CHINA'S GAS POLICY IN CENTRAL ASIA

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The development of China's gas industry cannot be reviewed outside the context of the development problems that have arisen throughout its entire energy sphere.

The growth of the Chinese economy in the midterm is largely related to the increase in the share of consumption of efficient energy resources—natural gas, oil, hydro-, and nuclear power, although at present their share in the production structure of energy resources is relatively small. But drawing effective energy resources into circulation is fraught with a fair number of problems.

At the present time, the high rates of growth in the Chinese economy are not sustained by corresponding development in the fuel and energy complex. The PRC is increasingly becoming a net importer of energy resources. Over time, the shortage of energy resources will only rise, and meeting the needs of the national economy for them in full measure will become one of the active factors in the state's foreign policy strategy.

A key facet of China's energy diplomacy is stable and guaranteed provision of the country's needs for highly efficient energy resources, meaning oil and natural gas. Due to the PRC's extensive involvement in the globalization processes, significant attention should be given to such external factors of world energy market movement as a change in the geopolitical situation and the related in-

crease in political risks and instability in hydrocarbon production, increase in world prices for oil and gas, greater state participation in world energy resource trade, and so on.

In addition, several national features of the country's oil and gas sector should be taken into account in China's energy policy, in particular:

— the high level of state participation in the development of oil and gas resources;

— the discovery of new promising oil and gas fields in difficult-to-access mountainous and desert terrains;

— the underdevelopment of the gas transport infrastructure.

And another no less significant factor of Beijing's energy policy is the need to optimize the country's energy consumption. At present, the Chinese leadership has been giving great attention to the problem of excessive energy consumption. The first session of the Chinese National People's Congress of the 11th convocation held recently in March 2008 paid special attention to this.[1]

As early as 2006, in order to economize on energy resources, there were plans to reduce their use per capita GDP by 20% over five years. But in 2006 no energy resource saving was accomplished, while in 2007 only 3.7% was saved instead of the planned 5%.[2] In addition, it is becoming clear that most of the foreign direct investments drawn into the PRC are going into the energy-intensive branches of the economy, which only aggravates the high demand for energy resources.

Due to these negative trends, the Chinese government has been taking several major steps over the past five years. In particular, it closed down a large number of small and inefficient thermal power stations, small coal mines, and outmoded energy-intensive production units in metallurgy, the cement industry, and so on. During the Eleventh Five-Year Plan (2006-2010), as Premier of the PRC State Council Wen Jiabao stated, progress in national sciences and technology is a high-priority and strategic task. China has entered that historical period when scientific-technical progress and innovations are giving an ever-greater boost to socioeconomic development.[3] In order to implement innovative projects in the country, the main provisions of a mid- and long-term government development program for science and technology have been drawn up, where, in addition to everything else, an increase in spending has been envisaged to raise the efficiency of hydrocarbon production from productive seams, improve the technological means for extracting methane from coal seams, and so on.

Recently, due to the increasing oil shortage, China's state power structures have been looking at how to develop the gas industry. At present, the latter is objectively becoming a defining factor in the further growth of the Chinese economy, to the accelerated development of which the country's entire attention is riveted.

But the high capital-intensity of developing the gas industry is making a clear and substantiated strategy indispensable.

The unwavering interest in development of the gas industry is related to the ongoing increase in gas consumption in the electric power industry and to implementing a policy aimed at improving environmental protection and transferring the industry to environmentally more sophisticated technology. Implementing program precepts to raise the standard of living of urban and rural residents is giving an additional boost to the widespread use of blue fuel, which in turn is related to the transfer of population settlements from coal heating to gas heating, and so on.

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[1] See: A.V. Ostrovsky, *Sovremennaia ekonomika KNR: problemy, ugrozy, perspektivy*, EKO, Novosibirsk, August 2008.

[2] Ibidem.

[3] [http://www.lenta.ru/news/2006/03/05/china/]

So in the midterm, it is presumed there will be a rapid increase in the consumption of this raw material. At first glace, the PRC is able to meet the increased demand for natural gas independently, since, according to some data, it has significant supplies of it. According to the estimates of Chinese experts, the country's potential gas resources amount to 46.2 trillion cu m (tcm).[4] According to the reports of the Chinese press, the proven supplies in the country's various gas-producing regions are actively increasing. For example, the Chinese National Petroleum Corporation (CNPC) announced the opening of four gas fields in the province of Sichuan in the southwest of the country. The preliminary estimate of the total supplies of these fields amounts to 160 bcm. More than 100 gas fields in all have been discovered in this province. At present, the province of Sichuan, the shelf of the South China Sea, and Xinjiang are the main gas-producing regions in China. The largest fields are in Tarim (Xinjiang), Ordos plateau (the provinces of Shenxi, Gansu, Ningxia, and Inner Mongolia autonomous region), the province of Sichuan, and in Qaidam (Qinghai).[5]

But here several problems arise. First of all, gas supplies are located unevenly throughout the republic. Most of them (around 80%) are in the western and central parts of the country. Large resources have already been discovered and are being exploited in Xinjiang. Thirty-four percent of the PRC's blue fuel supplies are concentrated in the gas fields of this region.[6] Although the conditions for developing oil and gas in Xinjiang are extremely complicated, which is due firstly to their location in high-altitude deserts where there is a severe climate and no convenient supply lines, and secondly to the great depth of the deposits and complicated structure of underground seams, although these fields are still attractive from the viewpoint of industrial development. The Tarim Basin is Xinjiang's main industrial region. In recent years, several large gas fields were discovered there. The potential blue fuel supplies there are estimated at 8.4 tcm, which comprises one quarter of all the reserves of this raw material in China. The gas fields surveyed in the Tarim Basin promise a yield of 658 bcm.[7]

In the 21st century, Xinjiang has the potential to replace the old exhausted fields and become an important base of oil and natural gas production. As survey work has shown, there are underground layers of sedimentary rock in an area of 950,000 sq. kilometers in Xinjiang that are promising from the viewpoint of oil deposits. Xinjiang is the richest gas-bearing region in the PRC. In recent years, China invested enormous funds in the survey and development of oil and gas fields. A total of more than thirty basins have been discovered in Xinjiang, the surveyed oil supplies of which top 2 billion tons, and the natural gas supplies of which amount to 700 bcm.[8] However, the main gas-producing regions do not geographically coincide with the most industrially developed regions of the country. The delivery of blue fuel to consumers in the central and eastern regions requires the building of capital-intensive gas transportation systems. As a result, keeping in mind the transportation of gas to the main consumption areas on the east coast, the final price of the raw material will be quite high, which objectively restricts the blue fuel consumption sphere to only highly efficient branches—the chemical industry, metallurgy, and the big electric power industry. All the same, in recent years, the demand for gas has been rising in the PRC at double-digit annual rates. It is expected that by 2008, China will pass the critical mark and natural gas consumption in the country will exceed its own production. In recent years, according to Chinese statistics, the gas demand growth rates have been much higher than its production rates. By 2010, as Chinese analysts believe, the demand for gas will reach 100 bcm, but there are differences in the production rate estimates. According to the data presented in the Blue Book *Energetika-2007* (a publication of the PRC Academy of Social

[4] [http://centrasia.org/newsA.php4?st=1150200540].
[5] Ibidem.
[6] [http://www.altaiinter.info/news/?id=16418]
[7] Ibidem.
[8] [http://www.abirus.ru/o/xjnr.htm].

Sciences), the production level is 80 bcm, while the Eleventh Five-Year Plan guidelines indicate that gas production should reach 92 bcm.[9] Thus, the blue fuel deficit could amount to 8-20% in 2010 and will have to be covered by means of import.

According to the forecasts, the prospects for the PRC providing itself with its own gas by 2020 do not look good. Most Chinese scientists believe that the demand for this raw material will reach 200 bcm, while production will not exceed 100 bcm,[10] that is, 100 bcm of gas will have to be imported in 2020, or 50% of the natural gas required. Russian analysts (A. Korzhubaev and others) caution against becoming too elated and forecast the consumption level at only 155 bcm.[11]

The gas industry could develop according to two main scenarios after 2010.

According to the first, optimistic, scenario, it is presumed that the existing supplies of natural gas and trends toward its significant increase in the main gas-bearing basins will permit China to make the development of its own production a priority.

In the official PRC government documents on national security adopted as the leading principles of energy policy, the stakes are placed on the development of the country's own energy resources, as well as on the multi-vector aspect of the channels for obtaining imported resources. Thus, it is presumed that gas production at its own fields, including introducing the new fields in the Tarim, Ordos, and Qaidam basins into operation, plus the growing purchases of liquefied natural gas (LNG), will meet China's main demands until 2010 and beyond.

According to the second, realistic, scenario, after 2010 the resources of old and newly introduced natural gas fields will not be able to cover the growing demand for blue fuel. At this point the need will arise not only to increase the deliveries of LNG to the east and south coast of the PRC, but also the import of gas from the fields in Central Asia and Russia.

There are plans to compensate for the shortage of blue fuel in the coastal provinces of the country's south and east, as well as in the coastal regions of the Bohai Gulf in the north of China, by transporting it from the country's western regions and by using LNG. In order to do this, the PRC has begun to create a system for receiving and re-gasifying liquefied natural gas (LNG) in several provinces of the country's south and southeast—Guangdong, Fujian, Zheijiang, the island of Hainan, and in Shanghai, as well as build gas pipelines for transporting re-gasified raw material in the southern regions.

Over the past 10 years, China has been keeping its eye on the LNG sphere and has now adopted a principal decision to place the stakes on its import from the countries of Southeast Asia, Africa, and the Persian Gulf. Long-term contracts are being entered with LNG-producer countries. One of the largest of these contracts for a total of 35 billion dollars was entered in 2007 with an Australian company, Woodside Energy Ltd. Now the PRC is building terminals at an accelerated pace for receiving LNG methane tankers. It is expected that the consumption of LNG in the PRC will amount to 10-15 bcm by 2010 and to 20 bcm by 2020.[12]

The gas deficit in the northeast and central provinces of China will be covered by the increase in production in its western and central regions with further transportation to the consumers via the main gas pipelines and by deliveries of blue fuel to the western border of the PRC from Central Asia and Russia.

The current differences in the prospective estimates of gas consumption after 2010 are primarily related to the absence of a developed raw material transportation and sale infrastructure, the high cost

[9] [http://www.easternpromise.ru/press.php?doc_id=1336].
[10] Ibidem.
[11] [http://www.ngv.ru/article.aspx?articleID=25052].
[12] [http://www.oil-equip.ru/ngv/4-99/vector/vector.html].

of its construction, and Beijing's unclear final position regarding the expediency of raising coal production—the country's main and cheapest energy resource.

At present, coal predominates in the PRC's energy balance, the percentage of which in recent years (2000-2006) has been holding steady at 67-75%. Coal is an energy resource that China always relies on as a last resort, and the rapid growth of the economy's demand for energy resources was met by an accelerated increase in its production. For quite a long time China has occupied first place in the world in terms of coal production. Keeping in mind its enormous supplies, the coal industry will remain the main branch of China's electric power industry for many decades to come. But there are two limiting factors. First, the PRC coal industry, which comprises around 40% of world production, has reached a certain technological limit. Second, the domination of coal as the main energy resource for the electric power industry in the state's fuel and energy balance is aggravating the environmental problems, which were serious anyway, in most of its regions. As Premier of China's State Council Wen Jiabao admitted at the annual session of the Chinese National People's Congress held in 2006, environmental pollution became one of the main problems of China's socioeconomic development back in 2001-2005, when the environmental requirements of the Tenth Five-Year Plan were not satisfied.[13] And an effective solution to the country's environmental problems has not yet been found. The problem of environmental pollution is becoming increasingly urgent due to the increase in emissions from thermal power stations operating on coal, which demands an improvement in the structure of energy resource use by accelerating the increase in gas consumption. In China's Eleventh Five-Year Plan (2006-2010), a program was adopted for reducing toxic emissions by 10%.[14] The government structures in China's largest metropolitan areas, where environmental problems are particularly acute, are beginning to undertake practical measures to reduce coal consumption.

Until 2005, there were no large gas-transportation systems in China, and blue fuel was pumped from the gas-producing regions by means of regional pipelines that linked the production fields to the nearest consumers.

Now the PRC is undergoing intensive progress in the national gas industry. The development of the latter is envisaged in three state documents: "Development Plan for the Oil and Gas Industry in the Mid and Long Term," "Development Plan for Liquefied Natural Gas in the Mid and Long Term," and "Development Plan for Gas Pipelines in the Mid and Long Term." These documents set forth the following priorities: encouraging gas-survey work, developing new fields, building major gas pipelines and terminals for receiving LNG, and creating the country's own tanker fleet for transporting LNG.

Implementation of these plans will make it possible to optimize the structure of the electric power industry and ensure the country's energy security. A significant place in planning the growth of the national gas industry will go to improving the fundamental legislative principles for regulation of development of the industry and creating precise prerequisites for domestic and foreign investments. In so doing, two prospective areas for developing the gas industry infrastructure will take the lead—in particular, the transportation and receipt of blue fuel, as well as the re-gasification and transportation of liquefied natural gas. This will generate a need for more than 26.5 billion dollars to stimulate progress in this branch of China's industry.[15]

According to China's energy conception, its leaders intend to build a society that is self-sufficient in terms of energy. So it can be clearly seen that the Chinese government is placing the emphasis on its own strengths and resources for developing the gas industry too. This, admittedly, does not mean that Chinese companies cannot participate in the development of minerals in other countries.

[13] [http://www.lenta.ru/news/2006/03/05/china/].
[14] Ibidem.
[15] [http://russian.people.com.cn/31518/2382829.html].

In the recent past, the PRC government, concerned about the development rates of Western transnational corporations, adopted a decision permitting 30-50 of the country's best state companies to make their debut on the global market and start competing with Western corporations by 2010.[16]

A graphic example is PetroChina Company Limited, a subsidiary branch of the country's major oil and gas company, China National Petroleum Corporation (CNPC), created in 2000. PetroChina, like CNPC, will also be engaged in buying up foreign oil and gas assets. In order to do this, it placed 20% of its shares totaling 2.4 billion dollars among portfolio investors in 2005. In so doing, the company's representatives themselves voiced their intention to use the revenue obtained from this placement to develop the industry's capacities and purchase new assets abroad in order to provide China with energy.[17]

The PRC's leading oil and gas companies have access to interest-free loans from state banks and enjoy tax benefits and privileged land rental rates. The government provides them with full support in the foreign markets when acquiring concession contracts and entering product-share agreements. It is not surprising that in this favorable context, the triad of oil and gas companies—PetroChina, Sinopec, and CNOOC—is conducting a very aggressive policy abroad aimed at purchasing infrastructure facilities and building pipelines through Central Asia. Chinese companies are aiming not only to purchase foreign assets, but also to independently acquire hydrocarbons in other countries.

Inside China, the companies chosen for this purpose are offered tax benefits, privileged land rental rates, and free loans via state banks. In the foreign market, the government is rendering them comprehensive support in entering contracts and concessions.

In contrast to this, oil and gas companies or the subdivisions of the main corporations operating in the domestic energy market are experiencing an obvious shortage of funds. This is caused by the special features of the Chinese government's policy in the electric power industry. Although the world prices for oil and gas are going up, the Chinese leadership is keeping the clamps on energy resource prices and retaining high taxes for oil-refining companies, thus preserving the low profitability of refining and sales.[18]

Keeping in mind the prospective rise in the imbalance between domestic production and gas consumption, the Chinese government is planning to give export flows of blue fuel from Central Asia a large role in feeding the entire gas-transportation system. This will lead to China putting pressure on the Central Asian states in order to gain access to their still largely undeveloped resources.

The PRC is intensifying its participation in the survey and development of Uzbekistan's, Turkmenistan's, and Kazakhstan's gas resources by actively buying up the assets of local companies. China has two motives for this.

One motive is strategic. The PRC wants to buy the assets of Central Asian gas companies at essentially any price in order to ensure stable and guaranteed blue fuel production volumes there. In addition, from the viewpoint of energy security, it is important for China to rely on its own gas rather than purchase it from other companies.

The second motive is economic. It is buying the assets of local companies in order to minimize its spending on the purchase of Central Asian blue fuel. This practice became widely used in Kazakhstan's oil and gas sector where Chinese companies have been operating for quite some time now. These actions mean that the Chinese side can minimize the price components by reducing the tax burden somewhat, and, ultimately, the main spending on hydrocarbon import will go to paying the transportation fees to the Chinese border. But this means the gas-producing countries of Central Asia are losing out, particularly at the current stage of the rising price trend for gas (and for oil).

[16] *The Economist*, 6 January, 2005.
[17] [htpp://www.au92.ru/msg/20050902_1vzm2oa.html].
[18] [htpp://www.rbcdaily.ru/2008/06/16/world/352265].

This same tactic of purchasing assets or entering product-share agreements is still being used in the gas sector of Turkmenistan and Uzbekistan.

Until recently, the project for a main pipeline from West Kazakhstan was the most realistic plan for delivering natural gas to China. But now the main Central Asia gas pipeline from Turkmenistan to the PRC is claiming this role. It will essentially become China's second large-scale energy project in Central Asia (after the Kazakhstan-PRC oil pipeline).

These pipelines are strategic and the most reliable links in China's energy security system.

Keeping in mind that Turkmenistan is positioning itself as a leader in the rating of countries with the largest resources of natural gas, the PRC currently regards its relations with it as strategic. In April 2006, Turkmen President Niyazov signed a strategic agreement on gas deliveries with Beijing.

Under Niyazov, the Turkmen authorities kept the geological data about the country's hydrocarbon reserves an essentially complete secret. In so doing, the estimates of Turkmen geologists of the size of the country's gas supplies often greatly contradicted each other. Foreign experts, on the other hand, based on data obtained back in Soviet times, give different estimates of Turkmenistan's gas reserves: from 8 to more than 20 tcm. As it turns out, the country can claim third place in the world in terms of this index. As for the proven supplies, they amount to around 3 tcm (according to BP Statistical Review of World Energy, they constitute 2.9 tcm).[19]

Due to this many foreign investors have been putting off implementing new projects in the development and transportation of blue fuel. The thing is that building major gas-transportation systems supported by long-term deliveries requires guaranteed supplies of raw material for a significant period, usually up to 30 years. In so doing, the consumer should guarantee stable long-term gas recovery, largely by means of the take or pay system. The level of blue fuel recovery has a strong influence on how much is spent on its transportation and, ultimately, on its efficiency. In large gas-transportation systems the cost of pumping often reaches 40% of the end sale price of blue fuel. This is why the main importers of Turkmen gas want to be assured that Turkmenistan is capable of providing long-term deliveries of gas.

The Turkmen authorities have come to understand that in order to become one of the leading world exporters of gas and enforce the country's status as a reliable blue fuel supplier at the transnational level, they need independent confirmation by international experts of their domestic raw material supplies.

In 2004, the Turkmen government had already made arrangements for an international audit of Turkmenistan's largest field at Dovletabad and several other promising deposits located in the southeast of the republic. At present, Dovletabad is the main raw material base for supplying blue fuel via the Central Asia-Center gas-transportation system until 2023. The stakes are being placed on it for the planned South Asian pipeline to Pakistan and India in volumes of 30 bcm a year for 30 years. As a result of this audit, international experts evaluated the supplies of Dovletabad at 4.5 tcm.[20] In recent years, Turkmen geologists have discovered another group of new productive oil and gas areas and structures in this industrial region. In 2003 another large oil and gas field by world standards, South Iolotan-Osman, was discovered. This structure has several productive beds of up to 550-600 m thick that are unique in terms of capacity, which will raise the volumes of the hydrocarbon deposits of any of the Turkmen fields being developed. Unique inflows of gas with a debit of 1.5 to 5 mcm have been obtained here.[21] This discovery confirmed the estimates of Turkmen geologists about the high gas-bearing capacity of Turkmenistan's eastern regions and aroused greater interest among foreign investors in Turkmenistan's subsurface. So the need arose for making corrections to the data obtained pre-

[19] [http://www.utro.ru/articles/2007/01/11/616149.shtml].
[20] See: O. Lukin, "Na vse chetyre storony," *Neftegazovaia vertikal*, No. 7, 2008.
[21] Ibidem.

viously by the international audit of blue fuel reserves. For this purpose, there are plans in the country to carry out total certification of the gas supplies. In March 2008, the Turkmenistan government entered a new contract with Britain's Gaffney, Cline & Associates (GCA).[22] GCA is making an estimate of the reserves of the new fields and deposits in East Turkmenistan, which should become the main resource base for additional deliveries to the European and East Asian markets.

On the whole, according to the data of the Turkmengeologia state concern, in 2007, approximately 150 gas and gas-condensate fields were discovered in Turkmenistan with supplies amounting to 6.1 tcm. The reserves of their land-based structures are estimated at 5.7 tcm, and of offshore fields at 400 bcm. Fifty-four fields with supplies of 2.7 tcm are under development, and eleven structures with reserves of 257 bcm are being prepared for development. Survey work is being carried out at more than 70 fields with supplies of 3 tcm, while eleven structures with supplies of 135.1 bcm have been temporarily shut down. At the beginning of 2007, Turkmenistan's current geological gas reserves amounted to 22.482 tcm and extractable supplies reached 20.350 tcm.[23]

Turkmenistan's national development strategy for the oil and gas industry until 2030 envisages a consistent increase in natural gas production by 2010 of up to 120 bcm (100 bcm of which are to be exported), by 2020 production should reach 175 bcm (140 bcm of which are for export), and by 2030 this index should be 250 bcm (200 bcm for export).[24] The development dimensions of Turkmenistan's gas-producing industry depends directly on the possibility of exporting raw material. In 2007, gas production rose in keeping with export demand, amounting to 72.3 bcm, 51 bcm of which were exported.[25] So by 2020 there are plans to increase the export of blue fuel 2.75-fold, compared with 2007. This is a large-scale strategic task requiring a clear energy policy. The latter should rely both on internal development sources and on foreign investors in the survey, development, and transportation of raw material for export.

The main obstacle is the shortage of export gas pipelines. The Central Asia-Center gas pipeline has undergone immense wear-and-tear during its more than 40-year lifespan. Like many other gas and oil fields of the Soviet Union, Turkmenistan's unique deposits were very intensively developed. Transportable gas had a high content of mechanical admixtures, water, and heavy hydrocarbons, which had a negative effect on the inner surface of the pipelines. Now significant modernization of the entire gas-transportation system is required, not only in the Turkmen section, but also in the Uzbek and Kazakh stretches.

At present, the Central Asia-Center gas-transportation system, which consists of four branches and was built between 1962 and 1997, forms the basis of the export capacities of the Turkmengaz state concern. The Central Asia-Center-1, 2, and 4 gas pipelines ensure the transportation of raw gas from Turkmenistan's eastern regions through Uzbekistan and Kazakhstan to Russia. The CAC-3 pipeline, which runs along the Caspian coast of Turkmenistan, transports gas from the country's western regions to the Russian Federation.[26] Based on the existing supplies and forecast reserves of natural gas, as well as its production possibilities, the country's government is adhering to a strategy of creating a multifaceted system of blue fuel transportation to the world markets. Based on the growing demand for energy resources in Europe and East and Southeast Asia, Turkmenistan is planning to dynamically increase natural gas export in the vectors that are most advantageous for it.

When the new leader, G. Berdymukhammedov, came to power in Turkmenistan in 2007, major reforms began in all the spheres of socioeconomic life and the number of contacts in the foreign policy sphere increased. It stands to reason that the new president is well aware of the importance

[22] O. Lukin, op. cit.
[23] Ibidem.
[24] "Gazoprovody: sostoianie i perspektivy," *Neftegazovaia vertikal*, No. 20, 2007.
[25] "Neft i gaz Turkmenistana, 2007," *Neftegazovaia vertikal*, No. 7, 2008.
[26] "Gazoprovody: sostoianie i perspektivy."

of the oil and gas industry as the foundation of the republic's economy. Domestic economic entities are unable to develop Turkmenistan's extremely rich resource base, this requires foreign direct investments, which means that changes must be made in the current investment environment. And globalization of the world economy requires a certain openness of the national economies. In order to solve this grandiose task, large foreign investments and state-of-the-art technology must be drawn into the country.

In addition, the PRC has noticeably stepped up its activity in the region. The efforts of Chinese companies to gain a stronger foothold in the electric power industry of Turkmenistan, Kazakhstan, and Uzbekistan are beginning to erode Russia's monopoly position in Central Asia due to its ownership of the export gas pipelines going to Europe.

The question of organizing deliveries of Turkmen blue fuel to China was discussed as early as 1996. At that time a consortium consisting of China's CNPC, Japan's Mitsubishi, and America's Exxon drew up a feasibility report of a pipeline project from East Turkmenistan (from the Dovletabad field through Uzbekistan and Kazakhstan to the PRC, South Korea, and Japan). At that time, despite the low world prices for gas and the high cost of building the pipeline (9 billion dollars), the project was declared unprofitable and work on it was ceased.[27] As the world prices for blue fuel grew, interest in the revived project began to increase again. In 2003-2005, Chinese companies carried out service work contracted by the Turkmengaz State Company on the right-hand side of the river Amu Darya, which confirmed the high prospects for these sections.[28] In April 2006, during the official visit of former Turkmen president Niyazov to Beijing, a general agreement on building a Turkmenistan-China gas pipeline and on deliveries of Turkmen natural gas was signed. In keeping with this document, there are plans to begin laying the pipeline of 30 bcm in capacity in 2008 and export gas via it for the next thirty years beginning in 2009. The fields on the right-hand side of the Amu Darya were pegged as the raw material base with estimated reserves of 1.7 tcm.[29] The Chinese side assumed the responsibility for reaching agreements with the governments of the transit countries on mutually advantageous conditions for transporting Turkmen gas through their territory. Practical implementation of the project began in 2007 when the new Turkmen president, G. Berdymukhammedov, confirmed the agreements reached previously between Ashghabad and Beijing. During his official visit to China, the Turkmen president signed several agreements with PRC Chairman Hu Jintao. In particular, the CNPC entered a Product-Share Agreement (PSA) with the State Agency on the Management and Use of Oil and Gas Resources under the Turkmen President on the contract territory of Bagtyiarlyk. At the same time, a buy-sell gas contract was signed between the CNPC and the Turkmengaz State Company that envisaged the beginning of gas transportation to China in 2009. The CNPC obtained an operating license for surveying and producing raw material, as well as a contractor's license for survey and production on the contract territory.[30]

The pipeline begins at the fields on the right-hand side of the Amu Darya and goes to China's south Pacific coast in the Guangdong Province. Its total length is approximately 7,000 km, 188 km of which will be laid in Turkmenistan, 530 km in Uzbekistan, 1,300 km in Kazakhstan, and approximately 5,000 km in China. In the summer of 2007, Beijing came to terms with Tashkent and Astana on the transit of Turkmen blue fuel through Uzbekistan and Kazakhstan.[31] Of the 30 bcm of gas envisaged annually for the pipeline, deliveries of 13 bcm will be ensured by building facilities for purifying and preparing raw material at the fields of Saman-depe, and others. The other 17 bcm are to be

[27] Ibidem.
[28] Ibidem.
[29] Ibidem.
[30] Ibidem.
[31] Ibidem.

delivered by developing new fields.[32] There are plans to carry out seismological and drilling work within the framework of the PSA on the contract territory of Bagtyiarlyk. This will make it possible to prepare the newly discovered deposits for development and join them up to the gas pipeline at the second stage.

In this way, a large part of the contracted gas (approximately 57%) will be produced under PSA conditions. Although there is high strategic expediency in streamlining the gas flow from Central Asia to the East, the economic efficiency of transporting Central Asian blue fuel to the eastern provinces of the PRC is still unclear. And this gives rise to the principal question of the efficiency of delivering its own and imported gas to large consumers in the eastern provinces.

Several Chinese economists are criticizing the commercial viability of the extremely expensive purely Chinese project of the West-East gas pipeline, investments in which amounted to 17.4 billion dollars.[33]

The full cost estimates for the transportation of gas from Turkmenistan to Guangzhou via the Central Asia pipeline being built from Turkmenistan through Uzbekistan and Kazakhstan to Xinjiang and on via the second branch of the West-East gas pipeline are not known. It is only known that the Chinese gas corporation, PetroChina, announced that an agreement had been reached with Turkmengaz on the purchase of blue fuel in 2009 at $195 per 1,000 cu m.[34] All the same, in the real market economy, the costs for transporting Central Asian gas 7,000 kilometers from the Turkmen-Uzbek border to the southern regions of the PRC will, according to experts, be much higher than even the price of imported LNG in these same regions. Moreover, this gas will not be in demand either in the electric power industry, or in other branches of industry. LNG supply in the world market exceeds demand, and the required gas volumes can always be found under spot contracts, admittedly, at rates more than double the prices under long-term contracts. LNG rates in the ports of South China at the end of 2007 (according to the Kortes Agency) recalculated using a measurement unit of mill BTE to 1,000 cu m from Australia amounts to 115-142 dollars per 1,000 cu m under long-term contracts. The prices of spot deliveries, on the other hand, from Algeria, Nigeria, and Oman are equal to 300-340 dollars per 1,000 cu m.[35]

What conclusions does this bring us to?

At present, China's gas policy is aimed in three directions:

— ensuring reliance on its own strengths in the resource base, for which reason investments in geological surveying, field development, and mass building of major gas pipelines throughout the country are being activated;

— providing the main consumers with imported LNG in such spheres as the electric power industry, chemistry, and metallurgy in the southern, eastern, and northeastern provinces of the PRC in order to cut back the limits on the use of energy resources;

— establishing strategic relations with the gas-producing countries of Central Asia—Turkmenistan, Uzbekistan, and Kazakhstan.

But there are limiting factors.

Due to the extensive development of prospecting works, the mass discovery of fields (mainly small and medium in size) is going on in the main gas-bearing regions of China—Xinjiang, Qinghai, Sichuan, and Inner Mongolia. These structures are distinguished by complex geological-industrial conditions, extremely deep occurrence of productive seams, and anomalously high seam pressures.

[32] "Gazoprovody: sostoianie i perspektivy."
[33] *Vremia novostei*, 28 December, 2005.
[34] [http://www.rosbalt.ru/2008/7/7/451370.html].
[35] [http:// www.kortes.com].

This results in the high cost of the gas produced. At the same time, no unique fields are being discovered on the basis of which the stable and profitable work of interregional gas-transportation systems could be organized and large-scale reconstruction of energy and municipal economy carried out in the main cities of the PRC.

In China, the large-scale construction of terminals for receiving and re-gasifying LNG is underway, as well as the construction of distributing gas pipelines to industrial and communal consumers. The restrictions on the increase in LNG purchase from the main producers in Southeast Asia, as well as in the Near and Middle East, are determined by the high world prices, particularly under short-term spot operations. At present, Chinese buyers of LNG have begun refusing to enter operations in some cases due to the high price level.

Interrelations with the gas-producing states of Central Asia are being established ambiguously. The relations between China and Kazakhstan, the first to carry out privatization of the country's oil and gas sector, as a result of which Chinese corporations began to acquire significant assets in its resource sector, are rather complicated. Reverse centralization of the most valuable assets in the oil and gas sphere is going on.

Relations with Turkmenistan and Uzbekistan are on the up and up. Since they do not have very many investment opportunities of their own, these republics are very interested in Chinese investments in the survey and development of gas resources. Particularly since the transportation of the raw material produced to the PRC is either financed by the Chinese side itself or on a parity basis with local companies.

Gazprom's surprise consent to increase the price for the purchase of blue fuel from the gas-producing countries of Central Asia in 2009 will lead to a sharp increase for importers in the rates for purchasing raw material. In addition, this decision will change the gas flow system in Central Asia and result in a change in the profitability of investment projects of various pipelines. Two long discussed projects—the Trans-Caspian (from Turkmenistan to Azerbaijan and on via the Nabucco gas pipeline to South Europe) and the South Asian (from Turkmenistan through Afghanistan to Pakistan and India)—are already becoming unprofitable in terms of their economic parameters. Under these conditions, the ability to fill the powerful Central Asia gas pipeline from Turkmenistan through Uzbekistan and Kazakhstan to China is also indefinite, at least in terms of the use of the resources at the current fields (Saman-depe and others), which it is becoming more advantageous to redirect toward Europe. In the context of the assumed underloading of the gas pipeline to the PRC, the operational efficiency indices of this route are dramatically dropping. This pipeline will probably not be put into operation until new results are obtained from the survey of Turkmenistan's gas resources in the new industrial regions on the right-hand side of the Amu Darya.

As a result, the cost of delivering pipeline blue fuel from Central Asia to the Chinese consumers will grow with a corresponding increase in the end sale price to consumers. The PRC government adopted a decision to steadily increase the internal gas rates to the world level, due to which there are plans to improve the raw material price formation method, as well as preference granting conditions for increasing the interest of oil and gas companies in the profitable development of domestic resources. Decisions should also be made aimed at ensuring a sharp reduction in the energy-intensity of the national economy and in the environmental load of enterprises.

In the foreseeable midterm, it is difficult to establish the rates and levels of China's gas industry development. This is because of the absence of concise government decisions on the allocation of funds for development of the gas industry to replace coal in the national economy, reduce the environmental load on cities, and so on.

The decision to build a major pipeline from Russia is becoming a decisive factor in this "gas patience" the PRC is playing. Of the two routes offered, the Altai gas pipeline is unrealistic due

to its length and excessively high environmental demands. The route from East Siberia is realistic, but the sale of East Siberian blue fuel at a privileged price, which China is insisting on, is only possible providing that Russian companies have access to the distributing assets of China's gas corporations.