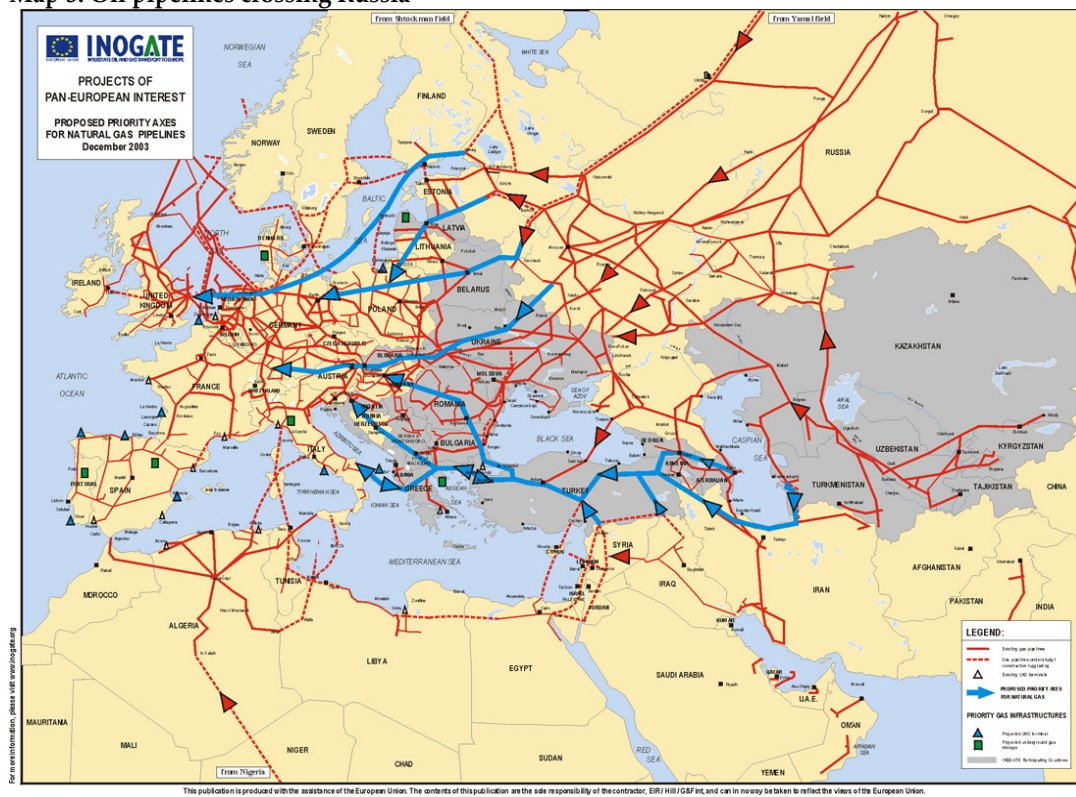
The war for gas reserves in Central Asia is not over, indeed, it has only just begun, since there are many more blocks in operation and the battle looks set to focus on the distribution of reserves at the South Yolotan superfield, where China already leads the way with 1.7 tcm. However, it is worth recalling that this field has between 4 and 14 tcm and there are some projects, like Nabucco, that could pay their way by linking up to this field.

Eurasian Gas Pipelines

There follows an analysis of the routes of Eurasian gas towards the markets where it is consumed and the new projects to be undertaken in this sector.

The gas network in Central Asia uses the Russian pipelines as its main export route, as shown by the map below.

Map 3. Oil pipelines crossing Russia



Source: EIA.

Approximately 99% of Central Asian gas is exported through Russia for marketing, and only 8 bcm, ie, less than 1% of Central Asian gas, uses the alternative route, via Iran. The routes are as follows:

Table 16. Central Asian gas routes

Pipeline	Route	Capacity (bcm/year)	Length (km)	Comments
Central Asian gas pipeline networks	Commences in Turkmenistan and runs through Uzbekistan and Kazakhstan to Russia	60	4,900	Includes two branches: Bujara-Urals and towards the Brotherhood gas pipeline
Korpezhe-Kurt-Kui	Korpezhe (Turkmenistan) to Kurt-Kui (Iran)	8	199	

Source: EIA.

The Central Asian gas pipeline system is not currently working at full capacity, since it is in a precarious state of conservation. The plans of Russia and the Central Asian countries are to expand it and increase its capacity to 100 bcm, in order to channel out the new reserves which are to be exploited in the region.

The Iranian route has very low capacity and will not rival the Russian route. Russia is currently almost the only way to export gas from Central Asia, although this could change in the next few years based on upcoming projects in the region (see Table 17).

Table 17. Projects under construction

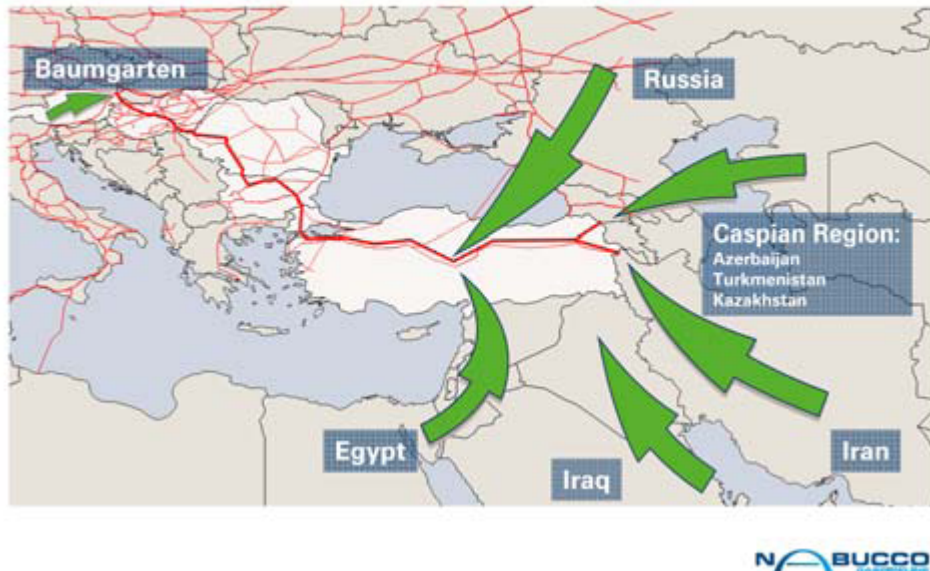
Pipeline	Route	Length (km)	Capacity (bcm/year)	Cost (US\$ Mn)	Comments
Turkmenistan -China Gas Pipeline	Turkmenistan to Xinjiang (China). Could be extended to Japan	6,696 km	30	10,000 (to China)	Under construction (August 2007)
Central Asia Gas (CentGas)	Daulatabad (Turkmenistan) via Herat (Afghanistan) to Multan (Pakistan). Could be extended to India	1,400 km to Multan	27	2,000 (to Pakistan) and another 500 km (to India)	Memorandum of Understanding signed by Turkmenistan, Pakistan, Afghanistan and Uzbekistan. The Presidents of Pakistan, Afghanistan and Turkmenistan met in May 2002 to discuss resuming this pipeline project
Central Asia Center Pipeline	Turkmenistan and Uzbekistan via Kazakhstan to Saratov (Russia), connecting the Russian natural gas pipeline network	Existing route Extension	60	N/A	
Trans-Caspian Gas Pipeline (TCGP)	Turkmenbashi (Turkmenistan) via Baku and Tbilisi to Erzurum, linking up with the Turkish natural gas pipeline network	1,641 km	30	2,000-3,000	Talks are underway

Source: EIA.

Of these projects, two face obvious difficulties in the medium term: the Trans-Caspian route (30 bcm/year), which runs under the Caspian Sea floor, because of Russian opposition based on environmental issues, and the CentGas route (27 bcm/year), which crosses Afghanistan towards India and which is a very difficult prospect because of the conflict in Afghanistan. Of the two remaining projects with more chances of coming to fruition, one runs through Russia (Central Asia Center, 20 bcm) and the other towards China (Turkmenistan-China, 30 bcm). In short, even with the Chinese route, the Russian Federation will still be the main export route for Central Asian gas. Another possibility is to link up the Central Asian oil pipeline network with the Nabucco project (Map 4).

Map 4. The Nabucco project

**Nabucco Gas Pipeline Project
Gas Supply Sources**



Source: EIA.

The Nabucco gas pipeline would be 3,300 km long and would transport between 25 bcm and 30 bcm of gas supplied by Egypt, Iraq, Iran, Central Asia and Russia, which would converge in Turkey and from there be transported to Central Europe. However, the connection of Central Asian gas pipelines to Nabucco is not without problems, since the connection would have to go through Iran or under the Caspian Sea. Both alternatives pose difficulties, for the reasons we have overviewed for other routes. The Iranian route does not appear to have US backing for now, and the undersea route is blocked by Russia.

There is no doubt that in the next few decades for the EU Central Asian gas may become a real alternative to Russian gas, thereby reducing Europe's dependence on Russia, but for this to happen a number of issues must first be resolved:

- (1) The political and strategic issues concerning some routes, such as the Iranian or Trans-Caspian route.
- (2) The need to secure sufficient supply contracts or reserves with Central Asian countries to feed gas pipelines that are built, which is no easy task in view of the fierce competition between European and US companies and the Russian, Chinese and Korean cartels, especially in countries like Turkmenistan and Uzbekistan, where the presence of Euro-American multinationals is minimal.

In short, gas from Central Asia in the next decade will strengthen its position in the Asian and European energy markets for various reasons:

- (1) Growing demand for gas in Asian countries that do not belong to the OECD will increase from 260 bcm in 2006 to 670 bcm in 2030.
- (2) Kazakhstan and Turkmenistan, depending on their reserves, could become a supply market for Asia to supplement the traditional Russian market, but not replacing it in view of the size of Russian operations and reserves.
- (3) In this regard, China has already started building a gas pipeline (30 bcm/year) to link up to its gas network.
- (4) The EU's need to diversify its energy supply sources to avoid dependence on Russian gas has positioned the Caspian region as a priority area for future supply. In 2004, the Baku Process was launched to achieve the progressive integration of energy and transport markets between the Caspian and the EU. Against this backdrop, the EU plans to make the Caspian countries suppliers via Nabucco.
- (5) Most experts and specialist bodies agree that production in the main Russian extraction fields has begun to fall, by between 6% and 7% per year, and this appears to be irreversible. The solution to the supply peak, according to the Russian energy strategy, is to exploit new reserves located in areas where the territory and weather conditions are adverse, such as the Russian Arctic tundra (Yamal Peninsula) and its off-shore fields around Sakhalin Island. However, until these new projects are on stream, Russian production will not be able to meet all demand for gas in Asia and Europe.
- (6) Central Asian gas could tap this possibility of stagnation in Russian gas supply. Turkmenistan could bring its large reserves on stream, which are more easily accessible than Russia's, and thereby acquire a bigger share in the Eurasian market.

(6) Uranium

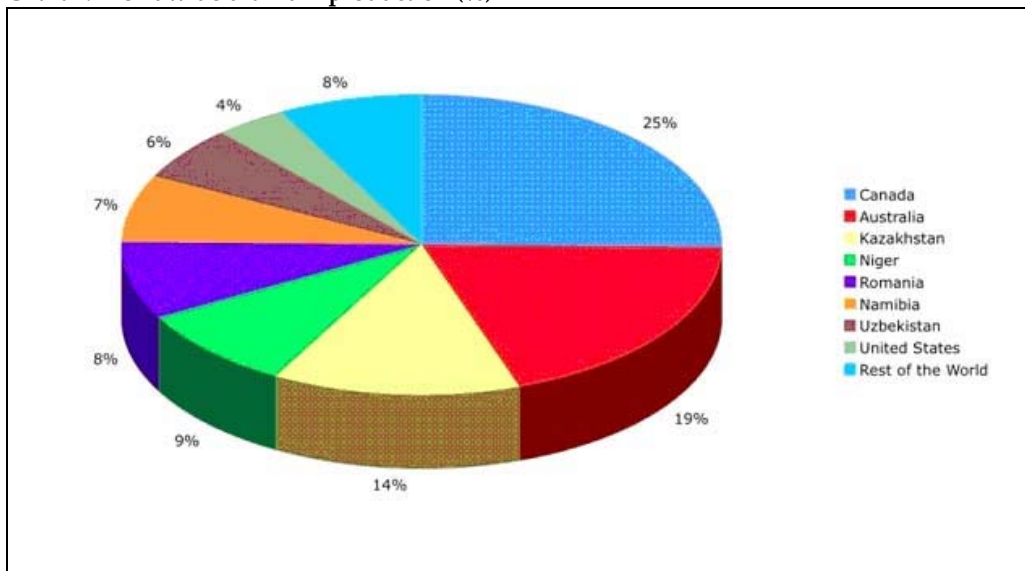
Uranium is a strategically important metal since it is an irreplaceable fuel in the nuclear-powered electricity generation. At present, nuclear-powered electricity consumption accounts for 30% of the total in Europe and Japan and 20% in the US. The instability of oil prices and the need to limit greenhouse gas emissions have led countries worldwide to consider the possibility of building new nuclear plants. According to the Nuclear Energy Agency, the global capacity to produce nuclear-powered electricity will increase from the current 372 gigawatts (2007) to somewhere between 509 and 663 gigawatts in 2030, an increase of between 38% and 80%. At the same time, uranium mining capacity will also have to increase by between 9,400 and 122,000 tonnes per year.

There is a growing market for uranium, not only in the near future but also in the present, since in 2006 just 62% of demand for uranium was met by the producers of this metal, and the rest came from recycling using disused nuclear weaponry.

If the estimates are correct, the uranium market in the next few years will clearly grow, and electric power generation using uranium as the base mineral will become even more

strategically important. Kazakhstan and Uzbekistan are major producers of uranium: together they produce 20% of the world's uranium ore (see Chart 1).

Chart 1. Worldwide uranium production (%)



Source: British Biological Survey, http://www.bgs.ac.uk/mineralsuk/free_downloads/home.html#WMP.

Kazakhstan is the world's second-largest producer, accounting for 14% of the total, and Uzbekistan is the eighth, with 6%. According to Table 18, Kazakhstan holds the world's second-largest uranium reserves and Uzbekistan ranks 12th.

Table 18. Proved uranium reserves by country, 2008

Ranking	Country	Amount (tonnes per year)	Global percentage (%)
1	Australia	1,243,000	23
2	Kazakhstan	817,000	15
3	Russia	546,000	10
4	South Africa	435,000	8
5	Canada	423,000	8
6	US	342,000	6
7	Brazil	278,000	5
8	Namibia	275,000	5
9	Niger	274,000	5
10	Ukraine	200,000	4
11	Jordan	112,000	2
12	Uzbekistan	111,000	2
13	India	73,000	1
14	China	68,000	1
15	Mongolia	62,000	1

Source: Energy Portal.

Kazakhstan and Uzbekistan play an important role in this sector and this is likely to be increasingly true, especially in the case of Kazakhstan. The Kazakh government plans to almost double its production in the short term, from the current 8,500 tonnes to 15,400 tonnes in 2010, thereby becoming the world's leading uranium exporter. Consequently, Kazakhstan has become the country with most projects and new mine openings, pushing ahead of countries like Russia, Australia, Canada and South Africa, which also have sizeable uranium reserves (see Table 19).

Table 19. New uranium mining projects

New mines	Company's country of origin	Companies	Estimated production (tonnes per year)
Eastern Mynkuduk	Kazakhstan	KazAtomProm	1,001
Southern Moinkum	Kazakhstan	KazAtomProm	500
Langer Heinrich	Namibia	Paladin	1,001
Dominion	South Africa	Uranium	1,526
Zarechnoye	Kazakhstan	KazAtomProm	500
Central Mykuduk	Kazakhstan	KazAtomProm	2,035
South Inkai	Kazakhstan	KazAtomProm	2,035
Irkol	Kazakhstan	KazAtomProm	746
Kharasan	Kazakhstan	KazAtomProm	2,035
Inkai	Kazakhstan	Cameco/KazAtomProm	2,035
Kayelekera	Malawi	Paladin	848
Western Mynkuduk	Kazakhstan	KazAtomProm	1,001
Budenovskoe	Kazakhstan	KazAtomProm	1,001
Cigar Lake	Canada	Cameco	6,784
Midwest	Canada	Cameco	2,205
Total			25,252

Source: Goldman Sachs, *Commodities Analysis*, 13/III/2007.

This increase in Kazakhstan's production capacity is due mainly to capital investment and technological assistance by companies from other countries in the state-owned KazAtomProm, in charge of exploration, mining, management and export of uranium and by-products. Its main partners are listed in Table 20.

Table 20. Foreign investment in uranium mines in Kazakhstan

Company Project or mine	Foreign investor and percentage	Investment value (US\$ Mn)
Inkai JV (Inkai Mines)	Cameco 60% (Canada)	N/A
Betpak Dala JV (South Inkai, Akdala Mines)	Uranium One 70% (Canada)	350 (in 2005)
Appak JV (W.Mynkuduk)	Sumitomo 25%, Kansai 10% (Japan)	100 (in 2006)
JSC Akbastau & Karatau (Budenovskoye deposit)	ARMZ 50% (Russia) (agreement to sell part of Karatau to Uranium One)	N/A
Zhalpak	CNNC 49% (China)	N/A
Katco JV (Moinkium, Tortkuduk Mines)	Areva 51% (France)	110 (in 2004)
Kyzlkum JV (Kharasan 1 Mine)	Uranium One 30%, Japan 40% (Marubeni, Tepco, Toshiba, Chubu, Tohoku, Kyushu)	75 (in 2005) and 430 (in 2007)
Kyzlkum JV (Kharasan 2 Mine)	Japan 40% (Marubeni, Tepco, Toshiba, Chubu, Tohoku, Kyushu)	430 (in 2007) (both mines)
Semizbai-U JV (Irkol, Semizbai Mine)	CGNPC 49% (China)	N/A
Zarechnoye JV (Zarechnoye & S. Zarechnoye Mines)	ARMZ 49% (Russia)	60

Source: Goldman Sachs, *Commodities Analysis*, 13/III/2007.

Companies from Canada, Russia, China, Japan and France are most involved in the Kazakh uranium business.

Uzbekistan, albeit with much less output and with smaller reserves, also plans to increase its production by 50% in around 2012. With this purpose, the State Committee of the Republic of Uzbekistan on Geology and Mineral Resources announced that the state-owned company in charge of exploiting uranium mines, the so-called Navoi Mining and Metallurgy Combine, planned to open seven new mines in around 2010, for which purpose it required new partners. At the same time, the Committee on Geology and Mineral Resources has signed a series of Memoranda of Cooperation with Japanese companies (Mitsui & Co. and Sojitz), French firms (Areva), and North American (Uranium Ltd) and Korean companies (Korea Resources Corporation General) to prospect for new mines, and it has also signed a uranium supply agreement with South Korea.

Kazakhstan and Uzbekistan are trying to diversify their investor and partner portfolio in order to commence a technological renewal and launch a process to find new mines to boost their operating performance and lead this market, thereby ending their traditional technological dependence on Russia. The major powers, including China and India, are vying for involvement in this increasingly strategic and restricted market (80% of the world's uranium reserves are controlled by just eight companies: Cameco, Río Tinto, Areva, KazAtomProm, TVEL, BHP Billiton, Navoi and Uranium One). Against this backdrop, exploitation of new mines in Kazakhstan has become pivotal, especially for China and India, which have significant nuclear projects. China has 11 nuclear reactors in operation, is building another 16 and plans another 25. India has 17 nuclear reactors in operation, is building another 6 and plans another 23. Neither country has sufficient

uranium reserves and to meet their own demand they have both signed major agreements with Kazakhstan. KazAtomProm unveiled the Irkol, Semizbay and Zhalpak deposits in compliance with strategic agreements signed with the state-owned enterprises China National Nuclear Corporation (CNNC) and China Guangdong Nuclear Power Corporation (CGNPC) in 2008; India and Kazakhstan have signed a Memorandum of Understanding that envisages cooperation in 'the joint extraction of natural uranium in Kazakhstan', as well as the delivery of fuel for India's plants.

(7) Conclusions

The analysis and comparison of the various sectors we have looked at herein enables us to reach a series of conclusions.

- (1) As regards regional matters (water and logistics), Russian pre-eminence is unquestionable. Russia is involved in a leading capacity in all major hydroelectric power projects in the region, ahead of China and Iran. This is true to such an extent that water has become a bargaining tool for Russia in its efforts to obtain Uzbek and Turkmen gas. The question is why other countries or players, such as the EU and US, have not played a more influential part in such a transcendental matter.
- (2) The main trade routes in Central Asia all cross the Russian Federation, meaning that a logistical block by Russia on Central Asian countries would be catastrophic for their economies. The solution is to open new corridors in the region via Iran, Afghanistan and Pakistan, but for political or security reasons this is not possible, at least not for now. China is the only player which, in the short term, could act as a counterweight to Central Asia's dependence on Russian transportation networks. Russia and China both have trade surpluses with Central Asia. They are the two leading suppliers to Central Asia, while European countries are its main customers. Turkey and Iran, despite being so close to the region, play only a secondary role. The US, India and Pakistan currently hold weak positions in trade relations in the region.
- (3) As regards the involvement of foreign oil companies in crude oil reserves in Central Asia, North American companies rank top in Kazakhstan, with almost half of reserves, followed by companies from Russia, Italy, the UK and China. The distribution of ownership of gas reserves is somewhat more complex: Most Kazakh reserves belong to Euro-American companies and Turkmen reserves to Russian or Chinese companies. However, Russia's advantage is that oil or gas extracted from the region is almost all transported through its territory. Only China can currently threaten Russia's hegemony in the region, by building the China-Turkmenistan pipeline. The EU could play an important role if the entire Nabucco project goes ahead. Logistical issues, based on the location and orography of the region, are central. If energy transportation corridors are not built as alternatives to the Russian or Chinese routes, the EU and US will not find it easy to play a major role in the region.

- (4) As for uranium mining, Russia's role in Central Asia is smaller than in other sectors. The concession of licences to mine uranium is highly fragmented among US, European, Chinese, Japanese and Korean companies, and it is not possible to determine which country or company has the greatest influence or presence. What is evident is that, if the projections are fulfilled, and Kazakhstan becomes the leading global uranium producer, and if demand for uranium by the main nuclear powers does increase, Kazakhstan could become the leading guarantor of nuclear energy security. As a result, Kazakhstan could attain considerably more political weighting on the international stage.

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