

The Desirability and Feasibility of Nuclear Sharing in Northeast Asia: A South Korean Perspective

Hwee-rhak Park

Kookmin University

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The East Asia Institute
#909 Sampoong B/D, Euljiro 158
Jung-gu, Seoul 04548
Republic of Korea
Tel. 82 2 2277 1683
Fax 82 2 2277 1697



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Introduction

It is now believed that North Korea has successfully developed several nuclear weapons, including hydrogen bombs, in spite of strong, ongoing international opposition and sanctions. The regime seems to possess approximately twenty nuclear weapons that are small and light enough to be delivered via ballistic missiles. North Korea recently showed off its Intercontinental Ballistic Missile (ICBM) capabilities and tested a hydrogen bomb as the acme of its nuclear program. Despite intensive and continuous international diplomatic efforts to persuade North Korea to surrender its nuclear weapons, the prospect of denuclearizing North Korea is growing dimmer. Now is the time for South Korea and the international community to discuss more effective options for protecting the Korean Peninsula, Northeast Asia, the United States (U.S.), and the world as a whole from a North Korean nuclear attack.

The most compelling element for the protection of South Korea from the North Korean nuclear threat could be the U.S.'s promise of "extended deterrence." The U.S. has promised massive, nuclear retaliation in the event of a North Korean nuclear attack on its allies. South Korea and the U.S. anticipate that the fear of such massive punishment from the U.S. will deter North Korea from using its nuclear weapons. However, it appears that the execution of this promise is not that simple. The U.S. cannot easily decide to keep its promise of retaliation without considering the risk of a North Korean nuclear attack on its people and territory. North Korea appears to have the capability to attack Guam, Alaska, Hawaii and at least part of the mainland with nuclear-mounted, especially hydrogen bomb-mounted, ballistic missiles. If the U.S. were to retaliate against North Korea by using its powerful nuclear weapons to keep its promise to South Korea, North Korea would threaten to attack Guam, Alaska, Hawaii or cities on the U.S. mainland with hydrogen bombs. Faced with this type of risk, the U.S. Congress and the public may not support the use of nuclear weapons to protect South Korea. For this reason, North Korea might assume that the U.S. is incapable of nuclear retaliation and decide to launch a nuclear attack on South Korea or Japan.



Based on this loophole in the current model of extended deterrence, South Korean experts, conservative politicians, and opinion leaders have begun active discussions on nuclear sharing, or the deployment of U.S. tactical nuclear weapons to South Korea. They state that nuclear sharing would increase the reliability of and confidence in the U.S. extended deterrence promise. The strongest opposition party in South Korea, the Liberty Korea Party, adopted the deployment of U.S. tactical weapons to South Korea as its official party policy in August 2017 in the wake of North Korean ICBM test fires. The party has also been demanding that the South Korean government and the U.S. government discuss the issue.

Although former U.S. administrations refused to consider nuclear sharing as a plausible option, the current Trump administration has reported that it is considering all possible options, including nuclear sharing. U.S. President Donald J. Trump seems to prefer smaller, tactical nuclear weapons to traditional thermonuclear bombs in order to give military commanders more options. In the wake of the North Korean hydrogen bomb test on September 3, 2017, it was reported that U.S. President Trump would be willing to review the deployment of tactical nuclear weapons to South Korea at South Korea's request. It may be high time for South Korea and the U.S. to assess the desirability and feasibility of the issue, and ensure that balanced and productive discussions take place in order to guarantee a rational policy decision. There should not be any taboo subjects in discussions regarding necessary measures to protect those living in Northeast Asian countries and the U.S. from a possible North Korean nuclear attack.

The Korean Peninsula will easily achieve a nuclear balance if the U.S. re-deploys tactical nuclear weapons to South Korea. The U.S. previously deployed tactical nuclear weapons to South Korea, Japan, and Europe in 1950s and withdrew them in the early 1990s at the end of the Cold War. Re-deployment could strengthen the deterrence posture on the Korean Peninsula and expand the current range of opportunities to resolve the North Korean nuclear problem. North Korea will likely agree to engage in negotiations, as the quick deployment of U.S. tactical weapons to South Korea would neutralize the effort expended by the North to develop nuclear weapons. The deployment of tactical nuclear weapons to the Peninsula would give South Korea and the U.S. an additional bargaining chip in these negotiations, as they could propose withdrawing the deployed nuclear weapons in exchange for a surrender of nuclear weapons from the North.

However, deploying U.S. tactical nuclear weapons to South Korea also has several downsides. It would make the Korean peninsula more volatile and pull the Peninsula closer to a real nuclear war. North Korea could respond to the deployment by developing additional nuclear weapons, drawing South Korea and the U.S. into a security dilemma. China and Russia would oppose the deployment and may take responsive measures against the deployment of U.S. tactical nuclear weapons. The Korean Peninsula could end up becoming a nuclear battlefield between the two Koreas as well as the other nuclear-armed strong powers of the world. Thus, it is essential to review all aspects and potential scenarios regarding re-deployment before making a final decision. Without a balanced and in-depth approach, nuclear sharing between South Korea and the U.S. could exacerbate the security situation in Northeast Asia and increase the possibility of a doomsday scenario.



U.S. nuclear sharing does not have to be limited to South Korea. Japan is also seriously threatened by North Korea's nuclear program and may experience similar doubts about the effectiveness of extended deterrence. It is important to note that South Korea is too narrow and too close to North Korea for the deployment of the U.S. nuclear weapons. North Korea could strike nuclear storage sites in South Korea with ballistic or nuclear missiles. We may need to expand the concept of nuclear sharing to all of Northeast Asia to protect South Korea, Japan and U.S. interests in the region. Japan could be better place than South Korea to deploy U.S. tactical nuclear weapons in terms of its protection from a possible North Korean missile strike. This expansion could increase the effectiveness of nuclear sharing while reducing the risks. It would be possible for the U.S. to forge the necessary agreements with South Korea and Japan on nuclear sharing as it has done with its North Atlantic Treaty Organization (NATO) allies. Close cooperation and coordination among South Korea, the U.S. and Japan could compel China and Russia to step up their pursuit of North Korean de-nuclearization in an effort to avoid the deployment of U.S. nuclear weapons to the Northeast Asian region.

In this context, this paper intends to provoke a debate over the desirability, risk and feasibility of the possible application of NATO nuclear sharing with South Korea as a more effective way to deter a North Korean nuclear attack. For this purpose, I will review the concept of extended deterrence and nuclear sharing and study relevant NATO cases as well as the experiences of South Korea on this issue. I will assess the level of the North Korean nuclear threat and the degree of South Korean preparedness and assess the discrepancy between the two. Finally, this paper will debate the deployment of U.S. nuclear weapons to South Korea and/or Japan. To conclude, I provide recommendations to both the South Korean and U.S. governments.

The Concept of Nuclear Sharing and Two Case Studies

Nuclear Sharing: Concept and Operation

The concept of nuclear sharing itself is very simple. Nuclear sharing is the deployment of nuclear weapons to a non-nuclear ally or allies, whose decide the use of these weapons through discussion, coordination or agreements with the nuclear provider. For example, the U.S. has deployed and is maintaining some of its nuclear weapons to its NATO allies and accepts discussion, coordination or sometimes agreements over the use of these nuclear weapons. The purpose is to strengthen the deterrence effect against a nuclear-armed enemy or potential enemies while simultaneously preventing U.S. allies from developing their own nuclear weapons. Although the nuclear weapons belong to the U.S., the NATO countries participate in the planning, training and execution of any attack.



Nuclear sharing seems to be mutually beneficial to both the U.S. and its allies. The U.S. can avoid violating the non-proliferation principle while also ensuring its commitment to the defense of its allies. U.S. allies can enjoy the benefits of possessing nuclear weapons without going down the treacherous road of making their own. Thus far, the U.S. and NATO allies have not had any disagreements over this concept, which was realized rapidly at the beginning of the Cold War maintained until now. NATO defines nuclear sharing as “a concept in NATO’s policy of nuclear deterrence, which involves member countries without nuclear weapons of their own in the planning for the use of nuclear weapons by NATO, and in particular provides for the armed forces of these countries to be involved in delivering these weapons in the event of their use.”¹

The nuclear sharing concept was adopted as a complement to the American promise of extended deterrence. In 1954, former U.S. President Dwight Eisenhower announced the country’s intention to execute a “Massive Retaliation Strategy,” to defend against the Soviet Union if the U.S. or its allies were attacked by the Soviet Union’s nuclear weapons. In other words, the U.S. extended the subject of its deterrence strategy to its allies and promised to use same ICBMs, Bombers with Air Launched Ballistic Missiles (ALBM), and Submarine Launched Ballistic Missiles (SLBM) to retaliate on behalf of its allies such as NATO countries in Europe. However, as France asked the U.S. before making its own nuclear weapons, U.S. allies raised the question of whether the U.S. could be 100 percent certain about its nuclear retaliation as the guarantee meant that the U.S. must accept the risks of massive nuclear counter-retaliation on U.S. cities. In this context, U.S. European allies demanded nuclear weapons on site as clearer evidence of support for nuclear extended deterrence. The U.S. accepted this demand as legitimate and deployed a number of nuclear weapons to its allies. This caused the Soviet Union to do the same, as demonstrated by its deployment of nuclear missiles to Cuba in 1962.

The degree of nuclear sharing may differ depending on the agreement between the nuclear power country and its allies. Nuclear countries must retain ownership of all deployed nuclear weapons, but allies that allow for deployment may demand some rights regarding weapon use. The nuclear power country and its allies may share the management cost of deployed nuclear weapons. For example, “the participating countries carry out consultations and take common decisions on nuclear weapons policy, maintain technical equipment required for the use of nuclear weapons (including warplanes capable of delivering them), and store nuclear weapons on their territory.”² Because nuclear sharing is based upon mutual trust among allies, the fairness of negotiations over the division of rights and costs should not be particularly controversial.

It may be too risky for a nuclear power country to share its strategic nuclear weapons with its allies, because they are too powerful to deploy or use. If deployed forward, small nuclear weapons can achieve considerable effects. Therefore, it is very natural for a nuclear power country to deploy relatively small nuclear weapons to its allies, known as “tactical nuclear weapons” or “non-strategic nuclear weapons.”

¹ Wikipedia, “Nuclear Sharing,” https://en.wikipedia.org/wiki/Nuclear_sharing (accessed June 30, 2017).

² Ibid.



It is not easy to clearly define what exactly a tactical nuclear weapon is. The tactical level may differ according to the size, situation and military doctrine of an individual country. For example, the U.S. defines tactical nuclear weapons as short-range nuclear weapons, which may have similar explosive power to strategic nuclear weapons and may serve the same purpose as strategic nuclear weapons in small countries. In this sense, some people argue that “non-strategic nuclear weapons” is a better term than “tactical nuclear weapons.” They define a “non-strategic nuclear weapon” as a “weapon that is not covered by strategic arms control treaties.”³ However, the term is as vague as the term “tactical nuclear weapons” and too closely oriented to the nuclear power perspective. “There is no agreed definition of what constitutes ‘tactical’ nuclear weapons, also known as non-strategic nuclear weapons.”⁴ In this context, I think that the term of “tactical nuclear weapon,” which implies a reluctance to escalate the situation to the point of using strategic nuclear weapons, is preferable for a deterrence-oriented discussion. The term “tactical nuclear weapon” is easier for ordinary people to understand than the term “non-strategic nuclear weapon.” However, we should keep in mind that although we use the term “tactical,” tactical nuclear weapons in reality range from very powerful nuclear missiles to relatively weak nuclear weapons such as nuclear artillery shells, nuclear mines, and nuclear backpacks.

Tactical nuclear weapons can be distinguished from strategic ones according to their purpose rather than their size or range. In general, tactical nuclear weapons are designed for use on the battlefield in counterforce targeting, or for degrading an enemy’s military capability,⁵ while strategic nuclear weapons are made to deter the enemy with the threat of use instead of actual use. Thus, the term ‘tactical nuclear weapon’ usually indicates a variety of weapon types capable of delivering nuclear warheads effectively to perceived targets. The U.S. deployed various tactical nuclear weapons to its allies during the Cold War era. Russia still maintains the largest inventory of tactical nuclear weapons in the world, which are capable of being delivered via cruise missiles, artillery, anti-submarine systems and a variety of aircraft.⁶ However, the variety of tactical nuclear weapons makes maintenance and training for them very difficult and costly due to a lack of standardization. For this reason, although the U.S. has a variety of weapons that could be classified as tactical nuclear weapons in storage, they have only officially designated one type of weapon in its nuclear arsenal as tactical: the B61 nuclear gravity bomb. Although the B61 has three modified sub-strategic variants: the B61-3, B61-4, and B61-10,⁷ the U.S. is in the course of standardizing them.

Even tactical nuclear weapons are capable of producing the same effect as strategic nuclear weapons thanks to the development of precision guidance technology. Tactical nuclear weapons can strike key target areas with very high accuracy and cause decisive damage to the enemy. “Technological changes in the area of tactical nuclear weapons means they are increasingly

³ Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, Federation of American Scientists Special Report No. 3 (May 2012), 9.

⁴ Brendan Thomas-Noone, *Tactical Nuclear Weapons in the Modern Nuclear Era*, Lowy Institute Analysis Paper (September 2016), 2.

⁵ *Ibid.*

⁶ *Ibid.* 6-7.

⁷ *Ibid.* 10.



accurate and reliable, and therefore usable.”⁸ If used wisely, tactical nuclear weapons can achieve decisive military accomplishments without the negative impact of strategic nuclear weapons.

Furthermore, if used creatively, tactical nuclear weapons can be better than strategic nuclear weapons, which enemy ballistic missile defense systems might intercept. The interception of tactical nuclear weapons can be difficult due to limited response time, while strategic nuclear missiles allow for sufficient time and space to prepare for interception. In a practical sense, a short-range nuclear ballistic missile or a nuclear artillery shell can be safer than a traditional strategic nuclear missile. At the same time, tactical nuclear weapons may promise a more practical deterrence effect than strategic nuclear weapons, because the enemy knows that the former can be used more easily than the latter.

In this sense, Russia is becoming more dependent on its tactical nuclear weapons. Russia is assumed to use its tactical nuclear weapons to coerce or intimidate its neighbors,⁹ and to have about 4,000 tactical nuclear warheads including 1,000-2,000 active warheads.¹⁰ Even though the U.S. government has not made any policy changes regarding its tactical nuclear weapons, it has begun to re-recognize the role that U.S. tactical nuclear weapons play in assuring U.S. allies of the U.S. commitment to their security. It seems to be considering more alternatives to ensure the credibility and effectiveness of U.S. extended deterrence to its allies. If the U.S. believes that nuclear confrontation is inevitable, it may produce more tactical nuclear weapons and utilize them as practically effective deterrent measures.

The Case of NATO

The U.S. deployed tactical nuclear weapons to several European allies beginning in the 1950s during the Cold War. It wanted to make the Europe “a nuclear porcupine” against a possible nuclear attack by the Soviet Union.¹¹ It deployed a variety of tactical nuclear weapons to at least fourteen European countries. The number of nuclear weapons deployed reached about 7,000 nuclear warheads in the 1960s and 1970s.¹² The Soviet Union also deployed similar tactical nuclear weapons to its allies such as the Czech Republic, Poland, and Mongolia. However, the U.S. started to reduce the amount of weapons deployed in late 1970 and 1980s, and withdrew most of them in 1991 when the Cold War ended.

The U.S. has maintained several tactical nuclear weapons in Europe even after the end of the Cold War. While no official number exists, they believe that approximately 150-200 B61 bombs are in Europe at six bases in five countries including Belgium, Germany, Italy, the Netherlands,

⁸ Ibid. 14.

⁹ Amy F. Woolf, “Nonstrategic Nuclear Weapons,” Congressional Research Service 7-5700 (February 21, 2017), 22.

¹⁰ Ibid. 23-24.

¹¹ Tom Nichols, et al, ed, *Tactical Nuclear Weapons and NATO* (Carlisle: U.S. Army War College, 2012), 23.

¹² Todd S. Sechser, “Sharing the Bomb: How Foreign Nuclear Deployments Shape Nonproliferation and Deterrence,” *The Nonproliferation Review*, 23(3-4) (2017), 446.



and Turkey.¹³ Most of the nuclear weapons are in Italy and Turkey, which are NATO's southern flank, reflecting a shift from the Cold War era, when the majority of the weapons were deployed to northern NATO countries. The number of deployed nuclear weapons decreased from 7,300 at the height of the Cold War to approximately 700 just after the collapse of the Soviet Union and 480 in the mid-1990s.¹⁴ The number was reduced further to 200 under the George W. Bush Administration in 2005-2006. The current number of nuclear weapons in the five NATO countries that possess deployed U.S. tactical nuclear weapons is as follows.

Figure 1. U.S. Nuclear Weapons in Europe

Country	Nuclear Weapons
Belgium	10-20
Germany	10-20
Italy	60-70*
Netherlands	10-20
Turkey	60-70*
Total	160-200**

The U.S. Air Force deploys nearly 200 non-strategic nuclear weapons at six bases in five countries. For additional details, see Figure 9.

* 10-20 of these weapons are for delivery by host country aircraft.
 ** The number in the deployment authorization signed by the president can vary by \pm 10 percent.

Source: Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, Federation of American Scientists Special Report No. 3 (May 2012), 16.

The tactical nuclear weapons in NATO countries are delivered by U.S. aircraft and the aircraft of the ally countries that allow the deployment. The NATO allies are supposed to deliver 50-100 nuclear bombs out of 150-200 total deployed tactical nuclear weapons in NATO countries. The nuclear bombs, however, are fully controlled by the U.S. forces in peacetime. In a time of war, the U.S. president must authorize handover of nuclear weapons to NATO allies. The U.S. Air Force provides allied aircraft with the necessary electronic and mechanical equipment for delivery and trains the pilots to load and use the weapons even during peacetime.¹⁵ The U.S. and allied aircraft for this nuclear mission conduct nuclear strike exercises to practice loading and delivering the weapons.

The U.S. and NATO countries have embarked on a significant modernization effort of both the nuclear weapons and delivery means. They are going to consolidate the previous four versions (B61-3, B61-4, B61-7 and B61-10) into one, the B61-12, which is scheduled to be deployed to Europe in 2019. The new weapons are supposed to maintain similar explosive power to the

¹³ Hans M. Kristensen and Robert S. Norris, "Status of World Nuclear Forces," Federation of American Scientist Home Page. <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>. (accessed July 10, 2017); Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, 15

¹⁴ Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, 15-16.

¹⁵ Ibid. 17.



current bombs, about 50 kilotons, but they are going to increase their effectiveness dramatically by enhancing their accuracy.¹⁶ It is very safe to conclude that the U.S. and its NATO allies are going to maintain at least the current amount of nuclear force in Europe as they have agreed to improve the quality of the deployed nuclear weapons there.

NATO countries have an organization to discuss, coordinate and agree on issues regarding deployed U.S. tactical nuclear weapons in Europe. They call the organization the Nuclear Planning Group (NPG), which has ultimate authority within NATO over nuclear policy issues. They have also established a High-Level Group (HLG) as a subgroup of the NPG to handle practical and specific matters. All NATO member countries except France participate in these groups regardless of the actual deployment status of individual countries. However, the five nations that host U.S. nuclear weapons have an additional organization that deals with combined work on nuclear strike missions.¹⁷

The cost of nuclear sharing appears to be distributed among the U.S., host nations and other NATO member countries, though there is no official information available regarding the division of the cost.¹⁸ Based on the standing cost-sharing policies of NATO between the U.S. and its allies, the U.S. and host nations should be independently responsible for any acquisition and operation costs of their respective delivery aircraft. However, all of the NATO allies likely share in additional costs for the construction of storage facilities, facility maintenance, and training on the deployed tactical nuclear weapons. The U.S. appears to bear the lion's share of the cost of deploying nuclear weapons.

Some people could argue that the deployment of U.S. tactical nuclear weapons to Europe is a violation of the Nuclear Non-proliferation Treaty (NPT). Article I of the NPT prohibits nuclear weapons states from transferring "to any recipient whatsoever nuclear weapons or other nuclear explosive devices..." and Article II also prohibits non-nuclear-weapons states from receiving such transfers.¹⁹ However, the United States has argued that nuclear sharing does not violate the NPT because U.S. personnel maintain custody of the U.S. nuclear weapons in NATO countries. It has also defended nuclear sharing by stating that although the European pilots may have full control over the nuclear bomb with the approval of the U.S. President, the NPT would no longer be relevant in the event of war.²⁰ Although the nuclear weapons stay in Europe, they belong to the U.S. Whether or not they will be withdrawn is a decision that is up to the U.S.

The deployment of U.S. tactical nuclear weapons in Europe may have contributed to the deterrence of nuclear war. The presence of nuclear weapons on European territory and knowledge that they were fully prepared to use their domestic military aircraft to deliver an attack gave the Soviet Union second thoughts about launching a nuclear attack on Europe. The nuclear weapons in Europe also functioned as a strong background to compel the Soviet Union to engage

¹⁶ Ibid. 23-24.

¹⁷ Ibid. 33.

¹⁸ Ibid. 27.

¹⁹ Treaty on the Non-Proliferation of Nuclear Weapons (NPT). <https://www.state.gov/t/isn/trty/16281.htm> (accessed June 10, 2017).

²⁰ Todd S. Sechser, "Sharing the Bomb: How Foreign Nuclear Deployments Shape Nonproliferation and Deterrence," 447-448.



in the Intermediate Nuclear Forces Treaty. The nuclear confrontation became serious when the Soviet Union deployed its SS-20 mobile nuclear missile launchers to its allies in Eastern Europe. However, the resolute will and real nuclear capabilities to cope with Soviet Union's move by the NATO countries as demonstrated by the rapid deployment of U.S. nuclear weapons to Europe neutralized the effects of the SS-20. The Soviet Union reached a treaty with Western European countries in 1987 because of the nuclear balance in Europe provided by nuclear sharing among NATO allies.

The Case of South Korea

The U.S. deployed nuclear weapons to South Korea in January 1958, four years after its deployment of nuclear weapons to Europe. There were five types of nuclear weapons that were initially deployed: the Honest John surface-to-surface missile, the Matador cruise missile, the Atomic-Demolition Munition (ADM) nuclear landmine, and the 280-mm gun and 8-inch (203mm) howitzer.²¹ Nuclear bombs to be delivered by aircraft deployed in March 1958. Three more surface-to-surface missile systems (Lacrosse, Davy Crockett and Sergeant) arrived in South Korea between July 1960 and September 1963. The Nike Hercules surface-to-surface missile arrived in January 1961 and finally the 155-mm Howitzer arrived in October 1964. Nearly 950 nuclear warheads were deployed in South Korea at the peak of this build-up.²² U.S. forces in South Korea were reorganized into a Pentomic structure, which incorporated both conventional and nuclear weapons. U.S. and South Korean forces conducted the necessary trainings on how to use the deployed nuclear weapons once the order was issued.

The majority of deployed nuclear weapons in South Korea were stored at Camp Ames (Daejeon Area), Kunsan Air Base, and Osan Air Base. Kunsan Air Base was of particular strategic importance due to its aircrafts with nuclear bombs that allowed for a quick reaction as part of the Single Integrated Operational Plan (SIOP), which was the U.S.'s plan for nuclear war. Kunsan Air Base was the key facility for nuclear sharing with Kadena Air Base in Japan, Clark Air Base in the Philippines, and Okinawa.²³ The number of nuclear bombs in South Korea began to decrease following the deactivation of the nuclear weapons storage site at Osan Air base in late 1977. There were approximately 150 artillery shells and bombs in 1985 and roughly 100 warheads in 1991, when it was decided that all nuclear weapons in South Korea would be withdrawn.²⁴ After the withdrawal in 1991, it became well known that there are no nuclear weapons in South Korea. Although the U.S. military has maintained its Neither Confirm and Nor Deny (NCND) policy on nuclear weapons in South Korea, the possibility of the existence of U.S. nuclear weapons in South Korea is essentially nonexistent.

²¹ Hans M. Kristensen, "A History of U.S. Nuclear Weapons in South Korea," The Nuclear Information Project (September 2005). <http://www.nukestrat.com/korea/koreahistory.htm> (accessed June 10, 2017).

²² Ibid.

²³ Ibid.

²⁴ Ibid.



The U.S. Department of State and the U.S. Department of Defense seemed to have a difference of opinion regarding the deployment of their nuclear forces to South Korea in 1958. The State Department thought that the negative ramifications of the deployment to international politics outweighed the military advantage and feared that the deployment could be a violation of the Armistice Agreement, which prohibited the deployment of new weapons and equipment.²⁵ However, military need outweighed diplomatic concerns and the U.S. deployed its nuclear weapons to South Korea. The possible violation of the Armistice Agreement did not become an issue.

The withdrawal of U.S. tactical nuclear weapons from South Korea was not decided by any changes in the security situation on the Korean Peninsula. It was a byproduct of the end of the Cold War. The U.S. and the Soviet Union agreed to the worldwide reduction of foreign deployed tactical nuclear weapons as the Cold War ended. U.S. President George H. W. Bush announced the overall global withdrawal of deployed U.S. nuclear weapons and President Mikhail Gorbachev of the Soviet Union announced a similar policy, which his successor, Boris Yeltsin, continued. Although the U.S. maintained its NCND policy even after the withdrawal, the South Korean government declared that there were no nuclear weapons in South Korea in December 1991.²⁶

From the outside, it appeared as though the South Korean government had not been consulted or officially informed regarding the U.S. deployment of nuclear weapons to the Peninsula. However, most South Korean higher officials knew in advance and even released a welcoming statement about the deployment.²⁷ At the same time, some South Korean military forces, for example, the 8-inch gun and 155-mm. howitzer units trained for the nuclear mission led by the U.S. military. However, the U.S. maintained an ongoing NCND policy and did not discuss the deployment or withdrawal of nuclear forces with the South Korean military. U.S. tactical nuclear weapons were deployed and stayed in South Korea from 1958 to 1991, but the manner in which this occurred was not the same as the “nuclear sharing” demonstrated in Europe.

²⁵ Yeon Joo Lee and Geun Uk Lee, “At the Watershed between the Financial Cliff and Security Assurance of the Alliance: A New Interpretation on the Deployment of the Tactical Nuclear Weapons in 1958,” written in Korean, *Social Science Studies*, 23(2) (2015), 131-134.

²⁶ Ung Jo Yoo, “Key Controversies and Prospect Surrounding the Re-deployment of the U.S. Tactical Nuclear Weapons to the Korean Peninsula,” *Issues and Controversies*, National Assembly Research Service, (1203) (September 2016), 3.

²⁷ Cheol Wun Jang, “A Study on the Dynamics of the Military Balance on the Korean Peninsula after 1953,” written in Korean, *Seminar Presentation at the World North Korean Studies*, 2(0) (2015), 478.



Threat Assessment and the Preparedness of South Korea

North Korean Nuclear Capabilities

North Korea intended to develop nuclear weapons just after the Korean War. It sent its scientists to the Soviet Union to learn the necessary technologies for development. It managed to receive an IRT-2000 experimental nuclear reactor from the Soviet Union in 1963 and build its own nuclear facilities in Yeongbyon in the 1980s. It joined the Nuclear Non-proliferation Treaty (NPT) in 1985 to cover up its ambition for the development of nuclear weapons.

The North Korean nuclear ambition was exposed to the world in 1993, when North Korea announced its withdrawal from the NPT. The International Atomic Energy Agency had demanded North Korea allow a special monitor to visit the North Korean nuclear facilities for an in-depth examination. However, North Korea was afraid of having its nuclear weapon development activities exposed and announced its withdrawal from NPT. Although South Korea and the U.S. presumed that North Korea was trying to develop nuclear weapons, they did not take it seriously and only tried to request that North Korea stay in the NPT. North Korea was able to continue its nuclear development program, because of the absence of effective interference from South Korea and the U.S.

The U.S. negotiated with North Korea and produced the Agreed Framework in Geneva in 1994. The U.S. promised to replace the North Korean graphite-moderated reactors with the less proliferation-sensitive light-water reactors (LWR) in return for North Korea's non-withdrawal from the NPT. At the same time, North Korea promised to freeze its reactors and eventually dismantle them upon receipt of U.S. assurances for the provision of LWRs and arrangements for interim energy alternatives (in the form of heavy oil).²⁸ However, the construction of the LWR was delayed and North Korea began to complain. During that period, a North Korean official told a U.S. representative that North Korea had conducted a uranium enrichment program in October 2002. The U.S. interpreted this revelation to be a serious violation of the Agreed Framework and stopped the transportation of heavy oil and construction of reactors as a punishment. The Agreement Framework collapsed as a result and North Korea continued its path to nuclear weapons development with increased determination.

China intervened to resolve the crisis and initiated the Six-Party Talks between itself, the U.S., Russia, Japan, South Korea and North Korea in 2003. The talks succeeded in reaching another agreement with North Korea in September 2005. North Korea promised to abandon all nuclear weapons and nuclear programs and return to the NPT as soon as possible. The U.S., in return, provided reassurance as a security guarantee that it had no intention of attacking or invading North Korea. South Korea was supposed to provide electricity to North Korea according to the agreement.²⁹ North Korea, however, conducted its first nuclear test just a year after the agreement

²⁸ Koen De Ceuster and Jan Melissen, ed., *Ending the North Korean Nuclear Crisis: Six Parties, Six Perspectives* (Hague: INSTITUTE OF INTERNATIONAL RELATIONS, November 2008), 10.

²⁹ *Ibid*, 12.



was reached, on October 9, 2006. This signaled the collapse of the second agreement. It appeared as though North Korea had decided to deceive the U.S. in order to buy time for its nuclear weapons development, because it surrendered a great deal (its nuclear weapons development program) in exchange for nothing more than a verbal security guarantee by the U.S. in the 2005 agreement.

North Korea successfully conducted its second nuclear test in 2009. South Korea, the U.S. and the international community did not pay much attention to the test, believing that North Korea could not succeed in making nuclear weapons because of its poor economy and technology. North Korea, however, conducted a third nuclear explosion test on February 12, 2013 and declared that it had succeeded in developing nuclear weapons. It boasted, “the test physically proved the excellent nuclear deterrence capabilities...of a smaller and lighter atomic bomb.” The South Korean government assessed the North Korean explosion as having a strength of 6-7 kilotons, which indicated a successful nuclear bomb explosion.³⁰ North Korea managed to develop nuclear weapons and began to pose a new security challenge to South Korea, the U.S. and the world.

North Korea conducted its fourth nuclear test on January 6, 2016. It announced its success in developing a “hydrogen bomb” after the test, although most South Korean experts believed that it might have only succeeded in developing a “boosted fission bomb,”³¹ which is two to five times more powerful than an original atomic bomb and a stepping-stone to a real hydrogen bomb. It was clear that North Korea was improving its nuclear capabilities and determined to become a nuclear state. South Korea and the U.S. began to take the issue seriously, but were unable to overcome their inertia on the issue.

North Korea declared that it had “standardized” its nuclear warheads for different types of missiles after its fifth nuclear test on September 9, 2016.³² This seemed to indicate that North Korea had nearly completed its nuclear weapons development and changed its focus to delivery systems. North Korea started to test fire various types of missiles after its fifth nuclear test. South Korea and the U.S., however, remained inactive and only demanded that North Korea return to the negotiating table.

North Korea surprised the world by succeeding in a real hydrogen bomb, or thermonuclear weapon, on noon of September 3, 2017. The tremors resulting from North Korea’s explosion were measured at 6.3 by the U.S. and China, 6.1 by Japan and 5.7 by South Korea. The U.S. assessment concluded that North Korea had exploded a real hydrogen bomb with a power of TNT 120kt. Japan changed its initial assessment from 70kt to 160kt, although South Korea maintained its initial assessment of 50kt. North Korea’s nuclear weapons suddenly became horribly powerful, capable of decimating a city.

Nobody is certain of the exact number of nuclear weapons that North Korea possesses due to a lack of information. However, Dr. David Albright, a U.S. expert on North Korean nuclear

³⁰ *Chosun Ilbo*, February 13, 2013, A1.

³¹ *Chosun Ilbo*, January 7, 2016, A1.

³² *Chosun Ilbo*, September 10, 2016, A1.



weapons, estimates that North Korea had produced 13-30 nuclear weapons as of December 2016 and predicts that they will have 25-50 by 2020.³³ The Stockholm International Peace Research Institute believes that North Korea could have 10-20 nuclear weapons and uploaded the number on the front page of its website.³⁴ North Korea's nuclear weapon stockpile may accelerate due to its recent success with the hydrogen bomb.

The North Korean Nuclear Missile Threat

The most efficient and effective method of delivering nuclear weapons is via missile. Missiles are longer-range, faster, safer, and generally more accurate than aircraft or other means of delivery. Therefore, another key task in nuclear weapons development is the creation of weapons small and light enough to mount on to missiles. If North Korea succeeds in developing a nuclear missile, that is, a missile mounted with a nuclear warhead, it could strike South Korea, Japan and even the U.S with certainty. Missiles, especially ballistic missiles, are very difficult to detect, track and intercept with current technology.

Judging from the amount of time that passed since its first nuclear test and the progress that North Korea has demonstrated, most experts believe that North Korea is capable of delivering a nuclear warhead on its Rodong missile.³⁵ If this is the case, North Korea could attack South Korea with its nuclear weapons using its Scud missiles, which have a heavier payload than Rodong missile. North Korea is estimated to possess at least 100 Scud missiles, 50 Rodong missiles, 50 ICBMs capable of delivering nuclear warheads.³⁶ North Korea also declared that it succeeded in standardizing its nuclear weapons to fit different types of missiles following its fifth nuclear test on September 9, 2016.³⁷ It is reasonable to conclude that North Korea is currently capable of attacking South Korea and Japan with its nuclear missiles.

North Korea has been working to develop long-range ballistic missiles in order to demonstrate its will and capability to strike the U.S. mainland. If the regime succeeds, it could threaten to destroy several U.S. cities and dissuade the U.S. from supporting South Korea. North Korea demonstrated its potential capability to reach about 10,000km by putting an Eunha-3 satellite into orbit on December 12, 2012. It succeeded in placing another satellite, Kwangmyongsong-4, into orbit on February 7, 2016. Based on these successes, it appears that North Korea has improved its rocket technology, which could be applied to the development of a long-range ballistic missile.

³³ David Albright, "North Korea's Nuclear Capabilities: A Fresh Look," Institute for Science and International Security Report (April 28, 2017), 1-3.

³⁴ SIPRI Homepage, <https://www.sipri.org/> (accessed June 15, 2017).

³⁵ Elizabeth Phillip, "Resuming Negotiations With North Korea," *North Korea Nuclear Policy Brief* (June 24, 2016), 4; Mason Richey, "New Developments in North Korea's Nuclear Weapons Programme: Implications for European Security," *Policy/Brief* (Institute for European Studies), 2016/11 (May 2016), 2; Ian E. Rinehart and Mary Beth D. Nikitin, "North Korea: U.S. Relations, Nuclear Diplomacy, and Internal Situation," *CRS Report*, R41259 (January 15, 2016), 12.

³⁶ Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea* (Washington D.C.: DoD, 2015), 19.

³⁷ *Chosun Ilbo*, September 9, 2016, A1.



North Korea demonstrated its success in developing a more powerful engine for its longer-range missiles on September 20, 2016. It praised another engine test as a “318 revolution” when it succeeded in making the engine more powerful and more stable on March 18, 2017. North Korea used this engine when it test-fired its Hwasong-12 ballistic missile on May 14, 2017. North Korean leader Kim Jong-un proclaimed that with the U.S. in striking range of North Korean nuclear missiles, the U.S. would face a terrible catastrophe in the event of conflict following the success of the test-fire.³⁸ North Korea test-fired its Hwasong-14 ballistic missile on July 4, 2017, and conducted a second, longer-range test on July 28, 2017. The second Hwasong-14 flew 998km after reaching an altitude of 3,724km using a lofted trajectory. Thus, experts assessed that the missile would be capable of reaching New York if it flew along a normal trajectory, or in other words, a minimum energy trajectory.³⁹ North Korea conducted its first real range test fire of the Hwasong-12 on August 20, 2017, and it reached 2,700km. Kim Jong-un has promised to continue with these tests.

North Korea has also been vigorous in its development of SLBMs to conduct stealthy undersea attacks on South Korea, Japan and even the United States. The regime succeeded in launching a missile about 500km from a submarine on August 24, 2016, after which Kim Jong-un declared, “The U.S. Pacific area of operation and even the U.S. mainland could be grasped by North Korean attack capabilities.”⁴⁰ Submarines, which are stealthy by design, are not easy to detect and destroy. If North Korea succeeds in arming SLBMs with nuclear weapons, it would be capable of launching highly accurate strikes anywhere within range of their submarines. The development of nuclear-armed SLBMs is a very effective means to compel the U.S. to give up the implementation of its extended deterrence promise. If the U.S. were to uphold its extended deterrence, it would mean risking a surprise North Korean nuclear attack on its mainland territories or cities. It appears that North Korea is continuing to pursue the development of both SLBMs and larger submarines. The South Korean Ministry of National Defense said in 2016 that North Korea would likely be capable of fully deploying an SLBM in one to three years.⁴¹

In addition, there is a possibility that North Korea is close to achieving the development of a genuine hydrogen bomb, which is hundreds or thousands of times more powerful than an atomic bomb. By assessing the size of the explosion, experts have guessed that the fourth nuclear test on January 6, 2017 was a boosted fission bomb, which is a stepping-stone to a hydrogen bomb. If this is the case, North Korea could apply its boosted fission bomb technology to the creation of a true hydrogen bomb. North Korea might have planned to test a hydrogen bomb during its sixth nuclear test, but the test appears to have been postponed. If North Korea succeeds in acquiring a hydrogen bomb, even the U.S. may not be capable of handling the threat.

Looking at the regime's past nuclear weapon tests and missile test-fires, and factoring in the amount of time that has passed since the first successful North Korean nuclear test in 2013, it is

³⁸ *Chosun Ilbo*, May 16, 2017, A1.

³⁹ Yonhap News, July 29, 2017.

⁴⁰ Yonhap News, August 25, 2016

⁴¹ Yonhap News, August 29, 2016.



reasonable to conclude that the regime possesses several nuclear weapons and is capable of attacking South Korea, Japan and at least Guam with its ballistic missiles. It either is close to or has already acquired a real capability to reach the U.S. mainland. If North Korea succeeds in developing ICBMs, SLBMs and even hydrogen bombs, the U.S. will face a difficult choice in deciding whether to honor its promise of extended deterrence to South Korea. Doing so would mean defying the risk of a major North Korean nuclear attack. It is very urgent for South Korea, Japan and the U.S. to maintain their alliance and mobilize all possible options to protect their territories and people from this terrifying prospect.

South Korean Preparedness

South Korea has depended primarily on diplomatic efforts to pressure North Korea into giving up its nuclear program since the early 1990s, when the North's nuclear ambitions first became known. However, as demonstrated by the failures of Agreed Framework in 1994 and the Six-Party Talks agreement in 2005, these diplomatic efforts have been unable to secure accumulating or enduring effects. These failures provide clear evidence of North Korea's deception and the gullibility of other countries. These diplomatic efforts resulted in nothing but self-satisfaction for the parties involved of doing something to stop the development of North Korean nuclear weapons. Although representatives from South Korea, the U.S., Japan, and occasionally China meet from time to time, there is more skepticism than optimism regarding the Six-Party Talks.⁴² Nowadays, the focus of the international community is on UN Security Council Resolutions that place economic sanctions on North Korea as a pressure mechanism to return to dialogue. However, the chance of success appears to be very slim. North Korea will firmly retain its nuclear weapons, believing them to be its only option for regime survival, and use them frequently.⁴³ To make matters worse, China has been exploiting loopholes in the sanctions and does not appear inclined to waver in its support of North Korea, despite continuous pressure from the U.S. Trump administration.

South Korea has been depending on the U.S.'s extended deterrence to protect it from the North Korean nuclear threat. The U.S. has offered continual reassurances that it will uphold this deterrence and retaliate with its huge arsenal of nuclear weapons if North Korea attacks South Korea. The South Korean and U.S. militaries have been developing strategies and plans to execute extended deterrence such as the "4D strategy," which stands for Detect, Disrupt, Destroy and Defense. However, nobody can be sure that the U.S. will keep its promise in the event of a North Korean threat to conduct a nuclear attack on the U.S. The U.S. should calculate the benefits and risks before implementing its promise of extended deterrence. As mentioned above, if North Korea succeeds in developing ICBMs and/or SLBMs, the U.S. will be unable to provide extended

⁴² Jae-sung Jeon, "North Korean Nuclear Issue and Six-Party Talks in the Perspective of Network Theory," written in Korean, *Guk-Je-Mun-Je Yeon-Gu*, 14(2) (Summer 2014), 84-86.

⁴³ Liang Yabin, "A China Perspective: North Korea's Nuclear Tests Reshaping Northeast Asian Security," *Asia Pacific Bulletin*, No 357 (October 3, 2016), 1.



deterrence without taking on the risk of a North Korean nuclear attack on its cities. The South Korean government announced its plan to implement the operational concept of Korea Massive Punishment and Retaliation (KMPR) by the early 2020s⁴⁴ due to this uncertainty over U.S. extended deterrence.

South Korean defense readiness against the North Korean nuclear threat does not seem reliable. Because of opposition from several civilian activists who are overly concerned with a possible infringement of sovereignty,⁴⁵ South Korea has been unable to pursue comprehensive or layered ballistic missile defense (BMD). South Korea currently possesses PAC-2 anti-aircraft interceptors (these are in the process of development into PAC-3 anti-missile interceptors) and two Green Pine radar systems for its BMD. It is also starting to develop its own missile interceptors under the project names L-SAM (Long-Range Surface to Air Missile) and M-SAM (Medium-Range Surface to Air Missile) with the aim of completion by the mid-2020s.⁴⁶ This is why the South Korean military strongly supports the deployment of the American THAAD upper-tier interceptor missiles despite strong opposition from civilian activists. South Korea is not currently capable of effectively defending its people from a possible North Korean nuclear attack.

South Korea intends to complement the shortcomings of its BMD with a preemptive strike system known as the “Kill Chain”, which would destroy North Korean nuclear weapons in the event of an imminent attack. The system is intended to destroy North Korean nuclear missiles within 30 minutes of identifying an approaching launch.⁴⁷ In reality, however, it would be very difficult to identify a launch and assess its timing. North Korea has several surprise tactics it could employ that would remove South Korea’s ability to conduct a preemptive strike. To make matters worse, there has been little discussion about the necessity of a preventive strike,⁴⁸ which entails destroying enemy nuclear weapons without proof of an imminent attack. A preventive strike could be a more realistic option than a preemptive strike, because it can be prepared in advance. However, South Koreans seem to think that the risk of escalation into a nuclear war likely outweighs the benefits of a preventive strike. In sum, South Korea lacks a reliable option to protect its people from a possible North Korean nuclear attack.

It may be the right time for South Korea to imagine a worst-case scenario in which it is attacked by North Korean nuclear weapons, because it does not have an effective way or means to deter or defend against such a threat. A few South Korean experts have already demanded that the government upgrade its conventional civil defense to nuclear civil defense and prepare nuclear

⁴⁴ *Chosun Ilbo*, October 19, 2016, A6.

⁴⁵ Uk-sik Jung, *Missile Bang-Eo-Che-Je (Missile Defense System)*, written in Korean (Seoul; Salim Pub, 2003)

⁴⁶ Ministry of National Defense, *2014 Defense White Paper* (Seoul, MND, 2014), 59.

⁴⁷ Hyeok-chul, Kwon “A Study on the Usefulness of South Korean Kill Chain against North Korean Nuclear Threat,” written in Korean, *Jeong-Chaek-Yeon-Gu*, (178) (2014), 38.

⁴⁸ In-tak, Han, “The Logic and Ethics of Striking First,” written in Korean, *Jeon-Ryak-Yeon-Gu*, 17(1) (March 2010), 191-208; Jun-hyeok Park, “Preventive Attack and Offense-Defense Theory: A Study on the Role of Military Strategy and Technology,” written in Korean, *Gun-Sa*, (86) (March 2013), 221-265; Hwee-rhak Park, “An Analysis of a Pre-emptive Strike on North Korean Nuclear Weapons: Theories, International Law and Necessity,” written in Korean, *Sin-A-Se-A (New Asia)*, 21(4) (winter 2014), 31-56.



blast and/or fall-out shelters to protect their people from a nuclear explosion.⁴⁹ Some South Koreans have already tried to prepare their own nuclear shelters, as demonstrated by the Traum House high-quality mansions in Seoul.⁵⁰ Under certain circumstances, South Korea may need to be prepared for negotiation with North Korea in order to avoid a nuclear attack. The U.S. may try to bypass South Korea and negotiate directly with North Korea to prevent a nuclear catastrophe.⁵¹ There seems to be a huge gap between the actual threat posed by North Korean nuclear missiles and the present level of South Korean preparedness. South Korea must take drastic measures if it wants to bridge this gap.

Reality Check

It appears that South Korea has spent too much time on diplomatic efforts to persuade North Korea to give up its nuclear weapons development. This wasted time has left South Korea unprepared and facing a very serious threat. South Korea has depended on U.S. extended deterrence and been slow to construct its own BMD shield. It has not been desperate enough to employ risky options as Israel did in 1981 and 2007 in the face of the potential nuclear threats posed by Iraq and Syria. South Korea needs a reality check regarding its posture towards the North Korean nuclear threat, and it must design remedies to address the current shortcomings.

A comparison of the seriousness of the North Korean nuclear threat to South Korean preparedness reveals that South Korea's ability to protect its populace is very limited. The country depends on U.S. extended deterrence, but there is no guarantee that this extended deterrence will be executed in the event of a real attack. There is a potential for North Korea to perceive or misperceive unwillingness by the U.S. to retaliate in the face of a threat to use hydrogen bombs on the U.S. mainland. Although South Korea has acquired the capabilities for a BMD and Kill Chain, these capabilities cannot narrow the gap much between the threat posed by North Korea and South Korea's preparedness.

South Korea may need to revisit the conventional belief that only nuclear weapons can handle a nuclear threat. Any deterrence and defense measures against a nuclear-armed country cannot work without persuasive evidence of massive nuclear retaliation. If it is difficult for South Korea to develop its own nuclear weapons in a short period, it should seriously consider other options. Currently, the other option is to ask the U.S. to deploy its nuclear weapons to South Korea as they did previously and as they do in Europe now. The gravity of the North Korean nuclear threat should compel South Korea to employ all possible options regardless of the

⁴⁹ Hwee-rhak Park, "A Complement of the South Korean Nuclear Deterrence Strategy: Focused on Nuclear Civil Defense," written in Korean, *Guk-Ga-Jeon-Ryak*, 20(3) (2014), 41–70; Hwee-rhak Park, "A Comparative Study on Civil Defense Regarding Nuclear Attack: Focused on Preparedness against North Korean Nuclear Weapons," written in Korean, *Pyeong-Hwa-Yeon-Gu*, 15(5) (2014), 81–106.

⁵⁰ The homepage of the Traum House describes its shelter as "the highest level of safety system" and "iron-clad shelter." http://www.traumhaus.co.kr/sub_traum_02.asp.

⁵¹ Liang Yabin, "A China Perspective: North Korea's Nuclear Tests Reshaping Northeast Asian Security," 2.



downsides. Among these options, the re-deployment of U.S. tactical weapons to South Korea stands out.

Nuclear Sharing in Northeast Asia?

U.S. deployment of tactical nuclear weapons to South Korea will increase the assurance of U.S. extended deterrence. However, it would also provoke North Korea and China and increase the possibility of a nuclear war. It is necessary to engage in an in-depth, balanced discussion of the desirability, risks, and feasibility of such a proposition.

Desirability

First, the U.S. deployment of tactical nuclear weapons to South Korea would enhance the deterrence posture of the U.S. dramatically.⁵² It would be easier for the U.S. to decide to use nuclear weapons in South Korea than strategic nuclear weapons located on its own soil and in the ocean. It is very rational to question the feasibility of the execution of U.S. extended deterrence through ICBMs, SLBMs and/or strategic bombers due to significant risk of escalation into a global nuclear war. Execution of U.S. extended deterrence through tactical nuclear weapons deployed in South Korea would be easier and safer. In the event of an attack, the U.S. President would be able to consult with South Korean leadership regarding nuclear retaliation, thus alleviating some responsibility. If the U.S. succeeds in incorporating precision strike technology into its tactical nuclear weapons, this will mitigate the downsides. As a result, North Korea would be afraid of the likely execution of U.S. extended deterrence and would think twice before making any irreversible decisions like launching a nuclear attack on South Korea.

Second, the deployment of U.S. nuclear weapons to South Korea could correct the nuclear imbalance on the Korean Peninsula in a very short period.⁵³ Such a rebalance would give South Korea greater freedom to explore additional options over a longer period. For example, South Korea could construct robust BMD shields in a more systematic way. It could explore various diplomatic options to persuade North Korea to engage in dialogue and construct a permanent peace structure on the Korean Peninsula. The nuclear balance achieved by the deployment of the U.S. tactical nuclear weapons could make South Korean residents feel safe and encourage active economic investment.

⁵² Hwee-rhak Park, "An Introductory Analysis for the Redeployment of U.S. Tactical Nuclear Weapons to South Korea," written in Korean, *New Asia*, 24(2) (Summer 2017), 58.

⁵³ Peter Hayes and Chung-in Moon, "Should South Korea Go Nuclear?" EAF Policy Debates, No.7 (July 28, 2014), 2.



Third, the presence of U.S. tactical nuclear weapons in South Korea could be very useful for preventing and defending against a surprise attack from the North.⁵⁴ If North Korean ground forces were to break through the frontline using chemical weapons and then advance to Seoul, it is uncertain whether South Korean forces would have the means to stop them. In such a scenario, North Korea could warn the U.S. and South Korea not to conduct any counter-offensive operations by threatening the use of nuclear weapons on other South Korean cities. This type of piecemeal advance could place South Korea in serious danger. However, if there were several nuclear weapons in South Korea, South Korea and the U.S. could destroy the main body and reserves of the North Korean surprise attack with a few tactical nuclear weapons and stop any advances before troops could reach Seoul. This possibility itself can prevent North Korea from planning and/or executing a surprise conventional attack. The deployment of U.S. nuclear weapons to South Korea could compel at least a forced peace on the Korean peninsula.

Fourth, the presence of U.S. nuclear weapons in South Korea could make de-nuclearization negotiations with North Korea more reasonable and expedite the negotiation process.⁵⁵ Right now, South Korea demands that North Korea give up its nuclear weapons and weapons development without equal reciprocity, because South Korea does not have anything of equal importance to offer North Korea in exchange. North Korea might view this as unfair, making it difficult to reach a compromise. If South Korea shared nuclear weapons with the U.S., on the other hand, it could demand mutual dismantlement or reduction of nuclear weapons to North Korea. This approach could be seen as fair and might help in achieving a sort of compromise. North Korea's continued nuclear development requires an intensive investment of resources, while the U.S. could easily increase the number of nuclear weapons in South Korea. Thus, North Korea may reach the conclusion that it cannot compete with the U.S. and South Korea on nuclear weapons build-up. It may decide that a negotiation over nuclear dismantlement in exchange for economic gains could be more beneficial. China may encourage North Korea to engage in negotiation, because it will not be happy about the presence of the U.S. nuclear weapons close to its territory.⁵⁶

Fifth, if the U.S. deployed its nuclear weapons to South Korea, South Koreans would not be interested in making its own nuclear weapons. Many South Koreans demand their government develop their own nuclear weapons, believing they cannot defend their country from a North Korean nuclear attack otherwise. If South Korea were to develop its own nuclear weapons, it would suffer from severe international sanctions including the collapse of its alliance with the U.S. The deployment of U.S. nuclear weapons could dissuade the proponents of South Korean nuclear development and prevent potential damage to the ROK-U.S. alliance.⁵⁷

⁵⁴ Hwee-rhak Park, "An Introductory Analysis for the Redeployment of U.S. Tactical Nuclear Weapons to South Korea," 58.

⁵⁵ Peter Hayes and Chung-in Moon, "Should South Korea Go Nuclear?" 2.

⁵⁶ Ibid.

⁵⁷ Charles D. Ferguson, "How South Korea Could Acquire and Deploy Nuclear Weapons," NPEC (Non-Proliferation Policy Education Center) Research Paper (May 5, 2015). at: <http://www.npolicy.org/article.php?aid=1278&rid=2> (accessed May 25, 2017), 34.



Risks

As with most issues, several risks exist that may change the balance of the desirability of nuclear sharing between South Korea and the U.S. South Korea should consider the risks as well as the benefits in order to reach a balanced and reasonable conclusion.

First, as has been frequently suggested, the deployment of U.S. nuclear weapons to South Korea could provoke another arms race on and around the Korean Peninsula.⁵⁸ North Korea could aim to acquire more nuclear weapons with stronger explosive power. It may try to adopt a more aggressive nuclear strategy and send more threats and provocations to South Korea. South Korea would need to invest more energy to deal with these increasing threats, provoking in turn a greater North Korean military build-up in a vicious circle. Furthermore, countries around the Korean Peninsula such as China and Japan might also join the arms race. As a result, the stability of Northeast Asia has the potential to rapidly erode. The deployment of U.S. nuclear weapons could heighten the security dilemma on and around the Korean Peninsula.

Second, the existence of nuclear weapons in South Korea could increase the possibility of a nuclear war on the Korean Peninsula. The more nuclear weapons exist, the more likely it is that a nuclear war will occur. A nuclear balance on the Korean Peninsula could be better than a nuclear imbalance, but it is definitely worse than de-nuclearization.⁵⁹ That is why the U.S. has gradually reduced the number of nuclear weapons deployed and the amount of authority delegated to field commanders in Europe. If South Korea shares nuclear weapons with the U.S., North Korea may give a nuclear attack more serious consideration than it would against a South Korea with no nuclear weapons.⁶⁰

Third, if South Korea shares nuclear weapons with the U.S., this could make its demand for the de-nuclearization of North Korea less persuasive.⁶¹ If South Korea demands de-nuclearization, North Korea may respond that South Korea should withdraw U.S. nuclear weapons first. U.S. nuclear weapons in South Korea would provide legitimacy to North Korea's nuclear development. The mutual de-nuclearization negotiation between South Korea and North Korea would take a very long time to reach a compromise, as demonstrated by the precedent of the U.S. and Soviet Union. Any unexpected incident and/or accident could occur between the nuclear-armed Koreans in the course of negotiations.

Fourth, nuclear sharing could trigger another arms race in Northeast Asia and present more enemies to South Korea.⁶² As clearly demonstrated by Chinese and Russian opposition to the deployment of the U.S. THAAD missile interceptor to South Korea, China has the potential to become a clear enemy to South Korea and Russia may follow the Chinese path. The consequences

⁵⁸ Hwee-rhak Park, "An Introductory Analysis for the Redeployment of U.S. Tactical Nuclear Weapons to South Korea," 59.

⁵⁹ Ibid, 60.

⁶⁰ Woo Taek Hong, "Pros and Cons over South Korean discussions over the Development of its Own Nuclear Weapons and Constrained Thoughts," written in Korean, *Korea Institute for National Unification On line Series*, Co14-12 (August 21, 2014), 2.

⁶¹ Hwee-rhak Park, "An Introductory Analysis for the Redeployment of U.S. Tactical Nuclear Weapons to South Korea," 60.

⁶² Ibid.



of this change in relations would not be easy for South Korea to endure.⁶³ It may also result in a division line between the three northern three countries; China, Russia and North Korea, and Southern three countries; the U.S., Japan and South Korea. As a result, tensions on the Korean Peninsula could rise and further destabilize the security situation.

Fifth, the domestic costs of nuclear sharing may outweigh the benefits. South Korea would need to share the financial burden of maintaining nuclear weapons on its soil and be more dependent on the U.S in exchange for the deployment of U.S. nuclear weapons to South Korea. South Koreans would voice active and vehement opposition before and in the course of the deployment of U.S. nuclear weapons. If serious anti-U.S. movements arise among the South Korean public, it could endanger the ROK-U.S. alliance, contrary to the initial intention of nuclear sharing.⁶⁴

It is not easy to decide whether the desirability of the nuclear sharing outweighs the risks. It depends on the level of the North Korean nuclear threat. If North Korea continues to strengthen its nuclear capabilities and threatens to attack, South Korea should pursue nuclear sharing regardless of the risks. Nothing outweighs the survival of a nation.

Feasibility

Tactical nuclear weapons, which we are discussing here, belong to the U.S. Therefore, even if South Korea decides to ask the U.S. to deploy them, it cannot have them without the consent of the U.S. For this reason, it is most crucial to focus on the U.S. factor and consider the feasibility of deployment even before weighing the desirability and risks.

First, neither the availability of nuclear weapons nor funding will be issues that hinder deployment of U.S. tactical nuclear weapons to South Korea. The U.S. has sufficient reserves of tactical nuclear weapons, and deployment and the maintenance are not very expensive. If the U.S. and South Korea share the cost of deployment, the burden for the U.S. will likely be lighter than the deployment during Cold War era. South Korea and other stakeholder countries could share the costs of any improvements or upgrades. If a host nation compares the cost of nuclear sharing with the cost of developing its own nuclear weapons, nuclear sharing comes out ahead.

Second, the most critical element affecting the feasibility of nuclear sharing will be the decision by the U.S. government, because the nuclear weapons belong to the U.S. The U.S. will consider various risk factors such as a probable increase of tensions on the Korean Peninsula, opposition from China and Russia, and the increasing possibility of a nuclear war. The majority of U.S. Congressmen and/or public may not agree with the deployment. However, if forced to choose between nuclear sharing and South Korea's development of its own nuclear weapons, the choice for the U.S. seems clear. Some U.S. experts called for the deployment of nuclear weapons

⁶³ Bong Geu Jeon, "Pros and Cons of the Development of its Own Nuclear Weapons," Nation Security Strategy, No. 44 (March 2016), 19.

⁶⁴ Peter Hayes and Chung-in Moon, "Should South Korea Go Nuclear?" 4.



in response to Russia's continuing aggression in the Ukraine and increased reliance on nuclear weapons after Russia's annexation of Crimea.⁶⁵

Third, South Korean domestic public opinion could strongly influence the feasibility of nuclear sharing. There are several strong anti-U.S. activists in South Korea who would consider the deployment of tactical nuclear weapons to be an act of war provocation. These activists are likely to organize vehement anti-U.S. movements and anti-nuclear demonstrations in South Korea. Most South Korean regional governments would make declarations announcing that they would not accept the stationing of the U.S. nuclear weapons in their territory. The South Korean government may not be able to overcome this opposition. The U.S. may need to find other locations to deploy the weapons that could still guarantee that South Korea would benefit from the effects of nuclear sharing but that would not provoke this kind of opposition.

Fourth, in the event of deployment, there could be a difference of opinions between South Korea and the U.S. with regard to the management and operations of the U.S. nuclear weapons. The U.S. is likely to demand that retains final decision-making authority as the nuclear weapons belong to them. However, the South Korean government and especially some South Korean people might demand a greater share of authority in the management and operations of the deployed nuclear weapons. Reaching a compromise will be challenging, as each government must heed domestic opinion. In this sense, they could use the precedent set by NATO countries to reach a compromise.

Fifth, South Korea's proximity to North Korea could make the U.S. reluctant to deploy its nuclear weapons there. North Korea could destroy nuclear storage sites in South Korea with ballistic missiles in peacetime or nuclear missiles at the beginning of a war. The U.S. did not have to worry about this kind of problem during the Cold War era because North Korea did not have advanced ballistic missile capabilities or nuclear weapons. However, North Korea is now capable of conducting a surgical strike against sites using various ballistic missiles armed with nuclear warheads. Considering this, tactical nuclear weapons should be deployed to a location beyond North Korea's missile range or with perfect BMD protection.

Other unexpected hurdles may also arise. For example, the international community could intervene to protect the spirit of the NPT. Opposition from China and/or Russia could be too strong to overcome or ignore. If deployment of U.S. nuclear weapons to South Korea becomes inevitable, South Korea and the U.S. should consider all of the possible factors and come up with solutions to address the majority of hurdles deployment is likely to encounter.

South Korea-U.S.-Japan Nuclear Sharing

South Korea and Japan share Northeast Asia, the North Korean nuclear threat, and an alliance with the U.S. In theory, they must cooperate in their defense against the North Korean nuclear threat. If the U.S. decides to deploy nuclear weapons against North Korea, South Korea will not be

⁶⁵ Amy F. Woolf, "Nonstrategic Nuclear Weapons," 1.



its only consideration. The nation would need to meet both South Korean and Japanese demands. Japan may express its opinion regarding this issue to the U.S. In this sense, South Korean sharing of U.S. tactical nuclear weapons should be in concert with Japanese policy as well.

The desirability of Japan's nuclear sharing with the U.S. is nearly identical to that of South Korea. Japan may also want to have the U.S. nuclear weapons in its territory in order to enhance its nuclear deterrence posture, correct the nuclear imbalance with North Korea, and expedite de-nuclearization negotiations with North Korea, while remaining reluctant to develop its own nuclear weapons. As Japan does not worry about a surprise attack by North Korean ground forces, it may be less desperate to engage in nuclear sharing with the U.S. However, Japan will not hesitate to receive U.S. tactical nuclear weapons if North Korea starts to threaten to attack Japan with nuclear missiles.

The risks that would accompany deployment of U.S. nuclear weapons to Japan are also similar to those of South Korea. The deployment could provoke another arms race with North Korea and China, increase the possibility of a nuclear war in Japan, make de-nuclearization demands to North Korea less persuasive, heighten tensions with China and Russia, and incur more immediate costs than benefits. As Japan is a relatively large country, China and Russia will respond more negatively to the deployment of nuclear weapons on its territory than in South Korea. Some Japanese people still have unpleasant memories of nuclear weapons, and may initiate very aggressive opposition movements.

However, the feasibility of the deployment of U.S. tactical nuclear weapons to Japan may be far greater than that of South Korea. It may be easier for the U.S. to deploy nuclear weapons to Japan and not South Korea due to less anti-U.S. sentiment. In addition, there would likely be less contention in the process of reaching an agreement on the management and operations of deployed U.S. nuclear weapons with Japan than with South Korea. Above all, Japan is farther from North Korea than South Korea is and does not have to worry much about a North Korean missile attack on the storage sites. Japan's longer and wider territory makes it simpler to find suitable locations for tactical nuclear weapons than South Korea without undermining the deterrent effect.

In this context, nuclear sharing among South Korea, the U.S. and Japan will be more effective and safer than nuclear sharing between South Korea and the U.S. The U.S. could store a few small tactical nuclear weapons such as artillery warheads in South Korea, while deploying short-range nuclear missiles and nuclear bombs for aircraft in Japan. If the three countries agree on nuclear sharing and remain intentionally vague regarding the storage locations by upholding the NCND policy, the deterrent effect against the North Korean nuclear threat could be very high.

There may be concerns over anti-Japanese sentiment in South Korea and anti-South Korea sentiment in Japan. However, the two countries, especially South Korea, cannot afford to let emotional and historical hurdles stand in their way. If South Korean leaders decide to adopt nuclear sharing among three countries and explain the reasoning, the public would understand and agree with the decision. The Japanese people may be able to cooperate with their government despite negative memories. The people of each country could overcome their negative emotions,



because they understand that it is time to unite and deal with the North Korean nuclear threat together.

Because North Korea does not show any sign of giving up its nuclear weapons, the desirability for the nuclear sharing increases for South Korea. The inevitability of nuclear sharing has increased because of North Korea's success in developing a hydrogen bomb. If North Korea succeeds in the development of an ICBM and/or SLBM capable of striking the mainland U.S. with a hydrogen bomb, the U.S. and its allies in the region should seriously consider the deployment of the U.S. tactical nuclear weapons as a clear signal of deterrence to North Korea. The desirability of deployment may begin to outweigh the risk at any time. Emphasizing risks is very easy, and many view it as a peaceful and rational argument, but cannot provide a solution against the terrible threat posed by North Korea. Now is the time for effective remedies rather than a sound-looking enumeration of the downsides.

However, there seem to be several serious hurdles that stand in the way of the deployment of U.S. nuclear weapons. The largest is that the U.S. government may be too cautious to commit to deployment. It may focus more on the risks rather than the benefits. It may not be ready to defy the likely opposition that would come from China and Russia and the American public. The opposition by some anti-American South Koreans may also prove to be a strong obstacle. Without a solid commitment from U.S. leaders to the defense of South Korea and strong political leadership in South Korea, it will be very difficult to realize nuclear sharing between South Korea and the U.S.

In this sense, it may be a better policy option to pursue nuclear sharing among South Korea, the U.S. and Japan. The deployment of U.S. tactical nuclear weapons to Japan could be easier for the U.S. than to South Korea. Nuclear weapons would be safer in Japan than in South Korea. South Korea could enjoy similar deterrent effects with U.S. nuclear weapons in Japan and avoid provoking strong domestic opposition movements. South Korea, the U.S. and Japan could strengthen their NCND policy on the locations of the deployed nuclear weapons to maximize the deterrent effect and minimize opposition.

The NATO case is a good example for the political leaders of South Korea, the U.S. and Japan. Points of contention can be resolved by referring to the current NATO nuclear sharing arrangements. They could share necessary information regarding management and operations of nuclear weapons with NATO leaders. By adding another nuclear sharing mechanism, the U.S. could be more systematic and organized in dealing with a rising China and recovering Russia by establishing two strong nuclear deterrence blocks in Europe and in Northeast Asia.

Regardless, South Korea, the U.S. and Japan must increase their cooperation in dealing with the North Korean nuclear threat. They must build a solid foundation of trust and make their people recognize the importance of cooperation. The South Korean people, who face the most severe North Korean nuclear threat, should try to overcome their emotional barriers about Japan and support the South Korean government's efforts to strengthen cooperation with Japan as an effective way to defend them from North Korean nuclear weapons. They cannot afford to continue their opposition to security cooperation with Japan.



Conclusion

North Korea has developed approximately twenty nuclear weapons, including hydrogen bombs, and made them small and light enough to be delivered via ballistic missile. It is on its way to developing ICBMs and SLBMs that will enable it to attack the mainland U.S with these nuclear weapons. It is very close to having the capability to compel the U.S. to renege on its promise of extended deterrence. If North Korea succeeds in building an ICBM and/or SLBM, the U.S. will be forced to run the risk of nuclear attack on its cities if it executes extended deterrence for South Korea and/or Japan. The U.S. alliance with South Korea and Japan cannot be maintained with conventional options against North Korean nuclear threat.

South Korea in particular faces a serious security threat from North Korea's nuclear weapons. It does not have any reliable deterrence or defense preparedness for a nuclear war except for the U.S. extended deterrence. However, if the U.S. tries to execute its extended deterrence promise to South Korea, North Korea will likely threaten to attack a few cities in the mainland U.S. with hydrogen bomb missiles. South Korea should come up with more effective measures than now to ensure the reliability of U.S. extended deterrence. In this sense, South Korea may need to ask the U.S. to re-deploy tactical nuclear weapons, and the U.S. should seriously consider the request. The re-deployment could strengthen the ROK-U.S. combined deterrence posture, correct the nuclear imbalance with North Korea, expedite de-nuclearization negotiations with North Korea, and dissuade South Koreans from making their own nuclear weapons. Although there are a few risks involved, the rapid strengthening of the North Korean nuclear threat may not allow South Korea and the U.S. to pay much attention to the risks.

Feasibility is also an important consideration. The U.S. may be reluctant to deploy its nuclear weapons to South Korea due to the potential for anti-U.S. movements and the country's proximity to North Korea. Considering the probable improvement of North Korean nuclear and missile capabilities, U.S. tactical nuclear weapons in South Korea could be very vulnerable to North Korean attacks. We may need to expand the scope of nuclear sharing from between South Korea and the U.S. to include Japan.

It would be easier and safer for the U.S. to deploy its nuclear weapons to Japan than South Korea. Japan is farther from North Korea and has a longer and wider territory in which to place U.S. tactical nuclear weapons compared to South Korea. South Korea could enjoy similar deterrent effects with U.S. nuclear weapons in Japan without provoking strong domestic opposition movements. South Korea, the U.S. and Japan could strengthen their NCND policy on the locations of weapons to maximize the deterrent effect and minimize opposition. If this occurs, the South Korean public should try to reduce their negative sentiment regarding Japan and support their government's decision to enhance close cooperation between the two countries. The security situation on the Korean Peninsula has worsened to such a degree that neither South Koreans nor Americans can allow themselves to remain captive to their emotions while ignoring the reality of the threats they face. ■



References

- Albright, David. "North Korea's Nuclear Capabilities: A Fresh Look." *Institute for Science and International Security Report* (April 28, 2017).
- Ceuster, Koen De and Melissen, Jan. ed. *Ending the North Korean Nuclear Crisis: Six Parties, Six Perspectives*. Hague: Institute of International Relations, November 2008.
- Department of Defense. *Military and Security Developments Involving the Democratic People's Republic of Korea*. Washington D.C.: DoD, 2015.
- Ferguson, Charles D. "How South Korea Could Acquire and Deploy Nuclear Weapons." *NPEC (Non-Proliferation Policy Education Center) Research Paper* (May 5, 2015). at: <http://www.npolicy.org/article.php?aid=1278&rid=2> (accessed May 25, 2017).
- Han, In-tak. "The Logic and Ethics of Striking First." written in Korean, *Jeon-Ryak-Yeon-Gu* 17. No.1 (March 2010).
- Hayes, Peter and Moon, Chung-in. "Should South Korea Go Nuclear?" *EAF Policy Debates*. No.7 (July 28, 2014).
- Hong, Woo Taek. "Pros and Cons over South Korean discussions over the Development of its Own Nuclear Weapons and Constrained Thoughts." written in Korean, *Korea Institute for National Unification On line Series*. Co14-12 (August 21, 2014).
- Jang, Cheol Wun. "A Study on the Dynamics of the Military Balance on the Korean Peninsula after 1953." written in Korean, Seminar Presentation at the World North Korean Studies. Vol. 2 No. 0 (2015).
- Jeon, Bong Geu. "Pros and Cons of the Development of its Own Nuclear Weapons." Written in Korean, *National Security Strategy*. 44 (March 2016).
- Jeon, Jae-sung. "North Korean Nuclear Issue and Six-Party Talks in the Perspective of Network Theory." written in Korean, *Guk-Je-Mun-Je Yeon-Gu* 14. No.2 (Summer 2014).
- Jung, Uk-sik. *Missile Bang-Eo-Che-Je (Missile Defense System)*. written in Korean, Seoul: Salim Pub, 2003.
- Kristensen, Hans M. "A History of U.S. Nuclear Weapons in South Korea." *The Nuclear Information Project* (September 2005).
- Kristensen, Hans M. and Norris, Robert S. "Status of World Nuclear Forces," Federation of American Scientist Home Page. <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/> (accessed July 10, 2017).
- Kristensen, Hans M. *Non-Strategic Nuclear Weapons*. Federation of American Scientists Special Report. No. 3 (May 2012).
- Kwon, Hyeok-chul. "A Study on the Usefulness of South Korean Kill Chain against North Korean Nuclear Threat." written in Korean, *Jeong-Chaek-Yeon-Gu*. No. 178 (2016).
- Lee, Yeon Joo and Lee, Geun Uk. "At the Watershed between the Financial Cliff and Security Assurance of the Alliance: A New Interpretation on the Deployment of the Tactical Nuclear Weapons in 1958." written in Korean, *Social Science Studies*, 23(2) (2015).
- Ministry of National Defense, *2014 Defense White Paper*. Seoul: MND, 2014.



- Nichols, Tom et al, ed. *Tactical Nuclear Weapons and NATO*. Carlisle: U.S. Army War College, 2012.
- Park, Hwee-rhak. "A Comparative Study on Civil Defense Regarding Nuclear Attack: Focused on Preparedness against North Korean Nuclear Weapons." written in Korean, *Pyeong-Hwa-Yeon-Gu*. 15(5) (2014).
- Park, Hwee-rhak. "A Complement of the South Korean Nuclear Deterrence Strategy: Focused on Nuclear Civil Defense." written in Korean, *Guk-Ga-Jeon-Ryak*. 20(3) (2014).
- Park, Hwee-rhak. "An Analysis of a Pre-emptive Strike on North Korean Nuclear Weapons: Theories, International Law and Necessity." written in Korean, *Sin-A-Se-A (New Asia)*. 21(4) (winter 2014).
- Park, Hwee-rhak. "An Introductory Analysis for the Redeployment of U.S. Tactical Nuclear Weapons to South Korea." written in Korean, *New Asia*. 24(2) (summer 2017).
- Park, Jun-hyeok. "Preventive Attack and Offense-Defense Theory: A Study on the Role of Military Strategy and Technology." written in Korean, *Gun-Sa*. No. 86 (March 2013).
- Phillip, Elizabeth. "Resuming Negotiations With North Korea." *North Korea Nuclear Policy Brief* (June 24, 2016).
- Richey, Mason. "New Developments in North Korea's Nuclear Weapons Programme: Implications for European Security." *Policy/Brief* (Institute for European Studies). 2016/11 (May 2016).
- Rinehart, Ian E. and Nikitin, Mary Beth D. "North Korea: U.S. Relations, Nuclear Diplomacy, and Internal Situation." *CRS Report*. R41259 (January 15, 2016).
- Sechser, Todd S. "Sharing the Bomb: How Foreign Nuclear Deployments Shape Nonproliferation and Deterrence." *The Nonproliferation Review*. Vol. 23, No. 3-4 (2017).
- Thomas-Noone, Brendan. *Tactical Nuclear Weapons in the Modern Nuclear Era*. Lowy Institute Analysis Paper (September 2016).
- Woolf, Amy F. "Nonstrategic Nuclear Weapons." Congressional Research Service 7-5700 (February 21, 2017).
- Yabin, Liang. "A China Perspective: North Korea's Nuclear Tests Reshaping Northeast Asian Security." *Asia Pacific Bulletin*. No 357 (October 3, 2016).
- Yoo, Ung Jo. "Key Controversies and Prospect Surrounding the Re-deployment of the U.S. Tactical Nuclear Weapons to the Korean Peninsula." *Issues and Controversies*. National Assembly Research Service, No. 1203 (September 2016).

*Author's Biography***Hwee-rhak Park**

Kookmin University

Doctor Park Hwee-rhak is Dean of the Graduate School of Politics and Leadership at Kookmin University, Seoul and has been teaching on Nuclear Strategy, Contemporary Military Issues and Defense Reform. He has written several articles on the North Korean nuclear and missile threat, defense reform, contemporary war-fighting concepts, and other military issues.

He graduated from the South Korea Military Academy in 1978 and retired as Colonel in 2009. He earned his Masters of International Relations at Yonsei University in 1983, and acquired a second Master's Degree at the U.S. National War College in 1999. He achieved a PhD in Political Science at Kyunggi University, Seoul, South Korea, in 2008.

He has published several professional books in Korean including *The North Korean Nuclear Threat and National Security* (2016); *Conditions for South Korean Defense in the Era of the North Korean Nuclear Threat* (2014); *South Korean Defense Posture against the North Korean Nuclear Threat* (2013); *Peace and National Defense* (2012), and others.

He has also written more than eighty articles during the last ten years in registered journals to the National Research Foundation of Korea on nuclear issues and military affairs including the following English articles: "South Korean Preparedness for the North Korean Nuclear Threat: A Few Steps Behind," *The Korean Journal of Security Affairs*, Vol . 29, No. 2 (2017); "The Expectation and Reality Gap in South Korea's Relations with China," *Asian International Studies Review*, Vol. 18, No. 1 (2017); "An Analysis and Lessons on South Korea's Attempt and Postponement of the OPCON Transition from the ROK-U.S. Combined Forces Command," *The Korean Journal of Security Affairs*, Vol . 27. No.3 (2015); "South Korea's Defense Posture against the North Korean Nuclear Threat: Dangerous Reluctance," *International Studies Review*, Vol. 16, No. 1 (June 2015); "Time to Balance Deterrence, Offense, and Defense? Rethinking South Korea's Strategy against the North Korean Nuclear Threat," *The Korean Journal of Defense Analysis*, Vol. 24, No. 4 (December 2012), etc.

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- For inquiries:
HyeeJung Suh, Associate Director, Research Planning Department
Tel. 82 2 2277 1683 (ext. 140) hjsuh@eai.or.kr
- Typeset by HyeeJung Suh