
A World without Nuclear Weapons: A South Korean View

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South Koreans hold mixed views on US President Barack Obama's vision of a nuclear-free world. On the one hand, they welcome the initiative and its potential to reducing the threat posed by North Korea's nuclear weapons program. On the other hand, there are concerns about a decreased credibility of US nuclear extended deterrence guarantees and about a possible friction with South Korea's interests in the area of civilian nuclear energy. Moreover, South Koreans remain sceptical about the chances to implement the vision.

Starting with an address in Prague on 5 April 2009, US President Barack Obama has been pursuing his vision of "a world without nuclear weapons" (Global Zero) through a series of international conferences and bilateral negotiations with Russia on reducing nuclear weapons and fissile materials.¹ Even though many people around the world welcomed and supported his vision, they still more or less considered it as a naïve dream or a declaratory policy at best. Nineteen months later, however, there has been gradual but concrete progress toward implementing the vision and it now looks rather more than a symbolic gesture. For example, the vision has been repeatedly expressed and elaborated in a number of the Obama administration's official documents on US security and defence policy, including the *Quadrennial Defense Review (QDR)*, the *Nuclear Posture Review (NPR)*, and the *National Security Strategy* published consecutively in 2010.

Notwithstanding these indications of serious intent on part of the Obama administration, there are still lingering concerns and reservations about its practicability and even about the merits of abolishing nuclear weapons. The reasons for and degree of these concerns vary, however, according to views on the value and role of nuclear weapons as well as on the fundamental features of the international system. Whether or not a country possesses

¹ White House Office of the Press Secretary, 'Remark by President Obama in Prague as delivered', 5 April 2009, <http://www.whitehouse.gov/the_press_office/Remark-By-President-Obama-in-Prague>; White House Office of the Press Secretary, 'Fact Sheet on the United Nations Security Council Summit on Nuclear Nonproliferation and Nuclear Disarmament UNSC Resolution 1887', 24 September 2009, <<http://www.whitehouse.gov/the-press-office/fact-sheet-united-nations-security-council-summit-nuclear-nonproliferation-and-nucl>>; Ben Rhodes, Gary Samore and Laura Holgate, Press Briefings 13 April 2010, <<http://www.whitehouse.gov/the-press-office/press-briefing-ben-rhodes-deputy-national-security-advisor-strategic-communications>>; White House Office of the Press Secretary, 'Joint Statement by Dmitry A. Medvedev, President of the Russian Federation, and Barack Obama, President of the United State of American, Regarding Negotiations on Further Reductions in Strategic Offensive Arms', 1 April 2009, <<http://www.whitehouse.gov/the-press-office/joint-statement-dmitry-a-medvedev-president-russian-federation-and-barack-obama-pre>> [Accessed 10 December 2010].

nuclear weapons and/or nuclear power plants is another source of contention. Moreover, countries' respective strategic conditions also lead to different levels of support for the vision of a nuclear-weapon-free world.

How do South Koreans view Obama's vision? On the one hand, one may think that most South Koreans would welcome Obama's vision just like many other non-nuclear weapons states that want to be free from the threat of nuclear weapons. On the other hand, one may argue that the vision would cause serious concern to South Korea because of the current security situation on the Korean Peninsula. Specifically, confronting a clear and present threat from North Korea's vigorous pursuit of nuclear weapons, South Korea's need for US extended deterrence is stronger than ever. In such a situation, the Obama's vision would be a concern because it may result in a diminished US nuclear arsenal and weaker deterrence of North Korea.

South Korea's apprehension may also not be confined to military security. There is a new concern for South Korea, which is related to the issue of peaceful use of nuclear energy. South Korea's electricity generation depends heavily on nuclear power plants. Almost 40 percent of its national electricity is supplied by its four nuclear power plants that have twenty operating reactors in total. Moreover, recently South Korea joined the select group of countries that export commercial nuclear power plants to other countries. As a result, a stable and steady supply of nuclear fuel is increasingly important for South Korea. Thus, Koreans may also wonder how Obama's vision will play into their ambitions for the peaceful use of nuclear energy.

Against this background, this article attempts to help identify and better understand South Koreans' views on Obama's vision of a world free of nuclear weapons. Public opinion surveys on the relevant questions would clearly be extremely helpful for this cause. Unfortunately, however, no reliable data of this kind is available as yet. Therefore, this article will discuss and infer South Korean views on the Obama vision largely from an analysis of the South Korean Government's announced policy positions, newspaper reports and editorials, as well as views of relevant experts in the field.

Reception of the Obama Vision

Many South Koreans reacted with surprise and astonishment when Obama first went public with his vision of a nuclear-weapon free world. It might not have been such a big deal, if it had been proposed by some academics or nuclear disarmament activists. In fact, even the internationally recognized proposal to the same effect by former high-level US officials George Shultz, William Perry, Henry Kissinger, and Sam Nunn did not attract much attention

in South Korea.² Once the incumbent president of the United States himself addressed it, however, the issue was usually debated intensely in South Korea.

One of the main reasons many South Koreans wondered about President Obama's vision stems from their understanding of America's relative position in world politics and the role of its nuclear capabilities in maintaining this position. Certainly, the United States possesses the world's most advanced nuclear arsenal which serves as one of the main sources of its great power status. Thus, Obama's initiative toward a complete abolition of nuclear weapons for many South Korean commentators implied that the United States is willing to give up a major source of its national power and comparative advantage. For them this fact was rather surprising and led to scepticism toward the initiative.

As a result, some South Koreans treated Obama's proposal as a symbolic political gesture. Others even questioned its intention. However, the Obama administration's persistent efforts since the Prague address have gradually changed many South Koreans' views on the vision and made its rationale and necessity more convincing.³ Yet, understanding the rationale and necessity of the Obama's vision of a nuclear-free world is one thing. Believing in its practicability is quite another. Many South Koreans remain doubtful and lack confidence in the actual implementation of the vision.⁴

Regardless of its feasibility, however, President Obama's pursuit of a nuclear-free world has increased South Koreans' confidence in the US commitment to the denuclearization of North Korea. In fact, some South Korean scholars and experts argued that the US Government has not had a consistent policy objective with regards to the North Korean nuclear issue.⁵

² George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, 'A World Free of Nuclear Weapons,' *Wall Street Journal*, 4 January 2007.

³ For example, see two analyses of Eunsook Jung, 'Summit for Commemorating the 60th Anniversary of NATO: Assessment and Meaning', [Korean] *Jungse and Jungcheck* [Current Issues and Policy] (Seoul: Sejong Institute, 2009), pp. 19-21; and 'The First Nuclear Security Summit: Background, Achievement, and Meaning', [Korean] *Jungse and Jungcheck* [Current Issues and Policy] (Seoul: Sejong Institute, 2010), pp. 13-16; and Jae Nam Ko, 'Trend and Prospect for US-Russian Nuclear Arms Reduction: Focusing on a New START,' *Analysis of Major International Issues* [Korean] (Seoul: Institute of Foreign Affairs and National Security, 2009).

⁴ This doubt was reflected in views expressed by some of major South Korean newspapers. For example, see 'Contradiction in the Obama's a "Nuclear-free World"[Korean], *Kyunghyang Shinmoon* [Kyunghyan Daily], 9 November 2009; and 'Editorial: The Obama's Effort to Make a "Nuclear-free World" [Korean], *Naeil Shinmoon*, 12 April 2010. For a summary of these different views in the United States, see Joseph Cirincione, 'US Nuclear Policy: The Open Window for Transformation,' *Harvard International Review* (Spring 2009), pp. 42-49. Also helpful is Center for Strategy and International Studies(CSIS), APS Physics, and AAAS, *Nuclear Weapons in 21st Century US National Security* (December 2008), < <http://www.aps.org/policy/reports/popa-reports/upload/nuclear-weapons.PDF>> [Accessed 12 December 2010].

⁵ For example, see Kyu-Deok Hong, 'Denuclearization and Nonproliferation Should Be Pursued Together,' *Maeil Business* [Korean], 22 September 2009; Soon-Bo Moon, 'US North Korean

They insist that it has oscillated between denuclearization and preventing North Korea from facilitating proliferation. While the difference between denuclearization and non-proliferation may not be so significant to the United States, it is critical to the South Korean deterrence and defence posture against North Korean military threats. In fact, anything short of complete denuclearization of North Korea will pose a huge security threat to South Korea for geographical and strategic reasons.

Unlike denuclearization, the US non-proliferation policy objective means a tacit acknowledgement of North Korea's possession of nuclear weapons. North Korea's possession of a few nuclear bombs would not pose an urgent threat to the United States because the current status of North Korea's weapons of mass destruction delivery systems is not yet capable of reaching the US mainland. However, even a limited number of North Korean nuclear weapons pose a serious threat to South Korea. In addition to military threats, these weapons will also be a major obstacle to constructive dialogue between South and North Korea, let alone concerning the process of reunification. Therefore, many South Koreans who had been worried about a weakening of US resolve on the denuclearization of North Korea felt reassured by Obama's vision for a nuclear-weapon-free world.

In sum, South Korean reaction toward 'Global Zero' is mixed. Support and doubt co-exist.⁶ While its implication for the North Korean nuclear issue is praised, a more sophisticated discussion on how to implement the vision and how South Korea might participate in such a process has yet to take place.

South Korean concerns

There are three general concerns related to Obama's pursuit of a nuclear-free world that South Korea probably also shares with other countries.⁷ The first issue is how to induce other nuclear weapons states to join the US effort to realize the vision. At present, eight countries are recognized as nuclear weapon states. They have developed their own nuclear weapons without direct violation of international law. They include the established five nuclear

Policy: Where is the End of its Gradual Retrieving,' [Korean] *Sejong Commentary*, no.155 (Seoul: Sejong Institute, 2009); and 'The US Choice, Denuclearization or Nonproliferation,' *Korea Herald Business* [Korean], 9 May 2009.

⁶ In addition to the South Korean newspapers noted in footnote 4, for more reserved views see Sang-Hyun Lee, 'US 2010 NPR: Contents and Meanings' [Korean], *Jungse and Jungcheck* [Current Issues and Policy] (Seoul: Sejong Institute, 2010), pp.17-20. For more supportive views, see 'US Nuclear Coming-out: Announcing a Will to Make a Nuclear-free World' [Korean], *Donga Daily*, 5 May 2010; 'WT Editorial: Obama's Nuclear-free World,' *Segye Daily* [English version], 9 May 2009; and 'Washington Starts Nuclear Politics: Concentrated Efforts to Make a 'Nuclear-free World in April,' [Korean] *Moonhwa Daily*, 5 April 2010.

⁷ For an excellent collection of discussions of general concerns about a nuclear-weapons-free world, see George Perkovich and James M. Acton, *Abolishing Nuclear Weapons: A Debate* (Washington DC: Carnegie Endowment for International Peace, 2009).

powers recognized by the Nuclear Non-Proliferation Treaty (NPT)—the United States, Russia, United Kingdom, France, and China; and three non-NPT member states—India, Pakistan and Israel. Among these states, only the United States and Russia have this far taken concrete steps to reduce their nuclear arsenals. Former British Prime Minister Gordon Brown expressed support for the vision⁸, but no comparable endorsement from France or China has been identified yet. In fact, China seems to have moved beyond its posture of minimal deterrence toward improving and upgrading its nuclear capabilities. Consequently, this has become an issue of growing concern in the region, and the transparency of Chinese military activities, including its nuclear capabilities, is now one of the major sources of friction between the United States and China.

Given the massive gap between the two nuclear giants and the other six nuclear powers in capabilities, it is logical that the United States and Russia take the initiative in reducing their nuclear arsenals in the expectation that the others will follow in due course. However, considering the lack of positive responses from three of the original five states, let alone the three latecomers, more efforts are required to urge them to join the pursuit of a world without nuclear weapons. To do so, a phased and progressive approach may be the most practical way forward. Specifically, it might make sense to build a consensus among the original five nuclear-armed states first, and then extend that consensus to the new nuclear-armed states. This might be effective since once an agreement is reached among the original five, that consensus would provide not just a rationale for but also a source of strong pressure on the others to join the initiative.

Second, there are concerns about the capacity to verify a transition to the total abolition of nuclear weapons.⁹ In international affairs, verification is always a great challenge due to the absence of an effective global authority to enforce compliance. The area of nuclear disarmament is no exception. To overcome this hurdle, past experiences of arms reduction negotiations between the United States and Russia could be helpful. They can offer valuable lessons and guidance for planning and implementing rules and measures to inspect and verify the agreed processes of reducing and dismantling nuclear weapons. Undoubtedly, the International Atomic Energy Agency (IAEA) should take a leading role in such processes, but the concerns and interests of all nuclear-armed states also need to be given due consideration. Achieving this will be a daunting task. Yet, without a consensus among all existing nuclear powers implementing Obama's vision will be impossible. Alongside intensified efforts to address verification of the

⁸ Gordon Brown, speech to the Chamber of Commerce, New Delhi, 21 January 2008, <<http://www.nuclearsecurityproject.org/atf/cf/%7B1FCE2821-C31C-4560-BEC1-BB4BB58B54D9%7D/GORDON%20brown%20in%20india%2001%2008.pdf>> [Accessed 10 December 2010].

⁹ See Perkovich and Acton, *Abolishing Nuclear Weapons: A Debate*, chapters 2 and 4.

elimination of existing arsenals, international efforts to prevent further horizontal proliferation through the existing NPT regime must also be tightened and enforced.

Third, maintaining a nuclear weapon-free world will be just as much difficult as creating one. This raises concern about enforcement, i.e. how to prevent states and non-state actors from developing and acquiring nuclear weapons. Once denuclearization is achieved, the power of political and moral imperatives will prevail and make enforcement easier for a while. Still, it will require an institutionalized entity to monitor nuclear activities and to conduct investigation and inspection whenever necessary. One plausible candidate for playing such roles is the UN Security Council (UNSC). While it needs more careful study and discussion on whether the number of permanent members should be increased from five to eight or more to include all nuclear states, utilization of the UNSC in maintaining and enforcing a world without nuclear weapons makes sense since it is the most widely-recognized and legitimate entity currently available to deal with matters of international security.

Two additional issues should be dealt with in the context of maintaining a nuclear-free world. The first is the issue of suppressing an existing nuclear weapons technology.¹⁰ It will be very difficult to 'disinvent' nuclear weapons. In these days of widely available internet and other mobile communication technologies, prohibition and control over the dissemination of knowledge and information is extremely difficult. This will be true even of sophisticated knowledge like manufacturing nuclear weapons. Some may argue for the possibility of disinventing nuclear technology by pointing to past cases of voluntary elimination of technology or human artefacts like Chlorofluorocarbons. It seems, however, that what has made such eliminations possible was the availability of substitutes rather than enforced abolition. Thus, a creative and effective method to limit and control access to nuclear technology still needs to be devised and put in place.

A final issue concerns the creation and maintenance of an independent supranational nuclear force. Of course, whether or not such a force is necessary should be the first object of discussion. As the final measure of deterrence or the last resort to dissuade any potential violation of the norm of Global Zero, it may be necessary to retain a small number of nuclear weapons as part of a joint and independent international nuclear force. Such a force could be placed under the control of the UNSC. Even so, the closest consideration would have to be given to the principles that would govern the use or threat of use of these weapons.

¹⁰ See *Ibid.*, chapter 5.

South Korea and US extended deterrence

Even though the concept of extended deterrence originated in the US strategy for the defence of Europe, today its application is more relevant to the countries of the Asia-Pacific region.¹¹ Unlike Europe, the United States has not forward deployed sub-strategic nuclear weapons in the Pacific for many years and so, deterrence rests essentially with its strategic (long-range) nuclear forces deployed in the continental United States and on nuclear submarines. That is why the actual use of nuclear weapons in the defence of countries in the region, especially South Korea, has been subject to controversy even during the Cold War. With the end of the Cold War, concerns about nuclear deterrence were muted, at least for a time. The decreased concern was partly reflected in the complete removal of US tactical nuclear weapons from South Korea pursuant to a 1991 US-Soviet understanding and the *Joint Declaration on Denuclearization of the Korean Peninsula* agreed between South and North Korea in 1992.

North Korea's persistent nuclear weapon program, however, has revived South Korean concerns about US extended nuclear deterrence assurances.¹² As matter of a fact, these assurances have been confirmed in almost every annual Security Consultative Meetings (SCM) between defence ministers of both South Korea and United States since their establishment in the 1970's (even though the issue was omitted from all of the joint statements that emerged from these meetings). After the first North Korean nuclear test in 2006, however, the issue of extended deterrence became one of the main concerns in ROK-US alliance meetings. As a result, the US confirmation of its provision of extended deterrence has been included in every joint statement of the SCMs since 2006. The assurance was also re-confirmed in the *Joint Vision for the Alliance between ROK and United States*, which was announced after a bilateral Summit meeting between Presidents Lee and Obama in 2009. In essence, the US Government has assured the South Korean Government for its provision of extended deterrence through all the primary capabilities at its disposal: nuclear capabilities, conventional forces, and missile defence. These explicit and repeated confirmations by the US Government have succeeded in substantially alleviating revived South Korean concerns about extended deterrence.

In addition to the official public confirmations noted above, two additional and more tacit factors have helped to reduce South Korean concerns about extended deterrence stemming from Obama's nuclear-free vision. The first

¹¹ For theories and practices of deterrence and extended deterrence, see Lawrence Freedman, *Deterrence* (Cambridge, UK: Polity Press, 2004) and Paul K. Huth, *Extended Deterrence and the Prevention of War* (New Haven: Yale University Press, 1991).

¹² For example, see Yong-Ok Park, 'North Korea's Acquisition of Nuclear Weapons and US Nuclear Extended Deterrence: Issues and Responses,' [Korean] *Jungse and Jungcheck* [Current Issues and Policy] (Seoul: Sejong Institute, 2009), pp. 1-4.

concerns the recognized difficulty of implementing Obama's vision. Even so the Obama administration has repeatedly stressed its determination to pursue the abolition of US nuclear weapons arsenals, many South Koreans take comfort in the fact that it will take a long time for this to come fully into effect. President Obama himself is fully-aware of this fact and has stated it openly. So, no drastic changes in either the policy or capability of the US extended deterrence posture will take place in the near future. Moreover, the 2010 QDR and NPR underscored the conditionality of Obama's vision and re-confirmed US nuclear extended deterrence commitments.¹³ Consequently, South Korea's concerns about the provision of the US extended deterrence were mitigated further.¹⁴

Second, South Korean concerns about Obama's initiative were softened because alternative tools of deterrence were seen to be available. While the US nuclear umbrella plays a critical role in deterring North Korean military attacks, US conventional forces—that are already deployed and planed to be dispatched in case of a North Korean attack—are seen as formidable enough to deter North Korea. Of course, psychological factors and subjective images play an important role in the success of deterrence. That is, deterrence would obviously work more effectively with both nuclear and conventional weapons deployed. That is why some South Korean security experts insist that if South Korea is not allowed to develop its own nuclear arsenal, US tactical nuclear weapons ought to be re-deployed to US bases in South Korea to deter North Korean nuclear developments.¹⁵ However, the South Korean and US military leadership insist that US conventional capabilities should be sufficient to deter any North Korean inclination to invade the South. Furthermore, the South Korean armed forces now also have advanced conventional capabilities that can add substantially to those of the United States. Many South Koreans are therefore reassured that Obama's initiative to reduce nuclear weapons is unlikely to weaken US assurances of extended deterrence.

Concerns about North Korea

The main reason for South Koreans to pay attention to nuclear weapons is ultimately to deter and defend against a North Korean invasion. Ever since Kim Il-sung, the founder of the North Korean regime, expressed his strong interest in nuclear weapons as early as the 1950s, South Koreans have

¹³ Office of the Secretary of Defense, *Quadrennial Defense Review Report* (Washington DC: Department of Defense, 2010), p. 66; and Office of the Secretary of Defense, *Nuclear Posture Review Report* (Washington DC: Department of Defense, 2010), pp. 32-33.

¹⁴ Kang Choi, 'The Obama Administration's Security Policy and ROK-US Alliance: Focusing on QDR,' *Analysis of Major International Issues* [Korean] (Seoul: Institute of Foreign Affairs and National Security 2010).

¹⁵ For example, see Seong Hoon Cheon, 'The Dual-track Policy for Denuclearization of North Korea and Strengthening of Nuclear Umbrella,' [Korean] *National Security*, vol. 16, no. 1 (2010), pp. 61-88.

worried about the possible nuclearization of North Korea. As a result, whenever the North Korean threat intensified or the security relationship with the United States went sour or uncertain, some South Koreans have argued for an indigenous nuclear weapon program. In short, the North Korean threat has always been the main reason for South Koreans' interest in nuclear weapons.

Considering the current security situation in Northeast Asia, the main concern for South Koreans is still the nuclearization of North Korea. This raises the question about the effect of Obama's vision on North Korean nuclear developments. As noted above, many South Koreans consider the effect to be positive. Their assumption is that Obama's vision will help the denuclearization of North Korea in two ways.¹⁶ First, it gives a stronger normative rationale for pressuring North Korea to give up its nuclear programs. President Obama's vision has led the United States and Russia, to further substantial cuts in their nuclear arsenals. This exemplary action by the two leading nuclear powers has, in turn, increased the weight of Obama's call for strengthening the NPT regime to avoid a backlash from the non nuclear-armed states. By the same logic, Obama's vision will legitimize and justify intensified pressure on North Korea to denuclearize.

Second, as mentioned above, President Obama emphasized the necessity of overt participation and support by non-nuclear weapons states of the example being set by the nuclear weapon states. The 2010 *NPR* states that the US Government will not offer so-called "negative security assurances" to violators of the NPT regime such as North Korea and Iran.¹⁷ This demonstrates the strength of Obama's commitment to horizontal as well as vertical non-proliferation. While his emphasis on exemplary actions on part of the United States and Russia bolsters the moral imperative behind denuclearizing North Korea, his reservation on negative security assurances toward Pyongyang provides a focus for more practical and realistic pressure on the North Korean regime.

Despite these expectations of a positive correlation between Obama's vision and the denuclearization of North Korea, the manner in which North Korea has worked its way toward a nuclear capability ironically underscores the doubts about the feasibility of the US President's vision. That is, despite the intensive pressure from the international community, the North Korean regime has managed to succeed to a considerable extent. North Korea's success is a graphic reminder of how difficult it will be to create and maintain a world free of nuclear weapons.

¹⁶ For more on this, see Young Ho Kim, 'The Obama Administration's Nuclear Policy and South Korean Security,' [Korean] *Journal of National Defense Studies*, vol. 53, no. 1 (April 2010), pp. 47-70, and Sang-Hyun Lee, 'US 2010 NPR: Contents and Meanings'.

¹⁷ Office of the Secretary of Defense, *Nuclear Posture Review Report*, p. 10.

The success of North Korea and Iran may not readily apply to other countries because one of the main reasons for their success was their extreme isolation and disengagement from the rest of the world. Nevertheless, their achievements are still remarkable and underline the need for non-proliferation efforts to consist of a skillful combination of forceful pressure and incentives. This lesson becomes more obvious if one considers what a country like North Korea can gain from the development of nuclear weapons. Pyongyang will be able to gain a lot politically, economically and diplomatically. Therefore, a proper mix of force, interest, and norms must be employed and utilized with strong resolve by all relevant stakeholders in order to change the calculus behind North Korea's choices.

Global Zero and South Korean Nuclear Power Plants

A final factor that has recently become more prominent in South Korea's analysis of Obama's vision concerns its rights regarding the civilian use of nuclear energy, as stipulated in Article IV of the NPT. Some may wonder how South Korean interest in the use of civilian nuclear energy relates to Obama's vision of a world without nuclear weapons. In fact, the two are closely interrelated because of a special treaty between South Korea and United States regarding nuclear energy production and use. According to the treaty, first signed in 1972 and revised in 1974, South Korea agrees to refrain from acquiring its own capacities to manufacture fissile material.¹⁸ Such a self-limiting agreement was reached mainly because of US non-proliferation concerns and partly because of limited South Korean nuclear energy technology and industry at the time. Since then, however, things have changed drastically and South Korea feels the arrangements between the two countries on nuclear energy cooperation should reflect the new circumstances. The present treaty expires in 2014, and both governments have agreed to renegotiate and revise it by the end of 2013.

What might a revised treaty look like? For South Korea, there are three principal considerations.¹⁹ First, South Korean nuclear energy production

¹⁸ Article VIII of the agreement states that: "When any special nuclear material received from the United States of America pursuant to this Agreement or the superseded Agreement requires reprocessing, or any irradiated fuel elements containing fuel material received from the United States of America pursuant to this Agreement or the superseded Agreement are to be removed from a reactor and are to be altered in form or content, such reprocessing or alteration shall be performed in facilities acceptable to both Parties upon a joint determination of the Parties that the provisions of Article XI may be effectively applied." Agreement for Cooperation between the Government of the United States of America and the Government of the Republic of Korea Concerning Civil uses of Atomic Energy, 15 May 1974, <http://www.carnegieendowment.org/static/npp/treaties/southkorea_123.pdf> [Accessed 12 December 2010].

¹⁹ For South Korean interests in nuclear energy and its relevance to the ROK-US peaceful nuclear agreement, see Seong Won Park, 'Why South Korea Needs Pyroprocessing,' *Bulletin of the Atomic Scientists*, 26 October 2009; Bong-Geun Jun, 'US-ROK Energy Cooperation from Tutelage to Partnership: Nonproliferation Factor,' a paper presented to the US-ROK Workshop on Nuclear Energy and Nonproliferation by the Asia Foundation, 20 January 2010; Fred McGoldrick, *New US-ROK Peaceful Nuclear Cooperation Agreement: A Precedent for a New*

has increased immensely and continues to expand even further. According to ambitious plans announced by the current Lee administration, eighteen more reactors will be built by 2030, at which time nuclear power is planned to supply 60 percent of the nation's electricity needs. This trend is likely to continue in the future given the increased emphasis on 'green growth' and mitigation of climate change. This means that South Korea needs to secure a stable and steadfast supply of nuclear energy fuels for its fast-growing nuclear power plants. One of the most certain ways of doing so is for South Korea to have its own fuel cycle technology and reprocessing facilities.

Second, South Korea will soon face serious problems with the disposal of nuclear waste. Most spent fuel from its nuclear power reactors is currently stored at the reactors, but these sites will reach their maximum capacity by 2016. When its additional nuclear reactors will operate as planned, South Korea is expected to produce almost 100,000 tons of spent fuel by 2100.²⁰ Yet, it is extremely difficult to find a proper site for storing spent fuel in South Korea, not least because of the 'not-in-my-back-yard' phenomenon. It took a decade of tedious negotiations with a multitude of municipalities to secure agreement in 2007 for a new storage near the city of Kyungju just for low-grade nuclear waste.²¹ Thus, the thorny political and economic problems related to nuclear waste disposal also make South Koreans attracted to the option of having their own nuclear fuel recycling facilities.

Third, South Korea now exports commercial nuclear power plants to other countries. In late December 2009, a consortium led by the Korea Electric Power Company won the bid for four new reactors worth over \$20 billion in the United Arab Emirates. Moreover, according to an announcement of the South Korean Ministry of Knowledge and Economy in January 2010, South Korea plans to export 80 reactors overseas, which will cover 20 percent of the international market by 2030. In order to achieve this ambitious goal South Korean nuclear power plant suppliers need to be more competitive and attractive than other suppliers. To have a national capacity for nuclear fuel processing and recycling will be important to this aspiration.

Global Nuclear Architecture (Washington DC: Asia Foundation, Center for US-Korea Policy, 2009); Mark Holt, 'US and South Korean Cooperation in the World Nuclear Energy Market: Major Policy Considerations,' *CRS Report R41031* (Washington DC: Congressional Research Service, 21 January 2010); Sharon Squassoni, 'US-ROK Nuclear Energy Cooperation: A US View,' a paper presented to the US-ROK Workshop on Nuclear Energy and Nonproliferation by the Asia Foundation, 20 January 2010; Chen Kane, 'Nonproliferation Issues in US-ROK Nuclear Cooperation,' a paper presented to the US-ROK Workshop on Nuclear Energy and Nonproliferation by the Asia Foundation, 20 January 2010.

²⁰ McGoldrick, *New US-ROK Peaceful Nuclear Cooperation Agreement*, p. 3.

²¹ An internet homepage of the city of Kyungju's environmental committee provides useful information on this subject. See the homepage of 'Wolseong Nuclear Facility Environmental and Safety Monitoring Committee', <<http://www.wsnesc.or.kr>>.

To address all these problems, South Korea is considering the acquisition of pyroprocessing technology, which is known as a more advanced spent fuel recycling technique. According to South Korean experts, it will make a future spent fuel repository up to 100 times smaller than a repository filled with spent fuel that does not undergo such a treatment. Also, it is said to be proliferation resistant because it is thermally and radioactively far too hot to be used as a means of acquiring material for a weapon.²² Unlike South Korea, however, the US has reservations about pyroprocessing and resists amending the treaty for that purpose. The main reason for US objections to pyroprocessing technology is a perceived proliferation risk. While the US accepts that pyroprocessing is relatively proliferation resistant, it does not want to weaken the NPT by making an exception. Thus, Obama's vision might obstruct South Korea's pursuit of an alternative recycling technology and consequently, solution of problems related to nuclear energy use. For South Korea, 'Global Zero' causes not just military but also political and economic challenges.

Conclusion

This article has reviewed and analysed South Korea's responses to and concerns about US President Obama's vision of a world without nuclear weapons. Just like other countries, South Korea shares the principal logic behind Obama's vision, and praises the ultimate objective. As a non-nuclear weapon state, South Korea also strongly supports the United States in playing the lead role in reducing nuclear arsenals. There are, however, also some doubts about the feasibility of nuclear abolition.

The vision has caused some security concerns in South Korea because of its implications for its defence and deterrence posture against North Korean threats. The confirmation of US commitment to the provision of extended deterrence has eased such concerns. On the other hand, the vision is also seen as having some positive security effects. In pursuing his vision, Obama has emphasized the important role that non-nuclear states need to play. He even declared that the "negative security assurances" would not be extended to repeated violators of the NPT regime like North Korea and Iran. Thus, the US initiative not only strengthens the moral pressure on North Korea to denuclearize but also offers more practical ways to apply real pressure on the North Korean regime. In addition to security concerns, the vision also causes some political and economic concerns in Seoul because of its implication for South Korea's ambitions regarding the civilian use of nuclear energy. Mainly related to nuclear fuel recycling technology, those concerns will need to be addressed in future negotiations on nuclear energy cooperation between the two governments.

²² Seong Won Park, 'Why South Korea Needs Pyroprocessing,' pp. 2-3.

In general, it appears that the implementation of Obama's bold and ambitious vision is a very distant prospect. As a country that has wrestled with the denuclearization of North Korea, South Korea understands well that its realization requires exceptionally strong patience as well as political will.

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