

ENERGY CHALLENGES IN NORTHEAST ASIA AND FUTURE DIRECTIONS

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ABSTRACT

Northeast Asia may account for one-third of the world's total energy demand increase over the next 30 years. Analyzing from the World Energy Investment Outlook 2003, Northeast Asia should make around 26% of the world total energy investment during the coming three decades to meet its increasing demand. Over the medium and long term, concerns about energy security in this region are likely to push a series of regional energy cooperative projects forward. On the demand side, the most critical issue of the three major energy importing countries-Japan, China, and Korea- is their high dependency on imported oil, especially from the Middle East. Therefore, the common denominator for these large energy-consuming countries is the diversification of the energy sources. On the supply side, the energy reserves in the eastern region of Russia are crucial to Northeast Asia. In the last few years, Russia's interest in developing energy relations with its eastern neighbors and potential energy partners has grown. However, there are a number of challenges ahead. The first is a general lack of energy infrastructure in each country. Significant infrastructure costs at both ends of the supply and demand chain will have to be addressed to maximize the potential economic benefits of full regional energy integration. Second, there is a problem of energy sector restructuring, especially in the supplier's side. The overall reform of the Russian gas industry must continue in order to attract enough foreign investment to develop this region. Lastly, political issues surrounding this region influence the overall pace and design of energy projects by industry and investors. These also complicate the estimation of total project costs and business schemes. With the significant needs for the energy sector investments in the one hand, and the various dimensions of challenges in the other hand, there is a strong wake-up call for the governments. There is an increasing emphasis on creating right enabling conditions and lowering barriers to energy sector investment. Governments should also monitor and assess the need to adjust regulatory reforms in network industry, and the policy makers need to ensure basic principles of good governance.

INTRODUCTION

It is a great honor to be invited to the Northeast Asia Economic Forum, a most significant conference, which has been actively tackling issues and developing tasks for the Northeast Asian economic cooperation.

I fully believe that there has been substantial progress in the Northeast Asia energy cooperation through this forum. Nonetheless, I would like to take this opportunity to

reemphasize the importance of the energy cooperation in this region and review the main challenges and future tasks for further discussions.

NORTHEAST ASIA IN THE WORLD ENERGY SCENE

Northeast Asia accounts for more than one fifth of the world's population. Although the economic systems and the levels of economic activities vary widely among countries, the economies of Northeast Asia already account for nearly one fifth of the world's total GNP and energy consumption. It is expected that this region may account for one-third of the world's total energy demand in the coming three decades. As a result, over the medium and long term, concerns about energy security in this region are likely to push a series of regional energy cooperative projects forward.

One of the distinguishing features of Northeast Asia is that, in spite of both the immense energy demand and abundant energy resources in the region, there aren't enough infrastructures to supply energy from the reserves to the markets.

On the demand side, the most critical issue of the three major energy importing countries - Japan, China, and Republic of Korea - is their high dependency on imported oil, especially from the Middle East. Therefore, the common denominator for these large energy consuming countries is the diversification of the energy sources, i.e., the need to shift from oil to alternate energy resources such as natural gas and renewable resources, and to look for alternate sources of energy other than the Middle East.

On the supply side, the energy reserves in the eastern region of Russia are crucial to Northeast Asia. To date, most discussions of Russian energy have focused on its exports to Europe, but in the last five years, Russia's interest in developing energy in relations with its eastern neighbors and potential energy partners has grown. The main reason for this "Russia East" policy is to exploit the abundant natural gas and oil resources in the east of Russia such as Sakhalin Island, Yakutsk, and Irkutsk, which could supply Northeast Asia and possibly the whole Asia-Pacific region.

Analyzing from the World Energy Investment Outlook, which was published last year by the International Energy Agency, it is estimated that Northeast Asia will account for about 26% of the world's total investment during the coming three decades. While China takes more than half of this investment demand, Russia, Republic of Korea and Japan have also significant shares.

Under these circumstances and in order to ensure energy security in the region, there are private sectors that are in the process of harnessing these abundant energy resources to supply the region. The followings are the major ongoing projects and plans in this region. Some of these initiatives are progressing more actively than others and keep a close review.

Northeast Asian Gas Pipeline Projects

Within Northeast Asian countries, there have been continuous attempts to link the natural gas resources in East Siberia and the Far East with the growing demand in Northeast Asian countries. The first major project that is being proposed is a 4,238km gas pipeline from the Kovykta field near Lake Baikal in Irkutsk, to northeast of China and Korea at a cost of around

\$15 to 17 billion. RUSIA Petroleum, owned by TNK-BP over 62% shares, has a license to develop the Kovycta gas field, which has over 1,400bcm proven reserves. At the end of last year, RUSIA Petroleum, China National Petroleum Corporation (CNPC) and Republic of Korea Gas Corporation (KOGAS) completed a joint feasibility study. Each party submitted the joint feasibility study report to its respective government for preliminary approval. The Joint Study Report recommends that the project is feasible and beneficial to natural gas consumers in the region and contributable to the development of the East Siberian economy. Upon approval of the respective governments and successful completion of commercial negotiations to implement the project, it is expected to deliver 30bcm (20bcm to China, 10bcm to Republic of Korea) between 2010 and 2012.

Sakhalin Island, which is more accessible than East Siberia, given its proximity to world sea routes and the Chinese, Korean and Japanese coasts, has also become increasingly central to Russia's energy supplies strategy for Northeast Asia. Since 1996, there have been around eight projects to explore the region for natural gas and oil. However, two major international projects – conventionally called Sakhalin 1 and Sakhalin 2 – are well on their way compared to others. In spite of some regulatory and business conflicts, new regulatory instruments and fixed tax rates that were announced by the Russian government in 2001 have helped to create a more stable and lucrative environment for large scale foreign investments in the Russian energy sector including Sakhalin. Sakhalin Energy, the Shell-led operating company for the Sakhalin 2 project, has made a series of LNG supply agreements with Tokyo Gas (1.1 million tons/year), Tokyo Electric Power Corporation (1.5 million tons/year), and Kyushu Electric Power Company (0.5 million tons/year), which will start to deliver LNG in 2007. Sakhalin Energy is now chasing the supply of LNG to Korea, China and the U.S.A. in the West-East coasts of North America.

Northeast Asian Electricity Network

There have recently been several studies of the technological potential of interconnections of national electricity grids across borders, in particular, between Russia, China, Republic of Korea and DPRK¹. According to the Russian Academy of Science, the combined potential generation capacity of hydroelectric, tidal power and natural gas power generation amount to 21.1 GW in 2020 in East Siberia and the Far East, and if nuclear and coal are added, the potential generation capacity would be 39.7 GW which far exceeds this area's own electricity demand of 14.9 GW. On the other hand, China has been facing the shortage of electricity in the past years and is expected to experience the world's most dramatic increase in power demand. In order to meet the rapid growth of electricity demand and to replace plants that are to be decommissioned, China would have to build 800 GW of new capacity by 2030. There have been a number of bilateral and multilateral talks and gatherings to discuss the plans for connecting these potential power demands and supply among countries. This design includes the utilization of abundant hydropower, natural gas in Irkutsk, Amur, and Khabarovsk in East Russian region to supply electricity to China, Republic of Korea and DPRK. Although many projects are still in their conceptual stages, the electricity sector is getting more attention from the industry and policy makers in the region as an important area for the Northeast Asian energy cooperation.

¹ At present, there are partial electricity connections between Russia-Mongolia, Russia-DPRK, and Russia-China for the sales of Russian surplus electricity to these neighboring countries. However, the interconnections between these countries have not been established yet.

Cross-Border Oil Pipeline in Northeast Asia

There are discussions still going on building oil pipelines from Taishet to Nakhodka and Angarsk to Daqing. The former is currently under a feasibility study by Transnaft, after which the Russian Federation will determine the pipeline route by the end of this year or early next year.

While oil trade by railway from Angarsk to Daqing is expected to exceed 6 million tons this year, China and Russia continue to study to implement a cross-border pipeline project with strategic partnership between two countries.

The implementation of pipeline projects in Northeast Asia and the Far East region will contribute to the diversification and security of oil sources in importing countries and also the development of the East Siberian and Far East region for Russia.

**CHALLENGES FOR THE
REGIONAL ENERGY COOPERATION**

It is noteworthy that there has been much progress in building energy networks in Northeast Asia since mid-1990s and, recently, these private-sector initiatives have induced more active involvement from governments. However, most of these ambitious plans are encountering several common economic or non-economic obstacles.

Firstly, there is a lack of energy infrastructure in each country. China, the largest possible consumer of energy in this region, lacks the infrastructure for major domestic gas usage. The country needs natural gas transportation and urban distribution networks. Japan also depends on domestic natural gas pipelines with its regional gas markets. Natural gas from Sakhalin 1 or Kovykta Projects may not reach to Japan in the foreseeable future, while the LNG supply from Sakhalin 2 field would start in 2007. Although Korea has substantial gas infrastructure in place, including a nationwide transmission network and three LNG receiving terminals, the overall size of Korean market alone is too small at present to justify construction of long-distance cross-border pipeline from Russia.

As a result, most of the preliminary findings of the academic researches and pre-feasibility studies indicate that significant infrastructure costs at both ends of the supply and demand chain will have to be addressed to maximize the potential economic benefits of full regional energy integration. Therefore, Northeast Asia would demand tremendous amount of investment.

Secondly, there is the issue of energy sector restructuring, especially in the supplier's side. In May 2003, Gazprom was chosen as the coordinator for building a gas network by the Russian government - production, transportation, and export- in East Siberia and the Far East. Potential importing countries like China and Republic of Korea hope that Unified Gas Supply System (UGSS), which is studied by Gazprom, will be well matched to dynamic market conditions for mutual benefits and earliest implementation of the cross-border project. In addition, the overall reform of the Russian gas industry must continue in order to attract enough foreign investment to develop this region.

Lastly, there are political issues that complicate regional energy cooperative frameworks. At the moment, DPRK is suffering from the serious energy shortages. In this regard, the ongoing Six-Party Meeting needs to be closely monitored since the consequences of this talk will influence the future of the energy cooperation and development in this region. These political concerns will also influence the overall pace and design of energy projects by industry and investors in the region. These also complicate the estimation of total project costs and business schemes.

DIRECTIONS FOR THE FUTURE

With the significant needs of the energy sector investments in the one hand, and the various dimensions of challenges in the other, there is a strong wake-up call for governments.

First, there is an increasing emphasis on creating right enabling conditions and lowering barriers to energy sector investment. The experiences of other regions that have already developed regional energy network will help Northeast Asian countries for the establishment of the cooperative framework.

Second, less direct intervention from the government is recommended as lender or owner. The basic principle for the regional energy integration should be based on the market principle and private firm's creative behavior.

Third, in some cases, the energy sector reform has introduced new challenges to the security of energy market. Therefore governments should monitor and assess closely the need to adjust regulatory reforms in order to secure more stable energy market and transparent investment environment.

Lastly, it seems that in most of Northeast Asian countries, there is still a long way to go to ensure basic principles of good governance. Policy makers should pay more attention whether these basic principles are properly accepted and applied including an efficient cost-reflective pricing.

Today, the regional cooperation bears some different meaning from the past. It does not mean any kind of regional block system that excludes other countries outside of their boundary. It now means the creation of the regional arm in the global cooperative network.

Considering the growing importance of Northeast Asia in the world energy demand increase in the near future, the development of sound Northeast Asian energy network would have a significant meaning to the world energy security.