

Asian Energy Demand and Competition

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1. Introduction

Backed up by economic globalization, the trend toward liberalization, IT development, ongoing low interest rates, and excessive liquidity, industrialization has marched forward in Asia thanks to international trade and direct investment, resulting in the achievement of long-term high economic growth. In particular, China has firmly established its position as the “world’s factory” through remarkable industrialization progress while India has experienced noteworthy development of its IT industry. The Asian economy is playing a leading role as a driving force behind the global economy and its presence is steadily expanding.

On the other hand, energy consumption is increasing rapidly together with high economic growth. Over a recent 25-year period (1980-2005), energy consumption in the Asian region grew at an annual average of 4.5%, greatly exceeding the world average of 1.9%. Moreover, China and India exceeded the Asian average with growth rates of 5.2% and 5.8%, respectively. While industrialized countries took steps to conserve energy and especially to reduce oil dependency following the experience of two oil crises in 1970s, full-scale industrialization coupled with urbanization and motorization have moved ahead in Asia, driving a sharp increase in demand for oil. This situation has led to tight global supply and demand for primary resources, including copper and iron ore in addition to oil, and is one factor behind the steep price rise in international markets in recent years.

Under these circumstances, the energy supply-demand structure in Asia has become increasingly fragile. Japan and Korea have conventionally imported nearly all of their fossil fuels, and now oil import dependencies of China and India have already reached 50% and 70%, respectively. Moreover, Indonesia, which is an OPEC member, has already shifted from being a net exporter of oil to being a net importer and has seen its export capacity for natural gas decline substantially. In recent years, securing the stability of energy resources has become an issue of ever greater importance to Asian countries including Japan as instability increases in the international energy markets for oil, natural gas, and coal.

Furthermore, the problem of global warming has become increasingly serious in recent years, making the establishment of a post-Kyoto Protocol framework for 2013 onward an important concern for the world. Japan has raised the goal of cutting greenhouse gases in half worldwide by 2050. Global warming countermeasures in Asia’s developing countries including China and India, where CO₂ emissions are increasing sharply, hold a major key to the realization of that

goal.

Simultaneous achievement of the “3S” energy goals (security of supply; sustainability by solving global environmental problems; and stability of the market) has become a pressing issue in order for Asia to continue its smooth economic development in the future. The acceleration of multilateral as well as bilateral regional cooperation is indispensable toward that end.

2. Global and Asian outlook for energy supply and demand

2-1 Outlook for the Asian economy

Economic growth is one important factor that determines energy demand. The GDP growth rate forecast referenced herein was established by the Institute of Energy Economics, Japan (IEEJ) based on projections by international organizations including the Asian Development Bank, figures and the economic development plans published by national governments, and the potential growth rate of each country's economy (see reference 1).

The world economy, centering on developing countries, is expected to grow at a rate of approximately 3.1% per annum from 2005 to 2030. While the GDP of developed countries will grow at a rate of 2.4% per annum over the same period, the GDP of developing countries will grow at the much faster rate of 4.8% per annum over the same period, expanding 3.2 times from 2005 to 2030.

Although the Asian economy is highly dependent on the economic growth of North America, Europe, and other developed countries outside the region, a continued high rate of growth can be expected due to the presence of huge economic markets such as China and India, the strengthening of mutual dependencies within the region, and rapid technological progress. The economic growth rate for Asia (excluding Japan) from 2005 to 2030 is forecast to stay at 5.3% per annum, expanding GDP approximately 3.7 times over the same period.

Notably, China was not greatly affected during the Asian currency crisis and maintained a high rate of growth through the 1990s on the back of increasing overseas direct investment (ODI). Even in the 2000s, it has maintained a high rate of growth; its GDP growth rate exceeded 10% for five straight years from 2003. Growth in fixed asset investment has been striking in recent years. In addition to investment in factories that are maintaining strong production output, there is vigorous investment in roads and other social infrastructure ahead of the 2008 Beijing Olympics and the World Expo 2010 in Shanghai. Accordingly, the country is forecast to achieve sustainable development in the medium term. In the long term, the economy will gradually mature from investment-led growth toward domestic demand-driven growth as long as appropriate future oriented macroeconomic management and operation are carried out, despite problems the country faces including internal economic disparities, reform of state-owned

enterprises, unemployment, and bad debts. China's GDP is expected to achieve a high growth rate of 6.2% per annum through 2030, expanding as much as 4.5 times the 2005 level.

India, on the other hand, had adopted an industrial policy focused on heavy industries under a planned economy for many years. Since 1991, however, liberalization of the economy was pushed forward together with cuts in the exchange rate and the introduction of foreign capital. Consequently, industrialization moved ahead centered on durable consumer goods and the automobile and IT industries expanded remarkably, resulting in the attainment of high growth. In 2030, India's population is expected to slightly exceed China's. The country's agrarian focused economic structure is anticipated to steadily shift to an economic structure including information and communications and services related industries and a manufacturing industry as a result of improved labor quality, promotion of an open door policy, and increased direct investment. However, solving the issue of a lack of electrical power and other infrastructure, reforming state-run enterprises, and reducing the fiscal deficit are prerequisites to maintaining sustainable growth. India's GDP is projected to grow at 6.1% per annum through 2030, increasing approximately 4.4 times the 2005 level.

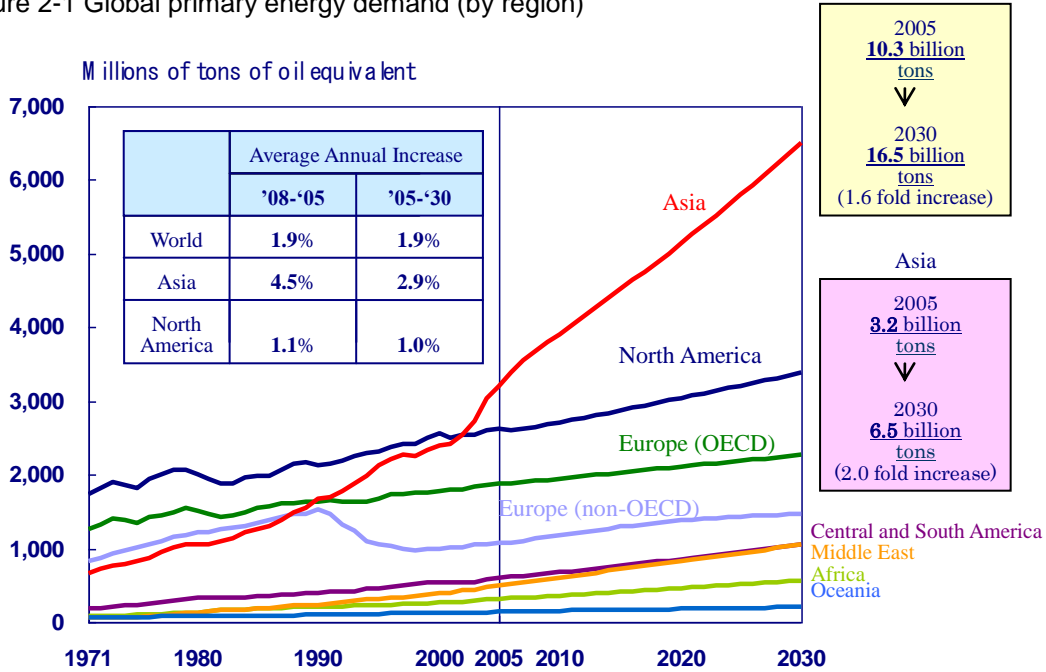
Further, although their rate of growth will be moderate compared to China and India, ASEAN countries appear likely to maintain solid economic growth of 4.7% per annum. In contrast, Japan is expected to continue gradual growth of 1.5% per annum as a result of a shrinking labor force accompanying the country's economic maturation and development of an aging population with a reduced birthrate.

2-2 Outlook for primary energy demand in Asia

According to the IEEJ forecast, the world's primary energy demand will increase at a rate of 1.9% per annum from 10.3 billion tons of oil equivalent in 2005 to 16.5 billion tons in 2030, expanding about 1.6 times. Approximately 80% of this future increase will come mainly from developing countries, particularly in Asia, which will account for 53%. More specifically, China and India will account for 27% and 12%, respectively.

Developing countries' share of the world's primary energy demand will rise from 46% in 2005 to 58% in 2030 following population increases and economic growth, whereas developed countries' share will decline from 54% to 42%. Asia's share will increase from 31% in 2005 to 40% in 2030.

Figure 2-1 Global primary energy demand (by region)

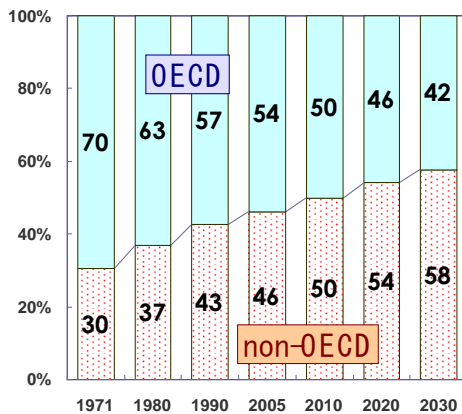


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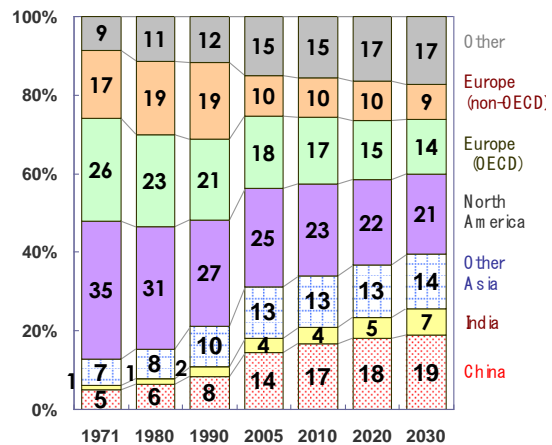
“Asia /World Energy Outlook 2007”, The Institute of Energy Economics, Japan, October 2007

Figure 2-2 Share of primary energy demand (by region)

Share of primary energy demand (OECD/non-OECD)



Share of primary energy demand (by region)



Source: Same as figure 2-1.

Asia's primary energy demand will increase at a rate of 2.9% per annum from 320 million tons of

oil equivalent in 2005 to 650 million tons in 2030, expanding two fold. Presently, China is the world's second largest consumer of energy behind United States; in 2030 it will be the largest. China's share of the world energy market will increase from 15% to 19%, further enlarging China's presence. India's share will also increase, rising from 4% in 2005 to 7% in 2030. Consequently, these two countries will account for approximately a quarter of the world's primary energy demand in 2030.

Indonesia, Thailand, Malaysia, Vietnam, and other ASEAN countries still account for only a small percentage of total primary energy demand in Asia. However, primary energy consumption will increase rapidly in these countries as well as their economies develop. In the long term, these countries have the potential to add further dynamism to overall energy supply and demand in Asia and in the world.

In terms of energy sources covering the demand for energy in Asia, coal and oil will increase as the main sources of supply and use of natural gas will expand mainly for electricity generation and household use (Table 2-1). Continuing to play their role as the main source of energy, fossil fuels will account for approximately 90% (29% oil, 34% coal, and 23% natural gas) of the increase in primary energy demand in Asia between 2005 and 2030.

Table 2-1 Asia's primary energy demand (by energy source)

Primary Energy Consumption	Millions of tons of oil equivalent						Share (%)			Annual average increase (%)				
	1980	1990	2005	2010	2020	2030	1980	2005	2030	1980-2005	2005-2010	2010-2020	2020-2030	2005-2030
Total	1,060	1,665	3,205	3,910	5,140	6,502	100	100	100	4.5	4.1	2.8	2.4	2.9
Coal	473	798	1,583	1,919	2,320	2,714	45	49	42	4.9	3.9	1.9	1.6	2.2
Oil	487	626	1,074	1,254	1,629	2,045	46	34	31	3.2	3.1	2.7	2.3	2.6
Natural gas	52	118	313	410	650	1,057	4.9	9.8	16	7.4	5.5	4.7	5.0	5.0
Nuclear Power	25	77	147	188	295	373	2.4	4.6	5.7	7.3	5.0	4.6	2.4	3.8
Hydropower	20	32	60	82	107	122	1.9	1.9	1.9	4.5	6.4	2.6	1.4	2.9
Geothermal, etc.	2.6	7.2	18	19	23	28	0.2	0.5	0.4	8.0	1.6	2.0	1.7	1.8
Renewable energy sources, etc.	0	6.9	9.9	39	115	164	0	0.3	2.5	-	31.5	11.6	3.6	11.9

Source: Same as figure 2-1.

2-3 Outlook for oil supply and demand in Asia

Asia's oil consumption will increase from 1.07 billion tons (22 million barrels per day) in 2005 to 2.05 billion tons (43 million barrels per day) in 2030, an increase of 2.6% per annum (Table 2-1). In terms of region, China will account for approximately 50% and India 30% of this increase.

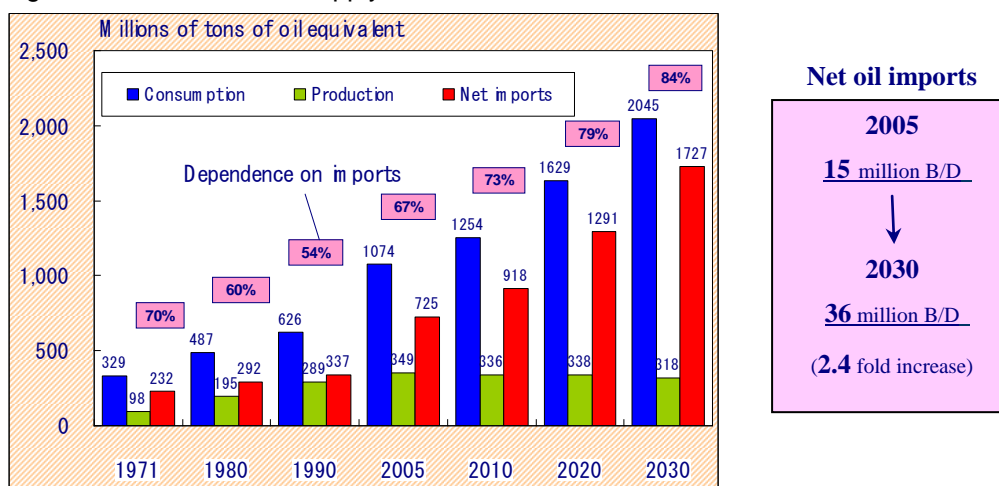
Looking at the world's future production of oil, increased production in Central and South America, Russia, and other non-OPEC countries will contribute greatly to meeting the world's increased oil consumption through 2010. However, constraints in terms of resources will come into play from 2010 onward, and the pace of production enhancement will taper off. As a result, production by OPEC countries, which have a large volume of reserves and low production costs, will increase to 46 million barrels per day in 2030. OPEC's share will increase from 44% in 2006 to 54% in 2030, expanding to nearly the same level as in 1973 when it set the previous record.

Approximately 80% of the world's future increase in oil demand will be met by increased production by OPEC countries.

While oil consumption will increase in Asia on the one hand due in part to the advance of motorization, oil imports are expected to increase and foreign dependence on oil is anticipated to rise as result of crude oil production in the region reaching its ceiling. Net imports will expand from 730 million tons (approximately 15 million barrels per day) in 2005 to 1.73 billion tons (approximately 36 million barrels per day) in 2030, sending dependence on imports up nearly 84% in 2030.

In 2002, China's oil consumption surpassed Japan's, moving into second place behind United States, but its net imports of oil are still below Japan's. However, its net imports will exceed Japan's during the 2010s as a result of surging consumption and the peaking of crude oil production, making China Asia's largest net oil importer. China's oil imports have continued to increase since the country became a net importer in 1993. In the future, net imports will increase from 170 million tons (3.4 million barrels per day) in 2006 to 570 million tons (12 million barrels per day) in 2030, reflecting increased demand centering on motorization and the degrading of its three main oilfields (Daqing, Shengli, and Liaohe) and pushing dependence on imports up from 48% to 76%.

Figure 2-3 Outlook for oil supply and demand in Asia



Source: Same as figure 2-1.

India's net oil imports will increase from 83 million tons (1.7 million barrels per day) in 2006 to 350 million tons (7.3 million barrels per day) in 2030, driving dependence on imports from 69% in 2006 up to 92% in 2030. Accordingly, China and India have the potential to further impact the price of oil as major players in the international oil market.

Additionally, among the ASEAN countries, Indonesia and Thailand will likely increase their dependence on oil imports. At the same time, Malaysia and Vietnam, which are currently net exporters, are expected to make the shift to being importers in the medium-to-long term as internal production comes down while domestic demand continues to rise.

Table 2-3 Asia's dependence on oil imports

(Net imports; ▲ indicates exports)

	2005	2010	2020	2030
China	44%	55%	66%	76%
India	71%	78%	89%	92%
Indonesia	22%	40%	60%	73%
Malaysia	▲39%	▲33%	0%	18%
Thailand	70%	82%	91%	93%
Vietnam	▲41%	▲25%	48%	66%
Asia	67%	73%	79%	84%

Source: Same as figure 2-1.

Oil trade is increasing greatly accompanying steady growth in world energy demand, especially in Asia. At present, the majority of crude oil supplies occupying an important position in the primary energy supply for Asia including Japan are dependent on the Middle East. The supply route goes from the Persian Gulf through the Straits of Hormuz, then from the Indian Ocean to Southeast Asia (through the Strait of Malacca, etc.), and from the South China Sea to the vicinity of the East China Sea, and on to Japan. Looking ahead even in the long-term, this route will continue to assume a pivotal role as the sea lane for Middle East crude to reach Asian countries including Japan.

Given the volume of oil imports to Asia from the Middle East and Africa, oil traffic through the Strait of Malacca will grow from 11.7 million barrels per day in 2004 to 21 million barrels per day in 2030. Accordingly, the number of very large crude carriers (VLCCs) passing through the Strait will increase from 4,200 vessels per year in 2004 to 6,700 vessels per year in 2030. Thus, there is a high possibility that congestion in the Strait of Malacca will become much more severe than it is at present. For that reason, the securing of safe passage through the Strait of Malacca is an extremely important issue for the stable supply of energy to Asian countries.

2. Geopolitics surrounding Asia's oil and natural gas resources

3-1 The rise of resource nationalism

Along with the issue of global warming, ensuring energy security has become a very important concern for each country in recent years. In 2006, Russia hosted the G8 Summit in St. Petersburg as the chairman of the G8 for that year. Energy security was taken up as a major issue, which led to the adoption of the St. Petersburg Action Plan on Global Energy Security. The

Action Plan outlined the enhancement of transparency, predictability, and stability in the global energy market, improvement of the investment environment, energy conservation, and diversification of sources of energy supply.

Thus, the Action Plan raised many challenges that should be addressed by each country. However, Russia is nothing less than the biggest concern in the problem of energy security. Recently, Russia has been halting and reducing the supply of natural gas or oil to its neighboring countries and the EU. Furthermore, the wresting of control of the Sakhalin II Project, which Japanese companies are investing in, by Russia's state monopolistic enterprise Gazprom through the obvious intervention of the Russian government is still fresh in memory.

In this way, Russia has been brandishing what can be called resource nationalism, high-handedly pushing for full revisions of contracts signed with foreign oil companies in the past, claiming their unfairness. The West's super-major oil companies, including Exxon Mobil, Royal Dutch Shell, and BP, are taking the rise of resource nationalism in oil-producing countries, headed by Russia, as a serious matter.

There was a period of time during the 1960s when resource nationalism blanketed the world, especially developing countries. As former colonies became independent one after the other following the Second World War, countries in the Middle East and Africa with significant resources saw a growing trend toward the assertion of state sovereignty over domestic natural resources. At the time, the power to determine crude oil production and prices in the oil-producing countries of the Middle East, Africa, and South America was held by the West's major oil companies. With the price of crude oil held at the low level of \$1-\$2 per barrel, income to oil-producing countries was significantly constrained. Deeply dissatisfied with this reality, OPEC countries aimed to recover sovereign authority over their resources by forming a producers' cartel to oppose the oil majors.

The resource nationalism occurring nowadays has the same characteristics as in the past plus some new elements. One is the strong linking of resource nationalism to anti-Americanism led by Russia and Venezuela. Another is the rise of resource nationalism in consuming countries including China and India. This has led to the growing tendency for oil and natural gas exploration and development projects to take on the hue of national businesses, which is standing out as the major characteristic of present day resource nationalism.

During the post-Cold War period following the collapse of the former Soviet Union, the period of unilateral domination by the United States continued into the 1990s. Then, the 9/11 terrorist attacks in 2001 led the U.S. to go ahead and invade Iraq without assembling broad support from the international community. However, the U.S. ended up losing the trust of the world as it failed in its attempt to build a new Iraq and became mired in its response to the problem in Iraq,

which has evolved into a hopeless mess. In this situation, Russia, Venezuela, and other oil-producing countries are exploiting their energy resources to the full to propel anti-Americanism or to oppose the United States.

The uneven distribution of oil resources has come to stand out as a reality behind the recent reemergence of resource nationalism. While OPEC's proportion of proved oil reserves grew from 66% in 1980 to 75% in 2006, the proportion held by developed countries fell from 16% to 7%. This fact points to the rapid depletion of developed countries' oil resources, including those in the United States and the North Sea.

According to a study by the U.S.' Baker Institute for Public Policy, 77% of the world's proved oil reserves are held by national oil companies (NOCs). In contrast, the percentage held by international oil companies (IOCs) and other oil majors is no more than 10%. Moreover, Russian oil companies hold 6% and NOCs and IOCs jointly hold 7%. It is therefore clear that state-run oil companies in the oil-producing countries have an overwhelming control of oil resources. Thus, from the standpoint of resource holding countries, they have a very strong position in a sellers market. Consequentially, the terms and conditions of contracts for exploration and development have become much harsher for IOCs than before.

3-2 Chinese resource diplomacy gaining momentumWith energy shortages becoming more acute accompanying its rapid economic development, China is promoting the development of oil and natural gas overseas as a national strategy. In the Middle East, Africa, Russia, Kazakhstan, Venezuela in South America, the United States, Canada, and other regions throughout the world with a rich endowment of oil and natural gas resources, the Chinese government and state-run oil companies are working as one to secure mining properties and acquire mining companies.

Notably, China's president, premier, and other political leaders frequently visit resource-rich countries and support the securing of resources by state-run oil companies. In November 2006, China invited the heads of state of 48 African countries to Beijing, where it held the Beijing Summit of the Forum on China-Africa Cooperation (FOCAC). There, the attendees adopted the Beijing Declaration with the aim of building strategic relationships based on the premise of mutual non-intervention in the domestic affairs of another nation. China's biggest aim in sponsoring this summit was to further expand its influence in Africa, which is blessed with an abundance of resources. According to the Xinhua News Agency, President Hu Jintao put forward a strong posture of valuing Africa, committing to forgive no-interest bearing loan debt for heavily indebted poor countries and the least developed among developing countries, announcing the dispatch of human resources development and agricultural technology specialists, and unveiling assistance measures including grant aid of 300 million yuan (approximately 4.5 billion yen) pegged for malaria prevention measures.

In particular, China embarked on oil resource development in Sudan during the early years of the 1990s. Today, Sudan has become the location of China's largest overseas oil field development project. The problem is that Arab militiamen supported by the Sudanese government have been persecuting ethnic African citizens, escalating the Darfur conflict into a serious situation. Already 200,000 people have been killed and 2.5 million refugees have headed for the border with neighboring Chad. U.S. President George Bush has called for sanctions against the Sudanese government, calling the Darfur conflict genocide. But, China has taken a passive stance in the UN Security Council, for which it has recently been receiving growing criticism from the international community.

In this way, one of the biggest concerns regarding resources-securing policy advanced by China is that many of the countries into which China is making inroads are viewed with suspicion in terms of human rights and democracy or the export of weapons. Incidentally, according to a report on arms trade in 2006 submitted to the UN by China, Russia is its largest source of imports while destinations for Chinese exports included many resource-rich countries in African including Congo, Gabon, Niger, Namibia, Zimbabwe, and others.

This Chinese resources-securing policy has been criticized as seemingly violating international business rules. The U.S. in particular has been showing wariness toward China's resources diplomacy. In 2006, the U.S. Congress gave the thumbs down for security reasons to a bid by a Chinese state-run oil company to acquire Unocal Corporation, a U.S. semi-major oil company (international oil major). Of course, here too the idea of a "Chinese Threat" was behind this reaction.

China's national commitment to securing oil and natural gas resources is driven by a strong sense of crisis that the country's existence depends on maintaining the stability of resources. Historically, oil has been a strategic commodity controlled by Anglo Saxons through U.S. and British oil majors. As China's economic development continues in the future it will become increasingly dependent on oil imported from overseas. As that happens, its national security will come to be under the thumb of the United States and Great Britain. Viewed in this light, it is only natural that China has strongly recognized since the early 1990s that it must secure with its own hands the oil resources that it needs and has moved to do so as a national strategy.

A major characteristic of the resources nationalism seen in China as a consuming country is the way in which the government and China's three state-run oil companies work together as one. The Chinese government employs diverse means to acquire oil and natural gas mining concessions including, for example, providing economic assistance or offering packages with combined road, port, and other social infrastructure development and sometimes even weapons export and military aid.

This way that China goes about securing resources could even be called a mercantilist approach. That is, without going through market transactions the state moves to the fore and attempts to physically lock in overseas oil and natural gas or, recently, uranium and other energy resources. This growing resource nationalism on the part of consuming countries distorts the rules of international resource development and has ended up fueling resource nationalism in resource-rich countries. Now, the oil and natural gas exploration and development business is taking on a growing “national business” hue, which has given even the oil majors a very strong sense of crisis.

3-3 Increasing energy cooperation between Russia and China

Even in the sense of checking the U.S., it is a very natural outcome that energy resources should drive Russia, an energy resources power, and China, which is facing an energy shortage, to become much closer. From the time of President Boris Yeltsin and President Jiang Zemin in the 1990s, China and Russia have continued to hold frequent cross national talks around oil and natural gas resources development in eastern Siberia. This was possible because the two countries had matching intentions, with Russia wanting to push the economic development of the Russian Far East through the lever of resource development and China having poor natural gas resources while its largest oilfield, the Daqing oilfield, is entering exhaustion.

Enthusiasm for this movement was notched up in the time of President Vladimir Putin and President Hu Jintao. Driving this development was the fact that on the Chinese side energy shortages had become even more serious. From the Russian perspective China is Russia’s largest destination for weapons exports and likely staging ground for Russian expansion into the East Asian market, which is experiencing striking economic development.

What drew keen attention on this front was the fact that now the border dispute between the China and Russia had come to a final settlement. The news about final closure on October 14, 2004 regarding the attribution of two islands that had been pending problems in the long-standing territorial row between the two countries flashed around the world. In June of the following year, instruments of ratification were signed for a Supplementary Agreement on the Eastern Section of China-Russia Boundary Line confirming the final settlement of the border dispute between the two countries. Putin and Hu both played up the agreement as an “historical achievement and mutual victory.” Countries, including Japan, that had viewed the border dispute as intractable were downright shocked.

The eastern part of the border between China and Russia is 4,300 km from the eastern end of Mongolia to North Korea’s Tumen River. Of this, a river border comprises 3,500 km, most of which belongs to the Amur River and the Ussuri River. Historically, there were incidents of tensions between the two countries escalating into armed clashes around the line of contact at

the Ussuri River. It has been reported that the mutual agreement over the border dispute was reached as a result of China making a major compromise to Russia. Behind that compromise is the value that China placed on securing energy resources by strengthening its strategic relationship with Russia.

At present, Russia is exporting crude oil using a railroad in the northeastern region of China. The volume of those exports increased rapidly by more than 10 times from 1.5 million tons in 2000 to 16 million tons in 2006. However, since rail transport is extremely expensive and its carrying capacity is limited, Russia started constructing an Eastern Siberia-Pacific Ocean crude oil pipeline. First phase construction is underway toward completion in 2009 of a nearly 2,000 km pipeline extension with an annual transport capacity of 30 million tons, stretching from Taishet near Lake Baikal, where the eastern terminus of the existing pipeline is located, to Skovorodino, near the border with China. Later, second phase pipeline construction will first bring the line from Skovorodino to China's Daqing oilfield, after which work is expected to start on a route stretching to the Pacific coast in the environs of Nakhodka.

In the area of gas, on the other hand, a plan is being considered to develop the giant Kovykta gas field located in eastern Siberia and export gas to China via pipeline. In June 2007, Russia's state monopoly Gazprom acquired TNK-BP's rights to over half of the Kovykta field under pressure from the Russian government. In the future, China's and Russia's state-run companies, Gazprom and China National Petroleum Corporation (CNPC), will engage in negotiations toward clarifying project objectives with support from the governments of the two countries.

3-4 The rising presence of the Shanghai Cooperation Organization

The strengthened link between China and Russia goes beyond a bilateral relationship; it can also be seen in terms of regional cooperation on the Eurasian continent through the Shanghai Cooperation Organization (SCO). The SCO was founded as the Shanghai Five when the leaders of China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan gathered in Shanghai in 1996. The organization was established with the purpose of strengthening cooperation in a wide range of fields including the economy and culture in addition to jointly tackling the problems of international terrorism, ethnic separatist movements, and religious extremism faced by each country.

This was underpinned by the intensification of movements demanding separation and independence by the Uyghur people in the Xinjiang Uyghur Autonomous Region of western China and by the Chechen people in the Chechen Republic of southern Russia. These movements raised a strong sense of crisis in China as terrorist activity spread with support from Islamic extremists in Central Asian and Middle Eastern countries. For that reason, the agreement included cooperation on the military front, which was launched out of a desire to jointly protect

borders with Central Asian countries from armed elements that were beyond state control. At the same time, China had the aim of strengthening its relationships with Central Asian countries that are blessed with oil, natural gas, uranium, and other energy resources.

Subsequently, the Shanghai Cooperation Organization (SCO) was launched as a multinational cooperative organization with six countries participating officially after the inclusion of Uzbekistan in June 2001. A permanent secretariat was established in Shanghai. Not long afterwards the SCO decided to set up the SCO Regional Anti-Terrorism Structure (RATS) in response to the September 11th terrorist attacks in the United States. Another aim in establishing RATS may have been to check the expansion of the war on terror, which U.S. President Bush proclaimed in his State of the Union Address at the beginning of 2002, in which he designated Iran, Iraq, and North Korea as an “axis of evil.”

Thereafter, other states besides China, Russia, and the four Central Asian states started to participate in the SCO as observer states: Mongolia in 2004, India, Pakistan, and Iran from 2005, and Turkmenistan at the Council of Heads of State in 2007. Together, the six member states, which spread across the Eurasian continent, plus the five observer states account for approximately half of the world population and have a land area that ranks with the old Mongolian Empire.

Furthermore, what is really interesting is the fact that the SCO is made up of countries that are opposed to or hostile toward the United States, which is globally exporting its values of democracy and a market economy in the post-Cold War mono-polar world centered on the U.S. In June 2006, the SCO stated in the Declaration on the Fifth Anniversary of the Shanghai Cooperation Organization signed at the sixth annual meeting of the Council Heads of Member States that, “Differences in...political...systems...should not be taken as pretexts to interfere in other countries internal affairs,” and that the, “Model of social development should not be ‘exported’.”

Then, the first joint military exercises in which more than 6,000 soldiers from the six member states participated, called Peace Mission 2007, took place in the Ural region of central Russia in August 2007. The exercises were explained as supposing terrorism from Islamic extremists, but showed that the SCO has started to play a role as a counterpoise to the United States. Following the joint military exercises, a regular meeting of the Council of Heads of Member States was held in Bishkek, the capital of Kyrgyzstan, where the heads of the six member states signed the Treaty among the Member States of the Shanghai Cooperation Organization on Good-Neighborly Relations, Friendship and Cooperation and the Bishkek Declaration. These documents expanded on the Declaration on the Fifth Anniversary made in 2006, which called for cooperation in the areas of regional security and energy resources.

Shortly beforehand, in strong opposition to the U.S.' deployment of missile defense (MD) systems in Eastern Europe, Russia has just announced in July suspension of the performance of the Treaty on Conventional Armed Forces in Europe, which has underpinned security in the European region since the Cold War. While there is no possibility of the SCO forming a military alliance, such a prospect may be turning into an effective diplomatic card for Russia, which is deeply concerned about the U.S. making inroads into the surrounding region and democratization pressure.

Then again, in terms of the energy issue it is noteworthy that the participants in the SCO are in a mutually complementary relationship with Russia, Kazakhstan, Iran, and Turkmenistan, all major producers of oil, natural gas, uranium, and other resources, on the one hand and China and India, both major consuming countries, on the other hand. This context is why another name for the SCO is the "energy club."

China has already obtained oilfield interests in Kazakhstan and is importing crude oil via pipeline. From Russia, China is importing crude oil via the Trans-Siberian Railway and plans to extensively expand the volume of imported Russian oil once the trans-Siberian pipeline currently under construction is completed. Further, China not only imports crude oil from Iran but has strengthened its relationship in the energy field in other ways, including securing oil field interests and agreeing to long-term import contracts for liquid natural gas (LNG).

In this way, while China and Russia have been gaining political and economic influence in recent years, the SCO has been increasing its presence markedly. However, one can see differences in the attitudes of China and Russia when it comes to expanding the Organization in the future. With its sphere of influence being squeezed as a result of the enlargement of the North Atlantic Treaty Organization (NATO) and the European Union (EU), Russia hopes to expand the SCO as a security and political organization countering the West.

China, on the other hand, wants to avoid going along with Russia and increasing friction with the West, since it is aiming to strengthen its influence on resource-rich Central Asia through the Organization. In the future, it is possible that conflicting positions between China and Russia could become exposed over the direction the SCO is headed, including the expansion of member states.

4. Asia's use of nuclear power generation and the problem of nonproliferation

4-1 Asia's expanding nuclear power development

There is worldwide recognition that the development and utilization of nuclear power generation is indispensable to solving the problems of energy security and global warming. The peak of oil

resources production is coming into view while greater political instability is gripping the Middle East, where about two thirds of the world's oil reserves are located. With utilization of natural gas increasing, Russia, which has the largest reserves of this resource, has actually reduced supply, making plain the risk of overdependence. What is more, as a non-fossil fuel energy source, nuclear power generation has become an essential option in the quest to greatly reduce greenhouse gases, including carbon dioxide.

Major accidents at the U.S.' Three Mile Island nuclear power plant in 1979 and at the Ukraine's Chernobyl nuclear power plant in 1986 lead Western countries, minus France and a few others, to bring nuclear power development to a virtual stop. However, at this point a movement toward the planning of the new nuclear power plants is taking shape in the United States while the British government has made a major policy shift in the direction of pursuing nuclear power generation. On the other hand, China and India, which have serious power shortages, are making all-out efforts to push the development of nuclear power generation forward.

Southeast Asian countries, which are facing the prolonging of high crude oil prices and rapidly increasing demand for energy accompanying economic growth, are hammering out construction plans for nuclear power plants. After Indonesia shifted from being an oil exporter to a net importer in 2004, the hike in oil product prices has put a burden on the daily lives of the people. The government plans to build four 1 GW units on the Muria Peninsula in Central Java. It is hoping to start construction around 2010 and have the first reactor up and running in 2016.

The Vietnamese government plans to construct and start operating nuclear power plants that will generate 2 GW by 2020 and 8 GW by 2025. Toward that end Vietnam has already signed nuclear power agreements with Russia, France, and Korea, and has also concluded an agreement with the United States. In its long-term power development plan established in April 2007, the Thai government announced plans to bring a four unit nuclear power plant into operation between 2020 and 2021. Additionally, Malaysia and Myanmar are also expressing a strong interest in nuclear power plant construction.

Many Asian countries are enthusiastic about nuclear power development, as just described, because oil and natural gas prices are continuing to skyrocket in the midst of ongoing strong growth of power demand and because coal leads to serious air pollution, including SO_x. Since Southeast Asian countries do not have the technology, funds, and uranium fuel needed for nuclear power generation, they are dependent on support and the procurement of fuel from possessing countries. Japan, the U.S., France, Korea, Russia, and other possessing countries have opened seminars on nuclear power technology and begun supporting human resources development, sparking an intense sales war for future orders.

The problem is, however, that concerns are growing over the proliferation of nuclear weapons

(as in the nuclear development problem in Iran) as nuclear power generation spreads to more countries. In particular, the issue of how to restrict uranium enrichment, a nuclear fuel cycle technology, and technology for reprocessing spent fuel to peaceful uses has become a major problem. In other words, the issue of how to realize peaceful use of nuclear energy while ensuring nonproliferation has become an important world challenge.

4-2 U.S.-India civil nuclear energy deal

Another issue that is drawing worldwide attention is how the U.S.-India civil nuclear energy deal and the nuclear nonproliferation treaty (NPT) system will be maintained. In June 2006, U.S. President Bush visited India and agreed to enter into a bilateral agreement relating to cooperation on the peaceful use of nuclear power. Negotiations later became tangled over specific conditions, but a final agreement was reached in July 2007.

In making this deal, India, which is not a signatory to the NPT, would end up tying its own hands, since international inspections would be carried out based on the peaceful use agreement. Thus, there was some opposition to the agreement with the U.S. if it were to include rigid requirements such as inspections. It has been reported that out of consideration for such internal conditions in India, the U.S. left open the door for the security of nuclear fuel supply to India while being able to demand the return of supplied fuel and technology if India conducts a nuclear explosion test. It also included provisions in the agreement that would allow the reprocessing of spent fuel to be carried out at facilities under inspection by the International Atomic Energy Agency (IAEA).

A great controversy has been aroused over the seeming double standard of providing nuclear power related technology for nominal peaceful use to India, which is a non-signatory to the NPT and in fact a nuclear weapons state, on the one hand while not approving uranium enrichment in Iran, which is a signatory to the NPT. The United States and Iran have been in a state of broken diplomatic relations since the Iranian Revolution in 1979; even now the U.S. maintains a policy of imposing harsh economic sanctions on Iran.

India on the other hand, while a non-signatory to the NPT, is esteemed by the international community as the world's largest democratic nation. The U.S. has decided that India does not present the same risk as Pakistan, which like India is a non-signatory to the NPT and an actual nuclear weapon state, but which has stirred up trouble in the past by channeling nuclear material and nuclear related technology into Libya and Iran through the black market. Of course, it is clear that moves by the Bush administration include geopolitical considerations—namely, the strengthening of the U.S.' relationship with India as a countervailing power to China.

4-3 Proposals for international control of nuclear fuel

While the need for the peaceful use of nuclear power is growing on the one hand, the number of countries wishing to possess nuclear weapons is also increasing, and the risk of nuclear weapons getting into the hands of terrorists has risen, especially since the 9/11 terrorist attacks. That is why the U.S., EU, Russia, and others have worked out proposals for the international control of the fuel used in nuclear power generation. In February 2006, the United States announced a plan for a Global Nuclear Energy Partnership (GNEP). Until now, the U.S. had shelved the nuclear fuel cycle—that is uranium enrichment and the reprocessing of spent fuel—but has now made a major course correction in the direction of approving reprocessing.

The GNEP plan is a framework for the multilateral control of nuclear fuel, including spent fuel. Russian President Putin, on the other hand, has proposed International Nuclear Fuel-Cycle Centers (INFCCs). Aiming to both prevent nuclear proliferation and to recycle nuclear fuel, the objective of the Russian plan for these INFCCs is to enable all countries that use nuclear power to access a supply of the services needed in the nuclear fuel cycle (i.e., enrichment and reprocessing). There are many common points in the details for the INFCCs and the GNEP. It is possible that in the future a proposal will come out for using the Russian fuel cycle facility supposed in the INFCCs plan as part of the technology demonstration facilities called for in the GNEP proposal.

The EU's proposal for a “nuclear fuel bank” is nearly the same as the proposals made by the U.S. and Russia. The concept for this proposal is that if countries that already possess the technology for manufacturing nuclear fuel and reprocessing spent fuel supply nuclear fuel to countries without that technology and accept spent fuel for reprocessing, it will be possible to prevent the proliferation of nuclear weapons. Critics claim that this proposal is discrimination by the technology haves against the have-nots. This is an important issue that needs to be addressed seriously by the world going forward.

5. Regional cooperation within Asia and issues for Japan

Japan must demonstrate greater leadership than before in cooperating with the world, especially in regional cooperation with Asian countries, toward ensuring energy security and solving the problem of global warming. It has become increasingly difficult for Japan to solve its energy problems and the problem of warming on its own; Japan has to strengthen regional cooperation within Asia. While importance should be attached to national interests, at the same time efforts are needed to avoid an undue scramble for resources by improving energy security for the Asian region.

Specific examples include technology transfers aimed at promoting energy conservation, human resources development, and the transfer of institutional know-how. If each country took appropriate energy-saving measures through the advancement of international cooperation

relating to the excellent energy-saving technology and systems available in developed nations including Japan, Asia's primary energy demand in 2030 could be reduced by 1.1 billion tons of oil equivalent or 17% of the demand forecast given in Chapter 2. This energy savings is equivalent to approximately double Japan's current overall energy demand. Greenhouse gas emissions would be drastically reduced as a result, contributing greatly to the fight against global warming. Concrete initiatives against these challenges have slowly started to be put into place at forums for multinational regional cooperation such as APEC, ASEAN+3, and the East Asian Summit. The Sydney Declaration was adopted at the Fifteenth APEC Economic Leaders' Meeting held in Australia in September 2007. The declaration includes the goal of improving energy efficiency—the measure of energy savings—by at least 25% by 2030 compared to 2005 to ensure the stable supply of energy and as a countermeasure against global warming. While the numerical targets included are nonbinding, the fact that China and the ASEAN countries showed a posture of seriously addressing energy conservation for the first time attracted attention.

In terms of supply, on the other hand, there is still a lot of room to translate the strengthening of regional cooperation among Asian countries into mutual benefits. Areas of potential cooperation include the fortification of oil reserves, expansion of the development and use of natural gas and renewable energy, the efficient and clean use of coal, the safe operation of nuclear power generation, human resources development, and the development and use of biofuels.

Oil stockpiling in particular is an area in which Japan can serve as a model for Asia. With the situation in the Middle East destabilizing further, the importance of having a contingency plan against interruptions in the supply of oil is growing for Asian countries, which are greatly dependent on Middle Eastern oil. Japan and Korea are the only countries in Asia with oil reserves, and China has finally just begun constructing oil stockpiling bases. The entire region would benefit by Japan supporting Asian countries with technology, know-how, and sometimes finances related to oil stockpiling. Japan is already transferring knowledge and providing human resources development to China, the Philippines, and Vietnam.

While Japan is competing against China and India to secure resources, as common energy consuming countries and importers, cooperation with these countries in energy conservation, oil stockpiling, the development of alternative energies, and other areas will lead to mutual benefits. Such regional cooperation in the field of energy will improve energy security worldwide and also help restrain greenhouse gas emissions from Asia, which are expected to rise sharply in the future.

In order to simultaneously achieve the "3S" energy goals (security of supply; sustainability by solving global environmental problems; and stability of the market) in Asia, Asian countries must strengthen their efforts to achieve an energy best mix by promoting the diversification of energy sources, energy conservation, and the decarbonization of energy supplies through fuel

conversion based on each country's energy supply and demand structure and level of economic development.

With its predominance in technology, economic muscle, and system design, Japan has a major role to play within Asia in these initiatives. Further developing and utilizing energy-saving technologies and environmental technologies—which are one of Japan's particular strengths and a core means of simultaneously achieving the 3S goals—as well as its technology and know-how cultivated as an advanced nuclear power country is an important cornerstone of Japan's international energy strategy. The country must leverage its advanced technologies to strengthen its economic foundation while reinforcing efforts to achieve a balance between the environment and economic development in Asia.

Reference:

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