

Cross-border Cooperative Energy Projects within NEA Countries and the Financing Approaches

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Part I. Current Situation of cross-border energy cooperation projects in Northeast Asia

A. Sino-Russian cooperation

- China has strengthened bilateral energy cooperation with Russia since 1996.
- China's rapid developing energy market has a tremendous appeal to Russian energy companies in energy supply, energy equipment, technologies and services.

Sino-Russian cross-border energy cooperation projects in recent years

Cooperation area	Time	Plans
Oil	2006	Sino-Russian Oil Pipeline (branch line of (Taishet- Nakhodka) started.
	2007	RussNeft exported to China 2.5 million tons per year through Mongolia since August 1, 2007. More than 8.9 million tons exported to China through Zabaikalsk-Manzhouli Ports annually. RussNeft exports to China 11.5~13 million tons since 2008.
	2008	The Subordinate Oil Company of Gazprom made exported 1.08 million tons to China through Atasu-Alashankou oil pipeline in 2008.
	2008	CNPC and Russian Oil Company set up a joint venture-Sino-Russian Eastern Petrochemical (Tianjin) with an annual oil refinery productivity of over 100,000 tons.

Sino-Russian cross-border energy cooperation projects in recent years

	Time	Plans
Natural gas	2006	<p>Gazprom and CNPC planned to build two natural gas pipelines to China, providing an annual volume of 68 billion cubic meters from 2011.</p> <p>West Line is from West Siberia pipeline to Xinjiang, and connected to the pipelines of West-East natural gas transmission project.</p> <p>Eastern line is from Sakhalin, via Khabarovsk to Northeast China.</p>
Electric power	2005-2006	<p>SG and Russia Electricity company. Russia expanded the power capacity in the Far East and exported electricity to Northeast China from Heihe line.</p> <p>Yesterday news: En+ group are planning to export electricity by Route 3 and 4.</p>
	2008	<p>Contracts about the Phase II construction of Tianwan Nuclear Power Station in 2009.</p> <p>Tenex and CNEIC have signed contract on the supply of enriched uranium from Russia to China. Russia will provide China with 6 million units splitting uranium in 10 years.</p>

B. Sino-Japanese cooperation

Cooperation Field	Time	Plans
Energy conservation and environmental protection	2009	<p>Launch the cooperative project "Underground Storage Technology of Carbon Dioxide" in China, 200~300 million US\$.</p> <p>Japanese will provide the most advanced technology, stores and liquefies the carbon dioxide from thermal power station emissions to inject to China oil wells.</p> <p>The technology is expected to reduce 150 million tons carbon dioxide and increase an average 1.5~2 million tons of crude oil production per year.</p>
Oil	2008	<p>CNPC and the New Japanese Oil Company signed the Agreement and will select a refinery with a processing capacity of 115,000 barrels per day to construct the joint venture.</p>
	2008	<p>Japanese Oil Company and Teikoku Oil Company are ready to cooperate with China to jointly develop oil/gas resources in the East China Sea.</p>

C. Cooperation between China and South Korea

Cooperation Field	Time	Plans
Oil	May 28, 2008	CNPC and Daewoo signed the memorandum on the joint development of overseas oil and gas fields in the west coast of Myanmar.
	Oct. 2007	Korea National Oil Corporation and Samsung started commercial oil production in China western inland region of Mahuangshan. Shares of Korea and China are 61.6% and 38.4%. The potentiality can be amounted to 2.3 million barrels and the planned daily production is 800 barrels, lasting for over 10 years.
	Nov. 7, 2007	Tianye Group of Xinjiang and South Korea International Corp jointly invested 7 billion RMB in the construction of a PVC chemical project with an annual output of 400,000 tons.
	May 28, 2008	CPCC and SK Energy jointly operated the construction of Wuhan ethylene project with an annual output of 800,000 tons that is expected to be put into production in 2011.

C. Cooperation between China and South Korea

Cooperation Field	Time	Plans
Electric Power	2007	Korea Electric Power Corp invest 1.1 billion RMB to buy 14 power plants in Shanxi, of which 10 were plants having been put into operation.
	2008	<p>The total generating capacity of wind power generation facilities projects that KEPC participates in China has reached 517.8 megawatts.</p> <p>The Korean Hydraulic& Atomic Force and Guangdong Thermal Power signed 15.5 million US\$ of technical service contracts for Yangjiang Nuclear Power Station.</p>
New Energy	2008	Shanghai Lijing Co., Ltd. and South Korea NESGO, Korea Huisheng jointly organized Jinfeng (Jiangxi) Petroleum and Chemical Company, who invest 5000 million RMB to construct a methanol fuel production base. An annual output of methanol gasoline up to 2 million tons.

C. Cooperation between China and South Korea

Cooperation Field	Time	Plans
Coal	Oct. 11, 2007	<p>Kunming Jueying Mining Ltd and SK signed agreement to jointly explore and develop the coal resources of Taoshu Ping mine in Yunnan Province with proven reserves of 149.25 million tons coal.</p> <p>The joint venture company will invest 600 million US\$ to reach an annual production capacity of 1.5 million tons of crude coal, 1.25 million tons clean coal and 1.5 million tons coke.</p>

D. Sino-Mongolia cooperation in Coal Exploration and Development

- Inner Mongolia has deepened coal development, exploration and other cooperation continuously with Mongolia, and the total volume of raw coal imported from Mongolia have reached nearly 10 million tons.
 - Qinghua Group of Inner Mongolia invested 8.63 million US\$ in NaLin Su Hite coalfield in cooperation with Mongolian Gold of Mongolia Group
 - Sanhe Energy of Inner Mongolia, Puxing Mining and Century Thaipeng Coal invested a total of more than 30 million US\$ in the development, exploration of coal resources with Mongolian enterprises
- With the enlarged cooperation scale, the cooperation fields has also expanded:
 - Shongyuan of Inner Mongolia is negotiating with Mongolian enterprises and preparing to invest 7.5 million U.S. dollars in Mongolia to build coking plants

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- State Grid of China (SG) started the Sino-Mongolian cooperation in electric power in 2005.
 - In 2006, the energy cooperation parties signed the “Agreement on the Primary Feasibility Studies on the Construction of Coal Power Projects in Mongolia Transmitting Electricity to China”.
 - The first large cross-border cooperation in electric power which has been put into implementation between China and its neighboring country.

E. R-J cooperation

- Implementing development project of large-scale oil-gas field
 - “Sakhalin I ” and “Sakhalin II ”
- The major large-scale cooperation project is the construction of the Oil Pipeline from Taishet in East Siberia to Nakhodka in the Far East area.
- RussNeft has signed contracts with eight major electric power and gas companies within the framework of "Sakhalin II " project, and Russia will export to Japan 8 million tons of LNG, accounting for 8.5% of Japan's total annual LNG imports.
- In 2008, Gazprom and the METI decided to create natural gas processing and gas chemical production in Krasnoyarsk Krai and to assist their enterprises in Russia Far East to produce large diameter pipeline and machinery manufacturing for the Eastern Natural Gas Projects.
- R and J are discussing the possibility of the joint nuclear energy development, planning to establish 12 nuclear power plants in the Far East.

Table 2 Russian-Japanese energy cooperation plans
at feasibility study stage

Cooperation area	plans
Natural gas	Gas pipeline plan from Russia South Sakhalin Island to Japan's Hokkaido
	"Blue Fuel" plan of gas pipeline from Sakhalin - Khabarovsk - seaside territory- North Korea - South Korea - Japan
Electric power	"Russia-Japan Electric Power Bridge" program from Sakhalin Island to the Japanese archipelago by laying 4,000 megawatts of undersea electric fiber cable

F. R-K cooperation

- The recent main cooperation projects:
 - ① Gas supplying plan of Kovykta Condensate Gas Field.
 - ② negotiations on the Kelinsike mining lots of "Sakhalin III"
 - ③ LNG import from Gazprom's "Sakhalin II "

- K and R have also developed close cooperation in oil exploration, crude oil refining and infrastructure reconstruction in Far East.
 - ① In Russia's major oil-producing region Tatarstan, their target Tatar Oil Company and South Korea signed a cooperation memorandum.
 - ② Samsung and Russian Oil Company signed an agreement on rebuilding the Khabarovsk Oil Processing Plant in Far East.
 - ③ Korea's National Oil Corporation and Russian Oil Company signed a memorandum of understanding on cooperation.

G. Cooperation between Japan, South and North Korea

Cooperation countries	Time	Plans
J and K	Jan 2008	<p>Japan Eurus Energy Corp said it would enter the Korean market to run a solar power plant with a capacity of 1,000 kilowatts.</p> <p>The solar power plant is the first and experimental project and is expected to put into operation in June, and the total investment is 7.3 million U.S. dollars (800 million won).</p>
South and North Korea	June 2008	<p>The South Korean Pohang Iron and Steel expressed that it would buy more raw materials such as coal and iron ore from North Korea.</p> <p>Pohang joint-stock company wants to double the coal procurement volume to 400,000 tons from North Korea.</p>

H. Multilateral cooperation

- There are few multilateral energy cooperation projects.
- The comparatively influential one is the development of Kovykta Condensate Gas Field and its pipeline construction.
- In 1997, Russia, C,J,K and Mongolia have discussed the item that laying down 4000 kilometers gas pipes via Russia and Mongolia to China.
- The project was expected to cost 10.8 billion US dollars and was from Russia to South Korea via Mongolia, and Northeast China. It was designed to supply gas to CJK.
- However, Japan lost interest in this project at last. In 2006, the decided natural gas pipeline changed its way and was not through Mongolia.

Part II. Prospect for cross-border energy cooperation

A. Cross-border energy cooperation projects will be accelerated after financial crisis

■ Oil bilateral cooperation will be upgraded

- China, Japan and South Korea will promote bilateral relations with Russia through energy trade.
- Russia is trying to increase the railways' oil transportation capacity by reconstructing the railway infrastructure, rebuilding oil export ports and reducing railway transportation prices.
- Far East oil pipeline will make cooperation relations closer.

■ Natural gas trade will be expanded

- Although there are dispute between China and Russia on the natural gas export prices, it should not affect the construction of Sino-Russian natural gas pipeline.
- R's natural gas exported to C and K will be increased as soon as the completion of Sino-Russian natural gas pipeline project.
- CJK will be the most important customers of the natural gas network in Russia's Far East.
- China will become Russia's largest natural gas market in Northeast Asian, because its supply shortfall.

■ **Electric power cooperation will be enhanced**

- Sino-Russian cooperation in electric power will be strengthened.
 - The strong complementarity would contribute to the rapid development of Sino-Russian electricity trade.
 - China will no longer be a electricity importer and it will invest in the region.
- Within the framework of “Sakhalin” project, the R-J electric cooperation will be developed.
- Sino-Mongolian Thermal Power cooperation has been processed. There is also a certain foundation for Russia-Mongolia-China electricity cooperation.
- In the next few decades, China will start more than 40 nuclear power projects, some of which will be cooperated with R, K and J.

B. Approaches of energy cooperation projects will be diversified

- Northeast Asian nations will promote cooperation on energy efficiency and environmental security.
 - Japan and South Korea's advanced technology and experience in CCT, energy saving, nuclear power, energy efficiency, renewable energy and CCS will be further transferred to China, Russia and other countries.
- In the aspect of renewable energy and new energy's development and utilization, there is large cooperation space for Northeast Asian nations.

Part III. Conception on project financing

- **A .The Provision of a New-type Energy Loan**
- Japan's experience is to provide assistance loans to the oil-producing countries. JBIC provided loans to the United Arab Emirates.
- China can learn from "oil loans" model by providing new energy loans to the NEA countries. China has many big banks and powerful policy banks, and they could play the role of financial resources.
- China has over 2.4 trillion US\$ of foreign exchange reserves, which can be a portion of loan resource to the transformation of energy infrastructure, large-scale energy development and pipeline laying in Russia, Mongolia.

B. From Commercial Bank Loans to Regional Development Bank Loans

- ✓ Commercial Syndicated Loan is an important way in the financing channels
- ✓ The shortage lies in the longer cycle and the complicated procedures affecting the investment and financing efficiency of energy cooperation projects.
- ✓ A regional development bank will enhance the investment and financing projects, improve investment and financing efficiency in energy cooperation and promote the substantive progress

C. The Formation of the Northeast Asian Development Bank

- Huge demand for funds In the Northeast Asian regions' energy development process, which creates space for the construction of Northeast Asian Cooperation and Development Bank (NEACDB)
- During the 2001-2030 period, Northeast Asian energy investment will account for 26% (4.16 trillion US\$) in the total investment of world's energy (16 trillion US\$).
- China needs an annual investment of 2.25 billion US\$, and Russian energy investments need annually 1.05 billion US\$.
- To solve the financing problem in cross-border energy projects and be Responsible for the direct financing of Northeast Asian energy cooperation projects by NEABCD.

■ Thank you for attention!

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