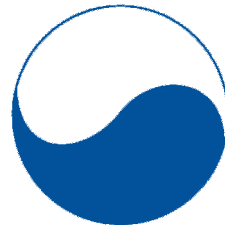

Korea's Economy 2006



a publication
of the
Korea Economic Institute
and the
Korea Institute of
International
Economic Policy

Volume 22

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CHALLENGES AND PROSPECTS FOR ENERGY COOPERATION IN NORTHEAST ASIA

by Park Bok-yeong

Northeast Asia includes China, Japan, Mongolia, North Korea, and South Korea. Russia is also a major player in Northeast Asia because recently it has emphasized development of eastern Siberia. Northeast Asia has been one of the most economically dynamic regions in the world. For the three to four decades preceding the early 1990s, South Korea and Japan achieved the world's highest economic growth rates. China, which today is recording growth rates of more than 8 percent, can be taken as an engine of the world economy and probably will compete with the United States in terms of economic size after about 20 years.

Because of its economic dynamism, the region is also where the demand for energy is increasing at the highest rate in the world. Energy demand in Northeast Asia will no doubt continue to increase very rapidly in the future. A successful solution to how the increasing demand for energy is satisfied will be essential for the region's sustained economic growth. Even if the region has a great deal of economic potential and possesses the institutional framework for economic development, it will not be able to realize its potential without the secure provision of necessary energy.

The possibility that the secure provision of energy can be accomplished regionally has been discussed as global concerns about energy security emerge. Northeast Asian countries complement each other in terms of energy resource distribution, energy technology, and capital: Japan has advanced technology and abundant capital; South Korea has the applied technology and experience in energy production needed at the stage of rapid growth; China can provide a huge energy market and sufficient labor for the construction of energy facilities; and Russia, particularly in area of eastern Siberia, is rich in energy resources such as crude oil and natural gas, as well as possessing basic technology.

Against this background, interest in regional energy cooperation in Northeast Asia is increasing. Successful cooperation among countries in the region is ex-

pected to induce efficient development of energy resources and the formation of a stable energy provision structure in Northeast Asia.

This article deals with the rationale of energy cooperation in the region and the existing obstacles to the cooperation. The final section suggests some strategies to realize cooperation.

The Present and Future of Energy Balance in Northeast Asia

Although we define Northeast Asia as only six countries—China, Japan, Mongolia, North Korea, Russia, and South Korea—the region is significant in its proportion of the world's economy and the energy it consumes. It accounts for 27 percent of the world's population and 19 percent of the world's gross domestic product (GDP). One-quarter of world's energy is consumed, and 18 percent of the world's carbon dioxide emissions are produced in the region. In 2000 the total primary energy consumption of Northeast Asia amounted to 2.3 billion tons of oil equivalent (TOE), compared with the world's total of 9.2 billion TOE. China accounted for 40 percent of the total energy consumption in Northeast Asia. Following China, Russia and Japan each consumed 25 percent of the total. The energy consumption of the remaining three countries, out of which South Korea consumed the overwhelming majority, accounted for only 10 percent of the region's total consumption.

In terms of energy consumption per capita, Japan, Russia, and South Korea were the highest in Northeast Asia (*Table 1*); their energy consumption per person exceeded 4 TOE. In contrast, the other three countries—China, North Korea, and Mongolia—are less developed in energy welfare on average and consumed approximately 1 TOE or less per person, which is below the world average of 1.5 TOE. Japan is one of the most energy-efficient countries, and South Korea is at the middle level, whereas other Northeast Asian countries like Russia and China use energy less

efficiently; their ratios of energy consumption to GDP are relatively high.

Northeast Asian countries, as a whole, depend on oil for about 40 percent of primary energy consumption. Coal accounts for a similar proportion, and natural gas and nuclear energy each accounts for approximately 10 percent. The rest is supplied by hydroelectricity. In China and North Korea dependence on coal is relatively high because their endowment is rich and motorization is less advanced in these two countries. Coal use is highest in China—it has the largest coal reserves in Northeast Asia—at 62 percent, compared with the world average of 26 percent. South Korea and Japan depend on oil relatively more than elsewhere in the region; their dependence has risen to about 50 percent.

The most important feature of the energy balance in Northeast Asia is the large mismatch between individual countries' needs for energy and their supplies of energy. For example, although Japan and South Korea are, respectively, the 4th- and 10th-largest energy consumers because of the sizes of their economies, both countries have very poor endowments of energy resources. Most of the fossil fuels, such as crude oil and natural gas, that are consumed in the two countries are imported from abroad, with more than 80 percent of the total imported from the Middle East, the least secure area in the world. China—the country with the largest population and where the

rapid increase in demand for oil is already under way—is certain to face the problem of rising import dependency for oil in the near future as industrialization and motorization proceed. China has large coal reserves, but its oil production has remained nearly unchanged for a decade. In contrast with these countries, Russia is a large energy producer and has plenty of potential for further development and production of energy.

Northeast Asian countries' varying energy consumption and endowment imply that, although there is a mismatch between energy demand and supply when it comes to individual countries, this mismatch can be overcome by countries within the Northeast Asian region. On the basis of this rationale, the South Korean government has promoted the necessity for energy cooperation in Northeast Asia; this topic will be discussed further in the next section.

Apart from such a structural mismatch, Northeast Asia shows some more noteworthy features in energy demand and supply. Northeast Asia is characterized, above all, by the rapid growth of its energy demand. While world energy demand is expected to increase at an annual rate of 1.8 percent on average between 2000 and 2020, demand in Northeast Asia is forecast to be 2.1 percent during the same period (*Table 2*). Among the region's six countries, China will lead in energy demand, while Japan will show the lowest growth rate.

Table 1: Energy Consumption and Efficiency in Northeast Asia, 2000

Regions and countries	Primary energy use (TOE, millions)	Per capita energy Consumption (TOE)	Energy/GDP (TOE/dollars, millions)	Population (millions)
World	9,179	1.51	n.a.	6,075
Northeast Asia	2,332	1.44	n.a.	1,617
China	950	0.75	912	1,273
Russia	612	4.21	1,751	146
Japan	559	4.40	105	127
South Korea	193	4.08	312	47
North Korea	16	0.71	735	22
Mongolia	3	1.03	n.a.	3

Source: Yearly Energy Statistics (Kyonggi-Do: Korea Energy Economics Institute), www.keei.re.kr/keei/frame/eng_statyear.html.

Another feature of the Northeast Asian energy economy is the growing dependence on oil in the primary energy mix. Even though South Korea and Japan have shown declining trends in the oil share of their primary energy consumption, China and Russia are expected to grow more dependent on oil to support their fast-increasing energy demand. After two major oil shocks in the 1970s, South Korea and Japan have developed many ways to diversify their energy resources and restructure their industries in less energy-intensive ways. In China and Russia, however, the main industries such as iron and steel, petrochemicals, and heavy industries are still energy intensive. According to a forecast by the International Energy Agency, oil use in China will increase from 23.8 percent to 26.7 percent and in Russia from 19.1 percent to 21.4 percent in the 2002–20 period.¹

With respect to energy security, the most urgent issue is the trend of increasing oil imports from outside the region, including from the Middle East. Already more than three-quarters of oil imports by Northeast Asia come from the Middle East. In the future, the proportion will grow because it is expected that China will come to depend more on Middle Eastern oil. Thus, Northeast Asia's oil supply will become more vulnerable to a possible oil crisis originating in the Middle East.

Need for Energy Cooperation in Northeast Asia

Why is it necessary for Northeast Asian countries to cooperate in the energy sector? What benefit is cooperation expected to create? Northeast Asian energy cooperation can enhance energy security in the region. Northeast Asia is not just a region in which future energy demand will grow quickly; it is also a region with immense reserves of energy resources. Russia is reported to have huge reserves of natural gas and crude oil in its northeastern areas of eastern Siberia and Sakhalin. Oil reserves in eastern Siberia reportedly amount to 20 billion barrels. Sakhalin is usually divided into four subregions—regions 1 to 4—and especially regions 1–3 are under active development. At present, total reserves in Sakhalin 1–3 are estimated to be 4.7 billion barrels of oil. These estimates of reserves certainly will increase because the regions have yet to be exploited. Reserves of natural gas in eastern Siberia and Sakhalin are estimated to be 50 trillion cubic feet and 53 trillion cubic feet, respectively. If regional energy cooperation makes it possible for these Russian energy resources to be developed and supply energy steadily and safely to neighboring Northeast Asian countries, Northeast Asia's high oil dependence on the Middle East can be lowered. The energy security of Northeast Asia consequently

Table 2. Primary Energy Demand in Northeast Asia, 2000 and 2020

Regions and countries	2000(TOE, millions)	2020(TOE, millions)	Predicted growth rate (percent)
World	9,179	13,167	1.8
Northeast Asia	2,332	3,515	2.1
China	950	1,707	3.0
Russia	612	841	1.6
Japan	559	586	0.2
South Korea	193	312	2.2
North Korea	16	65	7.4
Mongolia	3	4	1.8

Source: *Analysis of Northeast Asia Energy Market and Regional Information* [in Korean] (Kyonggi-Do: Korea Energy Economics Institute, 2004).

1. *World Energy Outlook* (Paris: International Energy Agency, 2002).

will be strengthened, and competition and tension among the countries in the region growing out of ensuring oil supplies can be prevented.

Regional cooperation is also beneficial to energy-exporting countries. Regional cooperation can create more favorable environments that permit energy-exporting countries to invest at lower risk large amounts of capital for energy development. Energy development projects usually take a long time to implement because they require capital and technology on a large scale. If South Korea and Japan participate in Russian and Chinese energy development projects by supplying capital and technology, the results will be mutually beneficial: a stable energy supply for South Korea and Japan, and secure sales for Russia and China. To encourage investment into foreign energy sectors, dispute settlement procedures must be set up for the trade and transport of energy products, and there must also be effective regulation of such settlements. Without these measures in place, it is very difficult to remove investment-related uncertainty. Through an energy cooperation framework, each country can collaborate with its regional neighbors to maintain those institutional requirements.

Another benefit of energy cooperation in Northeast Asia is that it would ease the political and military tension on the Korean peninsula. North Korea is now suffering from an absolute deficiency of energy, which is surely one of the reasons that North Korea sticks to its nuclear development program. Therefore, solving North Korea's nuclear problem is inevitably related to solving its energy shortage. If the nuclear problem can be solved in the regional dimension of the six-party talks, the solution to North Korea's energy problem also might be found on a regional basis. Although the regional solution for North Korea's energy shortage is not yet clear, it is certain that intergovernmental talks for solving the problem can create momentum for further energy cooperation in the region. Decreased inter-Korean tension would lower investment uncertainty in the region and thereby lead to more opportunities for regionally interconnected energy projects.

Furthermore, energy cooperation could be a cornerstone for more advanced regional integration in Northeast Asia. As a precedent, atomic energy cooperation in Europe since 1958, known as the European Atomic

Energy Community, is well known to have accelerated European integration both economically and politically. Similarly we can hope that Northeast Asian energy cooperation can stimulate regional economic integration and thereby create a foundation to lessen or prevent political and military tension in the region. As the example of Europe demonstrates, cooperation in the energy sector can be expanded into other industrial areas such as construction, railroads, and communication. The energy trade creates heavy demands on transportation such as railroads and shipping and on communication infrastructure. Therefore, energy cooperation would necessitate similar measures in these sectors and could lead to the establishment of regional standards for energy, transportation, and communication as well as policy coordination in related areas.

South Korea's Initiative for Northeast Asia Energy Cooperation

The institutional framework for discussing energy cooperation in Northeast Asia, initiated by the South Korean government, is already established. In June 2001, at the International Symposium on Energy Cooperation in Northeast Asia that was held in Seoul, South Korea's minister of commerce, industry, and energy proposed the creation of a high-level committee to develop regional energy cooperation issues into intergovernmental consultation. Shortly thereafter, in October 2001, the first intergovernmental meeting was held in Khabarovsk, Russia. At the meeting, government officials and energy experts from six countries—China, Japan, Mongolia, North Korea, Russia, and South Korea—adopted a declaration called the Khabarovsk Communiqué.

The communiqué contains agreement on basic principles and objectives for energy cooperation in Northeast Asia:

- Recognize sovereign rights over energy resources;
- Develop free and fair trade;
- Promote and protect investments;
- Protect the environment;
- Transport energy products in a free and nondiscriminatory manner;

- Increase the supply of energy from the Northeast Asian region;
- Optimize the efficiency of supply and use of energy; and
- Minimize the environmental impact of energy projects through an improved energy mix.

The Khabarovsk Communiqué also recommended institutional arrangements: a meeting of senior officials of the six countries, a secretariat, and working groups on energy issues such as energy restructuring, electric power interconnection, and interstate transit of fossil fuels.

Subsequently, a preparatory meeting aimed at creating a working committee for Northeast Asian energy cooperation was held in Seoul late 2001, at which participating countries agreed to create a committee; the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) accepted the role of interim secretariat of the committee.

In April 2003 a senior officials meeting (SOM) was held in Vladivostok, Russia, but it was not entitled the first SOM for Northeast Asian energy cooperation because China and Japan did not attend. Instead, international organizations such as UNESCAP, the Asian Development Bank, and International Energy Agency participated.

UNESCAP hosted the first meeting of the senior officials committee on energy cooperation in Northeast Asia, which was held in Ulaanbaatar, Mongolia, in November 2005. At the meeting, South Korea initiated the formation of an intergovernmental consultation organization. Participating countries agreed to create an SOM composed of director-level officers from the six countries and place working groups under the SOM. On the basis of these agreements, the Ulaanbaatar Declaration was adopted and, consequently, an intergovernmental body for discussing Northeast Asian energy cooperation was officially launched. As its goals, the SOM agreed on energy information sharing, investment promotion in energy infrastructure, and an increase in intraregional energy trade. The SOM will be held annually. Plans call for six working groups to be set up: a working group for energy planning and policy is expected to be first.

Thus, an institutional framework for Northeast Asian energy cooperation has been established.

Impediments to Energy Cooperation in Northeast Asia

Energy cooperation in Northeast Asia remains at an early stage; thus far, consultations among six governments have been the result. Northeast Asian countries have a long way to go to achieve successful energy cooperation, and many obstacles stand in the way.

The primary impediments to increased cooperation are a lack of consensus on regional energy cooperation and conflicts of interest among the countries of the region. Until now, most of the countries have sought solutions to their energy problems through bilateral relations rather than through multilateral cooperation within the region. In addition, Northeast Asian countries deal with each other competitively rather than cooperatively with regard to energy issues. For example, China and Japan have competed vigorously on the issue of the route of the eastern Siberian oil pipeline. Both countries expect eastern Siberian oil to be their alternative oil source that will reduce their oil dependence on the Middle East. Therefore each country has worked to the utmost to draw the outlet of the pipeline nearer to itself. Russia preferred to deal with this issue bilaterally rather than regionally because a bilateral strategy would strengthen its leverage and bargaining power in the energy economy of Northeast Asia.

Some territorial disputes—between China and Japan and between Japan and Russia—are still going on. These disputes are not only deeply interrelated with energy exploration around the territories; they also make other regional energy cooperation difficult. The recent South Korean initiative for Northeast Asian energy cooperation can be seen as an attempt to reverse this confrontational situation and create a cooperative mood in the region.

In addition, the heterogeneity of economic systems in Northeast Asia is a challenge to energy sector cooperation. South Korea and Japan have developed their energy industries on the basis of a market economy, but China and Russia are still struggling to transform their planned economies into market economies and

are restructuring their energy industries in the midst of such transformations. Russia recently has shown a willingness to turn some of its energy installations into a state-controlled industry. North Korea has not yet begun a significant transformation of its economic system. These various economic systems could be a serious obstacle to progress in energy cooperation because some countries will object to market-based transactions and some will object to state-driven industry.

The lack of transparent procedure and institutional protection for foreign investment is deterring large-scale foreign investment into China's and Russia's energy sectors. Without sufficient investment in the development of these two countries' energy reserves, the expected energy supply to South Korea and Japan cannot be achieved.

The heterogeneity of energy markets is also a deterrent to Northeast Asian energy cooperation. Although energy demand patterns in China, Russia, and North Korea are primarily dependent on domestic energy resources and cheaper energy resources, South Korea and Japan rely heavily on imported energy resources and more eco-friendly energy products. Each country pursues an energy policy appropriate to its demand pattern; thus, these differences will compromise the achievement of mutually beneficial strategies. Intergovernmental collaboration can provide guidance in achieving an optimal balance of energy supply and demand as well as an integrated plan for energy exploration, project financing, and environmental protection.

The question of how to finance the huge initial investment needed to develop Northeast Asia's energy resources and build infrastructure for cross-border transport of energy also needs to be answered before regional energy cooperation can occur. Russia, China, Mongolia, and North Korea desperately need more investment. South Korea and Japan have the means to help, but the high risk of energy exploration, the lack of legal protection for foreign investment, and inconsistency or nationalistic tendencies in energy policies have kept South Korea and Japan from more actively investing in their neighbors' energy sectors. A multinational financing mechanism is therefore needed to spread and mitigate the risk. Such a mechanism

would also provide the institutional investment protection that is currently lacking.

The historical legacies and political conflicts among the countries are also obstacles to regional energy cooperation. World War II and the Cold War have deeply influenced diplomatic relationships in Northeast Asia. The conflicts surrounding North Korea's nuclear issue and the emotional confrontation between China and Japan deriving from the colonial experience are typical examples that hinder further cooperation in the region. Previous energy cooperation in Northeast Asia has been implemented only project by project, and China and Japan actually prefer an ad hoc bilateral cooperative framework to a multilateral one.

Without political consensus, effective energy cooperation in Northeast Asia becomes next to impossible. Many important regional projects such as natural gas development, oil pipelines, and electric grid interconnection absolutely require the consensus and mutual trust of all countries involved. Bilateral negotiations frequently end in stalemate, but a multilateral approach can provide all participating countries more options for agreement. A multilateral approach requires in turn the formation of a consensus or a sociopolitical understanding that is still not sufficient in Northeast Asia.

Prospects

Because of the many obstacles to energy cooperation in Northeast Asia, a visible result will be difficult to bring about in the near future. Instead, competition or confrontation over energy issues is more likely to prevail in the region. But we can expect that a sustained confrontation can be transformed into momentum for recognizing the necessity for energy cooperation in the region and then for bringing individual countries to the table. Pessimism about the future of energy cooperation is not the only realistic attitude because it is clear that energy cooperation among Northeast Asian countries offers tremendous potential benefits for all.

To develop regional cooperation and enjoy its riches, Northeast Asian countries first have to achieve some small success stories of energy cooperation in the region. It can be information sharing, joint stockpiling of emergency oil reserves, or cooperation among the countries in research and development of energy

technology. Success in any part will help build the trust and consensus necessary for further energy cooperation. We cannot exclude the possibility that regional collaboration for solving the problem of North Korea's energy shortage can be derived from dealing with North Korea's nuclear issue. This may well become the first success story of energy cooperation in the region.

Efforts to diversify mutual exchange and dialogue are needed. The Northeast Asian countries do not have to rely on intergovernmental consultation, but they need to have various dialogue channels such as an energy experts' forum and an energy business forum. The forums can develop agendas to require policy coordination and suggest cooperative and feasible ideas to the governments. The agendas may include investment protection treaties, dispute settlement mechanisms, harmonization of technical standards, and a blueprint for financing regional energy development projects. Producing a visible result, even if small, will be the first step for the regional energy community in Northeast Asia.

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