"Contrasting Nuclear Models on the Korean Peninsula"

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Let us acknowledge some basic facts, which point to a stark contrast: The southern half of the Korean Peninsula enjoys energy security and is free of nuclear weapons. In the northern half, the opposite situation prevails. And North Korea's energy insecurity is exacerbated by its nuclear weapons program.

So to answer the question posed by the title of this session: both goals of energy security and nuclear-weapons free status can be achieved by following the South Korean model. The North Korean model makes for a contradiction. It has beaten ploughshares into swords.

ROK model

South Korea is a world leader in civil nuclear energy. Its 23 nuclear reactors currently produce 18.5 gigawatts of power, though the capacity is over 20 gigawatts when all are running. This accounts for nearly 30% of South Korea's total electrical generation capacity, and 45% of total electrical consumption. Eleven more reactors are scheduled to come on line in the next ten years, adding 13.8 gigawatts. South Korea has become an exporter of civil nuclear technology, building four advanced power reactors for the United Arab Emirates and a research reactor for Jordan. Additional nuclear energy projects are under negotiation with several other countries.

South Korea's nuclear program is exclusively dedicated to civilian purposes. The program is fully transparent and South Korea is a highly respected member of the International Atomic Energy Agency. It has adopted the safeguards Additional Protocol and has signed and ratified all of the IAEA nuclear safety and security conventions and other instruments. When Seoul hosted the second Nuclear Security Summit in April, it showcased international leadership in the three S's of nuclear energy: safety, security and safeguards.

There was a period in the past when South Korea considered acquiring nuclear weapons. When US President Jimmy Carter unwisely announced a pull out of US forces in 1970, the Park Chung-hee government looked to supplement its security options by obtaining plutonium reprocessing capabilities from France. Under US pressure, France backed down and the ROK ratified the NPT. Carter also reversed his troop pull-out policy.

One reason the ROK decided to forego nuclear weapons and has kept itself nuclear-weapons free is that it can rely on the security protection of the United States. However it is

misleading to talk about a US 'nuclear umbrella'. The US-ROK alliance treaty does not refer to nuclear weapons. As explained by American nuclear policy expert Jeffrey Lewis, the US has no obligation to use nuclear weapons in any particular circumstance.[1] And for almost any circumstance relating to the Korean Peninsula in which nuclear weapons might be considered to be effective, conventional weapons are a reliable and far more credible alternative.

In 1991, under President George H.W. Bush, the US removed all nuclear weapons from Korea and from surface ships and attack submarines. In fact, the United States no longer maintains any nuclear weapons in Northeast Asia at all. Today, there is not a shadow of a doubt about South Korea being nuclear-weapons free. If there were any hint of American nuclear weapons remaining or being re-introduced, you can bet that the free and notoriously raucous South Korean press would report the evidence, and that the government would face fierce antinuclear protests

In the past two years, some South Korean politicians have called for the re-introduction of US nuclear weapons to serve as a bargaining chip to counter North Korea's nuclear program and to send a wake-up call to China to respond more seriously to the nuclear challenges posed by North Korea. Those who make this case represent a small minority in the Republic of Korea. President Lee Myung-bak is firmly opposed. In the US, not a single government official or senior military officer supports the idea.

The ROK is not engaged in any sensitive aspect of the nuclear fuel cycle. It has no uranium enrichment or plutonium reprocessing capability. In this respect, South Korea is faithfully abiding by the agreement it reached with North Korea in 1991 to forego all enrichment and reprocessing, even though North Korea has been violating the North–South Denuclearization Agreement for well over a decade. Plutonium reprocessing is also effectively barred under the terms of the US-ROK peaceful nuclear cooperation agreement. When that agreement comes up for renewal in 2014, South Korea seeks agreement to allow pyro-processing, which the US considers to be a form of reprocessing. The two nations are now jointly studying whether pyro-processing can be done in a proliferation-resistant manner.

DPRK model

The contrasts between the South and North in the nuclear field could not be greater. As detailed last year in an IISS Adelphi book by US academic Jonathan Pollack,[2] Soviet and Chinese archives show that North Korea's nuclear programme from its very onset was designed with weapons in mind. Although the Soviet Union did not intend to support a weapons programme, the small reactor and radioisotope-production laboratory it supplied allowed North Korea to master the production and reprocessing of plutonium. Although North Korea in 1985 acceded to Soviet pressure to join the NPT, it never declared the full

[1] Jeffrey Lewis, Policy Forum 10-054: Rethinking Extended Deterrence in Northeast Asia, Nautilus Institute, 3 November 2010, http://nautilus.org/napsnet/napsnet-policy-forum/rethinking-extended-deterrence/.
[2] Jonathan Pollack, *No Exit: North Korea, Nuclear Weapons and International Security (*London: International Institute for Strategic Studies, 2011).

extent of its nuclear infrastructure or its plutonium production prior to concluding a comprehensive safeguards agreement with the IAEA in 1992.

In around 1980 North Korea began a programme to build three graphite-moderated, natural uranium-fuelled reactors to produce plutonium and, ostensibly, electricity, along with a reprocessing plant. Only the smallest of the three was ever completed. It was rated at a nominal 5MW electrical output to underscore the claim that its purpose was electricity generation, even though the reactor was not connected to electrical generators or power transmission lines until 1992, just before the IAEA's third inspection, and six years after the reactor started to operate. Similarly, work on the turbine hall of the 50MWe reactor appears only to have started when IAEA inspections began. The smaller reactor did eventually provide small quantities of electricity and heat to a local town, but the total amount of electricity it ever produced is only equivalent to 23 days' operation of a modern light-water reactor. Approximately 2MWe out of the reactor's 5MWe output were required simply to operate its own cooling fans.[3]

In 1994, North Korea reached an agreement with the United States that was to have provided two light water reactors in exchange for stopping work at the nuclear weapons-related facilities and removing the plutonium-bearing spent-fuel rods. Construction was delayed in large part because of North Korean tactics such as wage hike demands that resulted in the extraordinary circumstance of Uzbek workers being brought in to replace the North Korean workers. But there should be no doubting the good intentions of North Korea's partners in the Korean Peninsula Energy Development Organization (KEDO) project. South Korea, Japan, the US, the EU and other countries contributed about $1.9 billion to the KEDO project and related heavy oil purchases before the project was effectively terminated in 2005.

KEDO was killed because North Korea violated the terms of the 1994 Agreed Framework by seeking to clandestinely develop a uranium enrichment program as an alternative path to nuclear weapons in lieu of the plutonium program it had halted. Insistent denials of any uranium enrichment program were disproven when North Korea infamously displayed a uranium enrichment facility to visiting American academics in November 2010. But already there was solid evidence of such a program based on foreign procurement attempts as well as testimony from Pakistan.[4] Rogue nuclear engineer A.Q. Khan supplied North Korea an enrichment starter kit.

If North Korea had not pursued the enriched uranium path, it could have had two light water reactors, producing 2 gigawatts of electricity, representing about a 30% increase in existing generating capacity. How the LWR output could be effectively harnessed through North Korea's decrepit grid was another matter. But implementation of the Agreed Framework would have put North Korea well down the road to normal relations with the Western world, and additional projects could have been envisaged to improve the grid.

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[3] Entire paragraph from *North Korean Security Challenges: A net assessment (London: International Institute for Strategic Studies, 2011), pp. 94, 96, 123 (fn 3 and 8),*

[4] Pervez Musharraf, *In the Line of Fire: A Memoir* (New York: Free Press, 2006), pp. 289, 296.

In 2005, the Six Parties most deeply engaged in Korean security issues adopted a Joint Statement in which they undertook to promote economic cooperation in energy, among other fields, and "to discuss, at an appropriate time, the subject of the provision of light water reactor to the DPRK". Disagreement emerged immediately thereafter as to when might be the appropriate time. One statement from Washington was interpreted to mean "when hell freezes over".[5] But stuttering progress was made toward the goals agreed to in the Joint Statement before it all came crashing down in autumn 2008 in a dispute over verification.

Looking ahead

A key question before this session is whether the agreement under the 2005 Joint Statement or some permutation of the 1994 Agreed Framework can be revived. In my judgement, this is very doubtful. Given the broken promises of the past, there is no basis of trust upon which to rebuild an agreement. Most recently, of course, was the abrogation of this year's Leap Day Deal, broken by North Korea's rocket launch short weeks after the deal. North Korean negotiators were clearly warned beforehand that a space launch fell under the Security Council prohibition and would be a deal-breaker with the US.

This does not mean rapprochement is forever forbidden. Americans are not a people who harbour grudges. I have no doubt that in the next year or so Washington will be willing to re-enter talks with the DPRK, provided that the Republic of Korea is not left out of the process. Last year, South-North talks on the nuclear issue were a prerequisite to US engagement with North Korea. That rule is certain to continue. For North Korea, the road to Washington leads through Seoul.

But even if and when there is re-engagement, nuclear power is the last thing that Americans will want to talk about. Nobody in the US who was engaged in the tortuous LWR negotiations wants to go through that experience again. There are too many moving parts, too many ways for it go wrong and too many political pitfalls.

The more general subject of energy security is a different matter. There are ways that North Korea's energy needs can be met with outside assistance, and all of them are better choices than nuclear. North Korea's abundant coal reserves are an obvious place to start. The fossil fuel does not have to be imported. North Korea also has the attractive prospect of taking advantage of a gas pipeline to South Korea from Russia. Furthermore, South Korea has offered to share its electricity grid and over the years negotiators have offered various other alternatives to nuclear energy.

For any of these offers to materialise, however, North Korea will have to make a choice between energy security and nuclear weapons. I see no signs that North Korea would be willing to give up its nuclear arsenal. The nuclear weapons program has become integral to North Korea's sense of itself and is deemed as vital to ensuring the survival of the regime. In my view, the nuclear weapons program has the opposite effect, of creating conditions of animosity, international isolation and sanctions that impose hardships that contribute to

[5] Bill Powell, "The US Makes Nice to North Korea", *Time*, 26 June 2008.

conditions that could threaten the regime. Were it not for the nuclear weapons program, Americans probably would not much care about North Korea.

Concluding that North Korea is unlikely ever to give up its nuclear weapons does not mean concluding that negotiations are hopeless. While maintaining an end goal of North Korean denuclearization, its negotiating partners may be able to obtain secondary objectives in the nearer term. Worthy objectives include a suspension and rollback of the enrichment programme, a moratorium on testing and a ban on the transfer of nuclear weapons-related material and technology. A suspension of nuclear and missile tests is of particular value, in case further testing of both systems enables North Korea to mount a miniature nuclear warhead on its ballistic missiles. Concerned nations might also consider whether nuclear safety and security objectives might be worth pursuing with North Korea under certain conditions. If North Korea proceeds with constructing LWRs on its own, it could pose severe safety risks for neighbouring countries.

So count me in favour of engagement and negotiation. But let's be realistic about the obstacles and let's start off with a clear understanding of the facts.