

China's Energy Strategy and China-Russia Energy Cooperation

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In article are analysed a supply and demand condition on power resources in China now and tendencies on prospect. Substantive provisions of the Chinese internal and external power strategy are formulated. The basic achievements of the Chinese-Russian cooperation in power sphere and possibility of its expansion are described

Key words: Stocks of power resources, oil and gas recovery, renewed and secondary power resources, rupture between supply and demand, principles of the international cooperation

Energy strategy and China-Russia energy cooperation are based on the estimation of China's energy supply and demand. Therefore, before we get to the main point, we need to analyze the development of energy in China first, and then discuss the issue of China's energy strategy and China-Russia energy cooperation.

1. BASIC SITUATION OF CHINA'S ENERGY SUPPLY AND DEMAND

China is now the world's major producer and consumer of energy. China ranks the second in the world in terms of both the output and consumption of energy. The energy self-sufficiency rate of China is higher than 90%. In respect of oil production, China has advanced to No. 4 place in the world in 2009, only behind Russia, Saudi Arabia and America, though the consumption still ranks the second in the world, and the foreign trade dependence ratio is higher than 50%. The characteristics of China's energy are as follows:

1.1. The energy structure is irrational, and the coal takes up a high proportion.

The energy structure of China can be summarized as "rich coal, poor oil, and scanty

gas". In 1952 coal once took up 95% of the total energy consumption. However, with the development of industrialization and urbanization, its proportion dropped gradually. In 2007, coal took up 69.4%, crude oil 20.0%, natural gas 3.4%, hydroelectric power, nuclear power and wind power 7.2%. From now on, although the coal proportion will drop, its total consumption will continually increase. In 2009 the coal consumption was 3.02 billion tons, in 2020 it will reach 3.8 billion tons, and the coal proportion will drop to 57%. Therefore, it is urgent to change the energy consumption structure and increase the proportion of clean energy in the energy consumption structure in order to maintain the energy security of China.

1.2. The relative insufficiency of energy resource reserves severely restricts the development of energy production.

China has an abundant energy resource reserves, but its resource structure is dominated by coal, while oil and gas resources are comparatively scanty. The raw coal takes up 87.4% of the proven recoverable reserves of conventional energy (coal, oil, gas and water energy), while crude oil 2.8%, natural gas 0.3%, and water energy 9.5%. By the end of 2005, China's oil and natural gas took up only 1.3% of the world total reserves respectively. According to the data from the Ministry of Land and Resources, in 2007 China's remaining recoverable reserves of oil were 212 thousand/100 million tons, and the reserve-production ratio was 11.3. The remaining recoverable reserves of natural gas were 1.88 trillion m³, and the reserve-production ratio was 27.2. There is little space for improvement. The raw oil output can reach 177-198 million tons in 2010 and 182-200 million tons in 2015, which shows a slow growth trend. In 2020 the raw oil output of China is predicted to be 181-201 million tons, reaching the peak. From then on, it will decrease year by year. The production of natural gas is similar to that of

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oil. China has made the utmost possible efforts, but it is difficult to improve the production of oil and natural gas due to the restriction of the resource reserves. In 2009 the output of natural gas is almost 80 billion m³. In 2015, it will reach 115 billion m³. The improvement of natural gas production in China is restricted by the high cost and great difficulties of its exploitation.

1.3. Energy demand is increasing continuously, while the gap between supply and demand is widening gradually.

With the rapid growth of economy and the constant improvement of modernization, the demand for energy is increasing year by year in China. China's increasing demand for energy is all-inclusive, but the energy resources in the most rapidly increased demand are oil and natural gas. In China the demand for oil has increased rapidly in the recent 10 years. In 2001, the demand for oil is 227 million tons, and in 2009 388 million tons, with a total increase of 161 million tons within 8 years and an average annual increase of 20 million. In 2001, the demand for natural gas is 27.4 billion m³, in 2007 67.3 billion m³, and in 2009 85 billion m³, with an increase of 57.6 billion m³ within 8 years. The potential demand for oil and natural gas will increase rapidly as well. It is predicted that by 2015 the annual demand for oil is 490-520 million tons, and by 2020 it will be 560-600 million tons, with an annual growth rate of 4.2-5%. By 2015, the annual demand for natural gas is 234 billion m³, with an annual growth rate of over 12%. The increase of the demand for natural gas demand will slow down from 2016 to 2020. However it will still maintain an average annual growth of about 8%. By 2020, the natural gas demand will be more than 350 billion m³.

For a long time in the future, China will have an overall increasing demand for energy, which the production capacity can not meet. In the next ten years, the oil production will hover around 200 million tons, and the gap between supply and demand will widen continually. The foreign trade dependence ratio will be over 60% by 2020, and it may reach 79% in 2035. Natural gas is similar to oil. In 2010, the import volume

of natural gas is 30 billion m³ in 2010, and in 2015 it is predicted to be 120 billion m³, and the foreign trade dependence ratio will be over 50%. How to solve the problem of the continually widening gap between supply and demand has become an important topic of China to maintain the energy security.

2. CHINA'S ENERGY STRATEGY

The main situation of China's energy supply-demand is that China has a high degree of self-sufficiency but an irrational structure. The coal takes up a high proportion while the reserves and production of oil and natural gas are scanty, with a continually widening gap between supply and demand. According to this, China has made its own energy strategy, whose basic content is to change the irrational energy structure, to strengthen the production and import of oil and gas and to ensure the China's increasing demand for oil and gas. China's energy strategy includes both domestic energy strategy and foreign energy strategy, which correspond to and coordinate with each other. We should "make use of two kinds of resources and two markets", that is to say, we should make use of both domestic and foreign resources and both domestic and foreign markets in order to maintain the energy security.

2.1. China's domestic energy strategy

China's domestic energy strategy mainly includes the following contents:

1. To strengthen the input on the exploration, development and refining of oil and natural gas and to establish a stable and reliable domestic oil and natural gas supply system.
2. To vigorously develop energy-saving and to improve energy utility efficiency so as to ease the shortage in energy supply
3. To vigorously develop and make use of new energy and renewable energy, including wind energy, solar energy, biomass energy, water power and nuclear energy, etc. so as to improve the energy consumption structure, to reduce pollution, to protect the environment and to deal with the climatic change.

4. To develop the clean use of coal, and to improve the environment and the utility efficiency

5. To establish oil strategic reserves so as to keep away the risk of oil supply interruption.

In order to ease the shortage in energy supply, China has also put forward a development and saving policy, in which it is proposed that saving should be put in the first place and the establishment of the conservation-oriented society should be advanced to the strategic degree of sustainable development. China also attaches great importance to the improvement of energy efficiency, and set a goal that in 2010 the energy consumption per GDP should be reduced by 20% compared with the end of the 11th Five-Year (that to say, within 5 years). To save and make reasonable use of energy, to reduce the energy consumption and to improve energy utility efficiency are not only the major measures for China to ease the shortage in energy supply but also the important means to improve the economic growth quality and innovate the development pattern. In recent years, China has made great achievements in all the above respects. In respect of the improvement of clean energy and renewable energy, China has invested a great amount of money, which ranks No.1 in the world. The development speed of China's wind energy also ranks No.1 in the world. At present China has begun to build seven wind energy bases with thousands kW level. After the establishment of these seven bases, it can be ensured that in 2020 the bearable wind power installation capacity of State Grid will be 100 million kW. In China 24 nuclear power units are being built and 36 are planned to be built. In 2009, the energy and renewable energy took up 8% of the energy consumption, and it is planned to increase to 15% in 2020.

2.2. *China's foreign energy strategy*

The goal of China's foreign energy strategy is to establish a reliable foreign energy supply system, to import energy to fill up the continually widening gap between energy supply and demand, and to ensure the national energy security. The energy imported from

abroad shall comply with the requirements of "stable, economic, clean and safe". The so-called "stable" is to transport sufficient energy to domestic markets stably for a long term. The so-called "economic" is the reasonable price. The so-called "clean" is to import as much clean energy like oil and natural gas as well as cleaner energy as possible, to import energy-saving, pollution-reducing technology which can improve energy efficiency and develop new energy and renewable energy. The so-called "safe" is to ensure that energy is transported to China safely, to add the multinational pipelines leading to China, to broaden the ratio of pipeline transportation and to increase the security of overseas energy transportation.

China's foreign energy cooperation is based on two points. One is the international cooperation and the other is diversification. The international cooperation is aimed at the relationship between China and energy importing countries. China advocates that importing countries should strengthen international cooperation and avoid vicious competition, in particular avoid the use and threat of force. Diversification is based on the fact that the focus of China's energy strategy was put on Middle East and that China imported trade oil mainly from Middle East before 2000. First, the energy import source should be diversified. That is to say, China should import energy not only from Middle East but also from Africa, America and Asia, etc., especially from peripheral areas such as Russia, Central Asia, etc. Second, the imported energy variety should be diversified, in other words, China should import not only oil but also natural gas, liquefied natural gas, oil sand, especially more natural gas. Third, the oil import manner should be diversified, that's to say, the introduction of both trade oil and share oil (equity oil) should be carried out, but the focus should be placed on the overseas development of oil so as to enhance the proportion of share oil. Fourth, the transportation means should be diversified, in other words, the marine transportation should be developed, meanwhile it is essential to develop land transportation, and more oil and gas pipelines should be placed, and the security

degree of the oil and gas transportation should be enhanced. Fifth, the content and scope of the energy cooperation should be diversified. In respect of the cooperation content, cooperation should be developed not only in the whole process of oil upstream, midstream and downstream but also in such areas as energy-saving, development and use of new energy and renewable energy, the clean use of coal, etc. In respect of the cooperation scope, we should not only “go outside” to develop the international cooperation but also “invite inside” to develop the domestic cooperation.

To sum up, the key points of China’s foreign energy strategy are as follows: 1. To go abroad to import oil and gas resource by means of buying and participation in shareholding in order to meet domestic demand. 2. To construct more oil and gas pipelines leading to China, and to improve energy transportation security. 3. To develop all-round technological cooperation, and to improve the efficiency of energy development and use, etc.

In recent years, China has made great achievements in the implementation of its foreign energy strategy. After the outbreak of global economic crisis in the autumn of 2008, China’s economy encountered tremendous difficulties as that of other countries, and its growth speed slowed down. But meanwhile China embraced the opportunities brought by the fact that the international oil demand was decreasing, the oil price was declining, the supply of oil and gas energy exceeded demand, and some energy-producing countries showed willingness to develop international cooperation with China, and then broadened the cooperation with them. First, China signed many long-term Oil for Loan agreements with them, which not only eased the finance shortage of the production countries but also met the oil demand in China to some extent. The most significant achievement is that in May, 2009, China signed three long-term agreements for supply with Russia, Brazil and Venezuela in succession within several days, with the kreditbetrag of China reaching 43 billion dollars. Second, China signed several overseas merger and acquisition contracts with resource

countries and multinational companies. It has the following characteristics: 1. It has a large number of merger projects on a large scale. Especially in 2009, China National Petroleum got Rumaila and Halfa oilfields in Iraq, and got North Azadegan oilfield and South Pars gas field in Iran. Sinopec purchased Addax Petroleum Corporation at the price of 9 billion dollars. So far it is the largest overseas energy merger and acquisition of Chinese enterprises. 2. It has a large area and range and lots of varieties, with coverage of Africa, Middle East, South America, North America, Central Asia, the Asian-Pacific region, etc. The varieties include not only oil, natural gas but also oil sand, uranium, coal, etc. Last year China became a net importer of coal with the import amount of over 100 million tons. The acquisition means include not only exclusive acquisition but also the joint bids with several oil companies of America, Turkey, and some Europe countries. For example, China bid for Rumaila oil field in Iraq together with an America company. These agreements have increased the world investment and production of oil and gas, which not only strengthens the proportion of China’s share oil in the total import amount but also benefits the world energy security. 3. Great achievements have been made in the construction of oil and gas pipelines leading to China. China and Russia signed the oil pipeline agreement. The pipeline will be finished in 2010 and be used for transporting oil at the beginning of 2011. At the end of 2009 the central Asia natural gas pipeline was finished and began to supply gas to China. In March, 2009 China and Burma signed the agreement on oil and gas pipeline, which is under busy construction at present. The construction of these pipelines will not only increase oil supply for China but also enhance the security of oil and gas supply for China. 4. It has increased China’s oil strategic reserves. Before the international financial crisis, the first phase project of China’s oil strategic reserves was completed, which hasn’t been used for storage of large-amount oil. China took advantage of the opportunity brought by the fact that supply exceeded demand in the oil market and the price was low, stored sufficient

raw oil, which not only saved the expenses but also avoided the fluctuation of international oil prices caused by China's large-amount oil purchase.

3. CHINA-RUSSIA ENERGY COOPERATION

3.1. *The progress of China-Russia energy cooperation*

In recent years, especially since the international financial crisis, China-Russia energy cooperation has made substantive progress:

China and Russia signed a formal agreement on *raw oil pipeline construction and raw oil supply for China* and have begun to put it into practice. China and Russia had been negotiating it for 15 years until October, 2008, when a formal agreement was signed after formal negotiation. According to the agreement, China should extend a loan of 25 billion dollars to Russia, and Russia should supply 300 million tons of oil to China through the China-Russia raw oil pipeline within 20 years, with annual supply volume of 15 million.

China and Russia signed the framework agreement on *natural gas pipeline construction and gas supply for China*. China and Russia are negotiating and planning to sign a formal agreement, and trying to complete the natural gas pipeline in 2015 to supply gas to China.

China and Russia agreed on *the promotion of oil upstream and downstream cooperation*. In October, 2009 China and Russia signed a memorandum of understanding on the promotion of upstream and downstream cooperation. According to the memorandum, Russia agrees to supply 15 million tons of oil every year by seaway to China-Russia Oriental Petrochemical Co. Ltd., which was registered in Tianjin in November, 2007. Meanwhile Oriental Petrochemical will establish 300 to 500 gas stations in north China.

In October, 2009 China-Russia Energy Investment Co. Ltd., Which was registered in Hong Kong, invested to purchase 51% shares of Russian Surgutneftegas oil and nature gas company, and then attained the exploitation

rights of the two natural gas fields with storage of 60 billion m³ in Russian East Siberia. Through negotiation, Chinese enterprises may enter Russian upstream area to take part in natural gas exploitation, and Russia may enter Chinese downstream area to take part in oil refining and oil product marketing. Chinese and Russian enterprises participate in the upstream and downstream cooperation and share the whole process benefits, which may advance the close cooperation of both sides.

China and Russia promoted all-inclusive cooperation *in such areas as nuclear energy, coal, electric power, etc.* In October, 2009, the two sides decided to go on with cooperation in the second phase project of Tianwan Nuclear Power Plant, fast reactor nuclear technology, uranium enrichment factory building and uranium mine exploration, etc. Cooperation in the coal area is a new bright spot of China-Russia energy cooperation. Chinese enterprises have invested on many Russian coal industries, and Russia has begun to supply coal to China. Breakthrough progress has been made in electric power cooperation. Both sides have decided to carry out the first phase project of China-Russia power supply and resume the sale of electric power to Chinese border regions.

3.2. *Reasons for progress in China-Russia energy cooperation*

China-Russia energy cooperation has been negotiated for over 10 years, with lots of difficulties. Recently breakthrough progress has been made, resulting mainly from long-term contributing factors between the two countries and recent international economic and political situation changes.

First, there are some long-term contributing factors between China and Russia:

China and Russia have good political relationship. China and Russia established strategic partnership of cooperation in 1996. Since then, relationship between the two countries has constantly deepened. Both sides signed the China-Russia Treaty of Good Neighborliness, Friendship and Cooperation, which solved the historical boundary question completely. Mutual political trust of both

countries has been constantly strengthened. Both countries support each other on major issues such as state sovereignty and territory, coordinate and cooperate with each other on extensive international issues. The relationship between China and Russia is in the bloom of history, which is the political security for development of China-Russia energy cooperation.

China and Russia greatly complement each other in energy area. Russia has abundant energy. China has increasing demand for energy, and China is the most potential and stable oil and gas, coal and electric power sales market. China and Russia are close neighbors. China and Russia complement each other in energy, which is the material basis for energy cooperation.

The exploitation of Russian Far East and East Siberia needs to develop China-Russia energy cooperation. Russia has made a large-scale Far East and East Siberia exploitation plan, in which oil, natural gas play an important role. In order to adapt this plan, the policy that oil, natural gas export should be inclined to the Orient was made in Russian Energy Strategy before 2030. Russia's oil exploitation volume will be on the top by 2030, after then it will decline. The export to Europe will be reduced but the supply proportion for the Orient will increase from 8% in 2008 to 22-25%, and the natural gas export proportion for the Orient will increase from 0 in 2008 to 19-20%.

Second, some new promoting factors have emerged:

Outbreak of the global financial crisis. The outbreak of the financial crisis has tremendous impact on Russian economy and energy enterprises. Russia desires for financing to ease its difficulty. China has sufficient funds. After Russia made the proposal, both sides reached an agreement immediately.

European Union countries' energy demand is declining. The financial crisis has also hurt the economy of European Union countries severely. The energy demand of European Union countries is declining, and the energy import from Russia is greatly reduced. Russia

needs to open the Chinese market so as to fill the gap left by European Union countries.

Measures adopted by Chinese and Russian leaders to promote energy cooperation have an immediate effect:

Both countries established a vice premier –level energy working group. In order to change the long procrastinating situation of both sides in energy cooperation, leaders of both countries decided to establish a vice premier –level energy working group, which was proposed by President Medvedev. In this group, Wang Qishan is the leader of China and Xie Xin is the leader of Russia. This group has played an outstanding role in all-round development of China- Russia energy cooperation.

Three principles were established by both sides to promote energy cooperation. In order to solve the difficulties in the energy cooperation and to promote the rapid development of energy cooperation, both sides established three principles for cooperation: 1. Long-term and all-round principle; 2. the market principle; 3. mutual benefit and win-win principle, which can closely and fully favor each other. Facts prove that as long as both countries follow these three principles and look at things from a higher elevation, they can easily solve the difficulties in energy cooperation with the spirit of mutual understanding and accommodation. If either side only cares about the immediate interests, haggles over every ounce and refuses to yield an inch, it will be difficult to promote *the energy cooperation between two countries.*

3.3. Prospect of China-Russia energy cooperation

The prospect of China-Russia energy cooperation can be summed up in three sentences: It has good prospects, but it's not easy to carry out. However, it will be constantly promoted in the process of difficulty overcoming. The good prospects of China-Russia energy cooperation is based on the following reasons:

Developing energy cooperation accords with both sides' interests. As both countries complement each other greatly in the energy

area, they can benefit from energy cooperation. If the two countries don't take advantage of the mutual complementarities, they will suffer a loss.

China and Russia will be friendly for generations. The friendly relationship between China and Russia is attributable to the common interests of both countries. The friendship between China and Russia has enjoyed popular support. Both sides will be good friends and partners for ever.

Leaders of both countries pay great attention to China-Russia energy cooperation. They have both listed China-Russia energy cooperation in the important agenda to advance cooperation in person, which is important guarantee for further development of China-Russia energy cooperation.

Although two countries have established three principles for energy cooperation, there are still some problems in the understanding and practice. However, the cooperation practice in recent years proves that despite there are various problems between both countries, both countries can solve them through negotiation at last. And that mainly profits from the foresighted view of the leaders of both countries and the common benefits of both sides. Although there will be some problems in the future, energy cooperation of both countries will be stably promoted ahead in the process of problem-solving.

4. BIOGRAPHIES



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