

Special Report 07-043A: May 31st, 2007

-“Anticipating Six Party Energy Negotiations” By Peter Hayes and David von Hippel

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I. Introduction

Peter Hayes, Nautilus Institute Executive Director and David von Hippel, Nautilus Institute Senior Associate, write, “In the long run... it is critical that a substantial fraction of the energy aid agreed to at the Six Party Talks result in developmental outcomes for the people living in the DPRK. Falling short of this goal will leave the DPRK highly insecure, and one of the essential girders of a non-nuclear future for the Korean Peninsula, the social and political stability of the DPRK, will collapse.”

This report is a companion piece to the article being published by the periodical *Science* 316, pp1288-1289 (2007). You can read this article [here](#).

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II. Report by Peter Hayes and David von Hippel

-“Anticipating Six Party Energy Negotiations”
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Six factors will drive DPRK negotiating strategy on energy security at the Six Party Talks. These are: strengthening the DPRK’s domestic leadership; its external circumstances; DPRK diplomatic leadership at the Talks; the subordinate role of DPRK economic ministries in the Talks; the minor role played by technical considerations and the DPRK energy ministries in the Talks; and the DPRK’s negotiating style.

This analysis describes these six factors, and then infers six likely DPRK preferences for energy assistance at the Talks given these driving factors. We conclude with a short analysis of the implications of the asymmetry between DPRK and US priorities for energy assistance at the Six Party Talks.

1. Six DPRK Driving Factors

First and foremost, domestic leadership must be served well by whatever energy options are agreed to at the Talks. Kim Jong Il will not allow energy assistance to influence sensitive domestic political domains that reflect on his anti-US, pro-military first political and ideological positions, for example, by allowing American companies to enter into DPRK energy investments (as improbable as such might be, this issue could come into play, for example, in relation to regional gas pipelines, oil exploration, independent power projects, and in other ways that entail crossing the DMZ which, above all, is Korean Peoples' Army (KPA) turf in the DPRK's system). One of the major flaws of the 1994 US-DPRK Agreed Framework was that it provided nothing for the KPA. It would be prudent to ensure that the KPA has reason to buy into an agreement struck this time around.

Conversely, the chosen energy options must enhance the legitimacy of Kim Jong Il's rule, most importantly, by recognizing the importance of Kim Il Sung as founder of the state and symbolized by the two light water reactors at the center of the US-DPRK Agreed Framework 1994 deal struck with Jimmy Carter. Obtaining the LWRs that were half-built in the DPRK by KEDO in the nineties before construction ground to a halt in 2002 will be the DPRK's highest goal in the energy negotiations under the Six Party Talks and will be the last option to be given up, if ever.

Second, as a small, weak state surrounded by great powers and a rich "big brother" in South Korea, the DPRK will seek energy options that offset its unfavorable external circumstances. Thus, DPRK negotiators will prefer energy offers that enable the DPRK to stand up to China by reducing its energy dependence on its erstwhile ally and primary supplier of oil; that hold the United States at arms length but build a cooperative relationship with it; that gravitate towards energy options involving linkage with a "buffer" in South Korea that enables the DPRK to push back against China, Japan, and the United States; that enlist Russia as a buffer against South Korean attempts to dictate energy options to the North and provides marginal leverage against all the other players; and that keep pressure on Japan via all the other players but eventually demands major financing from Japan (reparations to the DPRK for damages committed during colonial and imperial predations on Korea by Japan) to be committed to reconstructing the DPRK's energy economy via multilateral institutions such as the World Bank or the Asian Development Bank.

Third, diplomats will lead DPRK delegations at the Talks. Their primary interest is to strike an agreement that serves the Foreign Affairs Ministry well in building its relations with the international community and above all, with China and the United States. In the search for agreement, and flying blind with respect to technical and economic realities, these diplomats will be most interested in options that lead to convergence with the United States and China on the one hand, and are built on past precedents in the US-DPRK Agreement on the other.

Fourth, economic planners play only minor support role for the diplomats at talks. Their interest will be in building relationships with international financial institutions, public and private, positioning the DPRK for windfalls such as future Japanese

reparations, and maneuvering to extract short-term support from South Korea to stabilize the dire economic situation in the North. They will also seek to build the analytic and policy capacities of a technocratic elite such as occurred in a similar transition from a (landlord dominated) rent-extracting elite in the South in the 1960s-70s, in obtaining access to training and study abroad, most of all at a hands-on enterprise level; and in energy options that support creation of successful free trade zones, big industrial developments, mine rehabilitation, and supporting the military-industrial complex, in short, the critical economic tasks entailed in keeping intact Kim Jong Il's rule.

Fifth, energy planners and line agencies officials are not likely to be at the talks except in a minor advisory role, but they may be consulted (and ignored for reasons explained above) as to energy goals and options that actually would serve to revive their ailing energy systems. Of most interest to them will be rehabilitation of the coal mines and supply system, reconstituting the power grid, modernizing and upgrading their oil refineries, and increasing imports of refined oil products for the transport and other sectors.(1)

Sixth, the DPRK has revealed a highly predictable negotiating style over the last two decades. This entails withholding all meaningful information from negotiating partners (read adversaries from a DPRK perspective) for as long as possible; posing maximum and wildly-overstated demands in order to have a position from which to “retreat” and then appear reasonable; renegotiating every agreement once achieved in order “to slice thin the salami;” ambushing already agreed agreements with new demands, holding out to the last moment, and then capitulating in order to extract the final ounce (or to appear to have tried their best to their “uppers” in Pyongyang); to withhold their own demands for as long as possible in order to pick and choose from the options being put forward by those with whom they are negotiating; to approach all agreements as containing traps deliberately set to take advantage of them; and to view all offers as justified by past DPRK grievances and to never admit that the other side is offering attractive options to build good will. Finally, DPRK negotiators will sometimes use “hostage taking” and “extortionate” strategies to attempt to force the other party to meet their extreme demands (“hostage taking” refers to implicit threats to put international or American personnel under increased pressure when in the DPRK should conflict erupt, as was sometimes the case with US Missing-in-Action Joint Recovery Teams in the DPRK or US technical contractors at Yongbyon at various times; “extortionate” demands refers to DPRK demands for payoffs be made without which they would escalate nuclear proliferation or other activities objected to by the international community such as the IAEA).

For all these reasons, the DPRK energy delegations are unlikely to offer a set of energy needs ranked by priority and with useful information and explanation. Rather, they will make inflated and often bizarre demands that either seek to put the adversary off-balance, make them confused, or shroud their demands in opacity such that what is being contracted, if one can use that verb in relation to North Korean agreements, is undefined. What data they do reveal are usually highly aggregated and minimalist, and as most DPRK data are systematically distorted by the reporting system, much of it is misleading or wrong. What data are not distorted are usually missing—often including the price or

market data needed in the evaluation of a standard energy project, because such needs-based or price-based energy data play no role in the DPRK's traditional allocational system, and goods that are distributed informally are not registered in the official data system anyway.

In short, the voices that normally express humanitarian and social-economic needs for energy security in most countries are unlikely to be heard at the talks from the DPRK negotiators. Instead, the DPRK's preferences are likely to be more or less an exact inversion of the seven sensible options outlined in our essay "Energy Security for North Korea." (2)

The next section infers six DPRK preferences that we infer from these six driving factors plus our direct knowledge of the DPRK energy system and organizational structure

2. Six DPRK Negotiating Preferences

We anticipate that driven by these factors, the DPRK will seek the following preferences in rough order of priority.

DPRK Preference 1: LWR (plus Regional Grid)

As noted above, obtaining at least one LWR is critical to Kim Jong Il in terms of domestic legitimacy, in achieving co-equal nuclear power status with regional states, and in forcing American policy towards the DPRK to shift from one of hostility to one of at least co-existence. The DPRK gave up two LWRs in order to pursue its nuclear weapons option after the 2002 confrontation with the United States over uranium enrichment. A simple economic calculation shows that these two LWRs were worth a net economic gain of 3-4 billion dollars and by implication, the value of what the DPRK must at least match what was given up.(3)

In reality, the political-symbolic value of nuclear weapons to Kim Jong Il may now surpass any affordable price. DPRK nuclear weapons are portrayed in DPRK domestic media as being "5,000 years in the making" and as making the DPRK a "dignified nuclear state" on co-equal footing with other nuclear states.(4) This post-colonial, small-power nuclear nationalism identified now with the achievements of Kim Jong Il's leadership the "matchlessly great man who is the greatest of all great men." who has demonstrated "immortal accomplishments."(5) Although not surpassing that of his father Kim Il Sung, obtaining nuclear weapons enables Kim Jong Il to at least match his father's prowess and historical legacy. Persuading him to give up this mythic engine for dynastic succession will be difficult to achieve without a near-substitute for nuclear weapons, and will not come cheaply. That said, and given American proclivity to absolutely object to any nuclear fuel cycle activities in the DPRK, let alone reviving the LWR project, it is important to start the DPRK thinking about what might substitute for it.

Unsurprisingly there is no effort underway in the US government to address this issue on the grounds that it is premature until we get through the quicksands of "phase 1" of the February 13th agreement to disable DPRK nuclear fuel cycle activities.

Of course, completing phase 1 requires that the DPRK cooperate; and to get the DPRK to cooperate, one has to address their most important over-arching goal on the energy front, which is obtaining the LWRs in terms of its political and symbolic value to the DPRK leadership.

Thus, it is essential, not merely desirable, to lay out a road map as soon as possible that addresses this overarching goal, just to get through the quicksand that we are already in, let alone to get to more stable footing. Moreover, if one judges the only way forward on this score to entail DPRK acceptance of the US-imposed constraint that no nuclear fuel cycle activities be undertaken in the DPRK and therefore, that the DPRK accept a non-LWR substitute for the LWRs, then the earlier one gets the DPRK to start grappling with this reality, the better. Otherwise, the DPRK may conclude that it will never get what it needs to justify giving up their nuclear weapons capacities from the United States, and it's already game over (or rather, a new game).

And by the same token, the sooner the American side begins to think through what political-symbolic transactions that the White House will have to make with Kim Jong Il in addition to whatever technological and economic substitutes for the value of the LWR will be needed to put the LWRs aside in Pyongyang, the better.

What might a substitute for 2 GWe (gigawatts of electric power) of light-water reactor (LWR) generation capacity look like? In 2005, the ROK government suggested the construction of a power transmission line from the ROK to the DPRK with a capacity of 2 GWe, and subsequent transfers of electrical energy from South to North. At present, both of these assistance packages face political and technical constraints that make them, in all likelihood, non-viable.

In light of these problems, we have sketched roughly what a feasible package of non-LWR substitutes would look like, to be implemented over a time frame of 7 to 10 years that roughly matches when the LWRs would come on-line if construction were re-started today. We would anticipate that such an integrated and coordinated package would include:

- Measures to vastly increase the efficiency with which coal is used in the DPRK, including boiler improvements in all sectors, building envelope measures, steam and hot-water line insulation, replacement of fixtures, and industrial furnace measures, and residential stove improvements. Repair of/improvements to/expansion of district heating systems would play a key role here.
- Measures to vastly increase the efficiency with which electricity is used in the DPRK, including lighting improvements, improvements to motors and drives, improvements to refrigerators and other appliances, and many other options.

- Implementation of renewable electricity sources, principally wind power, possibly using pumped-storage hydroelectric facilities for energy storage and to feed the grid(s). It is likely that the target capacity would be in the hundreds of megawatts. Other forms of renewable electricity, including small hydroelectric and tidal power units, may also be potential elements of an assistance strategy.
- Some rebuilding/rehabilitation/replacement of existing power plants and coal production facilities to allow (for example) wind power plants to operate in a grid-connected mode.
- Rehabilitation/replacement, in some areas, of the DPRK transmission and distribution grid in order to allow the above to be implemented effectively. These rehabilitation activities would focus on areas and particular counties, for example, where coupling with economic development activities (agriculture, manufacturing, mining) and installation of new power systems can be coordinated with and through transmission and distribution upgrades.
- Installation of one or two (one on each coast) medium-sized facilities for importing of liquefied petroleum gas (LPG), with installation of limited LPG distribution networks (as against the mere bottling of LPG suggested below in phase 1 HFO equivalents) to provide fuel for key activities and areas in the short term, and to provide the DPRK with experience in use of piped gas to pave the way for future interconnection with the ROK and (perhaps eventually) the Russian Far East gas grids.
- Extensive human capacity-building in many areas, starting with technical areas such as energy efficiency and renewable energy engineering, but necessarily including economics, energy market creation and regulation, law, statistics/accounting/planning, and other disciplines as well as institution-building in all of these areas.

Based on the results of our previous analyses, we would expect that a package including the above elements, and offering about the same amount of effective energy as 2 GWe of LWR capacity, to cost very approximately 2 billion USD. For comparison, completing 2 GWe of 40% complete LWRs at the KEDO site would cost on the order of 3-4 billion USD, plus require either 2 AC transmission lines from the ROK (and acceptance by the DPRK that the LWR is to export its power to the ROK, which is politically unpalatable) or connection of the reactors at the KEDO site into a regional Russian-ROK grid connection DC tie-line (which is more politically acceptable, but is a high donor cost add-on to the direct LWR cost, and poses some difficult, if ultimately tractable, technical issues).

Such a package could be built on the seven energy options to substitute in part for the million tonnes of heavy fuel oil (HFO) to be provided during the disablement phase 1 of the February 13th agreement. As the initial stepping stones would be laid in the HFO-

substituting effort, it is critical to start thinking through and planning the second phase that substitutes for the LWRs now, to ensure that the right stones are laid in the right places from the start.

DPRK Preference 2: Heavy Fuel Oil

Although it is expensive and in scarce supply in the DPRK, provision of refined petroleum products or refinery upgrades have little symbolic value to the DPRK in a negotiation over nuclear weapons. Nor do they offer much utility for diplomats in striking agreement except in relatively small quantities (the Rajin power plant can use HFO which was the reason that HFO was selected in the 1994 US-DRPK Agreed Framework). Moreover, the Chinese wouldn't want DPRK to become more independent from Chinese oil supplies for political reasons; and the DPRK military, one of the biggest users of refined product in the DRPK, aren't at the table. The DPRK negotiations also know that the United States will block any deal that offers refined product that can fuel the DPRK's military machine. And since the DPRK lacks any substantial domestic supplies of crude oil, refinery upgrades simply make the DPRK more dependent on crude oil imports.

Thus, of oil products, HFO, or (effectively) liquid coal, is the only possible oil product that may appear in an agreement due to HFO provision having been a part of past agreements, the utility of HFO in benchmarking the dollar value or energy equivalent of substitute deals implied in the February 13th 2007 agreement, and as a way to sell an agreement with constituencies in Pyongyang (showing that the DPRK was able to force the United States to return to former agreements may be popular in hard line quarters of the DPRK leadership).

In reality, HFO is not very useful to the DPRK. It will displace some coal and thereby reduce the pressure on the coal mining ministry; it might fuel some heavy industry, but it is inherently hard to transport and use in boilers; and it might reduce HFO imports from China and thereby the political or financial cost of such imports. But the economic ministries know that HFO included in an agreement does not provide a driver for development because it offers no technology transfer, creates no backward and forward and inter-sectoral linkages, in short, it is a development dead-end.

Therefore, we anticipate that the DPRK will be amenable to "equivalent HFO" services in phase 1 of perhaps 300,000 tonnes ~ per year leaving about 200,000 tonnes/year as HFO (perhaps for processing minerals such as magnesite). We estimate that the DPRK can actually absorb about 6-700,000 tonnes of HFO per year at most—a figure the DPRK delegation confirmed at the first Six Party Talks energy working group meeting on March 17, 2007, and that the total HFO nominally included in the February agreement would therefore need to be spread over 2 years (total: 1 million tonnes of HFO or equivalent).

DPRK Preference 3: Rehab Coal, Coal is King

The problems of the coal sector are pervasive and affect almost every sector in the DPRK, but are especially acute the power sector and product of heat for urban buildings where people live and have to survive in bitter cold winters. Many of the 60 percent of

the DPRK's coal mines that were flooded in the mid-nineties remain so today. De-flooding a mine can take 1-2 years minimum subject to the consistent availability of power for pumps, which is often not the case in the DPRK. Once intermediary levels of collieries are dried out, work in the mines can start again (but pumping must continue, and clearing out muck is critically dependent on proper haulage equipment being available). The DPRK's coal mines are appallingly unsafe, and need to be provided with almost every type of safety equipment, including oxygen supply, methane monitoring and removal systems, proper ventilation, fire risk control and response systems, carbon monoxide monitoring, dust suppression, and materials for shoring up mine shafts given the shortage of timber for structural support below-ground.

The DPRK coal sector needs building of basic capacities, transport and distribution equipment, and upgrading of the fabrication of briquettes for household and small commercial/institutional use (fabrication of briquettes is mostly done by hand on-site, often by householders). The coal mining ministry may also be interested in more efficient end-use equipment such as light bulbs, more efficient boilers, and reduction of waste from district heating pipes in order to reduce demand for coal, and increase effective supplies. Also not to be overlooked are needs for coal testing and analysis equipment, and training in modern coal analysis and mining techniques.

DPRK Preference 4. Mining Energy Infrastructure for Foreign Exchange

The DPRK has significant mineral deposits and a long history of mining them for local use and export. Thus, the economic agencies may have an interest in energy aid that is aimed specifically at reviving specific mines. DPRK diplomats may also find it useful to link such assistance back to bilateral agreements with the United States in the bilateral working group under the Six Party Talks where the United States is expected to bring pressure on the DPRK to desist from arms and nuclear exports (and may recognize that developing foreign exchange-earning mines may be necessary if the DPRK is to desist from destabilizing exports). Some mines, such as those in Yangdok County, may offer the prospect of combining minerals ventures with humanitarian and county-level projects funded by the minerals developments. The power needs for individual mines are not great and could be surveyed quickly. (6)

DPRK Preference 5. "Modern Energy" is Attractive but a Trap

North Korean energy organizations and the prevailing political culture are dominated by a Leninist paradigm of modern science and technology being at the center of social development and progress, without regard to applicability or cost. Almost without exception, DPRK counterparts in aid projects seek substantial amounts of capital equipment, the latest high technology equipment, and then try to unpackage and reverse-engineer the provided devices, usually failing to produce working copies due to lack of suitable materials (high-quality metal alloys, for example), production equipment, or systems engineering. This tendency should be avoided by insisting on proper energy and end-use surveys and assessments, with technology choice derived from survey and analysis, not from the desire for the latest high technology.

Given this preference, two types of “modern” energy exemplify the type of project that is likely to be attractive to DPRK energy agencies, or at least would be deemed acceptable, as well as meeting minimal western criteria of social and economic justification. These are:

- **Small coastal urban LPG terminals**, one east coast, one west coast, for gas bottling and distribution to households and small industry, to initiate wider use of gas in the DPRK and prefiguring introduction of natural gas in pipelines integrated into the ROK gas pipeline system in phase 2 of nuclear disablement (or possibly, at some point, from an liquefied natural gas terminal in the DPRK); and
- **“Reunification renewables,”** for example, provision of windpower turbines and mechanical waterlifting windmills where economically or socially justified, in response to Kim Jong Il’s mandate for 0.5 GWe of windpower. This latter option might be implemented on a North-South Korean basis and also provide symbolic benefits attractive to both Koreas.

DPRK Preference 6. Training

Historically, DPRK counterparts resisted training on the grounds that DPRK agencies already had sufficient technical and other expertise to implement projects; and to avoid exposure to “contaminating” foreigners who would also learn too much about the DPRK and use this knowledge against the DPRK in future negotiations with aid agencies. The DPRK also learned from many years of food aid that aid agencies do not always send their most competent professionals to dish out food aid and that they could either ignore or circumvent unwelcome advice even when it was apt and expert.

Today, this situation no longer pertains, at least not in the nearly absolute manner that was once the case. Economic ministries, especially those close to the Premier and Cabinet level, seek training that is conducted at the enterprise-level, especially hands-on, local short or long-term training overseas in Europe, China, Indonesia, Vietnam, India, Singapore, or short-term study tours (even in the United States or its allies is acceptable provided the students are treated in an apolitical manner). The DPRK has also sought technical assistance as preparation to join the World Bank and the Asian Development Bank, although the DPRK remains sensitive to political conditionalities that may be imposed by the United States and Japan, respectively, related to membership in these two institutions. Observer-level participation in the APEC Energy Working Group would be a good intermediate entry point for sectoral and project-level energy planning work to commence in the DPRK itself.

The DPRK likely will resist training assistance at the Six Party Talks, at least until all the other elements of an energy package are negotiated. Access and verifiable information that is a key component of effective training always has a price in the DPRK and is rarely provided as an obligation to the international community or as a contribution to the creation of a global public good. Therefore, we believe that it is important that the five parties engaging the DPRK on energy insist at the outset of the Talks that each and every element of the package include the necessary capacity-building needed for successful

energy development in any normal country, and at the end of the negotiation, aggregate the training and capacity building activities into one item. The cost of this item should be subtracted from the total “equivalent” package cost at the end of the haggling of phase 1.

3. Conclusion

The outcome of the negotiations to increase energy security in the DPRK—should they ever resume—is likely to be a mixed bag of DPRK preferences with those driven by pragmatic geopolitical factors from their neighbors, and norm-based options by the international development community that are designed to meet standard economic and sustainability performance criteria. The resulting potpourri will not be “efficient” in normal terms; but then, this is not a normal situation. The primary payoff of a successful negotiation will be to denuclearize the DPRK and thereby arrest a nuclear proliferation dynamic that afflicts the whole region, indeed, the whole world.

In the long run, however, it is critical that a substantial fraction of the energy aid agreed to at the Six Party Talks result in developmental outcomes for the people living in the DPRK. Falling short of this goal will leave the DPRK highly insecure, and one of the essential girders of a non-nuclear future for the Korean Peninsula, the social and political stability of the DPRK, will collapse.

III. Citations

(1) See the studies at

<http://www.nautilus.org/DPRKBriefingBook/negotiating/index.html>; and R. Saccone, *Negotiating with North Korea*, Elizabeth, NJ, Hollym, 2003

(2) Published in *Science*, full reference (316, pp1288-1289 (2007). Available at:

<http://www.sciencemag.org/cgi/content/summary/316/5829/1288>)

(3) P. Hayes, “The Beijing Deal is not the Agreed Framework,” Policy Forum Online 07-014A: February 14th, 2007, at: <http://www.nautilus.org/fora/security/07014Hayes.html>

(4) See the photograph of a DPRK banner proclaiming: "Let Us Long Make Shine the Historical Event of a Nation With 5,000 Years of History Becoming a Nuclear State!" at: <http://news.wenxuecity.com/BBSView.php?SubID=news&MsgID=329089> At the 11 April session of the DPRK Supreme People's Assembly (SPA) Vice Premier Kwak Pom Gi stated: "Thanks to the fact that we have come to possess a powerful self-defensive nuclear deterrent...our Republic has now come to possess invincible military capabilities as a dignified nuclear state and is able to devote all its strength to economic construction" ([Pyongyang radio](#), 11 April, 2007).

(5) Cited from “Poem To The NDC Chairman: Kim Jong Il published in Pyongyang by the Rodong Sinmun Daily,” attached to P. Hayes, “Embrace Tiger, Retreat To Mountain, Test Nuke,” POLICY FORUM ONLINE 06-60A July 21st, 2006 at:

<http://www.nautilus.org/fora/security/0660Hayes.html>

(6) Power needs for 8 mines specified by the DPRK in a document posted at <http://www.nautilus.org/DPRKBriefingBook/economy/DPRKonDPRKMines.pdf>

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