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ASIA PROGRAM



Woodrow Wilson
International Center
for Scholars

Toward Oil and Gas Cooperation in Northeast Asia

New Opportunities for Reducing Dependence on the Middle East

SELIG S. HARRISON

ABSTRACT: With its energy needs steadily growing, Northeast Asia will require ever-accelerating petroleum imports for its economic expansion and survival. Most of these imports will come from the same sources—the Persian Gulf and Southeast Asia—where the United States and Western Europe get much of their petroleum. Yet there are enormous untapped oil and gas resources in nearby Russia and in contested areas of the East China Sea and Yellow Sea seabed that could, if exploited, reduce Northeast Asian dependence on costly imports from politically turbulent faraway sources.

Projected oil and gas pipelines that would link Russian gas fields in eastern Siberia and Sakhalin Island to China, Japan and the two Koreas would not only have a profound political impact, drawing the region together, but would also help to stabilize the region economically. A pipeline from Sakhalin through North Korea to South Korea could also prove important in security terms. Support for such a pipeline could give the United States the decisive economic leverage necessary to induce North Korea to give up its nuclear weapons program and to accept an adequate inspection regime, provided that this economic leverage is accompanied by security assurances, such as the non-aggression agreement proposed by Pyongyang.

After assessing the prospects for gas pipelines, this study will examine the high economic and political stakes involved in the quiet struggle now unfolding in Northeast Asia over seabed petroleum resources, especially the conflict between China and Japan over the East China Sea.

Foreword

Robert M. Hathaway

This study by Selig S. Harrison, a senior scholar at the Woodrow Wilson International Center for Scholars, presents the findings of the first year of a three-year project under his direction designed to explore the potential for regional oil and gas cooperation among the countries of Northeast Asia. Harrison seeks to determine how these countries can meet more of their petroleum needs from nearby sources through the development of gas pipelines from Russia and through the exploitation of the untapped potential of East China Sea and Yellow Sea seabed petroleum.

In conducting this study, Harrison visited Russia, China, Japan, and the two Koreas, where he met with government officials, geologists, scholars, and executives of government and private oil and gas companies and of pipeline construction companies. During these visits, he prepared the ground for a series of meetings over the next two years designed to overcome the obstacles that impede regional cooperation in the energy sector. The second year of the project will include several workshops in Beijing co-sponsored by the Wilson Center and the China Institute of International Studies, where experts from China, Japan, and the two Koreas will explore the resolution of their seabed jurisdictional disputes. The pro-

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ject's third year will feature workshops where Russian and Northeast Asian experts and petroleum company officials will discuss gas pipeline options.

Selig Harrison has studied the geopolitics of energy in Northeast Asia for 35 years, first as Northeast Asia bureau chief of the *Washington Post* from 1968 to 1972, and later as a senior associate of the Carnegie Endowment for International Peace from 1974 through 1996. His 1977 Carnegie book *China, Oil and Asia: Conflict Ahead?* remains the definitive study in this field.

The Woodrow Wilson Center would like to express its appreciation to the U.S. Department of Energy for the support that has made possible the first two years of this pioneering project. In addition, Sue Howard of the Wilson Center's financial management office provided essential accounting services with her customary good cheer, while Timothy Hildebrandt of the Wilson Center's Asia Program ably employed his desktop publishing skills to produce this report.

Portions of this study first appeared in articles in *Current History* (Fall 2002) and *World Policy Journal* (Winter 2002).

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Gas Pipelines From Siberia: So Near and Yet So Far

The geopolitical importance of Russia's emergence as a major petroleum exporter is generally viewed in the limited context of uncertain United States relations with the Arab world. If Middle East oil is cut off, many observers point out, Moscow would provide an alternative source, strengthening American leverage both politically and economically.

But the impact of Russian petroleum riches on global power alignments extends far beyond the Middle East. In Northeast Asia, China, Japan and the two Koreas are turning to nearby sources of petroleum in Russia to keep pace with their rapidly-growing energy needs and to offset their dependence on costly oil and gas imports from faraway Arab producers. This dependence has become increasingly uncomfortable, not only because it makes Northeast Asia vulnerable to possible supply disruptions resulting from wars and revolutions but, above all, because it means reliance on the United States for the protection of tanker traffic through potentially hazardous sealanes.

Russian natural gas reserves are the world's largest, 31 percent of global reserves, in contrast to its oil potential, which ranks eighth on the global scale. Already the largest supplier of natural gas to Europe, where its exports have reached the saturation point, Moscow will become the major source of gas for some or all of Northeast Asia within the next decade if promising negotiations for the construction of gas pipelines from eastern Siberia and Sakhalin Island reach fruition.

ARE GAS PIPELINES GOOD FOR THE UNITED STATES?

Gas pipeline networks linking Russia and its neighbors would greatly enhance regional economic and political stability. Economically, pipeline gas would be cheaper than oil imported from the Middle East. Thus, with their foreign exchange burdens reduced, Northeast Asian countries would be much more

resistant to global economic shocks than they were during their 1997 financial meltdown. Politically, pipeline networks would knit the region together, softening tensions between Russia and Japan, and between Russia and China, left over from World War II and the cold war. Pipelines crossing from Russia through North Korea to South Korea would help to defuse Korea as a flashpoint of military conflict by promoting North-South economic cooperation. North Korea would receive royalty revenue and gas for its power stations in return for letting the pipelines pass through its territory. This would revitalize its stagnant economy and facilitate increased economic interchange with the South as well as a broader economic opening to China, Japan, Southeast Asia and Western Europe.

Despite the obvious advantages of greater stability, the United States has so far shown no interest in promoting gas pipeline networks in Northeast Asia. With or without U.S. support, some of these networks are likely to take shape, but the process would be faster and more solidly based if the United States would encourage the World Bank and other multilateral lending institutions to back up the regional governments and private companies involved. With the initial investment outlays so colossal and so many governments involved, commercial viability alone will not determine the scope and timing of the pipeline projects now being negotiated.

In the case of Korea, the Bush Administration actively opposes pipelines crossing through North Korea to the South for ideological and security reasons. This rules out the participation of Exxon-Mobil, a U.S. firm, in a projected pipeline from its gas fields off the coast of Sakhalin to the South. Yet, as I will spell out later, U.S. support for such a pipeline could be the key to easing the tensions between the Bush Administration and North Korea over its nuclear weapons program.

More broadly, the very idea of a tightly-knit Northeast Asia has alarmed some U.S. analysts. "Pipelines that promote greater regional integration

in Northeast Asia,” warned a National Bureau of Asian Research study, “might exclude U.S. involvement except in a marginal way...and could evolve into regional blocs.”¹ Conceivably, if overall U.S. relations with Russia, China, and Japan should seriously deteriorate, this warning could prove to be prescient. However, in the absence of such a sharp downturn, the United States would benefit from movement toward regional economic integration that would ease political and military tensions. In security terms, declining tensions would enable the United States to scale down its costly military presence in the region. Access to cheaper petroleum would weaken the incentive to expand civilian nuclear power programs that could be converted to the development of nuclear weapons. Moreover, to the extent that Northeast Asia can satisfy its petroleum needs from indigenous sources and from Russia, competition with the United States for access to existing sources, pushing prices up, would be reduced.

Startling projections of future growth in regional energy demand underline why greater Northeast Asian reliance on nearby petroleum sources would be beneficial to the United States.

China, in particular, with its rapid economic expansion, exemplified by the growth of gas-guzzling cars and trucks, is steadily escalating its oil imports. Most expert projections suggest that the level of imports, now 1.6 million barrels a day, will reach four million barrels a day by 2010 and seven million by 2015, close to the current U.S. level and equal to three-fourths of Saudi Arabia’s current production. At present, natural gas accounts for only 2.5 percent of China’s energy mix, with coal 68 percent and nuclear power still negligible. But Beijing is seeking to raise the share of natural gas to ten percent by 2020 through increases both in domestic production and in imports. The increase in imports will involve not only pipeline gas but also liquefied natural gas (LNG). The shift to gas is driven both by the pollution resulting from a coal-based economy and by the geographical accident that its coal deposits happen to be located in the north and west, while its energy demand is centered in the south and east. Expanding the use of coal would require a costly expansion of its railroad network.

Japan and South Korea, the world’s second and fourth largest oil importers respectively, are also

global leaders in the use of LNG. Japan is now the world’s largest LNG importer, accounting for 61 percent of global demand, and the consumption of LNG in both Japan and South Korea is rapidly increasing. However, the extent of this increased LNG demand will depend on whether, and how soon, projected gas pipelines are built, and whether the price of pipeline gas will be competitive with LNG.

PIPELINES VERSUS LNG

With untold billions of dollars in profits at stake during the decades ahead, an intense struggle is now developing between rival contenders for dominance in the burgeoning Asian petroleum market. On one side are leading LNG exporters like Shell, El Paso and Conoco, anxious to maintain and increase the existing level of their exports from established gas fields and LNG processing terminals in Indonesia, Australia, Brunei, Alaska and the Persian Gulf. On the other are Russian and foreign gas companies with substantial investments in gas exploration and development ventures in eastern Siberia and Sakhalin, notably Yukos, Transneft, Tyumen, British Petroleum and Exxon-Mobil. These ventures will pay off only if their production is conveyed by pipelines to Northeast Asian consumers.

This struggle overlaps with internal conflicts in all of the countries concerned that will determine whether the pipelines can be built at a tolerable cost, and thus whether the gas can be sold at a price competitive with LNG.

In Russia, the state-controlled gas giant Gazprom is seeking to assert planning and coordinating authority over both internal and external pipeline development, with the power to decide which gas fields, and which pipelines, should get priority in governmental transportation and infrastructure investment within Russia. This has provoked resistance from the companies that would be adversely affected by Gazprom’s anticipated choice of priorities. The Ministry of Energy in Moscow is at loggerheads with the two provinces that would supply pipeline gas to Northeast Asia. They have yet to agree on who should control the price of gas exports and how high the price should be, a key issue in continuing negotiations with China on a pending pipeline agreement. These two Siberian

¹ Gaye Christofferson, “China’s Intentions for Russian and Central Asian Oil and Gas,” *NBR Analysis* (National Bureau of Asian Research, Seattle) 9, no. 2 (1998): 33.



border provinces, Irkutsk and Sakha, together with the companies that control their gas reserves, are competing to get the biggest share of pipeline exports.

In China, northern provinces near Russia and interior provinces where it is hard to deliver LNG are more eager to see pipelines built than coastal provinces. In Japan, powerful utility companies led by Tokyo Electric, with monopoly control over regional electricity markets, want to continue their exclusive reliance on LNG imports. Consumer groups, by contrast, are campaigning to break the grip of the monopolies and to bring prices down by promoting competition between LNG and pipeline gas from Sakhalin.

In South Korea, middlemen allied with companies that are developing LNG terminals to be supplied by gas from Sakhalin, notably Shell, are waging a propaganda offensive designed to prove that LNG will be cheaper than pipeline gas from either Siberia or Sakhalin. The government gas monopoly, Kogas, supports development of a pipeline that would run from Kovykta in Irkutsk province through China to North and then South Korea. Kogas is taking part in a \$120 million tripartite Kovykta feasibility study, jointly financed by China, Russia and South Korea, that is scheduled for completion next July. South Korean President Kim Dae Jung, soon to retire, who favors closer ties with Russia and likes the idea of a pipeline crossing through North Korea to the South, has been pushing the Kovykta project. But South Korea has yet to resolve interlocking controversies over whether it would be cheaper to get pipeline gas from Kovykta or from Sakhalin, which is not as far away, and over the relative share that pipeline gas and LNG respectively should have in its energy mix in relation to oil and nuclear power.

BARGAINING OVER KOVYTKA

The Kovykta complex of six gas fields, one of the world's largest, is located in a remote, undeveloped part of Siberia to the west of Lake Baikal, 225 miles northeast of Irkutsk (see map on page 8). "At the moment, you have mostly tigers, bears and earthquakes there," exclaimed Mikhail Lipilin, vice-president of Russia's biggest pipeline construction combine, Rozneftegazstroy, in a Moscow interview.

"There's no infrastructure, no helicopter pads, nothing." Undaunted, British Petroleum paid \$571 million in 1997 to acquire the Russian company that controlled the Kovykta reserves and has since invested \$100 million on exploration in a joint venture with two Russian companies. Originally, British Petroleum envisaged a pipeline of some 2,400 miles running through Mongolia, northeast China and North Korea to Inchon in South Korea that would have cost \$8 billion to build. But China, which has tenuous relations with Mongolia and regards it as overly subject to U.S. influence, insisted on a pipeline route that would circumvent Mongolia to the east. Since this route will go through a "permafrost" area and will be at least 600 miles longer than the original one running through Mongolia, the pipeline will cost some \$2 billion more to build. The feasibility study now nearing completion will pin down the cost more precisely and will set the stage for negotiations between Russia, China and South Korea on the price of the Kovykta gas. Once the price is settled, broader discussions can begin on how the project will be financed.

Russia, China, South Korea and the private companies involved hope that Japan and multilateral lending institutions will join with them in a consortium to develop the Kovykta complex and the pipeline. Japan was initially part of the feasibility study but backed out after a dispute over how the study would be conducted. So far, Japan has been reluctant to commit itself on how much gas it would buy and whether it would agree to provide financing on the low-interest terms that the other governments involved are prepared to contribute. But officials of the Japan National Petroleum Corporation told me in Tokyo that Japan wants to join the consortium if the feasibility study looks promising.

Since some \$2.5 billion will be needed to develop the fields after exploration is completed, British Petroleum and its Russian partners want definite commitments from China and South Korea on how much gas they will buy before making development outlays. Most experts accept estimates indicating proven reserves in the Kovykta fields of 1.6 trillion cubic meters—sufficient to provide 20 billion cubic meters of gas annually to China for 25 years, plus another 10 billion for South Korea and 10 billion to

meet the growing gas needs of Irkutsk and neighboring areas of Siberia. While South Korea is ready to consume 10 billion cubic meters right away, however, China may not be able to absorb its 20 billion until about 2010. For this reason, Beijing has room for maneuver in bargaining over the price. Precisely how much gas China will need from Siberia, and how soon, will depend in part on such uncertain factors as when its possible gas pipeline links with Turkmenistan and Kazakhstan get into operation, and whether its projected cross-country gas pipeline from Xinjiang actually begins to supply gas to consumers in eastern China by 2005 as scheduled.

Beijing is outraged at Russian suggestions that the Kovykta price will be fixed at the same level as LNG. Defending the Russian position, Alexander Y. Misiulin, Director of Foreign Economic Relations in the Energy Ministry, told me in Moscow that “the price should be at least as high as LNG. What they can pay Oman, they can pay us. After all, when it comes down to it, they are interested in cooperation with us primarily for geopolitical reasons, for diversification of their sources of supply, not only for economic reasons. Diversification should be reason enough.” Stanislav Zhiznin, Counselor for Economic Cooperation in the Foreign Ministry, echoed this theme, adding that Siberia and the Russian Far East badly need gas for their own development, and “we have to get a high price to justify large-scale exports that undercut what they can have.”

Chinese officials are more tight-lipped than their Russian counterparts but are privately threatening to upgrade their reliance on LNG if Moscow refuses to compromise on the price issue. They also warn that Russia’s reliability as a petroleum partner has yet to be tested. Beijing is upset over recent signs that Moscow may renege on a long-standing commitment by the Russian oil and gas giant Yukos to build a crude oil pipeline from Angarsk, near Irkutsk, to Chinese refineries near Daqing. Beijing has been counting on the pipeline, which would provide 20 million tons of crude oil by 2005 and 30 million by 2010. In the name of “national security,” President Vladimir Putin has recently signaled his support for Yukos’ politically powerful rival, Transneft, which wants to build a crude pipeline to the Russian port of Nahodkha that would sell oil to all comers, not just to China.

Putin may well be using the Nahodkha option as a bargaining chip in the emerging negotiations with China over the price of Kovykta gas. It would be surprising if he does back out of the Daqing deal for short-term political reasons because Russian profits from pipeline gas exports to China and Korea would skyrocket as their gas demand grows after 2010. Indeed, projections of future demand are so high that Kovykta alone might not be able to keep pace with this demand, and other gas-rich areas in Siberia are already lobbying for their inclusion in a pan-Siberian pipeline export grid in which they would be linked to Kovykta.

A PAN-SIBERIAN PIPELINE GRID?

At the very least, said Misiulin, Kovykta should be linked to the nearby Yuzhno-Ustkoutska field controlled by Tyumen, which would add 330 billion cubic meters to its proven reserves. Richard Karplus, the Moscow-based vice president of Conoco International Petroleum, predicted that the Kovykta reserves will run out within ten years if exports reach the anticipated annual level of 30 billion cubic meters annually. To keep up with the demand, he said, Russia would have to integrate Kovykta exports with gas from three fields in the Vilyush area of the Sakha Republic near Yakutsk, northeast of Kovykta, or with the Urungoye and Yambury fields near Krasnoyarsk to the northwest. The Vilyush area alone has gas reserves of some 2.15 trillion cubic meters, and the Sakha Republic as a whole, 7.6 trillion.

In the late 1960’s, when I was covering Northeast Asia for the Washington Post, China, Japan and South Korea were mesmerized by the enormous potential of Sakha. Studies of a direct southeasterly route, running diagonally across Siberia from Vilyush to China, proliferated. But these studies found that the southeasterly route from Vilyush and other Sakha gas fields would have to go through earthquake-prone areas where sub-zero temperatures would make pipeline construction tortuous during the winter months, with daylight lasting only six hours and the ground often frozen to a depth of 100 feet. Even in summer, the studies showed, snow and ice in this part of Siberia are not fully absorbed in the soil, and much of the route would be a muddy quagmire. By contrast, the route from Kovykta, running



to the south of Lake Baikal where the climate is less severe, would pose more manageable logistical obstacles. Although technological breakthroughs could eventually make construction easier in northern Siberia, Sakha gas is likely to be linked up with the Kovykta pipeline for the foreseeable future.

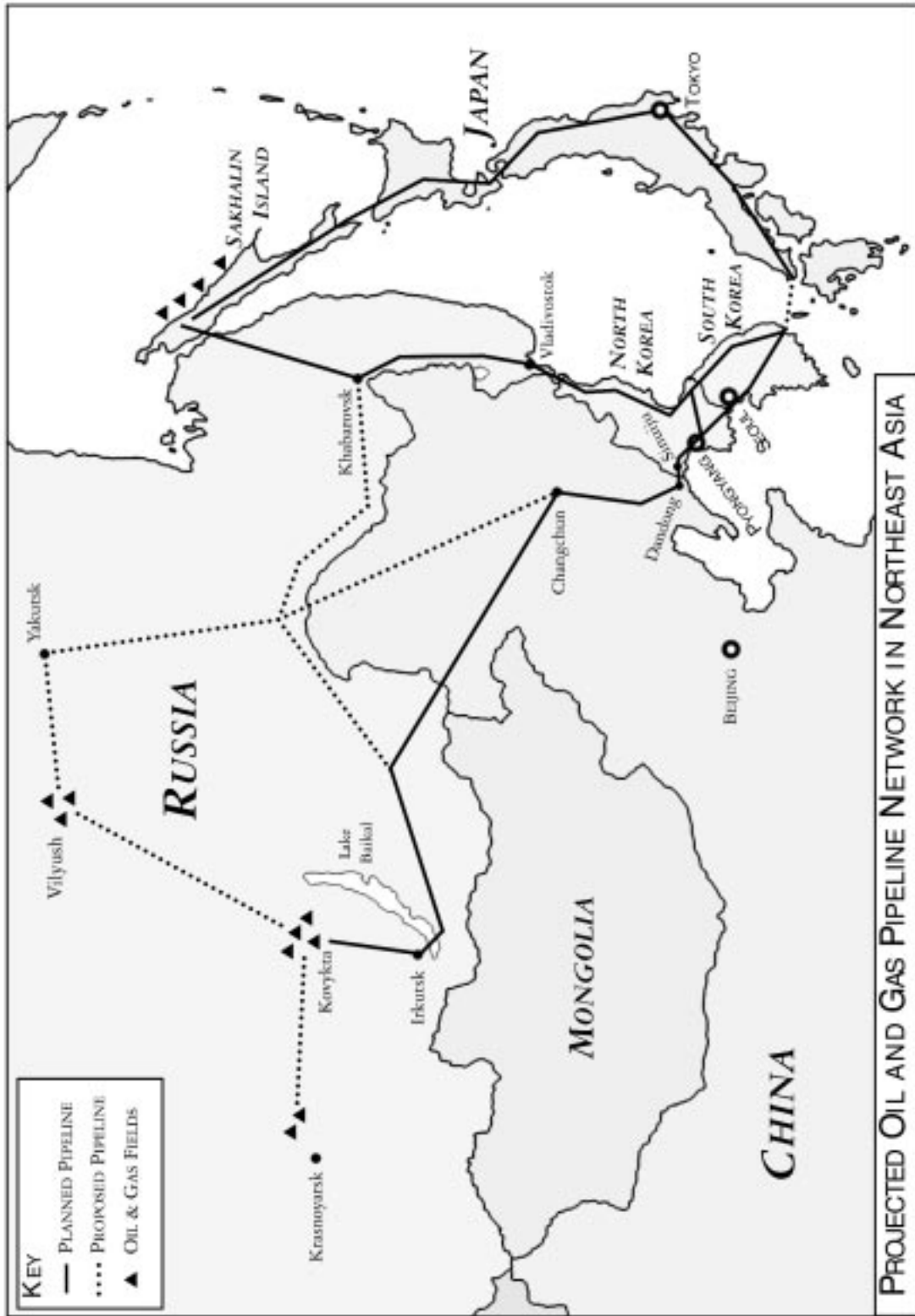
Significantly, Gazprom oversees all Russian gas exports and will thus have a big say in what happens to the gas produced in Kovykta, Yakutsk and Krasnoyarsk, even though British Petroleum (BP) and local companies and governmental entities hold the legal rights.

“BP shouldn’t be snobbish,” said Lipilin of Rozneftegazstroy. “They should work with Gazprom, which has to think of the overall national interest.” Indeed, he added, BP has no choice, since the Russian government controls 38 percent of Gazprom’s equity and its approval will be a prerequisite for the conclusion of any pipeline deals with China and Korea.

Assuming that a price agreement is reached with China and that British Petroleum can come to terms with Gazprom, the last remaining obstacle to the early development of the Kovykta complex will be BP’s renegotiation of its existing production-sharing agreement (PSA) with the Russian government next year. The issue of PSA agreements is a hot one both in Russian politics and in Russian-U.S. rela-

tions. Russian oil and gas companies and nationalists in the Duma are pressing for loosely defined agreements, or none at all, and foreign companies are demanding PSAs with strict guidelines pinning down the terms of their taxes and guaranteeing the security of their investments.

Russia needs a big foreign investment influx to make the most of its petroleum riches. In their meeting in November 2001, at Crawford, Texas, President Bush urged President Putin to enact tougher PSA legislation. Such legislation, Bush said, is a precondition for White House support of stepped-up US investment, according to Vladimir Konovalov, director of the Petroleum Advisory Forum, a coalition of foreign energy companies operating in Russia. But Putin has so far avoided a showdown with politically powerful Russian oil and gas barons who have reaped big profits during periods of high prices and want to limit foreign investment even if it slows down the expansion of oil and gas production. The foreign investors fear capricious changes on taxes and other issues by Russian bureaucrats at all levels. By contrast, the Yukos, Tyumen (TNK) and Transneft magnates would rather be free to make cozy deals with local authorities, often corrupt, than come under binding control from Moscow, where foreign interests have their greatest clout.





Sakhalin Gas and the Korean Nuclear Crisis

Compared with the huge potential of Siberia, where gas reserves are expected to last for the next century, the reserves so far discovered along the east coast of Sakhalin Island are less spectacular, though their impact on the Russian Far East and adjacent areas of northeastern China, Korea and Japan is likely to be significant.

The grand total of proven Sakhalin reserves is 915 billion cubic meters. These reserves are divided almost evenly between the oil and gas concession areas off the northeast coast, known as Sakhalin I, where a multilateral consortium led by Exxon-Mobil plans to invest \$15 billion, and Sakhalin II, to the south, where investments by Shell, Mitsui and Mitsubishi are likely to exceed \$10 billion. Exploration in the Sakhalin seabed has been in progress since 1978, but development proceeded sporadically until late 2001, when Russia liberalized its tax and regulatory policies and Putin's meeting with Bush signaled an overall improvement in Russian-U.S. relations. Soon after Putin left Crawford, Exxon-Mobil announced that it would spend \$4 billion of its projected \$15 billion on Sakhalin development within the next five years, Russia's largest single foreign investment commitment to date. At present, plans call for oil production to start at Sakhalin I in 2005 or 2006, but Exxon-Mobil will begin with gas production if either South Korea or Japan, or both, should agree to open the gas market on a long-term basis with a commercially acceptable gas price.

SAKHALIN, KOVYKTA AND THE KOREAN CONNECTION

Russia favors the construction of a pipeline running from Sakhalin I through North Korea to South Korea, partly because the pipeline route would skirt the Khabarovsk, Primorsky-Krai and Vladivostok areas on the Russian mainland opposite Sakhalin, where the demand for gas could grow very rapidly. Until now, these cities have been dependent on

Chernobyl-type nuclear reactors that pose a safety hazard. Initially, they might not get much gas from a pipeline originating in Sakhalin I, since most of it would have to go to South Korean consumers who can afford to pay the prices necessary to make the pipeline profitable for Exxon-Mobil. However, as untapped additional gas reserves of some 1.4 trillion cubic meters are explored and developed in newly allocated concession areas known as Sakhalin III, IV and V, there will be enough gas available to divert what is needed to Russian cities along the pipeline route as well as to nearby northeastern Chinese cities, notably Harbin and Dalian, where there is a heavy demand for gas from petrochemical plants as well as consumers.

"If Exxon became serious about a pipeline from Sakhalin to Korea," said Lipilin of *Rozneftegaztroy*, "Russia will support it because it would be in our long-term national interest, both in terms of our strategic interest in close relations with Korea and as a step toward the gasification of our Far East." Even though Russia is short of cash, added Alexander Fedorovsky, Director of Pacific Studies at the Institute of World Economy and International Relations (IMEMO), Russia could help to make the project financially viable in various ways. Instead of repaying its \$1.7 billion debt to South Korea in scarce foreign exchange, he suggested, Russia could pay by getting government-controlled enterprises to contribute part of the work on the pipeline or to provide a share of the gas. For example, *Rozneftegaztroy*, formerly the Soviet Ministry of Oil and Gas Construction, could help to build the pipeline, and *Rozneft*, which holds a fifth of the stock in the Exxon-led consortium, could forego profits on the gas until the debt to Seoul is paid.

Neither the precise routes from Kovykta and Sakhalin I, nor the capacity of the pipelines, have yet been decided. Still, it is clear that Sakhalin pipeline gas would be competitive with LNG and cheaper than Kovykta gas, though how much cheaper remains to be seen. The pipeline from

Sakhalin I would not be more than 1,900 miles long, running along the east coast of Korea to its terminus near Seoul, where it would intersect with an existing South Korean gas network. The pipeline could be built within three to four years at an estimated cost of \$3 billion. By contrast, assuming that the pipeline route from Kovykta does circumvent Mongolia, crosses China's Liaoning province to Dandong, enters North Korea at Sinuiju and proceeds along the west coast of Korea to a terminus at Inchon, it would be nearly 3,000 miles long and would cost some \$9 billion to build.

As it happens, it cannot be assumed that a Kovykta pipeline would cross through North Korea to the South. The Bush Administration is flatly opposed to such a possibility. In South Korea, retiring president Kim Dae Jung favored a route through North Korea as a way to cement North-South economic cooperation and to help Pyongyang resolve its energy crisis. But some of Kim's critics in the South want the pipeline to veer south of Dandong to Dalian, where it would go under the Yellow Sea directly to Inchon, bypassing North Korea, even though this would add 250 miles to the route and make the pipeline more expensive, especially since it costs more to lay pipeline under the sea than on land. South Korea formally asked China to support a route through North Korea in December, 2000. Zhang Xin, Director General of the China National Petroleum Corporation, told me in Beijing. "That is our policy, even though some South Koreans have come to us saying that they would prefer the undersea route," he said. "They think it's less risky politically. Like the Americans, they're afraid North Korea would have a stranglehold over the South if the pipeline goes through the North."

Ironically, North Korea itself is cool to the Kovykta project. Given China's burgeoning demand for gas, observed Song Bok Ku, Commercial Counselor of the North Korean Embassy in Moscow, Beijing will not be willing for very long to let Kovykta gas go to Korea. Whatever short-term commitments it might make, he said, "as time goes by, there will be little left for North and South Korea." South Korea's Kogas has sent two missions to Pyongyang to keep North Korean petroleum officials abreast of progress on Kovykta and to conduct preliminary surveys of a possible pipeline

route. North Korean officials have promised to keep an open mind on Kovykta until the feasibility study is completed. But the North strongly prefers a pipeline from Sakhalin and has repeatedly conveyed this preference to Russia, most recently during Kim Jong Il's fourth meeting with President Putin at Vladivostok last August.

Russian enthusiasm for a pipeline through North Korea, either from Kovykta or Sakhalin, will be influenced in part by the fate of ongoing negotiations (between Russia and the two Koreas, and between North and South Korea) on extending the Trans-Siberian Railroad through North Korea to the South, explained Alexander Fedorovsky of IMEMO. Russia hopes to reap \$3 billion in annual profits through container freight traffic from Europe to South Korea through Russia, which would be twice as fast and one quarter the cost of shipping by boat. South Korea has already started to restore its rail links with the North, severed since the Korean War. Russian pressure is one of the main reasons why the North has agreed to cooperate. But Pyongyang lacks the capital and expertise needed to renovate its decrepit rail system on its own, and before embarking on a costly reconstruction effort with South Korean assistance, Moscow is demanding a substantial degree of Russian managerial and financial control over the Korean portion of the extended Trans-Siberian rail system.

"If the North Koreans cooperate in a realistic way on the railroad, it will open up many other areas of cooperation, especially concerning natural gas," commented Fedorovsky. "The railroad is a test case."

NORTH KOREA'S ENERGY BIND

For North Korea, the loss of subsidized petroleum supplies from China and Russia since the end of the cold war has been the root cause of its current economic paralysis. With low-cost Chinese crude oil flowing directly to its refineries from the Daqing oil field, Pyongyang built its economy primarily around oil, even though it has abundant coal deposits and has continued to rely partly on coal. But since 1990, when Beijing and Moscow began to demand repayment at commercial rates in hard currency, crude oil imports have dropped by 85 percent. This has immobilized industries dependent on petroleum, including fertilizer factories, which



has led to low agricultural production, aggravating the impact of famines in 1995 and 1996. The lack of oil has shut down most tractor operations and many of the power generators in rural areas needed to run irrigation pumps. Industries dependent on coal have also suffered, since coal production has been crippled by the reduction of electricity output from power stations dependent on oil, and electricity is needed for mechanized mining as well as for the electrified rail system used to ship coal out of the mines.

To escape from its energy bind, North Korea is prospecting for oil in the seabed off the coast of Anju and has been counting on 2000 megawatts of electricity annually from two light water nuclear reactors that a U.S.-led consortium, the Korean Energy Development Organization (KEDO), promised to build for the North under a 1994 U.S. nuclear freeze agreement with Pyongyang known as the Agreed Framework. In return for the promise to build the reactors by a target date of 2003 and to provide 500,000 tons of oil annually pending their completion, North Korea discontinued a graphite-based nuclear program that was designed to produce plutonium for nuclear weapons while simultaneously helping to meet civilian electricity needs. During the ensuing seven years, however, work on constructing the two reactors did not even begin, and the United States also failed to fulfil two other key provisions of the agreement: Article Two, which envisaged the U.S. normalization of economic and political relations with North Korea, and Article Three, which required "formal assurances" ruling out "the threat or use of nuclear weapons by the United States" against North Korea.

Pyongyang repeatedly threatened to stop honoring the Agreed Framework unless Washington lived up to these obligations. Finally, on October 4, 2002, North Korean leaders told visiting U.S. officials that it is no longer bound by the accord and that it is seeking to produce enriched uranium for use in nuclear weapons. The enrichment program violates the spirit, but not the letter, of the 1994 accord, which covered only the plutonium-based nuclear program then underway. In any case, Pyongyang offered on October 4 to end the uranium program, abide by the safeguards in the 1994 accord relating to plutonium and negotiate inspection procedures acceptable to Washington. In

return, the United States would have to fulfil its commitment to normalize relations, opening the way for economic aid, and conclude a non-aggression agreement pledging that it will not use nuclear weapons against North Korea. But the Bush Administration has not accepted this offer, and it is unclear whether the two reactors will ever be built.

Even if North Korea does get nuclear power for electricity, natural gas from a Sakhalin or Kovykta pipeline would help North Korea to meet its expanding energy needs as it rebuilds its economy. Gas-fired power stations along the route could tap into the pipeline. Equally important, royalty payments for permission to pass through its territory would provide Pyongyang with critically needed foreign exchange. South Korea would be the main market for pipeline gas from Russia, with its expected commitment to buy 10 billion cubic meters annually, but North Korea will seek a steadily growing share as a supplement to nuclear power.

Pyongyang is so enthusiastic about the Sakhalin pipeline that the Natural Gas Society of North Korea concluded an unpublicized 18-point Memorandum of Understanding with a consortium of three Dutch trading companies on April 6, 2001, giving the consortium the exclusive right to build the North Korean portion of the pipeline from the Russian border to the South Korean border. Pyongyang hopes that the Dutch companies will act as an intermediary in promoting the pipeline project with Exxon-Mobil, Japanese companies and South Korean gas officials. Mindful of South Korean concerns, the Memorandum committed the consortium "to construct and operate this project so as to secure an undisturbed flow of natural gas over the Southern borders."

The Memorandum specifically envisaged the construction of three gas-fired power stations along the pipeline route with a total capacity of 500 megawatts. Access to the gas needed to operate these power stations would be a condition for permitting the pipeline to transit North Korea to South Korea. By seeking only enough gas for 500 megawatts, North Korea signaled that it sees the three power stations as a supplement to the two nuclear reactors, not as an alternative to them. This is significant because some observers who have long believed that the Bush Administration will never build the reactors, and who question the reactor

project on economic grounds, anyway, argue that the United States should offer to support the pipeline if North Korea agrees to drop the reactor project and to comply with U.S. demands relating to its nuclear and missile capabilities.

SHOULD THE AGREED FRAMEWORK BE RENEGOTIATED?

The most explicit proposal for such a deal has come from Bradley O. Babson, a senior consultant to the World Bank on East Asia. Babson told a Seoul conference on March 6, 2002, that the 1994 North Korea-U.S. nuclear freeze agreement “is very likely headed for a crisis.” The crisis could be triggered, Babson said, by any or all of three contingencies: an impasse over inspection issues; the unwillingness of KEDO members (South Korea, Japan, the European Union and the United States) to pay for completing the reactors; or, most probably, by their refusal to cover the costs of the new power distribution grid that would be needed to transmit the electricity produced by the reactors.

Babson did not foresee that the crisis would result from North Korean acknowledgement of a secret nuclear weapons effort. But his warning was nonetheless prescient, and he made a proposal for a bargain with North Korea that the United States should now adopt, with important modifications, as I will explain later. If North Korea satisfies the United States that it has ended its nuclear and missile programs, Babson suggested, Washington and the multilateral development banks should be prepared to help finance not only the construction of the pipeline itself but also gas-powered power plants, gas-based fertilizer factories and rehabilitation of the existing North Korean power distribution grid. “The idea of building a gas pipeline to cross North Korea and serve the South Korean market is worth serious consideration,” he concluded, “not just from the point of view of meeting South Korea’s future gas requirements through regional energy cooperation,” but because “it could transform inter-Korean relations and advance the larger goal of regional security.”

Supporting this view, a leading expert on Northeast Asian energy issues, Keun Wook Paik, author of *Gas and Oil in Northeast Asia* (Royal Institute of International Affairs, 1995), points out

that the cost of building the reactors (\$4.9 billion) would greatly exceed the projected \$3 to \$3.5 billion cost of the Sakhalin pipeline. Gas could begin flowing well before the reactors are likely to start producing and transmitting electricity, he adds, assuming that Exxon-Mobil can reach agreement with South Korea on the price of the gas and the annual volume to be purchased. Once the feasibility study on Kovykta gas is completed this summer, he says, Seoul will know whether Sakhalin gas would be cheaper. If South Korea completed negotiations with Exxon-Mobil for Sakhalin gas during 2003, the pipeline could be completed and in operation by 2008.

Like many observers, Paik emphasizes that North Korea’s antiquated electricity transmission grid cannot handle the 2000 megawatts of electricity to be produced by the two nuclear reactors. The cost of constructing a new countrywide grid with a 540 kilovolt capacity would be substantially higher, he estimates, than building a network of 250-megawatt gas-fired power stations, along the pipeline route, linked to small local transmission grids. Each of these power stations and its local grid would cost from \$150 to \$170 million, he calculates, based on the 2002 price of gas-fired turbines made by Korea Heavy Industries in the South. To cover the most populous parts of North Korea with eight power stations, the cost would be \$1.2 to \$1.36 billion, but all of them would not have to be constructed at once.

At their own initiative and at their own expense, two leading European engineering firms, Asea Brown Boveri (ABB) of Switzerland and Siemens of Germany have both conducted extensive studies in North Korea of its existing electricity distribution system and of its future energy needs. Even though North Korea is virtually destitute at present, their reasoning is that the security interests of the United States, Japan and South Korea will sooner or later lead to multilateral aid to ease North Korea’s energy problem as part of a broader rapprochement, whether through a new countrywide grid linked to the two KEDO reactors or through gas-fired power stations with local grids fueled by a Sakhalin pipeline—or through a combination of both.

In economic terms, there is no need to make an either-or choice between pipeline gas and nuclear power. Both will be needed to meet the growing economic needs of North Korea, South Korea and



a unified Korea. The American interest in a stable Korea would clearly be served by a policy in which the two reactors are supplemented by a Sakhalin pipeline. In political terms, however, the issue confronting the Bush Administration is how to head off a North Korean nuclear weapons program. In my view, the best way to do so is to replace the Agreed Framework with a new agreement that combines pipeline gas with a scaled-down nuclear power program in return for an inspection regime fully adequate to verify that the nuclear weapons effort has ended.

HOW TO RENEGOTIATE THE AGREED FRAMEWORK

North Korea and South Korea alike would strongly oppose a revision of the 1994 accord in which both nuclear reactors would be abandoned in favor of pipeline gas. But they might well agree to reduce the KEDO commitment to one reactor, instead of two, if that would keep the nuclear agreement on track.

In order to make such a compromise attractive to the United States, Pyongyang would have to reaffirm its commitment to the existing provisions of the Agreed Framework, under which it must dismantle its frozen nuclear facilities, designed to produce plutonium, coincident with the completion of the reactor project. In addition, North Korea would have to accept new provisions that would end its effort to acquire enriched uranium under adequate inspection safeguards, and would have to go beyond existing provisions that require International Atomic Energy Agency inspections to determine how much fissile material had been accumulated before 1994. The Bush Administration wants these inspections to begin immediately, much sooner than the Agreed Framework requires. North Korea would accept such accelerated inspections, in my view, if the schedule of inspections is linked to progress in the construction of the reactor. In return, the United States would drop its opposition to an Exxon-Mobil gas pipeline through North Korea; encourage multilateral assistance for gas-fired power stations, transmission grids and fertilizer factories along the pipeline route, and support interim KEDO energy aid to the North pending completion of the reactor and the pipeline.

For the Bush Administration, inducing North Korea to accept one reactor instead of two, together with strengthened nuclear inspections, could be presented in the United States as a political victory, partially vindicating Republican charges that Clinton gave North Korea too much in the 1994 accord, on terms that were not tough enough.

For Pyongyang, getting at least one of the reactors up and running is a political imperative if only because the Agreed Framework bore the personal imprint of the late President Kim Il Sung and of his son Kim Jong Il, now North Korea's leader. Equally important, since Japan and South Korea both have large civilian nuclear programs, North Korea regards nuclear power as a technological status symbol. Like Tokyo and Seoul, Pyongyang wants nuclear power in its energy mix to reduce dependence on petroleum. Still another factor is that North Korea has a force of 7,500 nuclear technicians, many of them trained in Russia, who have been in a state of limbo since the 1994 accord and are awaiting new jobs when the KEDO nuclear complex at Kumho is completed.

In the case of South Korea, support for the KEDO program comes in part from vested interests with a stake in contracts to build the reactors. The South had already spent some \$800 million on the reactors by the end of 2002, and South Korean companies had lined up contracts totaling another \$2.3 billion for the construction work ahead. As a State Department official observed, "the bribes have already been paid." Still, half a loaf would be better than none, and the money spent by the South has gone, so far, only to the infrastructure at the site and to the first reactor.

South Korea likes the KEDO project because it is confident that the reactors will someday belong to a unified Korea. By contrast, Japan made its \$1 billion commitment to KEDO grudgingly and has dragged its feet in meeting its obligations. In Japanese eyes, North Korea cannot be trusted to observe nuclear safety standards, and Tokyo fears another Chernobyl in Japan's backyard. Since Tokyo has already spent \$400 million on the project, it is reluctant to see it scrapped entirely, but like Seoul, might accept a compromise limiting the project to one reactor.

A government-controlled Japanese company, SODECO (Sakhalin Oil Development Cooperation Company), is Exxon-Mobil's principal

partner in Sakhalin I, with a 30 percent stake. Therefore, if Prime Minister Koizumi's September 16, 2002, summit meeting with Kim Jong Il leads to a normalization of Japanese relations with Pyongyang, Japan might well support a pipeline from Sakhalin I through North Korea to the South as part of its rapprochement with Pyongyang. Conceivably, the pipeline route could be extended across the Tsushima strait to southern Japan. But Japan is not likely to need Sakhalin gas routed through Korea because Exxon-Mobil and SODECO are already planning a direct 870-mile pipeline link from Sakhalin I to northern Japan that could provide 8.2 billion cubic meters of gas annually to Japanese consumers.

THE PIPELINE CONTROVERSY IN JAPAN

As in South Korea, consumer groups in Japan argue that pipeline gas would be cheaper than LNG and that it would be prudent, in any case, to reduce what is now excessive dependence on a single source. But the LNG lobby, spearheaded by Shell and powerful Japanese utility companies like Tokyo Electric, is waging a high-stakes campaign to subvert the Sakhalin pipeline or at least to delay its construction. Shell finalized plans last July to start building a \$3 billion liquefaction plant in southern Sakhalin, with a \$2 billion port facility, linked to its gas fields in the north of the island by a \$2 billion pipeline. The liquefaction plant will have two units, each with a capacity to produce 4.8 million tons of LNG per year. Shell is going ahead with one of the two units, gambling that it can get South Korea and Japan to buy its LNG by late 2006. If this gamble does not pay off, the second will not be built, and the LNG produced by the first unit will be sent to more distant markets, such as the west coast of the United States, where it would face greater competition.

The Japanese utility companies, for their part, would lose their lucrative regional monopolies if Sakhalin pipeline gas replaces LNG. At present, their power plants are linked to 20 LNG terminals concentrated in three major urban areas, Tokyo, Osaka and Nagoya. Pipeline gas would have to be distributed through a new internal pipeline network that would disrupt these regional monopolies by opening up new linkages between different areas of the country, including many areas that do not now

get gas. South Korea and most other industrial countries already have internal gas pipeline networks for distributing gas, but surprisingly, Japan's energy distribution system has grown haphazardly without such a network.

Kengo Asakura, a leading Japanese energy expert, has proposed a plan for a new 3,300-mile national trunk pipeline that would be linked, in turn, to 9,000 miles of local pipelines. This would be comparable in size to the long-existing pipeline grid in the United Kingdom. The existing LNG terminals would be integrated into the new network, but LNG usage would coexist with pipeline gas.

Asakura contends that the national network would stimulate a burst of new industrial activity and consumer demand in energy-short parts of the country, helping to revive the Japanese economy. The LNG lobby seeks to counter this argument by pointing out that the cost of building the new network would be at least \$25 billion and could reach \$40 billion. Spending this much would be risky, the argument runs, since the parlous state of the Japanese economy could slow down the anticipated growth in electricity consumption by the time the network is completed.

Despite the LNG campaign, it is precisely because Japan faces difficult economic times ahead that the Asakura plan is winning support. Energy prices in Japan are among the highest in the world, and LNG prices, in particular, are inflated by the system of regional monopolies. Japanese exports will lose their competitiveness unless energy prices are reduced. Moreover, there is a growing consensus that it is foolish to be so dependent on politically volatile parts of the world when gas is available in abundance so close to home. It was deeply unsettling to Japan when Tokyo Electric Power could not import LNG for six months in 2001 after separatist violence erupted in Aceh, Indonesia. In this new consensus, both LNG and pipeline gas from Sakhalin should be part of the Japanese energy mix, and the Japanese government should actively encourage both a Sakhalin pipeline and a new internal distribution network by providing low-interest government loans.

The Japanese government is already giving modest support to Sakhalin gas development through the participation of SODECO and a \$116 million investment by the Export-Import Bank of Japan.



Ultimately, in order to make gas pipeline networks in Northeast Asia a reality, the governments of China, Russia, South Korea and Japan would all have to provide large-scale financial support and launch a serious regional political dialogue on pipeline development designed to set common objectives and priorities. Such a dialogue should be institutionalized in a Northeast Asia Energy Forum that would lead, in turn, to a Northeast Asia Energy Charter Treaty patterned after the one negotiated a decade ago by the European Union.

To the extent that Northeast Asian regional cooperation grows, the willingness of the United States and international financial institutions to help support regional pipeline networks through credits and investment guarantees is also likely to increase. So far, the European Bank for Reconstruction and Development and the U.S. Overseas Private Investment Corporation (OPIC) have extended investment credits of \$160 million each for Sakhalin

gas development. But a much bigger regional role by the United States, the European Bank, the World Bank and the Asian Development Bank is needed and would be justified if Northeast Asia shows a capacity for cooperation.

“A comprehensive regional approach accepted by all of us would be much better than letting the vagaries of the marketplace decide what happens,” observed Zhou Dadi, Director General of the Energy Research Institute in China’s State Planning Commission.

“Is some of the Kovykta gas going to the two Koreas and Japan? How much Sakhalin gas will come to Northeast China? How much to Korea? How much to Japan? If everything is left to each company, each country, each interest group, China will have to think of itself and give priority to its own immediate pressures and demands. It would be much better for everybody if we adopt a regional approach.”



Map courtesy of Current History

The Untapped Potential of the East China Sea and the Yellow Sea

In order to keep pace with its growing energy consumption, including the steady growth of gas-guzzling cars and trucks, China became a net importer of oil in 1993. Since then, import levels have steadily risen, passing 1.6 million barrels a day last year. Most expert projections suggest that China's imports will reach nearly four million barrels a day by 2010 and seven million by 2015, close to the current U.S. import level and equal to three fourths of Saudi Arabia's current production.

Even with these rising imports, oil accounts for only 25 percent of China's energy mix, with coal 68 percent, natural gas and hydroelectric power each 2.5 percent and nuclear power development still negligible.

Since its coal deposits are located in the north and west, while its energy demand is centered in southern and eastern coastal provinces, China has ruled out a large-scale increase in its coal production, which would require a costly expansion of its railroad network. Instead, while continuing to seek increased oil production in undeveloped onshore and seabed areas alike, Beijing is focusing primarily on raising the share of natural gas in its energy mix to ten percent by 2020, through increased domestic gas production coupled with imports. This push to expand the use of gas is driven in part by the appalling pollution resulting from a coal-based economy.

China's new focus on gas is demonstrated by its ambitious plan for a 2,900-mile, \$35 billion east-west gas pipeline from the Lunnan gas field in Xinjiang province to Shanghai. In an agreement announced in July, 2002, Exxon-Mobil, Shell and the Russian gas giant Gazprom will join in the venture, scheduled for completion by 2005. The July agreement has triggered stepped-up efforts to negotiate pipeline agreements with Russia that would link up gas imports from eastern Siberia with the east-west pipeline. At the same time, the drive for more gas explains why Beijing has dramatically stepped up its seabed exploration and production in

the East China Sea, where exploration to date has revealed that the massive reserves there consist largely of gas, not oil.

ANOTHER PERSIAN GULF?

Geological assessments indicate that the East China Sea, the Yellow Sea, and to a lesser extent, the Sea of Japan contain rich natural gas deposits. The most promising of these deposits lie in the central portion of the Chinese continental shelf in the East China Sea, where the Yellow and Yangtze rivers have deposited an estimated three billion tons of sediment every year for millennia.

How big are the East China Sea reserves?

A United Nations assessment based on a 1968 survey mission aroused high hopes, reporting "a high probability that the continental shelf between Taiwan and Japan may be one of the most prolific oil and gas reservoirs in the world." At one point, the U.N. study referred to the possibility that the East China Sea would prove to be "another Persian Gulf."¹ A companion study pointed in particular to a prospective bonanza in "a wide belt along the outer part of the continental shelf" adjacent to the Japanese Ryukyu islands, of which Okinawa is the largest.²

The U.N. report touched off a bitter controversy between China, Taiwan and Japan over seabed jurisdictional rights that has largely paralyzed exploration in contested areas and has prevented the geological studies necessary to determine the full extent and character of the East China Sea reserves.

Initially, Taiwan claimed jurisdiction over the East China Sea in the name of China. Taipei even allocated concession rights to American companies that conducted seismic surveys in the immediate aftermath of the U.N. study. These surveys suggested that some of the East China Sea petroleum is in complex geological structures rather than large, easily-accessible reservoirs and that the North Sea would thus be a better analogy than the Persian

¹ K.O. Emery, "Geological Structure and Some Water Characteristics of the East China Sea and the Yellow Sea," *CCOP Technical Bulletin*, (United Nations ECAFE, Bangkok) 2 (1969): 41.

² K.O. Emery and Hiroshi Niino, "Stratigraphy and Petroleum Prospects of Korea Strait and the East China Sea," *CCOP Technical Bulletin*, (United Nations ECAFE, Bangkok) 1 (1968): 13.



Gulf. In any case, after the United States recognized Beijing in 1979, Taipei dropped its seabed claims and gradually phased out its foreign concessions, keeping the door open for cooperative petroleum development efforts with Beijing. Since then, Beijing has been the spokesman for Chinese claims in the jurisdictional conflict with Japan, and in July, 2002, Taiwan and China agreed to start joint exploration in the Northern Taiwan Strait.

China claims the entire continental shelf as its own, rejecting Japanese proposals to negotiate a median line in accordance with principles set forth in the 1994 U.N. Law of the Sea treaty. However, Beijing has repeatedly declared its readiness to explore cooperative arrangements for the joint exploration and development of contested areas. Pending such arrangements, China has proceeded with its own exploration and development in areas that clearly lie on its side of the hypothetical median line, while periodically reminding Japan of its claim to the entire shelf by sending survey vessels across the line, stirring up recurring diplomatic crises with Tokyo.

Japan, for its part, has allocated hypothetical concession rights on its side of the median line that can be activated only when and if a jurisdictional agreement is reached with China. Tokyo is locked into long-term contracts to import liquefied natural gas (LNG) that meet its immediate needs and make access to East China Sea oil and gas less urgent than it is for China. Nevertheless, some Japanese companies that have concessions in the most promising East China Sea areas are eager for cooperative arrangements with Beijing to begin exploration and development. This is particularly true of the companies with concessions in the seabed surrounding the Senkaku (Tiao Yu Tai) islands northwest of Taiwan, which are occupied by Japan but claimed by China.

A Japanese government survey immediately following the 1968 U.N. report estimated that there were "well over 94.5 billion barrels of quality oil" trapped in the shallow waters to the northwest and south of the island. But the Japanese Foreign Ministry is reluctant to suspend Japanese territorial claims to the Senkakus (Tiao Yu Tai) for the sake of joint exploration and development with China, lest this set a precedent that would jeopardize Japan's position in its dispute with Russia over the Kurile Islands north of Japan. Moreover, possession of the

Senkakus (Tiao Yu Tai) would be crucial to Japan in bargaining over the location of a median line. The Senkakus (Tiao Yu Tai) are located further west than Japan itself. Thus, using the Senkakus (Tiao Yu Tai) to demarcate the outermost extension of Japanese territory would push part of the median line westward, maximizing the Japanese share of the seabed.

Based on the known geological facts, Chinese petroleum officials believe that the most promising reserves lie on the eastern side of the continental shelf claimed by Japan. Chinese estimates of potential East China Sea gas reserves on the entire shelf range from 175 trillion to 210 trillion cubic feet in volume. (Saudi Arabia has "proven and probable" gas reserves of 21.8 trillion cubic feet and the United States, 177.4 trillion.) Foreign estimates of potential oil reserves on the shelf have gone as high as 100 billion barrels. (Saudi Arabia has "proven and probable" oil reserves of 261.7 billion barrels and the United States 22 billion.)

Exploration to date on the Chinese side has indicated "proven and probable" gas reserves of some 17.5 trillion cubic feet on the Chinese side, much of it in the Xihu Trough, where a major discovery recently occurred less than 50 miles west of the median line at the Chun Xiao gas field. The Chun Xiao reserves are estimated to be 1.8 trillion cubic feet. When production starts in 2004, Chun Xiao will initially produce 70 billion cubic feet of gas annually, and the volume is projected to reach 350 billion by 2010. A pipeline is under construction to carry the Chun Xiao gas to the Chinese coastal areas near Wenzhou. Gas from a smaller field to the northwest at Pinghu, with estimated reserves of 378 billion cubic feet, is already being supplied to Shanghai through a 250-mile pipeline.

CHINA CROSSES THE LINE

While continuing to search for gas and oil on the Chinese side of the median line, Beijing has periodically accelerated its pressure on Japan for negotiations on joint exploration and development arrangements that would give it a share of the petroleum resources on the Japanese side. When diplomatic pressure has failed, Beijing has responded by sending survey ships across the line and, on one occasion, by drilling exploratory wells near the median line on the Japanese side.

China and Japan made their first serious attempt to negotiate on the East China Sea in November 1980. Beijing reaffirmed its stand that the shelf is a “natural prolongation” of Chinese territory as defined in the U.N. Law of the Sea Treaty. When Japan insisted on a median line, China drilled an exploratory well just two miles short of the median line in February 1981, at a point 286 miles southeast of Shanghai, followed by another one 11 miles short of the line. After striking oil at the two sites, known as Longjing I and II, the Chinese drilling rig withdrew without initiating production activity. China pointed to the strike as evidence that there are abundant petroleum riches in contested areas, offering potential benefit to both sides if they would suspend territorial claims in order to permit joint exploration and development. But Japan did not budge from its median line position.

For the next decade, Beijing continued to send occasional seismic survey ships across the line, prompting recurring diplomatic flurries, but it was not until early 1992 that it once again intensified its assertive posture. In a law defining its maritime boundaries, Beijing formally incorporated the Senkakus as Chinese territory. In August 1995, Chinese fighter planes flew a patrol mission over the islands. Okinawa-based Japanese jets were immediately dispatched to head them off. After Japanese rightist groups planted a Rising Sun flag on the Senkakus in late 1996, Taiwan, which claims the islands as part of its claim to be the rightful government of China, sent a flotilla of fishing vessels carrying protesters who pledged to uproot the flag. The Japanese Maritime Self Defense Forces quickly interviewed, deploying 60 naval vessels to block the protesters from landing. In May 1999, Beijing encircled the islands with ten naval vessels for a week, amid a propaganda barrage against Japanese “hegemonists.”

China conducted seismic surveys on the Japanese side of the hypothetical median line in a wide arc east of Shanghai in December, 1995; May, June and December, 1996 and November, 1997. In 1996, the Japanese press reported two cases of exploratory drilling. In late 1997, China restructured and consolidated its oil and gas industry for the specific purpose of pursuing natural gas exploration more aggressively in both onshore and offshore areas. From January 1998, through August 2000, accord-

ing to Japan’s Maritime Self-Defense Forces, China sent 16 ships into areas on the Japanese side of the median line on 22 different occasions. Some of them were Chinese naval vessels that were believed to have conducted oceanographic studies with military implications. Others conducted what were clearly detectable seismic studies related to petroleum exploration. This steady influx of ships brought simmering Japanese anger to a head and led to negotiations that resulted in a “confidence-building” agreement on February 13, 2001, in which each side agreed to notify the other “if either country is to conduct maritime scientific research nearby the coast of the other, except for territorial waters.” The agreement provided for a notification at least two months in advance that would specify the name of the ship involved, where it would go and for what period.

The use of the phrase “nearby the coast of the other” was a diplomatic concession to China, since Beijing does not acknowledge the existence of a hypothetical median line. But it was clearly understood, a Japanese Foreign Ministry official told me, that the agreement covered all ships crossing the median line.

At my request, the Foreign Ministry provided me with an unpublished list naming 17 ships that have conducted what China called “maritime scientific research” on the Japanese side of the line from the inception of the agreement through July 1, 2002. This list showed that some stayed for as long as six months, some for only one or two months. But it pointedly excluded any mention of where the ships had gone and their purported research agenda.

There were four cases, I was told, in which ships intruded in violation of the agreement. Either they crossed the line unannounced or they operated in areas not covered in their notification. One of these, I learned from several Japanese and U.S. sources, was a Norwegian geological survey ship, the “Nordic Explorer,” hired by China. The ship spent all of July and August 2001, in an area on the Japanese side of the median line some ten miles across the line from the Chun Xiao discovery where Beijing has launched production operations on the Chinese side.

Adding insult to injury, the Chinese Navy asked the Japanese Maritime Self Defense Forces to tell Japanese ships that they should stay at least three



miles away from the “Nordic Explorer.” This prompted angry outbursts by Japanese rightist lawmakers threatening a cutoff of Japanese economic aid to China and demanding the creation of a Japanese Marine Corps that could operate in the Senkakus if China should ever invade the islands.

Rightist groups occasionally clamor for military action to stop Chinese intrusions, or at least for inspection of Chinese ships to establish what they are doing. However, successive Japanese governments have concluded that military action would only become necessary if China should actually start to extract gas or oil on the Japanese side. If China wants to pay for the research necessary to establish the extent and location of oil and gas reserves on the Japanese side, Japanese officials say privately, let them do so, and Japan can follow up on their findings when and if negotiations on joint development begin. Equally important, Japan does not want to complicate its lucrative economic relations with China, including joint petroleum exploration in undisputed Chinese coastal areas such as the Bo Hai Gulf.

The need for an early resolution of seabed jurisdictional conflicts in Northeast Asia is underlined by rapidly-improving technology that will make it progressively easier for China and its foreign exploration partners to conduct deep-water drilling operations. Fifty years ago it was considered a remarkable feat to drill in 50 feet of water. Even in 1980, the Longjing I well drilled by China went down only 2,125 feet deep. But soon it will be possible to reach 10,000 feet. This means that the hitherto-inaccessible seabed areas on the eastern side of the East China Sea shelf will soon be accessible. Another important recent technological breakthrough is three-dimensional seismic exploration, which gives the seismic surveys that precede exploration a much deeper thrust.

THE LEGAL TANGLE

The first attempt to establish internationally agreed criteria governing the jurisdiction of coastal states over seabed resources was the U.N. continental shelf convention adopted at Geneva in 1958. Under this agreement, coastal states have the exclusive right to exploit seabed resources up to a depth of 660 feet “or beyond that limit where the depth of the waters

admits of the exploitation of the natural resources of the said areas.” Where two states lie on opposite sides of a continental shelf, the Geneva Convention states, or where they lie adjacent to each other on the same coast, the shelf boundary is to be determined by mutual agreement. If such agreement cannot be reached, the boundary is to be a median line determined by the same base points (i.e. islands near the coast, or the coast itself) used by each state in defining its territorial sea, unless another boundary line is justified by “special circumstances.”

The caveat permitting states to claim “special circumstances” led to an arcane legal controversy, still unresolved, over precisely what makes this or that island valid or invalid as a base point. Among the many resulting disputes that arose in the East China Sea, the Yellow Sea and the South China Sea, the most troublesome has proved to be the case of the Senkakus (Tiao Yu Tai). To becloud matters further, the International Court of Justice, interpreting the 1958 Geneva Convention in the North Sea Cases, held in 1969 that seabed boundaries should be drawn so as to “leave as much as possible to each party all those parts of the continental shelf that constitute a natural prolongation of its land territory into and under the sea, without encroachment on the natural prolongation of the land territory of the other.”

By emphasizing the natural prolongation principle, the Court left it unclear whether the median-line approach should be applied at all in cases where a subsea trough divides what would otherwise be a continuous continental shelf between two states. As it happens, there is just such a subsea divide in the East China Sea. Known as the Okinawa Trough, it is located to the west of the Ryukyu Islands, and is both deeper (7,000 feet at some points) and broader (100 miles in places) than the Norwegian Trough in the North Sea. In the East Asian context, therefore, the 1969 ruling had momentous implications, providing China with a legal rationale for seeking jurisdiction over the continental shelf as far as the Okinawa Trough.

China has carefully avoided a precise definition of its sea boundary claims and has left the door wide open, accordingly, for negotiated settlements with its maritime neighbors. To the extent that its claims have been implicitly or explicitly indicated, they substantially overlap areas claimed not only by

Japan, but also by South Korea, Vietnam, Malaysia, Indonesia, Brunei, and the Philippines. Chinese statements during U. N. discussions on the Law of the Sea treaty echoed the “natural prolongation” concept set forth by the World Court in the North Sea cases, which gives China a legal rationale for claiming the entire continental shelf. This rationale was implicitly invoked in a basic policy statement on June 13, 1977, describing the shelf as “an integral part” of the mainland. In other statements China has accepted the principle of median lines and “equitable” adjustments between neighbors, but it is far from clear that Beijing would accept a median line agreement in either the Yellow Sea or the East China Sea.

Chinese international law specialists argue that provisions of the Law of the Sea treaty relating to the median line concept are open-ended and ambiguous. In the Chinese view, the median line approach is not necessarily applicable under the treaty to a case such as the East China Sea, in which a coastal state faces an island state. By contrast, Beijing acknowledges that the median line might apply under the treaty to cases such as the Tonkin Gulf and Yellow Sea, where states contiguous on the same land mass can invoke the “natural prolongation” doctrine.

Japan has attempted to push its base points for a median line as far to the west as possible on the shelf by claiming the status of “special circumstances” for the Senkaku Islands (Tiao-yu T'ai), in the southern part of the East China Sea, and for two other uninhabited islets, Danjo Gunto and Tori Shima, in the northern part. Both of these are on the western side of the Okinawa Trough, however, and in order to win recognition of these claims, Japan would have to prove that it is entitled to “jump” the Trough. The argument advanced by Japanese and foreign oil companies with Japanese concessions in the East China Sea is that the seabed between the Ryukyus and the mainland is a common prolongation of both Japanese territory, i.e. the Ryukyus, and of the Chinese mainland. Thus, it is argued, Japan's jurisdiction extends past the Trough to the median line.

China's formal position has long been that the Ryukyus themselves are part of the prolongation of the mainland, and that the shelf ends, and the ocean floor begins, on the eastward side of the Ryukyus. Both sides treat the Trough as a geomorphic depres-

sion in the shelf, not a geological breach. As a practical matter, however, given Japanese sovereignty over the Ryukyus, Beijing has not pressed this claim recently. Instead, Beijing focuses on where the eastern edge of the shelf should be demarcated if it acknowledges that the shelf does end to the west of the Ryukyus. On this key point, Beijing argues that the shelf embraces not only the western downward slope of the Trough but also the “rise” where the slope flattens out at the bottom. This is a hotly-contested claim because the richest petroleum deposits in the East China Sea are believed to be concentrated in the “rise.” Even though the bottom of the Trough is 7,000 feet deep, it is no longer beyond the reach of deep-water drilling technology.

NEW OPPORTUNITIES IN THE YELLOW SEA

The Law of the Sea Treaty gives every coastal state exclusive economic rights in a 200-mile zone along its coastline. But in the East China Sea, the distance between the Ryukyus and the Chinese mainland at one point is only 284 miles, which is the key factor cited by Japan in seeking a median line. Similarly, the Yellow Sea is not wide enough in most places to accommodate 200-mile economic zones.

On the surface, it might seem that the case for a median line is equally strong in both the East China Sea and the Yellow Sea. However, Article 71 of the Law of the Sea Treaty states that median line agreements should be based on “equitable principles” and should be negotiated “where appropriate, taking into account all relevant circumstances.” China could contend that Article 71 was meant to apply to cases in which the natural prolongation principle can be advanced by more than one party, as in Korea, but not in a situation in which one coastal state is involved, as in the East China Sea.

The possibility of jurisdictional disputes over seabed petroleum deposits in the Yellow Sea has been underlined by the economic problems besetting both the South and the North. The South Korean economy is even more energy-intensive than that of Japan, and crude oil imports impose an onerous burden on the South Korean balance of payments. Until the 1997 Asian financial crisis, South Korean energy imports cost three times as much as Japan's as a fraction of gross national product, with oil demand increasing at a rate of 20 per-



cent per year. South Korea was using ten times as much oil per capita as China. The necessity to cut back crude oil imports since 1997 has been a key factor contributing to the recession in the South and has revived interest in Yellow Sea petroleum exploration, which was suspended after jurisdictional conflicts with Beijing. In the case of the North, the loss of subsidized Soviet and Chinese oil at the end of the cold war has led to virtual economic paralysis that has stimulated serious oil exploration efforts for the first time, including seabed exploration.

Tensions between China and South Korea over the Yellow Sea seabed started to develop soon after the 1968 U.N. survey mission report. The report was less ecstatic about petroleum prospects there than in the East China Sea but said that the Yellow Sea seabed and adjacent areas of the East China Sea seabed had “great potential as oil and gas reservoirs.”

In April 1969, the Gulf Oil Company was awarded the first two concessions granted by Seoul to explore the Yellow Sea seabed. This was followed by Shell and Texaco concessions in January and February of 1970.

At first, China made little effort to interfere with the seismic survey ships that crisscrossed the Yellow Sea after Seoul had granted its concessions to foreign companies. As this survey work grew more intense, however, Chinese naval craft began to harass survey vessels operating in a potentially disputed middle zone of the Yellow Sea.

In Chinese eyes, Seoul had acted provocatively by allocating concessions “unilaterally” without first reaching a boundary agreement with Beijing or Pyongyang or both. At that time, Beijing did not recognize South Korea as a legitimate state. But even if it had been ready to negotiate a median line with Seoul, this would not have automatically made it easy to agree on a boundary settlement. Median-line boundaries are fixed in accordance with the particular islands, or base points, designated by the countries concerned as defining their coastal limits. In the case of the Yellow Sea, Chinese maps have delineated implicit base-point claims that were ignored in the initial concession boundaries laid down by South Korea.

Beginning in 1971, China conveyed its displeasure over these boundaries by sending lightly armed fishing vessels into the vicinity of survey operations.


The floating tracer cables used in seismic studies were systematically cut on at least four occasions. When Gulf conducted drilling operations from February to June 1973, in one of its two concession areas, Beijing escalated its response by dispatching Komar-class gunboats. The Chinese boats appeared intermittently less than a mile from the Gulf drilling rig Glomar IV, remaining menacingly nearby for three days in early March.

This encounter was followed by a Chinese Foreign Ministry statement on March 15, 1973, attacking the drilling activities of Glomar IV as “the latest step taken by international oil monopolies in their attempt to grab China’s coastal seabed resources... The areas of jurisdiction of China and her neighbors in the Yellow Sea and the East China Sea have not yet been delimited. The Chinese government hereby reserves all rights in connection with the possible consequences arising therefrom.”

Seoul interpreted the reference to “China and her neighbors” as an indirect invitation to negotiate and responded promptly with a statement on March 16, 1973, offering to hold talks with “the authorities of the People’s Republic of China on the question of the delimitation of the continental shelf areas between the two countries.” But China maintained a stern silence, and six days later Gulf quietly capped the well it had been drilling and shifted its operations to a new site within the same concession zone. Finally, on June 10, 1973, Gulf terminated its drilling. South Korea later created the state-owned Korean National Oil Corporation, which has since drilled 25 wells in the Yellow Sea close to shore, avoiding disputed areas.

A report by Gulf geologists prepared for a technical conference in late 1974 made it clear that the most promising parts of the zone in geological terms were the Kunsan Basin and the western Yellow Sea Subbasin, both located at the western end of the concession area where Chinese and South Korean claims appeared to overlap. The report stressed that the two 1973 wells have provided data on only “a limited portion of the area” and that a “considerable area remains to be tested by the drill.”

From the outset Gulf knew in general terms that the most attractive structures were located in the western portions of the areas involved and were geologically linked with more extensive structures



still closer to China. Viewed in terms of international law, the issue at stake was whether Beijing had a right to claim a group of four islands, located between thirty-eight and sixty-nine miles from the Chinese coast, as appropriate base points for a median line or whether the line should properly be drawn on the basis of three different islands within 24 miles of the coast.

In North Korea, serious seabed petroleum exploration is just beginning. The seismic studies conducted with Soviet and Chinese help during the cold war decades were limited in scope and proved to be inconclusive. In 1991, Pyongyang decided to invite the help of Western companies in an intensified search for both onshore and seabed oil and gas. But with U.S. sanctions still in effect, American oil companies were barred from operating in North Korea, and Pyongyang has been able to conclude agreements only with small companies based elsewhere: an Australian company, Beach Petroleum; Taurus of Sweden and SOCO International, a British subsidiary of the Snyder Petroleum Company of Fort Worth, Texas. SOCO, with west coast concessions straddling both onshore areas near Anju, northwest of Pyongyang, and adjacent seabed areas in the Yellow Sea, bases its hopes for major discoveries on the geological linkages connecting its seabed concessions with the nearby Bo Hai Gulf, where China has already found oil. There are proved recoverable reserves of 450 million barrels in Bo Hai. Production there was running at 68,500 barrels a day in 1998, and is expected to increase following the discovery of a new structure in the Peng Lai area of the Gulf and a subsequent exploration agreement concluded by Beijing with the Phillips Petroleum Company.

North Korean hopes for seabed oil discoveries off the coast near Anju have been stimulated by successful drilling in nearby Sukchon, where an oil well began producing 2.2 million barrels annually in 1999. More recently, an American petroleum specialist of Korean ancestry, Busuph Park, has identified five zones in the Yellow Sea seabed off Anju with a potential of 1.17 billion barrels of recoverable reserves, based on seismic surveys and aerial surveys utilizing a new, computer-controlled sensing technology that he has developed.

Beach, Taurus, and SOCO are all small companies seeking to parlay a small initial investment in

seismic surveys into something bigger by making partnership deals with more affluent companies that will make possible large-scale exploratory drilling. For example, SOCO and its North Korean contractors were using an outdated Romanian rig in 1998 and could only drill to a depth of 3,600 feet, instead of the 4,300-foot depth required to make a meaningful assessment. In late 1999, North Korea, impatient for results and convinced that the foreign companies were not investing enough in seismic studies to make definitive findings, hired a Singapore-based firm, Veritas Geophysical Company, to conduct extensive seismic studies in a specified area thirty-five miles off the coast. The government-operated North Korean Oil Exploration Company took possession of the resulting data for processing on its own instead of letting Veritas do it, and the results are not known. Pyongyang is intensely suspicious of foreign oil companies and releases little information concerning its oil prospects.

Since neighboring South Korea, Japan, and China would provide easily accessible markets for any oil found in North Korea, oil companies in all three of these countries have shown interest in supporting the search for petroleum in the North. "North Korea's West (Yellow) Sea is presumed to contain abundant amounts of petroleum," said Hyundai chairman Chung Mong-hun in 1998 after a visit to Pyongyang. "If oil is found, North Korean leaders proposed that Hyundai build an oil pipeline over land to our refineries, instead of by sea." South Korea would save significantly on shipping costs if it could get oil through such a pipeline rather than by tanker from the Middle East. North Korea, for its part, would not only get a bonanza of foreign exchange earnings if oil is found but would be able to get its agricultural and industrial economy back into full swing again after a decade of stagnation following the end of the cold war.

The fact that Beijing did not recognize Seoul diplomatically ruled out negotiations on a seabed boundary agreement or on joint development arrangements during the cold war decades. In 1991, however, Beijing signaled its readiness for a more symmetrical diplomatic posture in Korea by supporting the simultaneous entry of the two Koreas to the United Nations, and in 1992 Seoul and Beijing formalized relations. This shift was paralleled by a Chinese proposal for discussions on joint seabed



development in early 1991. A South Korean delegation met with representatives of the Chinese National Offshore Oil Corporation in Beijing on April 21, 1991, but differences over how to delimit a joint development zone led to an impasse.

Even if agreement had been reached between Seoul and Beijing, it would have been politically impossible for both Beijing and Seoul to proceed without North Korean concurrence in the terms of an accord relating to joint development, or for that matter, to a median line in the northern sector of the Yellow Sea and the adjacent Bo Hai Gulf that would be compatible with the line in the southern sector. For this reason, no further discussions between Seoul and Beijing have been held since 1991. However, since the June 2000, summit meeting in Pyongyang between President Kim Dae Jung and North Korean leader Kim Jong Il, the prospects for joint Sino-Korean development or for a median line settlement have improved. Beijing would be much more likely to negotiate such agreements with the North and South alike if Pyongyang and Seoul are cooperating in seabed petroleum development.

Ideally, Pyongyang and Seoul would create a joint North-South seabed petroleum enterprise empowered to negotiate with Beijing. Such a body would also facilitate South Korean cooperation with

the North in developing seabed petroleum close to shore near Anju.

In the final analysis, the resolution of seabed jurisdictional disputes in the Yellow Sea and the East China Sea alike will be dependent on broader political developments in the region. If political and military tensions between Seoul and Pyongyang ease, the prospects for seabed petroleum cooperation would improve as part of a broader increase in economic cooperation. Similarly, in the case of the East China Sea, seabed petroleum cooperation is likely to depend not only on the temperature of bilateral relations between Beijing and Tokyo but also on Japanese-Russian relations. So long as the impasse over the Kuriles continues, Japan will be fearful that suspension of its territorial claim over the Senkakus, a prerequisite for seabed cooperation there, would undermine its stance in the Kuriles dispute, a politically explosive issue in Japanese politics.

In the Yellow Sea, a continued impasse over seabed petroleum would have an economic impact on China and the two Koreas but is not likely to become a serious political or military irritant. As China's energy needs multiply, however, pressures to fully develop the more promising petroleum reserves in the East China Sea are certain to intensify. Renewed seabed negotiations between Tokyo and Beijing will then become increasingly urgent.

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