

Policy Forum 03-33A: Tackling DPRK's Nuclear Issue through Multilateral Cooperation in the Energy Sector



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Tackling DPRK's Nuclear Issue through Multilateral Cooperation in the Energy Sector

By Su-Hoon Lee and Dean Ouellette

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I. Introduction

In the paper below, Su-Hoon Lee and Dean Ouellette of Kyungnam University argue that given the breakdown in U.S.-DPRK relations, a viable alternative to avoid possible catastrophe on the Korean peninsula is urgent. The authors assert that energy sector cooperation may provide the most sound and politically acceptable solution to the problem we now face in Northeast Asia. This paper examines Northeast Asian regional energy cooperation by briefly reviewing North Korea's energy situation, the problems associated with KEDO, and regional positions toward North Korea and energy sector.

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The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Nautilus Institute. Readers should note that Nautilus seeks a diversity of views and opinions on contentious topics in order to identify common ground.

II. Essay by Su-Hoon Lee and Dean Ouellette

"Tackling DPRK's Nuclear Issue through Multilateral Cooperation in the Energy Sector"

By Su-Hoon Lee and Dean Ouellette

Kyungnam University

The cat is out of the bag and causing a stir. During last October's discussions in Pyongyang between North Korean officials and U.S. special envoy James A. Kelly, North Korea allegedly admitted to operating a clandestine nuclear weapons program despite inking in its assurance that it would refrain from doing so when it signed the Geneva Agreed Framework in 1994. This triggered an outcry from the international community and gave the George W. Bush administration justification to intensify its hard line posture toward North Korea, a country Bush himself coined as one member of the terrorist supporting "axis of evil." The message from Washington is clear: forget the Korean Peninsula Energy Development Organization (KEDO) heavy-fuel oil (HFO) deliveries, give up your nukes, comply with International Atomic Energy Agency (IAEA) inspections, and subjugate yourself to complete international (i.e., U.S.) authority; refuse and the noose of tailored containment will tighten and suffocate your economy -death by economic strangulation.

Five months later the pillars for such a position seem reinforced by the Bush administration's (unilateral) decision to invade Iraq. If current U.S. actions in the Middle East are any indication of how the Bush administration intends to deal with North Korea in the near future, then projects like the KEDO-led construction of two light water reactors (LWR) in North Korea's Kumho district may be in serious jeopardy. With the ongoing suspension of KEDO-supplied HFO to the North([1](#)) -itself a breach of the U.S. obligation to the 1994 Geneva Agreed Framework -dwindling international food

and medicine donations,([2](#)) European Union (EU) decision to suspend planned cooperation with the North unless it scraps its nuclear program,([3](#))and subsequent Congressional urgings for legislation "that would remove a provision in immigration law that makes it difficult for North Koreans to seek asylum in the United States"([4](#)) -essentially encouraging a mass exodus of refugees from the DPRK -it would appear that the lights on the Kim Jong Il regime are certain to go out.

Yet to think this shows just how preciously little has been learned by the West since the Agreed Framework was signed almost a decade ago. Despite North Korea's dilapidated energy and devastated economic sectors, the North is not going to implode, nor will Kim Jong Il's regime fade away. Survival is the cornerstone of its *juche* philosophy. Self-reliance is its watchword. The loss of the HFO shipments from the United States is a trivial one and of little consequence to the North energy industry,([5](#)) but all the reason Pyongyang needs to justify cranking up its old nuclear facilities in Yongbyun in order to compensate and adapt for its projected electricity shortfall.([6](#)) And despite Washington's attempts to rally regional allies and players (China and Russia) to join in an international coalition to pressure the North into reversing its bid to reopen its nuclear facility,([7](#)) leaders in Pyongyang are doubtlessly aware of South Korean and Russian desires to maintain inter-Korean cooperation and North Korea-Russia engagement on projects like the Kaesong Industrial Complex and Trans-Siberian-Trans-Korea railway. Equally well known are China's security concerns and political ambitions, ones that ensure that the aid train should continue to run from Beijing to Pyongyang for some time.([8](#)) Such continued engagement should present enough of a life support for Kim and his regime to tough it out indefinitely.

Failure on the part of the West to learn does not mean that North Korea has not been doing its homework. The old adage "fool me once, shame on you; fool me twice, shame on me!" sums up Kim Jong Il's education on Western agreements. The "harsh lesson" learned by Pyongyang from the international community is "that nuclear power was easy to promise but hard to share." The former Soviet Union was unable to make good on its 1985 commitments to build three 635 Mwe LWRs in exchange for DPRK commitments to the non-proliferation treaty (NPT) and International Atomic Energy Agency (IAEA) safeguards regime, and likewise the United States has failed to meet its LWR construction deadlines.([9](#)) The moral of the story, "show me the reactors!"

But what frightens the leadership in Pyongyang more than broken promises is the apparent unilateral character of U.S. actions in the Middle East. With a UN decision abandoned and world leaders' cries for peaceful resolve of the U.S.-Iraqi impasse dismissed by the U.S.-led invasion of Iraq, Kim Jong Il grows increasingly wary of a pre-emptive U.S. strike on North Korea. Such suspicion is not unfounded, as many experts fear that a military option cannot be ruled out.

It is not unlikely that the breakdown in relations and current events are leading us down a path to nuclear "gridlock" in Northeast Asia([10](#)) or perhaps a U.S.-DPRK military confrontation. Hence, the need for a viable and attractive alternative to tackle past political agreements and forge new productive relationships that will ensure human and environmental security and avoid possible catastrophe on the Korean peninsula is urgent. Thus, this paper argues that energy sector cooperation may provide the most sound and politically acceptable solution to the problem we now face in Northeast Asia. In light of this, this paper examines Northeast Asian regional energy cooperation by briefly reviewing North Korea's energy situation, the problems associated with KEDO, and regional positions toward North Korea and energy sector activities that exhibit the plausibility of implementing energy cooperation projects -in particular, gas development and pipeline construction -as a viable solution to North Korea's energy and Northeast Asia's security crises.

The Problem With LWRs And The DPRK Energy Sector

A Looming Crisis No Longer

Over the past decade, North Korea has experienced an estimated 50 percent decrease in its major energy sources due to vulnerabilities in the DPRK's energy system and poor energy sector policies. The pullout of Soviet support (i.e., loss of subsidized oil supplies and energy related equipment and expertise) at the beginning of the 1990s manifested these weakness, and natural disasters (drought and flooding) during the mid-90s exacerbated the energy crisis. The cost of this on human and environmental scales is still yet to be precisely determined. From all indications the price seems to be enormous: millions are feared dead as a result of the ongoing famine, while degradation of the environment rapidly increases (deforestation as a result of scavenging for food and biomass as an alternate energy source, soil erosion due to flooding, etc.)([11](#))

At the moment, KEDO can provide no solutions. The monthly 500,000 tonnes of HFO shipments are indefinitely confined to the docks with no U.S. congressional funds allocated to HFO deliveries for the 2004 fiscal year. Suspension of HFO deliveries and possible abandonment of the LWR project may sound the death toll for KEDO, the only moderately successful multilateral regional energy project involving the DPRK. The death of such an organization is a critical matter considering the destabilizing effect escalating nuclear developments will have in a region still rife with tension and distrust yet one that foretells to be the most significant economic and political region in the world during the first-half of the 21st century.

As it exists now, KEDO and its estimate \$4.6 billion LWR project at Kumho, economically and technically, seems an unsuitable solution to the DPRK's energy problems and Northeast Asia's security dilemma. Considering the physically weak, highly fluctuating, and rapidly decaying electricity grid in the North, current total capacity of generation in the DPRK, and lack of reliable offsite power for coolant pumps in the event of a shutdown, the power generated by two LWRs could not possibly be used. Even with new transmission lines and back-up power, optimistic estimates for energy use in 2008 still leave capacity well short of enough to operate even one reactor safely. Hooking it to another regional grid would be the only means of utilizing the generated power.([12](#))

As a vehicle for generating foreign currency through power trade with its neighbors, the LWRs would require a regional connection (i.e., China's, Russia's, or South Korea's grid). According to some experts, this solution is "unrealistic if it is not driven by a compelling economic logic and market demand for power trade,"([13](#)) while others suggest officials in Seoul should be persuaded to develop a regional interconnection,([14](#)) which may offer a positive alternative that stimulates a market supply for potential LWR produced electricity.

These imposing technical problems, current state of North Korea's energy infrastructure, and fragility of KEDO's future make LWR construction alone a relatively unviable solution to the immediate crisis.

Politically, KEDO has also had its share of problems that have hampered it from functioning as an effective multilateral cooperation body.([15](#)) But despite internal frictions among KEDO's members, external misgivings, poor performance in implementing an international LWR construction project, and apparent unfeasibility of the project itself, as a political endeavor, KEDO has also shown that cooperation through energy security can bring stability to the region, as it has for the past few years.([16](#)) By acting as a "vehicle for broadening North Korea's engagement with the outside world and improving its relationships with KEDO core members," KEDO has provided its members with a means to learn how each other member thinks and operates, fostered stronger bonds between

them, and thus may serve as a benchmark for further multilateral cooperation in the energy field. Abandonment of the organization "would constitute a real setback for U.S. political leadership in the region and may be regarded as a negative precedent for expanding multilateral co-operation to other areas."([17](#))

Nuclear Issue, Changing Energy Needs, and Environmental Concerns as a Driving Force for Gas Pipeline Development

Multilateral cooperation is essential for Northeast Asia as it moves toward greater economic integration in the 21st century. Economies in the Northeast Asian region will drive expansion of energy demand in the new era as "Asia is likely to account for more than half of the world's total increase in energy demand" by 2015, with China and India leading the way.([18](#)) Asia's growing demand for oil alone and current dependence on oil imports from the increasingly politically unstable Persian Gulf stimulate a need to diversify the type, sources, and uses of energy. China, Japan, and South Korea will need to diversify energy sources for energy security and environmental reasons as local, regional, and global environmental impacts will necessitate a move to cleaner, more highly efficient fuels. For Northeast Asian countries, natural gas stands out as a key resource for potential exploitation because of its "wide range of applications and environmental advantages," and potential for reducing the region's reliance on oil imports from the increasingly unstable Persian Gulf.([19](#)) Multilateral cooperation in the energy sector also should be viewed as a valuable means of improving energy sustainability and regional security. For this latter goal, some means must be found to incorporate North Korea into the fold. In light of all this, a Northeast Asian gas pipeline that exploits the abundant reserves in the Russian Far East and Siberian regions and transfers them to Russia's neighbors is seriously being considered as a means to wean the Asian economies off energy (oil) supplies from the Middle East.

China

If China truly has a "positive vision for North Korea" that seeks to avoid collapse of the regime in Pyongyang and for North Korea to "embark on a sustained and comprehensive path of reform à la China" -a long-term vision that will ensure China's own security and enhance its external influence over the Korean peninsula([20](#)) -then regional energy development projects that include North Korea cannot be too far off of China's agenda. The recent increase of Chinese mineral exports to the North is perhaps the best indicator of Beijing's intentions toward Pyongyang.([21](#))

As in North Korea, energy is a major concern for China. China's energy structure is dominated by coal (75 percent of primary energy supply) and its long-term structure is based on coal due to China's comparative advantage in coal resources. However, the increasing of CO₂ emissions may cause China to become the largest CO₂ emitter in the world by 2020. This alone should persuade authorities in Beijing to allow for China's long-term energy strategy to include prospects for alternative cleaner energy development projects. Realizing the potential environmental problems, inability for coal to "meet the demand for a high quality energy resource," and potential energy shortages if energy supply is not increased, China is taking measures to address their needs. Currently, China is working on a new gas pricing policy, removing restrictions on gas use for manufacturing fertilizers, and investigating cross-border energy cooperation in natural gas that would bring development and management possibilities to China's northeastern provinces. For one, feasibility studies for a gas pipeline between Russia (Russia Petroleum) and China (China National Petroleum Corporation) have been undertaken (a gas pipeline to be built from Russia's Irkutskaya Oblast, Kovykta deposit, to China). In addition, Rosneft (Russia) and Shtroytransgaz, the Royal Dutch Shell Group and Hong Kong & China Gas Co., plus the ExxonMobil Corporation and CLP Holdings signed a memorandum of understanding on joint ventures with PetroChina in July 2002 to share project risks and expertise on constructing a west-east natural gas pipeline across China.([22](#))

) In the long run, it is desirable for China to diversify away from coal to gas for household use.([23](#))

Russia

Russia brags an untapped resource rich area in the Russian Far East and Siberia but is plagued with poor infrastructure and a declining population and economy in the area. Furthermore, the former juggernaut of the Soviet Union has limited capital for exploiting its own resources. Russia would sincerely like to develop these abundant oil and gas resources in the Eastern Siberia and Far Eastern regions and become a major exporter of natural gas to its neighbors (China, South Korea, Japan) and energy supply center for Asia.([24](#)) Russia needs to develop its Far Eastern region to stem the region's economic and population declines. These trends must be reversed if Russia is to maintain its influence in Northeast Asia and avoid losing the Far East on account of the changing demographics of the region (i.e., influx of Chinese immigrants that may support separatist notions in the future). Foreign investments in the region's energy sector may provide a workable solution to this problem. As mentioned above, Russia is currently involved in building a gas pipeline in China, and several on- and offshore oil and gas research projects with various international organizations from the private sector, namely the Sakhalin and Irkutsk projects.

Like China, Russia's interests lie in maintaining a stable regime in Pyongyang that, over the long term, will embark upon a steady program of reform.

Japan

Japan is in the midst of deregulating its power sector. It is also a global leader and leading importer of LNG. However, it is predicted to show a slowing future demand as the market becomes saturated. Japan is very much interested in securing a stable, consistent supply of gas so that the transition from coal to gas as a major energy source can be realized in the relatively near future. Japan will need to restructure its energy sector to accommodate for increased gas use, but the potential for gas is very attractive as it is relatively easy -compared to other energy options -to convert Japanese numerous coal-fired plants to gas-fired ones. Pipeline gas as well may supplant LNG depending on how soon a pipeline can be built and how competitive the pipeline gas will be with LNG.([25](#))

South Korea

Like Japan, South Korea is a leading consumer of LNG and is also currently deregulating its power sector. The potential for increased multilateral private cooperation in the gas sector is great. Second, the Korea Gas Corporation (KOGAS) has shown keen interest in importing gas from the Russian Far East, as its continued involvement in feasibility studies on gas pipelines originating from both the Irkutsk and Sakhalin regions suggest.([26](#)) Even former South Korean president Kim Dae Jung and Russian President Putin expressed common interest in developing natural gas reserves in Irkutsk and promoting investments in projects related to Sakhalin. Third, South Korea seriously needs to diversify to cleaner fuels for environmental reasons (geographical location makes it a major repository of Chinese and North Korean air pollutants, sulfur deposits, etc.). A shift to increased gas use would help alleviate some of the environmental side effects associated with the current dependency on oil. Finally, South Korea has the capacity and know-how on how to help North Korea rebuild its energy infrastructure. As North and South move toward greater cultural exchange and economic cooperation, their capacity to cooperate on energy sector development will be critical to both their futures. In fact, the new government of South Korea appears to have entertained an initiative that involves a gas pipeline project from Far Eastern Russia passing through the DPRK territory, as evidenced by the presidential National Security Advisor Ra Jong-il's interview with the Financial Times, March 31, 2003 right after his visit to Moscow.

North Korea

The DPRK has undertaken some initiatives to address the energy issue by establishing the Natural Gas Research Society, (NGRS DPRK), under the leadership of DPRK's Asia Pacific Peace Committee in 1998 to oversee gas pipeline issues. This body has focused on securing another energy supply source by demanding a gas pipeline passing through North Korea. Leaders in Pyongyang have shown a keen interest in a realistic extension of an offshore pipeline from Sakhalin Islands to the Korean peninsula, as evidenced in the Natural Gas Society of North Korea's unpublicized 2001 Memorandum of Understanding with a Dutch consortium, giving the Dutch the exclusive right to construct the portion of the pipeline that traverses DPRK territory. Included in the Memorandum were plans for the construction of three gas-fired power stations along the pipeline. Pyongyang sees power generated by these stations as a supplemental to the KEDO LWRs.([27](#))

Northeast Asian Cooperation in the Energy Sector

A Gas Pipeline and LWRs

In an article by Bradley O. Babson (Senior Advisor for East Asia and Pacific Region at the World Bank), to solve the North Korean security crisis, regime legitimacy, inter-Korean reconciliation, weapons of mass destruction, and human security need to be addressed, issues all irrevocably anchored to the stark realities of North Korea's energy problems.([28](#)) The lack of economic viability of the KEDO Light Water Reactor project makes it an implausible solution, one "that was never conceived as part of a rational plan for rehabilitation of North Korea's energy economy" in the first place.([29](#)) To unravel this Gordian knot, Babson argues for greater multilateral cooperation among the regional players and development assistance from the international community to help rationalize energy's role in the economy and devise an economically efficient energy sector.

Why gas? This is seen as a more realistic answer than the LWR project in providing an energy and revenue-generating source for the North. Second, gas pipeline construction would also bring the two major powers of Russia and China, absent from KEDO, into the cooperation mix.([30](#)) Since China and Russia have a direct interest in addressing the region's mounting security, energy, and environmental concerns, bringing these players into the huddle through pipeline construction may allow for past North Korean allies to apply pressure on Pyongyang to follow the nonproliferation game plan. China and Russia must be included in providing energy assistance to North Korea if security in the region is to be attained. Cooperation through gas pipeline development would provide both players a means of joining the team or at least entering the game.

Third, trans-national pipelines running from China and Russia through the North to South Korea (and Japan) would also guarantee North Korea significant transit royalties from gas shipped through the pipelines, and as well may encourage refurbishment of old and construction of new power plants along it. Together with the refurbishment and repowering of existing coal-fire plants, a gas pipeline would be an ideal method for balancing North Korea's energy supply structure.([31](#))

Gas also has multiple uses. A DPRK supplied with gas could structure some of their demand sector to provide gas for household heating, raw material for manufacturing fertilizers, agricultural machinery use, and so forth. Taking advantage of the various uses for gas would also provide North Korean engineers with opportunities to learn the new applications, customize and implement them to suit DPRK needs.

Russia's assistance to North Korea for the connecting of the Trans-Siberian and Trans-Korean Railways, plus their work on building the gas pipeline infrastructure could go towards paying off

Russia's debt to South Korea, a far more productive peace-building approach than the recent provisional contract signed by Seoul for Moscow to repay its outstanding debt by supplying the South with \$534 million in Russian arms on credit.([32](#)) Likewise, Japanese involvement in constructing a gas pipeline could be factored into an apology and reparations package to the North that initiates the DPRK-Japan normalization of relations process.

Recent tension in the region caused by North Korea's ongoing nuclear weapons development program may provide the urgency for multilateral energy sector cooperation as a means to bring a halt to the North's nuclear weapons program. In the long run, energy cooperation could provide the unifying factor for the regional actors to develop interdependence that would strengthen energy security and sustainability and promote regional prosperity and peace as well.

Yet despite some critics call for a gas pipeline substitute to the KEDO reactors, some points must be considered. First, the Korea Electric Power Corporation (KEPCO), the prime contractor responsible for implementing the KEDO-KEPCO Turnkey Contract for the building of two 1,000 MW(e) light-water reactors has invested too much time and money into the endeavor that letting go of the project now is unthinkable. Both nuclear power and energy produced via gas used from a pipeline will both be needed to meet North and South Korea's (and a unified Korea's) growing economic needs.([33](#))

Second, despite U.S. fears of losing influence in a "tightly-knit" Northeast Asian region on account of pipeline construction, the United States would benefit from the security gains an economically integrated Northeast Asian region would bring.([34](#)) More of a concern should be the implications of the demise of KEDO. Such would almost assure a diminishing U.S. influence in the region, and likewise set a bad precedent for future multilateral cooperation efforts.

Third, Pyongyang's position on the LWR project is uncertain. Abandonment of the project all together may cause problems in the future. During the negotiations prior to the resulting 1994 Agreed Framework, which, for the most part, put a freeze on North Korea's nuclear weapons development project, it was at the request of North Korea, not the insistence of the West, that nuclear power assistance come in the form of LWRs. Power from the LWRs would provide the North with a prestigious energy source and related technology, and give its people a chance to learn something new. Pulling the rug out from under their feet by canning the project altogether under a narrowly-focused "anti-weapons of mass destruction" hue and cry would only reveal the West's true lack of understanding of the situation.

Nevertheless, the changing international environment necessitates a major readjustment of the current LWRs project. The signal from Washington is very clear. Pyongyang is not happy with the project. The consensus appears to be reduction of two LWRs to one and supplement the loss from some type of alternative.

Potential Issues with a Pipeline

As experts point out, many hurdles need to be overcome before any pipes can be placed.([35](#)) The high price tag that comes with such a venture is one. Who pays who for what and how will be an issue of intense negotiation. Actors are numerous in number and diverse in kind. Additionally, whether or not a gas pipeline project can be carried out in the context of energy sector deregulation (i.e., mainly in South Korea and Japan) is something that needs to be addressed. Second, activity is needed to improve the investment climate to make markets for gas more accessible and secure. Third, a long-term, comprehensive, export-oriented strategy to enable implementation, partnerships, and consistent negotiations is almost nonexistent. Fourth, no consensus or sense of urgency exists for multilateral cooperation in energy sector, especially with North Korea involved as a player.

However, the recent re-escalation of nuclear tensions should provide governments with adequate enough impetus to promote such cooperation. The new government of South Korea has a grand vision of playing a hub for Northeast Asian regional cooperation, including energy and environmental sectors. Finally, the incredibly poor infrastructure in North Korea needs extensive rebuilding before anything could start in the North. This comes with a hefty price tag of its own. Therefore, governments must be willing to promote private sector involvement to help shoulder the costs of development.

Conclusions

By admitting to his regime's nuclear-related misbehavior, Chairman Kim Jong Il has dropped any face saving tactics and turned the other cheek to see if the Western world will offer him an olive branch or a cold iron fist. For the West, clear understanding, clemency, and continued dialogue may be the wisest of approaches at this critical stage. Extending that branch through multilateral energy cooperation in building an economically viable regional gas pipeline, despite the obstacles, is a far better alternative to dangers and instabilities associated with a nuclear gridlock scenario or war. Collaborative efforts that sincerely envision the means to assist North Korea exit the energy crisis, enter the international community on more equal footing, while at the same time recognize the North's indigenous socio-political culture, are desirable. Creating interdependencies through energy cooperation can only lead to greater efforts to foster regional prosperity and stability. Such would greatly alleviate the economic demons haunting the DPRK and calm the nerves of all the actors in the region.

Notes

(1) KEDO November 2002 Executive Board Meeting Statement, November 14, 2002, online at www.kedo.org/news_detail.asp?NewsID=10; Currently, the suspension of the HFO is still in effect. See www.cfr.org/background_northkorea_bg.php .

(2) Despite the U.S. donation to the World Food Program (WFP) of 40,000 metric tonnes of agricultural commodities and potential for an additional donation of 60,000 more, international food and medical aid to the North is rapidly "drying up." For an updated look at the food aid and supply situation in North Korea, see John Williams, "Meanwhile: Some real surprises visiting North Korea," International Herald Tribune (online ed.), March 21, 2003, online at www.ihrt.com/articles/90512.html; Richard Boucher, Spokesman, Press Statement, Seoul, February 25, 2003, "U.S. Food Donation For North Korea," online at www.us-mission.ch/press2003/0225NorthKorea.html .

(3) "EU Suspends Cooperation with NK," Chosun Ilbo (Seoul, online ed.), December 5, 2002. Available online at <http://english.chosun.com/w21data/html/news/200212/200212050012.html> .

(4) "U.S. Is Urged to Promote Flow of Refugees from North Korea," New York Times, December 10, 2002, online at www.nytimes.com/2002/12/11/international/asia/11REFU.html .

(5) Peter Hayes, "Tactically Smart, Strategically Stupid: The KEDO Decision to Suspend Heavy Fuel Oil Shipments to the DPRK," Nautilus Institute Policy Forum Online, November 15, 2002, online at https://nautilus.org/fora/security/0221A_Hayes.html .

(6) Howard W. French and David E. Sanger, "North Korea to Reactivate an Idled Nuclear Reactor," New York Times, December 13, 2002. Online at

www.nytimes.com/2002/12/13/international/asia/13KORE.html .

(7) "Diplomats work on coalition to press North," JoongAng Ilbo (Seoul, online ed.), December 16, 2002, online at <http://english.joins.com/Article.asp?aid=20021216022515&sid=200> .

(8) "A local Chinese paper (Heilongjiang Newspaper, March 17) reported that China is expected to see increased food export to NK due to the sharp drop in international food support caused by NK's nuclear issue and continuing bad harvests. Quoting an anonymous source, the newspaper said that NK has already concluded a large contract for food purchased from a trading company on the Chinese border to relieve the food shortage. According to the newspaper, imported food is already streaming into the country through trade areas along the NK-China border, including Yanji and Changbai, and NK is negotiating with a trading company in the Jian trade area for further food. Last year, China's food export to NK amounted to \$49,361,000 (326,296.3 tons), showing a sharp drop (40%) from the \$83,490,000 (571,717 ton) of the previous year. But since NK has actively been purchasing food from abroad since the beginning of the year due to international suspension of food aide, it is expected that NK's food import from China will increase remarkably." "China's Food Export to North Korea Likely to Increase This year," retrieved March 27, 2003 from KOTRA website, online at www.kotra.or.kr/nk/eng .

(9) Alexandre Mansourov, "North Korea Goes Nuclear, Washington Readies for War, South Korea Holds Key," Nautilus Institute Policy Forum Online, December 9, 2002. Available online at https://nautilus.org/for_a/security/0223A_Mansourov.html; also see the Korean Anti-Nuke Peace Committee's (North Korea) spokesman statement issued January 24, 2003, available online at https://nautilus.org/pub/ftp/napsnet/special_reports/KANPC-3critical2.txt .

(10) For more on the possible scenarios of "gridlock" and U.S. disengagement in Northeast Asia, see Timothy Savage, "Pyongyang's Dangerous Game," Nautilus Institute Policy Forum Online, October 23, 2002.

(11) For a more complete view of North Korea's energy picture, see James H. Williams, David Von Hippel, and Nautilus Team, "Fuel and Famine: Rural Energy Crisis in the DPRK," Asian Perspective, vol. 26, No. 1, 2002, pp. 111-140; see also David Von Hippel, Timothy Savage and Peter Hayes, "DPRK Energy Sector: Estimated Year 2000 Energy Balance and Suggested Approaches to Sectoral Redevelopment," online at www.nautilus.org .

(12) Peter Hayes, David Von Hippel, and Nautilus Team, "Modernizing the US-DPRK Agreed Framework: The Energy Imperative," Asian Perspective, vol. 26, No. 1 (2002), pp. 9-28.

(13) Bradely O. Babson, "Searching for the Right Side of History in Northeast Asia: Potential Role of Energy Cooperation with North Korea," ERINA Report, vol. 46 (June, 2002), pp. 20-23.

(14) For a South Korean perspective, see Park Dong-wook, "Perspectives on the North-east Asian System Interconnection," online at www.nautilus.org/energy/grid/papers/dwpark.pdf .

(15) For a comprehensive look at the problems surrounding KEDO, see Scott Snyder, "The Korean Peninsula Energy Development Organization: Implications for Northeast Asian Regional Security Cooperation?" North Pacific Policy Papers 3 (Vancouver: University of British Columbia, 2000), available online at www.pcaps.iar.ubc.ca/pubs.htm .

(16) See Ibid.; Mitchell B. Reiss, "KEDO: Which Way from Here?" Asian Perspective, vol. 26, No. 1 (2002), pp. 41-55.

(17) Snyder, "The Korean Peninsula," p. 28.

- (18) Vladimir I. Ivanov, "Energy Security and Sustainable Development in Northeast Asia: Prospects for Cooperative Policies," ERINA, June 2001. Online at www.erina.or.jp/En/E/HPlib.html .
- (19) Ibid.
- (20) David Shambaugh, "China and the Korean Peninsula: Playing for the Long Term," *The Washington Quarterly*, vol. 26, No. 2 (Spring 2003), pp. 43-56.
- (21) "A local Chinese paper (International Business Daily, March 18) reported that since last February, NK appears to be sharply increasing its import of mineral resources for energy production from China. This is due to the deteriorating energy condition of NK and the need to increase its stock of strategic materials in case of an emergency. According to statistics from Chinese customs, oil products (including gasoline) that were sent to NK in February in border areas, such as Changbai, Linjiang, Tumen and Hunchun Customs Houses, which are all under control of Changchun Customs House, reached 455 tons. This quantity equaled 63% of China's total oil-product export to NK in January and February and in terms of money, the US\$175,000 worth was 64.8% of the total. Also, last February China exported 36,032 tons of coal (including cokes) to NK, which made up 88.2% of China's total export volume to NK for the Jan.-Feb. period; in money terms, its \$1.55 million took up 87.1% of the total trade amount. The newspaper also said that since considerable time will be required for the nuclear issue between NK and the US to be settled, the mineral resources for energy being shipped to NK through each of the border areas within Changchun Customs House control is expected to continue to increase in the future." K.H. Koo, "N.K. Imports Large Amount of Mineral Resource for Energy Use," retrieved from KOTRA NK Club e-mail service, March 27, 2003, online at http://crm.kotra.or.kr/main/common_bbs/bbs_read.php3?board_id=21&pnum=899848&cnum=0&row_num=2&n_page=1&q_page=1 .
- (22) For an updated discussion on this project, see Keun-Wook Paik, "Sino-Russian Oil and Gas," paper presented at the conference on Northeast Asia Energy Cooperation, Washington, DC, January 7, 2003.
- (23) Zhang Aling and Shi Lin. "Prospects for and Impacts of Diversifying Fuel Use Away from Coal." Online at www.nautilus.org/energy/eaef/C2_final.pdf .
- (24) Elena A. Telegina, "Northeast Asia and Russia's Energy Exports in the 21st Century," ERINA Report, vol. 35 (August, 2000). Available online at <http://www.erina.or.jp/En/E/HPlib.html> .
- (25) Selig S. Harrison, "Toward Oil and Gas Cooperation in Northeast Asia," Asian Program Special Report, Woodrow Wilson International Center for Scholars, December 2002. Available online at www.keia.com/PolicyForum/NortheastAsiaEnergy/Harrison.pdf .
- (26) For a comprehensive look at the South Korean interests in transnational gas pipeline, see Keun-Wook Paik, "Natural Gas Expansion in Korea," in Ian Wybrew-Bond and Jonathan Stern, *Natural Gas in Asia: The Challenges of Growth in China, India, Japan and Korea* (Oxford: Oxford University Press, 2002), pp. 188-229; Harrison, "Toward Oil and Gas Cooperation."
- (27) For a more complete look on North Korea and gas pipeline issues, see Harrison, "Toward Oil and Gas Cooperation"; Paik, "Natural Gas Expansion in Korea"; Keun-Wook Paik, "Revitalising North Korea's Energy: Based on pipeline gas option," a paper delivered at the conference *Korean Peninsula: Enhancing Stability and International Dialogue*, Rome, Italy, June 1-2, 2000, online at <http://lxmi.mi.infn.it/~landnet/corea/proc/033.pdf> .

- (28) Babson, "Searching for the Right Side of History"; for a supportive argument to the gas pipeline option, see Paik, "Revitalising North Korea's Energy."
- (29) Babson, "Searching for the Right Side of History."
- (30) Ibid.
- (31) Ibid.; Paik, "Revitalising North Korea's Energy."
- (32) "Seoul to use part of debt for Russian Armaments," JoongAng Ilbo (Seoul, online English ed.), August 13, 2002. Available online at <http://english.joins.com/article.asp?aid=20020813093831&sid=E00> .
- (33) Harrison, "Toward Oil and Gas Cooperation," pp. 12-13.
- (34) Ibid., pp. 3-4.
- (35) Babson, "Searching for the Right Side of History"; David Von Hippel and Peter Hayes, "Regional Energy Infrastructure Proposals and the DPRK Energy Sector: Opportunities and Constraints," a paper presented at the KEI-KIEP Policy Forum on "Northeast Asian Energy Cooperation," Washington, DC, January 7, 2003

III. Nautilus Invites Your Responses

The Northeast Asia Peace and Security Network invites your responses to this essay. Please send responses to: napsnet-reply@nautilus.org . Responses will be considered for redistribution to the network only if they include the author's name, affiliation, and explicit consent.

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