

Energy Cooperation in Northeast Asia: The Role of Mongolia¹

Kang WU,² Batsaikhan USUKH³ and Bulganmurun TSEVEGJAV⁴

Abstract

Northeast Asian economies are important consumers, producers, and traders of energy. The Asia-Pacific region in general and Northeast Asia in particular is highly dependent on external energy supplies, especially oil. What is common in Northeast Asia is that most of the economies have experienced higher rates of growth in demand, either in the past or at present, are highly dependent on energy imports, and have good prospects for increasing natural gas consumption and regional cooperation. For Northeast Asian economies, exploring the opportunities for more Russian crude imports, developing and utilizing more natural gas, the establishment of joint emergency oil stockpiles, building international oil and gas pipelines in Northeast Asia, and better coordination among importing countries for reducing oil price shocks, and so forth, are important to manage the ever-growing import dependence on Middle Eastern oil. Even though Mongolia is a landlocked country, the economy has been growing fast and the energy sector is expanding. So far, the role of Mongolia is minor in regional energy cooperation, except for trade with its two giant neighbors. As Mongolia attracts more foreign investment in its hydrocarbon sector and the call for regional energy cooperation increases, Mongolia will have a chance to participate in some of the energy cooperation schemes discussed in this article. The Mongolian government should pursue such plans actively. Executing these energy cooperation plans will not only benefit Mongolia, but also promote economic integration and better international relations in Northeast Asia at large.

Keywords: energy consumption, energy security, LNG imports, natural gas pipelines, Northeast Asia, oil import dependence, oil pipelines, regional cooperation.

Introduction

In a broad sense, Northeast Asia includes China, Japan, South Korea, Mongolia, North Korea, the Russian Far East, Taiwan, and Hong Kong. In this report, however, our

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² Kang Wu, Ph.D., is a Senior Fellow at the East-West Center, Honolulu, Hawaii, US.

³ Batsaikhan Usukh, Ph.D., is a freelance researcher and affiliated with the School of Economics at the Mongolian National University of Agriculture, Mongolia.

⁴ Bulganmurun Tsevegjav is the Programme Officer for Energy Efficiency and Disaster Management, Environment Cluster, UNDP Mongolia.

definition of Northeast Asia excludes Russia, which will be discussed separately in the context of Northeast Asia plus Russia.

Northeast Asian economies are important consumers, producers, and traders of energy. On an overall basis, Northeast Asia, as defined above, accounts for over two-thirds of the primary commercial energy consumption⁵ (PCEC) of the Asia-Pacific region.⁶ As for Russia, it is the third largest user as well as producer of PCEC in the world, after the US and China.

Differing political systems, economic management styles, and resource endowments have meant that so far Northeast Asian economies have been, for the most part, following a policy in an uncoordinated fashion as far as energy is concerned, despite some progress in regional energy cooperation. What is common in Northeast Asia is that most of the economies have experienced higher rates of growth in demand, either in the past or at present, are highly dependent on energy imports, and have good prospects for increasing natural gas consumption and regional cooperation (Fesharaki and Wu, 2002). So far, the role of Mongolia is minor in regional energy cooperation, except for trade with its two giant neighbors. As Mongolia attracts more foreign investment in its hydrocarbon sector and the call for regional energy cooperation increases, the chances are Mongolia is likely to become more active in the Northeast Asia energy field.

Focusing on oil and natural gas issues, regional cooperation in Northeast Asia plus Russia, and the role of Mongolia, the rest of this article is organized as follows. The second section deals with overall energy issues in Northeast Asia and the Asia-Pacific region as a whole. Specifically, the issue of Northeast Asia's energy dependence with respect to coal, oil, and natural gas will be examined. The third section reviews oil and gas market developments in Northeast Asia with a discussion on the Asia-Pacific regional situation as well. Energy development in Mongolia is discussed in the fourth section. The prospects for Northeast Asia plus Russia regional cooperation in oil and gas fields, and the role of Mongolia, are examined in the fifth section, followed by concluding remarks in the final section.

The Energy Situation: Northeast Asia in the Asia-Pacific Context

The Asia-Pacific region is highly dependent on external energy supplies, particularly oil. As shown in Table 1, the region is clearly dependent on oil imports as the gap between regional oil production and consumption is huge. Such dependence is expected to continue. The import dependence for natural gas is low at present but may grow over the long term. Coal reserves in the Asia-Pacific region, however, are quite ample to meet anticipated demand.

⁵ Primary commercial energy is defined to include coal, oil, natural gas, hydroelectricity, and nuclear power.

⁶ The Asia-Pacific region is defined in this article as including Northeast Asia, Southeast Asia, South Asia, and Oceania (Australia, New Zealand, and the Pacific Islands).

Table 1
Asia-Pacific Region's Share of Fossil Energy in the World, 2008

	Reserves, End of the Year		Production		Consumption	
	Amount ¹	Share of World	Amount (mmboe/d)	Share of World	Amount (mmboe/d)	Share of World
Oil	42.0	3.3%	7.6	9.7%	23.6	30.1%
Coal	259.3	31.4%	40.5	61.1%	40.5	61.5%
Natural Gas	543.5	8.3%	7.4	13.4%	8.7	16.0%
Fossil Energy Total	n.a.	n.a.	55.5	27.8%	72.8	36.7%

1. Oil: billion barrels for oil, coal: billion metric tons, and natural gas: trillion cubic feet.

Source: BP (June 2009) and FACTS Global Energy Database (2009).

When it comes to Northeast Asia, the unique problem of energy import dependence has become more serious. Not only does Northeast Asia have a higher dependence on oil imports, but dependence on natural gas imports is also significant (Table 2). If China is excluded, Northeast Asia has a huge dependence on coal imports as well.

Table 2
Northeast Asia's Share of Fossil Energy in the World, 2008

	Reserves, End of the Year		Production		Consumption	
	Amount ¹	Share of World	Amount (mmboe/d)	Share of World	Amount (mmboe/d)	Share of World
Oil	16.1	1.2%	3.8	4.8%	15.3	19.5%
Coal	114.5	13.9%	28.2	42.5%	32.9	49.9%
Natural Gas	86.7	4.3%	1.4	2.5%	4.1	7.6%
Fossil Energy Total	n.a.	n.a.	33.4	21.2%	52.3	26.3%

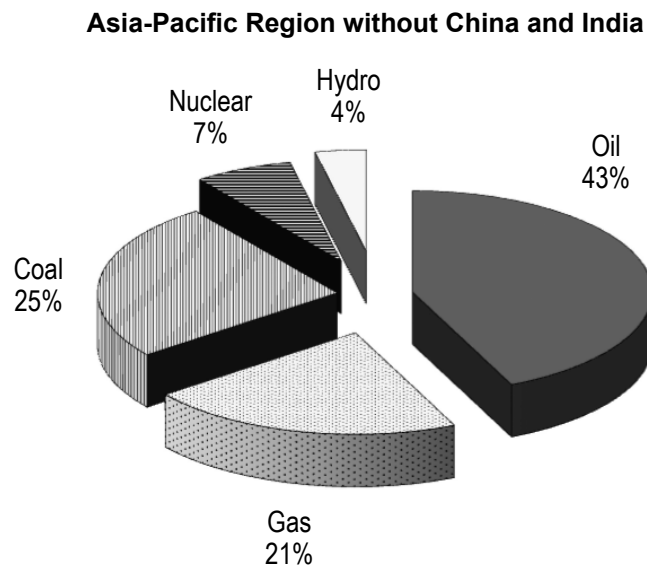
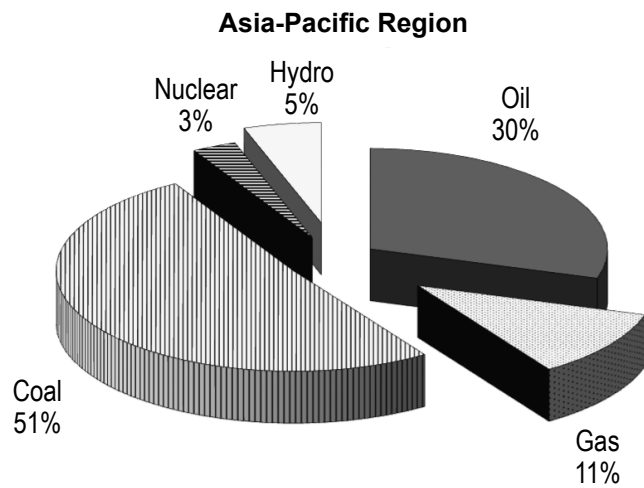
1. Oil: billion barrels for oil, coal: billion metric tons, and natural gas: trillion cubic feet.

Source: BP (June 2009) and FACTS Global Energy Database (2009).

Northeast Asia is part of the Asia-Pacific region. Despite Northeast Asia's dependence on coal imports, the import requirements can be satisfied largely by supplies from other Asia-Pacific countries, such as Australia and Indonesia. For natural gas, Indonesia, Australia, Malaysia, and Brunei are important exporters of liquefied natural gas (LNG) to Northeast Asia, though Northeast Asia also needs to import LNG from the Middle East. Beginning in 2009, the Russian Far East has become a gas provider to Northeast Asia and its importance as a LNG supplier will increase in the future. Beyond gas and coal, oil is the only fossil energy in which the entire Asia-Pacific region is highly dependent on imports, particularly from the Middle East. Because of the large and growing need for oil and gas in Northeast Asia and the desire to manage its import dependence on the Middle East, the role of Russia has become more important.

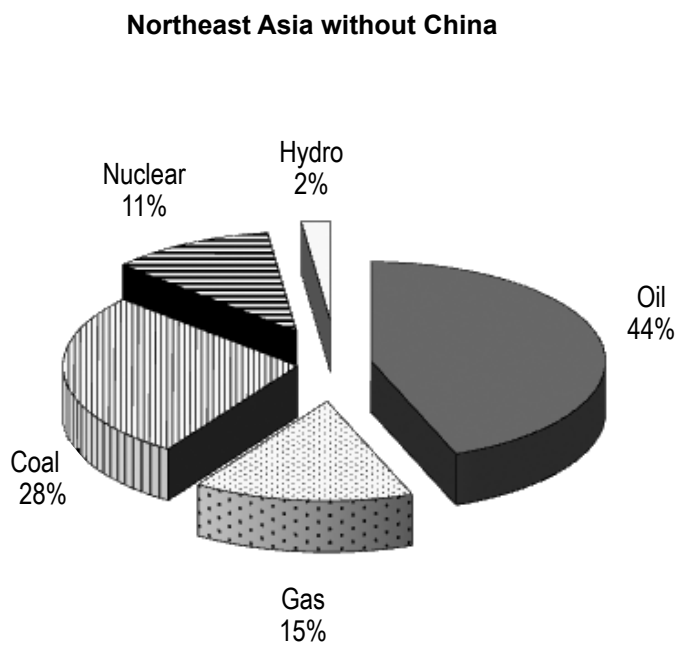
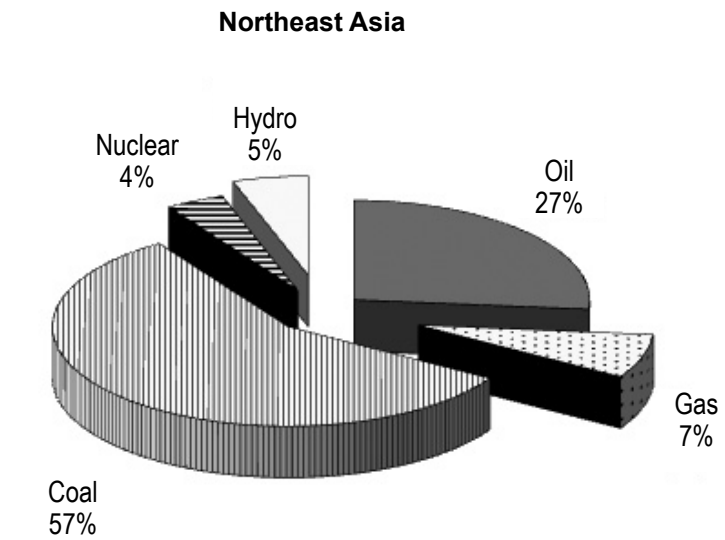
Coal is currently the largest source of primary commercial energy consumption in the Asia-Pacific region (Figure 1). In Northeast Asia, coal is also the largest source, followed by oil (Figure 2). If China is excluded, oil would lead coal by a large margin as the largest source of primary commercial energy in Northeast Asia, as well as the Asia-Pacific region at large.

Figure 1
Structure of Primary Commercial Energy Consumption
in the Asia-Pacific Region, 2008



Source: BP (2009)

Figure 2
Structure of Primary Energy Consumption in Northeast Asia, 2008



Sources: BP (2009) and FACTS Global Energy (2009).

The Asia-Pacific region in general and Northeast Asia in particular are much less dependent on natural gas than on oil or coal. Despite its economic benefits, natural gas in Northeast Asia forms 7 percent of the energy mix and 11 percent in the Asia Pacific, which is much lower compared to its share of the world's energy supply of 24 percent. However, the potential for the increased use of natural gas is high for some of the Northeast Asian economies.

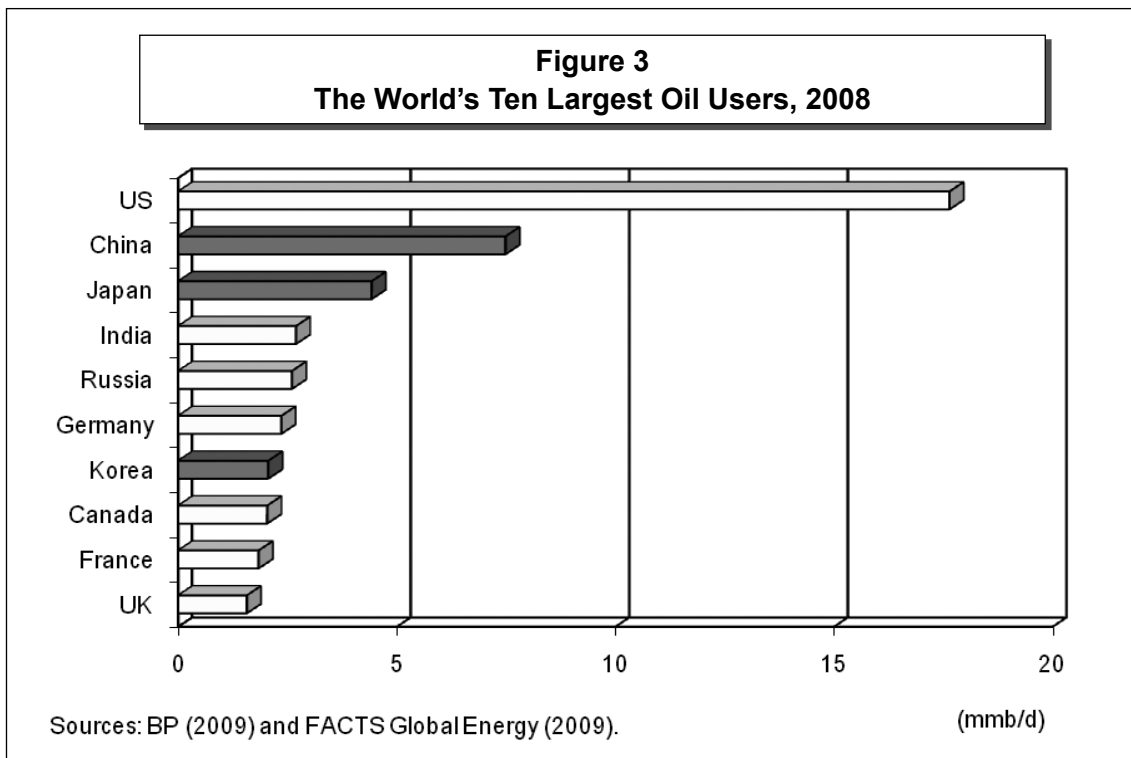
Six economies in the Asia-Pacific region have commercial nuclear power reactors: Japan, South Korea, Taiwan, China, India, and Pakistan, as well as Russia. Four of the six are located in Northeast Asia. Nuclear power currently accounts for 4 percent of Northeast Asia's primary commercial energy consumption, as compared to 3 percent for the Asia-Pacific region and 6 percent for the world as a whole in 2008. Over 96 percent of the Asia-Pacific region's nuclear power consumption is from Northeast Asia.

Hydroelectric energy is important for Northeast Asia, though its share in total primary commercial energy consumption remains low. Northeast Asia accounted for over 70 percent of the Asia-Pacific region's total hydroelectricity consumption in 2008.

Oil and Gas in the Asia-Pacific Region and Northeast Asia

Oil is special in the energy makeup of the Asia-Pacific region and for Northeast Asia. In 2008, the Asia-Pacific region had less than 4 percent of the world's proven oil reserves, and under 10 percent of the global oil production, but consumed 30 percent of total oil. The situation is even worse in Northeast Asia despite the presence of China. The huge gap in regional oil production and the high demand in the Asia Pacific generally, and Northeast Asia in particular, has become an issue of concern for most economies in the region in terms of energy security. The high and volatile oil prices seen since 2004, as well as the outbreak of world economic crisis in late 2008, have strengthened the view that energy or energy supply security is important for energy-importing countries.

Northeast Asia is home to some of the world's largest oil-consuming countries. China is currently the world's second largest oil-consuming country, though it is far behind the US. Japan is the third largest and South Korea the seventh largest in the world (Figure 3).

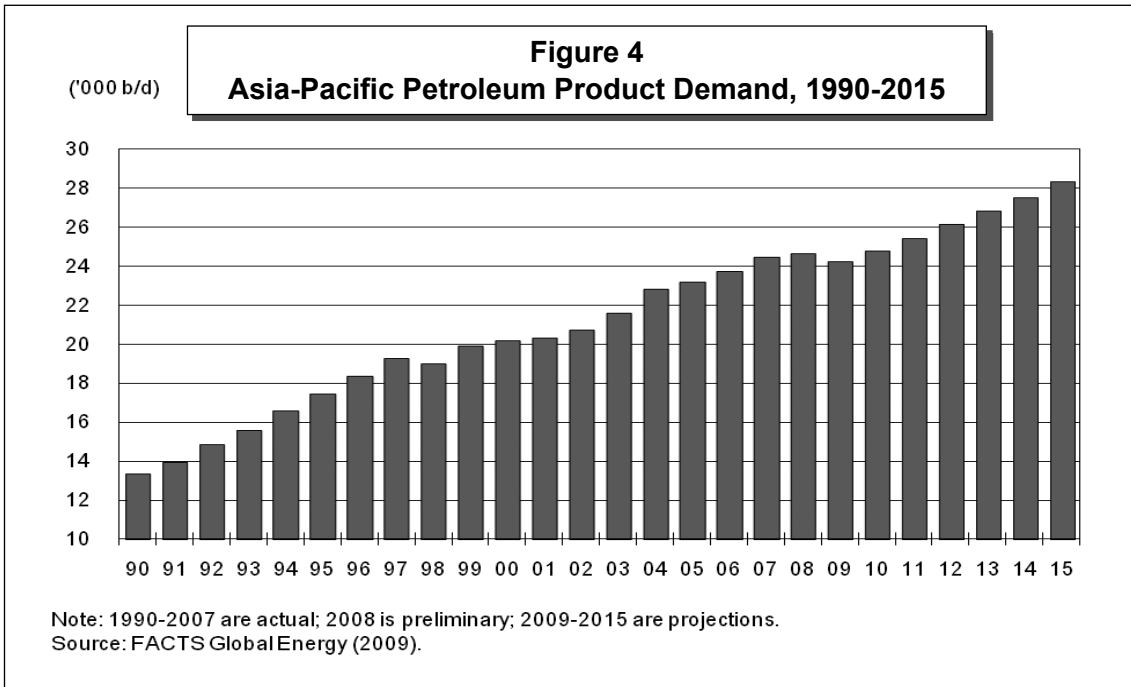


The Asia-Pacific region has a high dependence on Middle Eastern oil at over 80 percent, and this is expected to increase in the future. In fact, the Middle East has over 60 percent of the world's proven oil reserves at present and it is the closest source of oil imports for the Asia Pacific from anywhere outside the region. Although the dominant role of the Middle East in supplying oil to Asia is unlikely to change in the foreseeable future, many Asian countries are making efforts to diversify their source of energy supply.

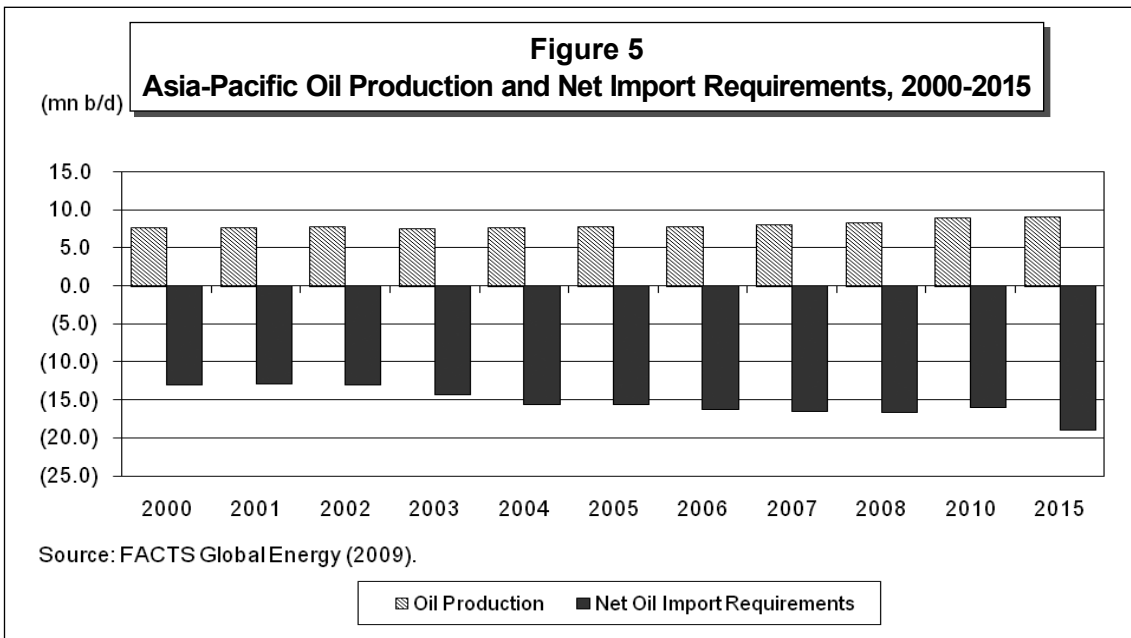
Since the mid-1990s, additional supplies from outside the Middle East have been on the rise in the form of crudes from the Atlantic Basin, particularly West Africa and to a lesser extent, the North Sea. Other sources include Russia, Central Asia, and the rest of the world. These crudes will never fully replace Middle East crudes, but they provide more options for Asian buyers.

For Northeast Asian economies, exploring the opportunities for more Russian crude imports and other forms of energy cooperation is an important way to manage the ever-growing import dependence on Middle Eastern oil. Energy cooperation measures may include, but are not limited to, developing and utilizing more natural gas, the establishment of joint emergency oil stockpiles, building international oil and gas pipelines in Northeast Asia, and better coordination among importing countries for reducing oil price shocks, etc.

These measures, if all implemented, can help diversify the source of energy supply for Northeast Asia and the Asia-Pacific region as a whole. However, it will not end the import dependence on the Middle East. As shown in Figure 4, oil consumption in the Asia-Pacific region is expected to continue its rapid growth over the next 10 to 15 years. With flat oil production of its own, net oil import requirements are expected to be substantially higher in 2015 as compared to 2008 (Figure 5). Oil supplies from regions other than the Middle East can only satisfy a fraction of the incremental demand.



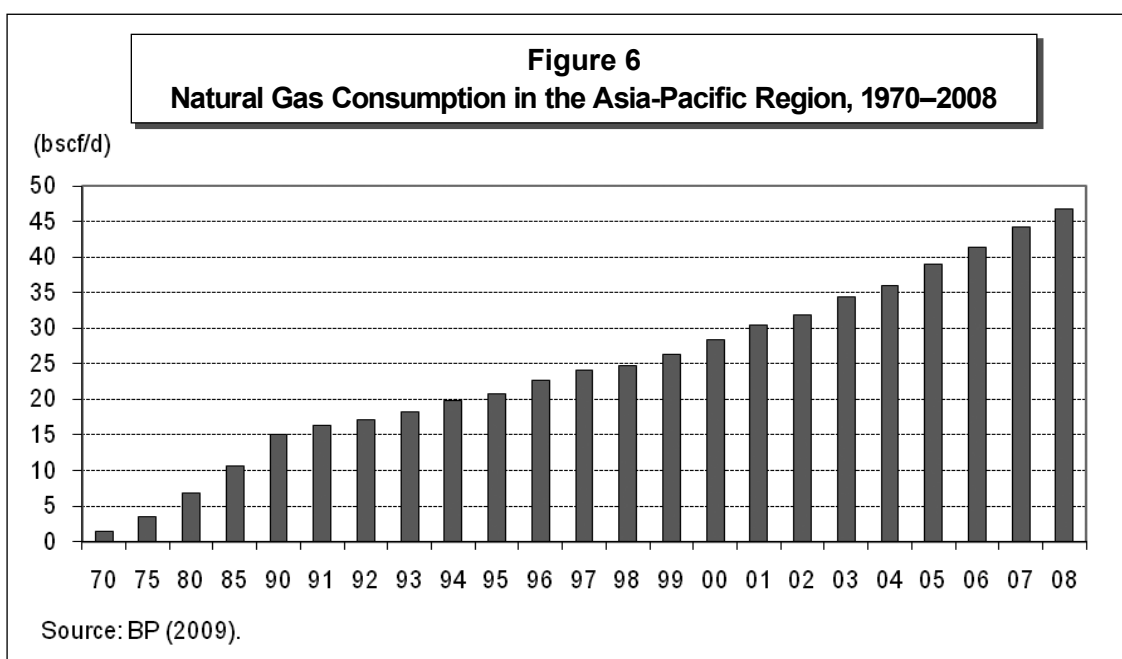
In Northeast Asia, every economy is a net oil importer. Russia as a whole is a large exporter of oil, but the Russian Far East is itself short of oil. Over the coming decade and beyond, the oil dependence of Northeast Asia will rise further. As such, the regional economies should seek ways of mitigating their vulnerabilities through regional cooperation, better coordination and planning, and more efficiency in energy use.



Compared to oil, the share of natural gas use in the Asia-Pacific region’s total energy consumption is relatively low, but growth has been fast. Between 1980 and 2008, the average growth in gas consumption in the Asia-Pacific region was 7.1 percent, more than

twice as fast as the average growth rate of oil consumption and nearly three times as fast as the average growth rate of natural gas consumption for the world as a whole during the same period. In 2008, the region consumed 47 billion standard cubic feet per day (bscf/d) of natural gas, up from 7 bscf/d in 1980, 15 bscf/d in 1990, and 28 bscf/d in 2000 (Figure 6).

The natural gas trade, which is predominantly in the form of LNG, has also been growing fast in Asia. In fact, Asia dominates the world LNG market, accounting for over two-thirds of the LNG trade in 2008. In comparison, the gas trade via pipeline is quite limited in Asia, but expansion is expected.



Japan was the first country in the world to start importing LNG in 1969. In 1970, LNG imports to Asia were less than 1 million metric tons per year (mtpa) (“Asian demand growth driving global gas trade outlook” 2000). After the inclusion of South Korea, imports rose to 28 mtpa in 1986. Taiwan became a buyer in 1990, and the combined LNG imports of all three reached 39 mtpa (“Asian demand growth driving global gas trade outlook” 2000).

Until 2004, when India began to import LNG, all three Asian LNG importers came from Northeast Asia: Japan, South Korea, and Taiwan. Japan and South Korea are the world’s largest and second largest LNG importers respectively, while Taiwan is the fourth largest after the US. China became Asia’s fifth and Northeast Asia’s fourth importer of LNG in 2006, when its Guangdong Terminal received its first cargo in May 2006. In other words, four out of five LNG importers in Asia at present are from Northeast Asia. By 2008, the LNG imports of Northeast Asia had jumped to 117 mtpa. In 2009, however, the imports are expected to drop to 110 mtpa due to the impact of the global economic crisis.

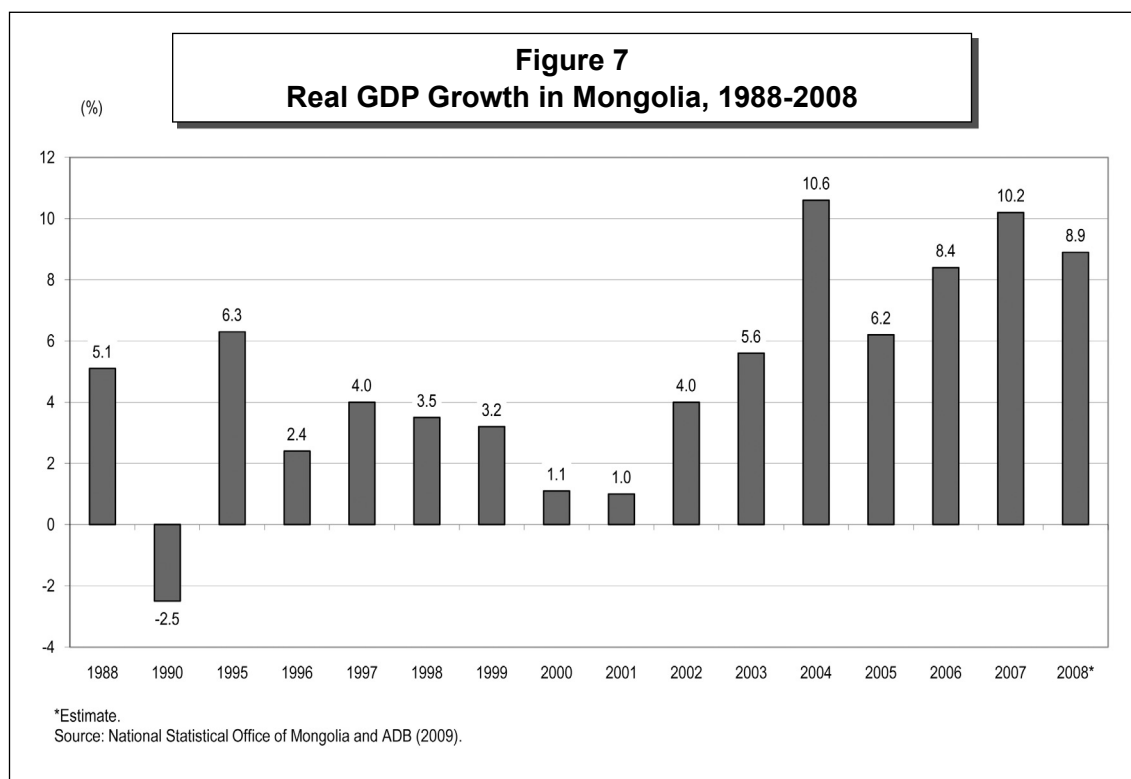
In the future, there is a huge potential for Asia to increase its gas imports (Wu and Fesharaki 2007). The growth will be led by China and India, but even the matured economies of Japan and Korea are expected to import more LNG as well. Moreover, a

few other Asia-Pacific nations, such as New Zealand, Pakistan, Singapore, Thailand, and the Philippines, are poised to become new LNG importers. By 2015, the LNG imports by Northeast Asian economies are likely to reach 160 mtpa, up from 117 mtpa in 2008.

Increasing the use of natural gas is important to improve the structure of energy consumption in Northeast Asia. In Japan, South Korea, and Taiwan, the share of natural gas use in total primary commercial energy consumption is in line with or above the regional average in Asia. However, Mongolia and North Korea use no natural gas, while the share of natural gas in China’s primary commercial energy consumption is extremely low, at less than four percent. As such, Northeast Asian economies have a long way to go to increase natural gas use. To achieve a higher growth in consumption and increase the natural gas supply in Northeast Asia, regional energy cooperation will be important, in addition to policy support and improvements in gas infrastructure.

Energy Development in Mongolia

Mongolia is a landlocked country, sandwiched between Russia in the north and China in the south. As a result of the democratic reforms carried out during 1990, the country has been transformed, from a socialist regime with a centrally planned economy to a democratic society with a system of market economy. The Mongolian economy depends mainly on the performance of agriculture and mining, with the latter generating more than two-thirds of the country's export earnings. The GDP growth in Mongolia has been impressive in recent years, and was in the range of 6.2-10.6 percent during the 2005-2008 period (Figure 7).



At present, energy in Mongolia is provided primarily by coal, accounting for 80 percent of the primary energy supply. The rest comes from hydroelectric power, wood, oil, and other sources. The power sector of Mongolia supplies electricity to around 70 percent of the population, and the rest have not yet been connected to the grid.

To make the energy sector more self-reliant, secure and cost-efficient, the government has undertaken a series of policy actions to improve the reliability and cost effectiveness of power distribution through a unified power grid, establishing hydropower plants on the Durgun, Taishir, and other rivers, increased production of renewable energy resources, and the promotion of the use of LPG by households and transport as a relatively “clean” fuel compared to other fossil fuels. A few years ago the government initiated the Mongolian Integrated Power System Program that mainly focuses on developing reliable and affordable energy supplies, contributing to regional development, and improving energy security in the country and the region. Within this program, Mongolia will establish an electricity supply system throughout the country based on finance made possible within the energy sector development strategy.

Based on analysis by Tsevegmid (2005): “Mongolia’s coal resources are roughly 150 billion tons, of which 20 percent is coking coal and 80 percent is lignite or steam coal.” However, recoverable coal reserves are around 20 billion tons, and Tsevegmid goes on to say that, “The reserves are located in 240 deposits ... in 12 major coal basins in three regions, and approximately 25 percent of these deposits have been confirmed by geological surveys”⁷ (Tsevegmid 2005). Coal production in Mongolia reached approximately 7.8 million tons in 2005, up from 5.1 million tons in 1998. In 2005, 2.23 million tons were exported to China.

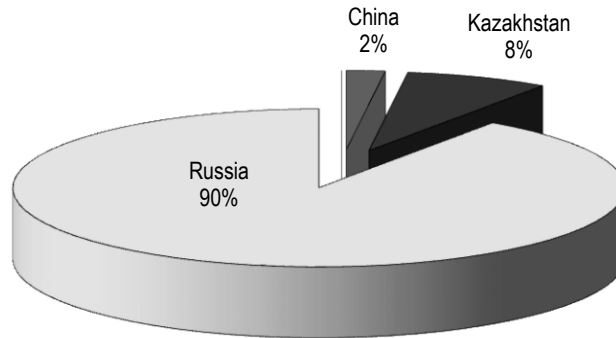
The legal basis of exploring for oil, making investments in this sector, and working together with foreign investors was established by the *Law on Oil* legislation, adopted in 1991 and amended in 2003. According to the amended law, the investigation period for oil is five years with an extension of another five years, and the exploration period may be 20 years with two extensions of five years each. This gives domestic and foreign investors the possibility of working in an oil field for up to 40 years.

Starting from 1993, Mongolia has been working with foreign investors to establish production-sharing contracts (PSCs). Currently, foreign companies from the US, China, and Canada are exploring for oil in Mongolia under PSCs. By the end of 2005, oil production from these contractors reached a total of “1.2 million barrels of crude oil from their contract areas, and 1.1 million barrels were exported by railway and trucks to China” (Government of Mongolia 2006).

Since Mongolia does not have any refineries, all petroleum products, such as gasoline, diesel fuel, jet fuel and lubricating oils are imported. The total volume of imports in 2006 was approximately 14 thousand barrels per day (b/d), which came from Russia, China, and Kazakhstan (Figure 8). Russia is the main supplier of oil products to Mongolia, accounting for about 90 percent of total imports. Imports from Kazakhstan and China amount to only eight and two percent respectively. Until the 1990s, the Soviet Union was the only source of Mongolia’s imports, since Kazakhstan was also part of the Soviet Union until that time.

⁷ Internationally recognized proven coal reserves of Mongolia are far less than either the resources or the recoverable reserves data cited here.

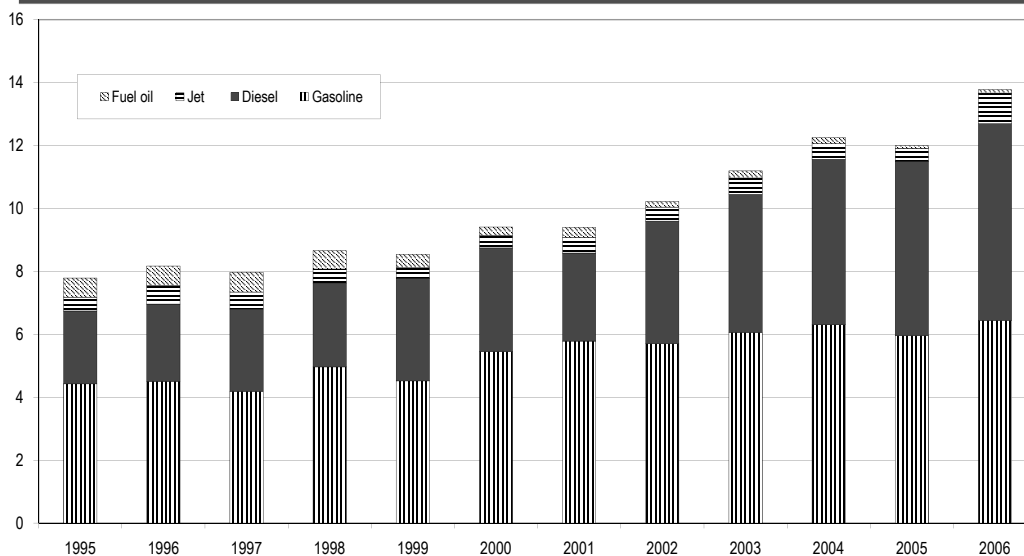
Figure 8
Mongolia's Imports Oil Products by Country, 2006



Source: National Statistical Office of Mongolia.

Demand for oil products in Mongolia has dramatically increased since 2000 due to the growing economy. As shown in Figure 9, gasoline and diesel have been the major petroleum products imported, accounting for 47 and 45 percent respectively of the total in 2006. The demand for diesel continues to grow because of the increased use of small diesel generators, railway transportation traffic, and increased operations in the mining sector. Gasoline demand is also continuing to grow in line with the increasing number of vehicles imported each year.

Figure 9
Mongolia Petroleum Product Imports



Source: National Statistical Office of Mongolia.

Overall, Mongolia depends heavily on coal for meeting its energy demands. Coal accounts for over three-quarters of the primary commercial energy consumption in the country, followed by oil. The share of hydroelectricity is small. In addition to commercial energy, energy from wood and other biomass sources is also consumed in Mongolia. In the long run, if construction of one of the long-distance pipeline projects passing through Mongolia can be achieved, the country will start using natural gas. The projects for this type of energy cooperation will be further discussed below.

Oil and Gas Cooperation in Northeast Asia: Role of Mongolia

Because of the increasing concerns over energy security, the competition for securing oil supplies in Northeast Asia and the Asia-Pacific region at large has intensified. Tensions between China and Japan have been an issue for a while because of their overlapping claims to petroleum resources in the East China Sea and competing oil pipeline proposals for importing Russian oil and gas. However, many countries also realize that enhanced energy cooperation, if successfully achieved and economically sound, can also help achieve the goal of greater energy security, both in the region and for individual economies. This section will focus on areas where potential opportunities for oil and gas cooperation in Northeast Asia⁸ exist. In this regard, Northeast Asian economies can cooperate in the following areas.

Cooperation in oil pipelines

This is still a sensitive issue. China hopes to import crude oil from Russia by pipeline as early as possible. The advantage of the Chinese pipeline proposal is economic, where Chinese demand for oil is growing and the market is huge. Japan, for the sake of its own energy security, is encouraging Russia to build the oil pipeline to the Pacific Coast of the Russian Far East. The pipeline is longer but gives Russia the option of exporting oil to other Asian countries as well as China. Russia has its own considerations in choosing one route over another, but in the end wishes to achieve both a secured market and the option of exporting to other countries. If the three countries only chose to maximize their own interests, building a suitable pipeline project would either take a long time or be impossible, because of the nonparticipation of one party or another in these schemes. If these countries could mix cooperation with sound economic evaluation, a joint plan for a pipeline running from East or even West Siberia to the Pacific Coast of the Russian Far East with a branch line to China would be attractive and might work in the end. That is precisely what happened in April 2006, when Russia began building the Eastern Siberia – Pacific Ocean (ESPO) oil pipelines in the Far East. Since mid-2009, Russia and China have started executing their plan to build the branch pipeline to Daqing, China. The new approach will prove to be a win-win solution for many parties in Northeast Asia.

⁸ Others discussed the cooperation in building an electricity grid in Northeast Asia. For further reference, see (1) Yun W.C. and Z.X. Zhang. 2005. "Electricity Power Grid Interconnection in Northeast Asia," *Energy Policy*, Volume 33, 2298-2309; and (2) Kanagawa, W. and T. Nakata. 2004. "Analysis of the Electricity Grid Interconnection between Korea and Japan—Feasibility Study for Energy Network in Northeast Asia," *Energy Policy*, Vol. 32, 1015-1025.

Cooperation in natural gas pipelines

This is an area where it is possible for Mongolia to play an important role. At present, Northeast Asia has no oil or natural gas pipelines. For decades, quite a few natural gas pipeline proposals have been made by various parties from Russia, China, Japan, and South Korea. Most of these pipelines involve Russia as the source of supply but additional proposals also involve Central Asia as a gas exporter (Fesharaki and Wu 2002).

Among the many proposals, one of them relates to gas pipelines from the Sakhalin-1 gas field in Russia to Japan. Because of the slow growth of gas demand in Japan and the high cost associated with the 2,000 km pipeline project, which may require Japan's existing LNG import facilities to be replaced, the proposal has not made much progress. Recently, a proposal was made to build a gas pipeline from Sakhalin-1 to Northeast China instead. An alternative plan is to liquefy the gas and export it as LNG to Asia.

Two gas pipeline proposals have been made from East Siberia in Russia. One is from Yakutsk in the Republic of Yakutia to China, South Korea, and Japan, with one option to pass to North Korea rather than China. This 4,800 km pipeline proposal has been shelved because of the high cost. The other plan is to build gas pipelines from the Kovykta field in Russia's Irkutsk to China and South Korea. The Irkutsk pipeline of over 4,000 km also has two possible routes: one goes through Mongolia, and the other one goes directly to Northeast China and then to South Korea via the Yellow Sea. The focus now is on the second option. In our opinion, if Northeast China can get Sakhalin-1 gas by pipeline, the option for sending gas from Kovykta to North China through Mongolia and then to South Korea will be a better option. Compared to Northeast China, North China has a higher demand for gas and higher paying capability. North China is also adjacent to the more developed Lower Yangtze Region and Russian gas can be sent further south. Moreover, this plan will benefit Mongolia and help add natural gas to the country's energy supply, as well as promote its economic development.

West Siberia has been well developed by Russia and contains vast natural gas resources. The Russian company Gazprom has long used it as the base for supplying natural gas to Europe. In the past, one of Gazprom's proposals called for the construction of a gas pipeline that would be 6,500 km long, so gas would reach Shanghai in Eastern China. One of the advantages of the West Siberia-Shanghai line is that it could connect to China's own West-East natural gas pipeline, running across China from Xinjiang to Shanghai, which was completed in 2004.

Because of the lack of progress between Russia and other Asian countries, Central Asia has jumped ahead in supplying natural gas to China and potentially other Asian countries. Currently three Central Asian countries share common borders with China: Tajikistan, Kyrgyzstan, and Kazakhstan. Two natural gas pipelines were proposed years ago. The first line runs from Ashgabad in Turkmenistan and passes through Uzbekistan, Kazakhstan, Xinjiang, Xi'an, Lianyungang (Jiangsu Province), and Cheju (South Korea), to reach Kitakyushu in Japan. The total length is 7,500 km. The other line follows the same route in Central Asia but goes through Xinjiang to reach Shanghai. Since 2007, the second proposal has materialized and has become part of China's second West-East Gas Pipelines. The construction of the international gas pipelines started in Turkmenistan in August 2007 and in Kazakhstan in June 2008. Within China, the state-owned China National Petroleum Corporation (CNPC) started construction for the gigantic, 9,102 km Second West-East Gas Pipeline project in February 2008. Upon its full completion in 2012, 3 bscf/d of natural gas from Turkmenistan will be exported to China, reaching not

only Shanghai but also South China.

For all gas pipeline projects above, except for the Turkmenistan-China pipeline, many uncertainties remain. Despite all these, the role of Mongolia can be important since Northeast China is likely to have the potential to allow only one cross-border pipeline and the parties involved may eventually see the benefit of routing at least one gas pipeline through Mongolia.

LNG cooperation

Despite the fact that Northeast Asia is the world's largest importer of LNG, there is no trade between the Northeast Asian economies themselves. However since early 2009, Gazprom, Shell, and other partners have begun officially commissioning the gas liquefaction plant at Sakhalin-2 oil and gas fields. Up to 9.6 mtpa of LNG are being and will be exported primarily to Northeast Asia. In this area, however, there will be little chance for Mongolia to be involved.

Cooperation in upstream petroleum exploration and downstream refining

Mongolia has passed the necessary laws and is actively seeking foreign investment in upstream petroleum exploration, development, and production, and downstream oil refining. Foreign companies from Russia, China, and Canada are investing in these areas.

Currently Mongolia produces 1 b/d crude oil and exports it mainly to China. The construction of Mongolia's first oil refinery is being considered, and if all progresses well, Mongolia can become an oil producer with its own refinery.

Cooperation in other areas

Other areas where Northeast Asian economies can increase their cooperation include the establishment of common oil stockpiling, improving energy data reporting systems and sharing energy data, promoting best practices in oil stockpiling, pipeline maintenance and operations, and the natural gas trade. Mongolia is likely to benefit from participating in at least some of these cooperative efforts if they are pursued by Northeast Asian economies. Beyond these, there are opportunities for China and Japan to cooperate in oil and gas drilling in East China once the tensions between them are reduced. China and Taiwan have already started cross-strait cooperation in oil drilling in the Taiwan Strait, and such cooperation needs to be enhanced if possible.

Concluding Remarks

Northeast Asia in particular and the greater Asia-Pacific region in general, have experienced high growth rates in energy demand. The regional energy resources are clearly insufficient, except in the case of coal. Asia has a particularly high dependence on oil imports, especially imports from the Middle East.

Northeast Asia's energy deficit, centered on oil, is greater and more acute than that of the rest of the Asia-Pacific region. Japan, South Korea, North Korea, and Taiwan have virtually no internal oil and gas resources. China became an oil importer in 1993 and has already become an oil importer on a global scale. All four are already LNG importers, and China will soon import pipeline gas from Turkmenistan and Myanmar.

Because of the remoteness of the sources of energy supply in Russia and the length of pipelines running from country to country in Northeast Asia, many of the possible energy cooperation proposals are costly. They require careful assessment of the energy market and energy needs of Northeast Asian economies at present and in the future. Most importantly, it requires international cooperation, both at the government level and among private investors, to make it possible for greater international trade and the use of natural gas in Northeast Asia. One should not be overly optimistic about the outcome of international cooperation, as it takes time, often many years or longer, to establish a sound business environment so that private investment can be forthcoming. For all Northeast Asian governments, doing nothing may also be counterproductive, which will complicate future efforts to diversify sources of energy supply, address environmental concerns for low-carbon energy use, and promote private investment in the areas of energy development and trade. What is needed in Northeast Asia is the willingness to cooperate and to take the first steps towards achieving the goal of building a regional supply system for oil and gas, as well as for electric power.

Mongolia is an important country in Northeast Asia, and has a good chance of participating in some of the energy cooperation schemes discussed above. The Mongolian government should pursue these plans actively. Executing these energy cooperation plans will not only benefit Mongolia, but also promote economic integration and better international relations in Northeast Asia at large.

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