

How to Win the Nuclear Deterrence War against North Korea

**Task Force on Defense against the Nuclear threat from
North Korea**

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Authors

Chair: Park, Hwee-rhak (박휘락)

Researchers

Kim, Choon Soo (김춘수)

Kweon, Meong Kook (권명국)

Cha, Joowan (차주완)

Cho, Young Key (조영기)

Lee, Tae-youn (이태운)

Jeong, Chan Gwon (정찬권)

Kim, Sung Jin (김성진)

Park, Gye-ho (박계호)

An, Jae Bong (안재봉)

Cho, Sung Wook (조성욱)

Park, Moo Choon (박무춘)

Kim, Wongon (김운곤)

Park, Jin-ho (박진호)

Lee, Heung-seok (이흥석)

Yoon, Sang-koo (윤상구)

Hwang, In-hee (황인희)

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Abbreviations

ADD	Agency for Defense Development
CFC	U.S.-South Korea Combined Forces Command
DSC	Deterrence Strategy Committee
EDSCG	Extended Deterrence Strategy Consultative Group
EMP	Electromagnetic Pulse)
HEU	Highly Enriched Uranium
HUMINT	Human Intelligence Source
ICBM	Intercontinental Ballistic Missile
KAMD	Korea Air and Missile Defense
KMPR	Korea Massive Punishment and Retaliation
L-SAM	Long-range Surface-to-Air Missile
M-SAM	Medium-range Surface-to-Air Missile
NATO	North Atlantic Treaty Organization
NIS	National Intelligence Service
NPG	Nuclear Planning Group
NPT	Nuclear Non-Proliferation Treaty
NSC	National Security Council
ONS	Office of National Security
ROK	Republic of Korea
SLBM	Submarine Launched Ballistic Missile

SRBM	Short-Range Missile,
SSBN	Ship, Submarine, Ballistic Missiles, Nuclear-Propelled
TDS	Tailored Deterrence Strategy
TTX	Tabletop Exercise
WMD	Weapons of Mass Destruction

Introduction

South Korea has been engaging in a "nuclear deterrence war" against North Korea. It is because North Korea blatantly exposed its intention to reunify the whole Korean Peninsula on its terms by using its nuclear weapons from the early 2022. North Korea called the reunification its "second mission," while believing that its "first mission," which is to block the U.S. nuclear umbrella for South Korea through its intercontinental ballistic missiles (ICBMs), is almost achieved. It defined South Korea as "the obvious enemy without a doubt" and declared mass production of tactical nuclear weapons to attack South Korea in late 2022. It even detonated its mock nuclear warhead in the air as part of its training for the nuclear missile attack on South Korea in March 2023. North Korea looks to be ready to attack South Korea if the opportunity arises. South Korea should conduct an all-out war to deter a possible North Korean nuclear attack because there will be no winner in the nuclear war.

In reality, the nuclear threat from North Korea is not just one of many threats. It is a fatal threat that makes South Korea disappear. A deterrence failure against North Korea could be the end of democratic South Korea or the tragic catastrophe of the Korean people. In this sense, deterring the Nuclear threat from North Korea is not one of various national tasks but the desperate and life-and-death task that South Korea should concentrate all its efforts and resources on accomplishing. No matter what ways and means are used, South Korea should deter North Korea's nuclear attack. The South Korean president should be the supreme commander in the "nuclear deterrence war against North Korea," and the military officers and public officials are the commanders and staff for the supreme commander. The people of South Korea should also do their best to win the nuclear deterrence war.

The United States, South Korea's only and staunch ally, is also fighting the "nuclear deterrence war against North Korea." It has promised to provide extended deterrence, or the so-called "nuclear umbrella," to South Korea to deter North Korea's nuclear attack. Because South Korea does not have any nuclear weapons, the United States should be more proactive than South Korea regarding the deterrence war. Because the United States is such a large country, North Korean nuclear weapons are not a fatal threat to the existence of the United States. However, North Korea can cause fatal damage to the United States because

the country has the capability to attack a few cities on the U.S. mainland with nuclear missiles. It is clear that deterring a North Korean nuclear attack on South Korea and the United States is also a vital national interest for the United States. The U.S. president, military, and public officials should also be the supreme commanders, unit commanders, and staff who are conducting the "nuclear deterrence war against North Korea." The U.S. people should also do their best to win the nuclear deterrence war.

Through intensive efforts for a few decades, the United States and South Korea failed to stop North Korea from acquiring a significant capability to counter-deter the U.S. nuclear umbrella for South Korea. North Korea managed to possess hydrogen bombs and ICBMs in order to reach the U.S. mainland. At least, North Korea can detonate its nuclear weapons in the airspace of the United States to conduct an electromagnetic pulse attack that could destroy most of the infrastructure of the United States. North Korea is improving its ICBMs to be launched by solid fuel and to deliver multiple warheads in order not to be destroyed in the launch sites or during the flight. It is even developing nuclear submarines to sail to the U.S. mainland and attack with nuclear missiles without being intercepted by the U.S. missile defense systems. As North Korea manages to develop more reliable capabilities to attack the U.S. mainland, the U.S. nuclear umbrella over South Korea will become more uncertain, and the possibility of a nuclear war on the Korean Peninsula will increase accordingly.

In the past, South Korea and the United States have tried to block North Korea's nuclear weapons development through negotiations and incentives. However, all the negotiations between the United States and North Korea since the 1990s have ended in miserable failures. North Korea succeeded in deceiving the United States, South Korea, and the world. As a result, it developed its first atomic bomb in 2013 and a hydrogen bomb in 2017. It is estimated that North Korea possesses about 100 nuclear weapons, which can be mounted on ICBMs and submarine launched ballistic missiles (SLBMs) to attack the United States. North Korea is still making more nuclear weapons. The two allies should not be captives of their wishful thinking and face reality as it is.

For example, South Korea's Moon Jae-in administration focused all its efforts on the diplomatic denuclearization of North Korea. However, it did not make any effective agreement with North Korea and provided the decisive time for North Korea's strengthening of nuclear weapons to its strategic level. The U.S. Donald J. Trump

administration also held two summit meetings with North Korea for the denuclearization of the country, but it only ended up allowing North Korea's nuclear armament capable of attacking a few cities on the U.S. mainland. As a serious consequence, South Korea's Yoon Seok-yeol and the U.S. Joe Biden administrations came to face North Korea's threat of nuclear attack, as described as its "first mission" and "second mission."

As the United States and South Korea did not strengthen their deterrence posture against North Korea while engaging in their denuclearization negotiations with North Korea recently, they exposed serious problems in deterring North Korea's nuclear attack. The United States remains focused on emphasizing the solidity of its extended deterrence promise to South Korea with only verbal assurances. The South Korean Yoon Administration has been discussing various options, including South Korea's own nuclear armament, but has failed to come up with any effective measures. The gap between the degree of the Nuclear threat from North Korea and the degree of the deterrence postures of South Korea and the United States has been widening.

Because North Korea has developed the capability to attack the U.S. mainland, the deterrence postures of the United States and South Korea should be totally reshaped. The United States should consider the risk of North Korea's nuclear attack on its cities if it decides to implement its nuclear umbrella promise for South Korea. South Korea should consider the possibility of no nuclear umbrella even though North Korea attacks it with nuclear weapons. The two allies should expand their options to effectively deal with North Korea's suicidal nuclear attack on the U.S. mainland. Instead of being complacent with the current extended deterrence posture of the United States, they need to come up with more effective measures to increase the stability of their nuclear deterrence against North Korea. Instead of relying on just one deterrence measure, they discussed all possible deterrence measures and strengthened them accordingly. They should consider a larger safety margin than they do now.

No matter how much it costs to deter North Korea's nuclear attack, the cost of a nuclear war is much higher. Instead of trying hard to stay alive after receiving North Korea's attacks with nuclear weapons, South Korea and the U.S. should try hard to win the "nuclear deterrence war against North Korea" that is going on right now. South Korea, which would be the direct target of a nuclear attack from North Korea, should fight a total war to stop a

nuclear attack from North Korea, and the people of South Korea should actively participate in this "nuclear deterrence war against North Korea" to protect their lives and families.

This report is meant to give the South Korean government some tips on how to win the "nuclear deterrence war against North Korea." We know that the deterrence efforts of the United States, which has the most powerful nuclear deterrence power in the world, have had and will have a decisive effect regarding the nuclear deterrence war against North Korea. The non-nuclear South Korea's own efforts could only create supplementary effects to the U.S.' efforts. However, South Korea should do its best before asking for the U.S.'s support, as the proverb "Heaven helps those who help themselves" implies.

Nuclear threat from North Korea

Nobody knows what North Korea's nuclear strategy is because the country is completely isolated. However, we can infer it from relatively known facts such as North Korea's national goal and the number of North Korean nuclear weapons. This inference method has been used in the U.S. military as "the construct of strategy," which was introduced by Arthur F. Lykke, Jr., who served as a professor at the United States Army College in the 1970s and 1980s. The U.S. military explained the construct as "Strategy=Ends +Ways + Means" or "Ends = Ways + Means" and emphasized the balance among goals, ways, and means. We could use this construct to infer North Korea's nuclear strategy.

Since each country will strive to balance the above three elements of strategy, knowing two of the three elements can logically infer the other. Among these, the goal is not only simple but also does not change easily, so it can be fixed to some extent, and the means, that is, nuclear weapons and delivery systems, can be identified to some extent. Therefore, if we can identify the ends (goals) and means (nuclear weapons and delivery systems) of North Korea's nuclear strategy to some extent, we can infer its ways (strategic concept).

The Goal of North Korea's Nuclear Armament. North Korea's national goal is "to communize the entire Korean Peninsula," and its nuclear armament is intended to realize the goal through the threat or use of nuclear weapons. North Korea not only attempted to realize this goal by initiating the Korean War in 1950 but has also never changed its goal of communizing the Korean peninsula since then. At the 8th Party Congress in 2021, North Korea included the will for communist unification through nuclear force in the platform of its Workers Party. In particular, it specified "territorial completion" as the goal of its nuclear forces in its act on nuclear forces passed in September 2022. North Korea's recent emphasis on the "second mission" of its nuclear forces also implies that the goal of its nuclear armament is the reunification of the whole Korean Peninsula through communism. It defined South Korea as its "obvious enemy without a doubt" and announced mass production of tactical nuclear weapons to attack South Korea at the Plenary Session of its Workers Party in December 2022.

For a considerable period of time, many scholars and officials in South Korea and the United States introduced the premise that North Korea developed nuclear weapons as a means for "regime safety" or a "negotiation card." They insisted that "North Korea developed nuclear weapons for defense purposes and will not use them against South Korea." Based on this premise, they recommended providing economic incentives to make North Korea come to the denuclearization negotiations and persuade it to give up its nuclear weapons. However, this premise was nothing but baseless wishful thinking. Actually, North Korean leaders never used terms like "regime safety" or "negotiation card."

From the standpoint of the North Korean leaders, it is unlikely that they think that their regime is unstable. The North Korean people have been docile, and their controlling mechanisms are powerful. As revealed in the 2018–2019 denuclearization negotiations with the United States, North Korea has never requested economic assistance as a condition for giving up its nuclear weapons. North Korea mentioned the "hostile policy of the United States" as the reason for its nuclear armament. However, the conditions that North Korea demanded of the United States were the dissolution of the U.S.-ROK (Republic of Korea, the official name of South Korea) alliance, such as the withdrawal of U.S. forces and the U.S. nuclear umbrella from South Korea. Actually, the United States has promised not to attack North Korea a few times, such as in its agreements with the country in 1994 and 2005. Therefore, we need to admit that the goal of North Korea's nuclear armament is the communization of the entire Korean peninsula, just like North Korea initiated the Korean War in 1950.

North Korea's nuclear weapons and delivery systems. North Korea managed to acquire a considerable number of nuclear weapons and delivery systems for the nuclear weapons. North Korea developed an atomic bomb through its third nuclear test on February 12, 2013, and a hydrogen bomb through its sixth nuclear test on September 3, 2017. A research institute in the United States, the 38th North, estimated the power of the hydrogen bomb at the sixth nuclear test as 108–250 kt, similar to the power of nuclear weapons possessed by most nuclear states, including the United States and Russia. The South Korean government estimated the power at 50 kt, which was an intentional underestimation based on political considerations not to emphasize the seriousness of North Korea's nuclear threat. That underestimation was the reason why South Korean officials frequently mentioned North Korea's necessity to conduct the "seventh nuclear test" since the year 2022 after witnessing the reparation of North Korea's nuclear test site. However, North Korea

succeeded in developing the nuclear weapons that it designed and does not need additional tests unless it wants to develop more sophisticated nuclear weapons, such as a neutron bomb.

It is almost impossible for the United States and South Korea to know the exact number of nuclear weapons that North Korea possesses. North Korea is totally isolated and closed, and it controls the information about its nuclear weapons with extreme caution and secrecy. Most North Korea experts mention 20–60 nuclear weapons in North Korea, but this number is just an unsubstantiated guess. Based on their own calculations, U.S. RAND and South Korea's Asan Policy Research Institute released their joint estimation in April 2021: They calculated that North Korea already possessed 67–116 nuclear weapons in 2020, could produce 12–18 nuclear weapons annually, and would possess 151–242 nuclear weapons in 2027. Dr. Sigfried Hecker of the United States also estimated that North Korea has a considerable number of nuclear warheads, even though the number was not as big as the Rand-Asan report. He estimated that North Korea produces at least 175 kg of enriched uranium annually (enabling the production of nine nuclear weapons) by operating 4,000 centrifuges 24 hours a day. If North Korea has more hidden centrifuges, the number of nuclear weapons that it could possess increases. A South Korean scholar analyzed that North Korea had secured nuclear material capable of producing 200–400 nuclear weapons based on his analysis of the number of North Korea's centrifuges, which could be more than 10,000. Therefore, we may need to assume that North Korea possesses at least about 100 or generally more than 100 nuclear weapons as of 2023.

North Korea possesses various means to deliver these nuclear weapons to the necessary targets. On November 29, 2017, North Korea successfully tested the "Hwasong-15," a potential ICBM. Recently, in parallel with a hypersonic missile test, it successfully launched the so-called "monster ICBM," Hwasong-17," in early 2023. North Korea seems to have focused on developing ICBMs that use solid fuel and deliver multiple warheads. North Korea has also developed its own SLBMs, such as Pukguksong-1, 3, 4, and 5, and has built a 3,000-ton diesel submarine capable of loading them. North Korea can equip its diesel submarines with these SLBMs and sail to the U.S.' west coast as a one-way mission. North Korea even announced plans to develop a nuclear-powered submarine in January 2021 and seems to be in the process of doing so. If North Korea succeeds in constructing the submarine and equipping it with SLBMs, in other words, making the submarine the SSBN, all the cities in the United States will be easy targets of the SSBN. In addition, North Korea has developed and is deploying three sets of new short-range missiles (SRBMs), such

as the KN-23, 24, and 25, which can launch a nuclear attack on South Korea while evading South Korea's missile defense systems. Actually, North Korea conducted nuclear attack drills with its missile forces and even detonated mock nuclear warheads in the air in March 2023 as demonstrations of its nuclear capabilities to attack South Korea at any time.

North Korea's consistent and logical strategic concept for its nuclear capabilities.

North Korea's nuclear strategic concept seems to be divided into two types, against South Korea and the United States, respectively. North Korea called the former the "first mission," and the latter the "second mission." The strategic concept for its "first mission" is to threaten the United States with attacking the cities on the U.S. mainland if the United States decides to provide a nuclear umbrella for South Korea. This is the concept that drove North Korea's development of hydrogen bombs, ICBMs, SLBMs, and SSBNs. North Korea seems to have evaluated its capabilities for its first mission as being relatively sufficient as it moved its focus to its "second mission." The strategic concept to achieve its "second mission" is to threaten or attack South Korea with nuclear and conventional weapons. Since its first success in developing nuclear weapons in February 2013, North Korea has seriously discussed its "seven-day war" plan to realize its reunification decisively and rapidly using nuclear weapons. As long as the United States does not implement its nuclear umbrella promise to South Korea, North Korea will not have any serious problem attacking and annexing the non-nuclear South Korea.

North Korea's nuclear strategy toward the U.S. is called a "minimal deterrence strategy" by scholars. This is because the goal of North Korea's nuclear weapons and its current nuclear capabilities is to keep the U.S. from providing the nuclear umbrella to South Korea. North Korea seems willing to trade off its total destruction for the destruction of a few U.S. cities. It does not have much to lose, but the United States has much to lose. In other words, North Korea poses the most serious question to the United States: "Will you sacrifice New York to protect Seoul?" That was the reason why North Korea has been focusing on the development of ICBMs and SLBMs that would reach the U.S. mainland. The North Korean leader, Kim Jong-un, once publicly threatened the United States that the button to attack the United States with nuclear weapons was on his desk. If North Korea succeeds in building SSBN-class submarines capable of carrying SLBMs, it will be able to perfectly implement its minimal deterrence strategy against the United States.

North Korea's nuclear strategy toward South Korea is "nuclear warfighting." North Korea seems willing to use nuclear weapons on South Korea if it makes its reunification war against South Korea successful. Since South Korea does not have nuclear weapons, North Korea does not have to develop complex plans to attack and annex South Korea. Experts at Rand and the Asan Institute estimated that North Korea will use 40 to 60 nuclear weapons from the beginning of the war. Because North Korea intends to use nuclear weapons as its primary warfighting means, ending the war in a week has been discussed. North Korea can and will carry out a nuclear attack on South Korea if it evaluates that the perfect opportunity has emerged, even without obtaining approval or support from China and Russia.

South Korea's Nuclear Preparedness

Modern wars, including a nuclear war, have no choice but to be total wars. An important concept frequently used in relation to winning the total war is the "Trinity" concept advocated by Carl von Clausewitz, a prominent German military theorist in the early 19th century. He emphasized the integration of war efforts among the government, the army, and the people of the country that has to fight a war. Therefore, to prevent nuclear war or to ensure survival from it, the government, the army, and the people of South Korea should achieve a high level of solidarity and unity.

South Korean government. South Korea has been strengthening its nuclear warfighting capabilities against North Korea by developing and demonstrating a number of SRBMs after acquiring a considerable level of capability to attack the U.S. mainland by developing hydrogen bombs, ICBMs, and SLBMs. However, the awareness and efforts by Korean government leaders to address the Nuclear threat from North Korea seem to have been insufficient. As a result of promoting the diplomatic denuclearization of North Korea during the Moon Jae-in administration, most government officials have fallen into complacency and are unable to recognize the Nuclear threat from North Korea as it is. Even the National Assembly, which should oversee the nuclear preparedness of the government, has been neglecting the Nuclear threat from North Korea. Even the Ministry of National Defense just started its active nuclear preparedness as the Yoon Suk-yeol administration begins in 2022 after ignoring the Nuclear threat from North Korea. The ministry used the term "WMD (weapons of mass destruction)" instead of "North Korean nuclear weapons" and paid more attention to its support of denuclearization negotiations than to its necessary nuclear deterrence and defense measures.

The nuclear preparedness of South Korea seems to rely too heavily on the U.S.'s promise of extended deterrence. Whenever North Korea demonstrated its offensive nuclear capabilities, South Korea turned to the United States to do something, such as the deployment of U.S. strategic assets. Right after the inauguration of current President Yoon Seok-yeol, U.S. Vice President Biden visited Korea and resumed the ROK-U.S. combined military exercises, which had been suspended by the U.S. Donald J. Trump Administration. The defense chiefs of the two allies agreed to consult each other on the "deployment in a

timely and coordinated manner" of the U.S. strategic assets. They are revising their tailored deterrence strategy (TDS) against North Korea and conducting a tabletop exercise (TTX) on the extended deterrence to deal with North Korea's nuclear attack scenarios. It seems inevitable for non-nuclear South Korea to rely on the United States, but the degree of reliance seems to be too high. The South Korean government should try to do more to defend its country and people from possible North Korean nuclear attacks while securing the nuclear umbrella of the United States.

The current Yoon Seok-yeol administration, which seems fully aware of the seriousness of the issue, has been increasing its efforts to address the Nuclear threat from North Korea since its inauguration. However, it has to clearly designate the control tower to oversee the overall efforts to deter and defend North Korea's nuclear threats. In addition to expressing its resolve to respond decisively to North Korea's various provocations, the government should develop a government-wide and nation-wide comprehensive deterrence and defense strategy that can effectively deter the Nuclear threat from North Korea and protect South Koreans from the threat. It needs to detail and distribute tasks for all the related government ministries and agencies to implement the deterrence and defense strategy. It should also designate or establish an organization to oversee the progress and achievements of all the governments in terms of nuclear deterrence and defense.

South Korean military. Given that nuclear weapons are "weapons," the military cannot help but play a leading role in responding to North Korean nuclear provocations. However, the complacency on the North Korean nuclear issue, which was prevalent in the previous government, still remains in the South Korean military. The South Korean military also relies too heavily on the U.S. extended deterrence or various strategic assets that the United States promises to provide. The fact that the militaries of the United States and South Korea just started to revise their operation plan to include the Nuclear threat from North Korea situation after the inauguration of the Yoon government proves that their preparedness against the Nuclear threat from North Korea was and is insufficient.

The South Korean military created the "three-axis system" to defend its country and people from a possible North Korean nuclear attack. The first axis was to conduct preemptive strikes on the North Korean nuclear weapons, mainly through its air forces. The South Korean military called it "Kill Chain." The second axis was the interception of incoming North Korean nuclear missiles in the air by its missile defense capabilities. The

military called it Korea Air and Missile Defense (KAMD). The third axis was to threaten to kill North Korean leaders if they decided to conduct nuclear attacks on South Korea. The military called it Korea Massive Punishment and Retaliation (KMPR). However, these three axes have become unreliable because of North Korea's development of solid-fuel missiles, which does not provide the South Korean military with the least amount of time to conduct its preemptive strikes. North Korea even developed SRBMs to perform pull-up maneuvers in the terminal stage of its attack to make South Korea's KAMD ineffective. In this sense, the South Korean military needs to create a new system to defend its country and people from a North Korean nuclear attack.

South Korean people. The South Korean public does not seem to have a strong consensus on the seriousness of the current situation or the urgency of being prepared for a possible nuclear attack by North Korea. They usually want to rely on their wishful thinking that North Korea will not use the nuclear weapon on South Koreans, the same race as North Koreans. They usually mention the rationality of North Korean leaders, who will not risk their positions for the reunification of the whole Korean Peninsula. They think that North Korean leaders are well aware of the risks of their nuclear attack, which could lead to the demise of both South Korea and North Korea. There is also a serious political confrontation between the left and the right of South Koreans regarding the nuclear threat from North Korea. South Koreans never conducted civil defense drills during the Moon Jae-in administration regarding a possible North Korean nuclear attack. South Korea's nuclear preparedness could be evaluated as very low.

The Nuclear threat from North Korea has been getting more serious and blatant. The South Korean government and military have just started to actively discuss their options to deter and defend against the nuclear threat from North Korea after the inauguration of the Yoon Suk-yeol administration. However, their actual nuclear preparedness seems to be far from the relevant and required degree of preparedness. There is a considerable gap between the level of the Nuclear threat from North Korea and the level of South Korea's preparedness, and this gap is growing over time. The government, the military, and the people of South Korea should engage in their all-out efforts not to lose the nuclear deterrence war against North Korea.

The Concept of South Korea's Nuclear Preparedness

One of the most important issues regarding South Korea's nuclear preparedness against the Nuclear threat from North Korea is setting up a concise concept to effectively integrate all available and necessary efforts at the national level. With the concise concept, the South Korean government can maximize the integrated effects of all elements of South Korea's national power, garner the people's understanding and support of the concept, identify detailed tasks necessary to implement the concept, and fulfill the tasks to realize the concept. It is the primary responsibility of the government to establish such a concise concept, while the military can establish a separate and military-based concept.

As one example of South Korea's strategic concept for deterring and defending the Nuclear threat from North Korea, the authors recommend "alliance-based all-out deterrence and defense." As is well known, South Korea should put its first priority on strengthening its alliance with the United States, which has promised to provide its nuclear umbrella to defend South Korea if North Korea attacks. Needless to say, South Korea should integrate all its resources and efforts to deter and defend against the Nuclear threat from North Korea. At the same time, South Korea should be prepared for the necessary defense from possible North Korean nuclear attacks if the deterrence fails. This concept may not be the best, but South Korea could use it as a starting point to integrate all of its efforts to win its nuclear deterrence war against North Korea.

The goal of the "alliance-based all-out deterrence and defense" strategy is to combine "alliance" and "South Korea's own strength." South Korea cannot help but depend on the U.S. nuclear umbrella, since it does not have any nuclear weapons of its own. At the same time, it should do its best to deter and defend the Nuclear threat from North Korea on its own, because the promises of the alliance cannot be absolutely trusted. Especially, South Korea should mobilize all of its resources, efforts, and wisdom to deter and defend the Nuclear threat from North Korea, because it should deal with a nuclear-armed North Korea with conventional weapons from the beginning. South Korea does not have any more important issues than its deterrence and defense against North Korea.

The South Korean military can come up with its own plan for deterrence and defense against North Korea's nuclear attack based on its government's "all-out deterrence and defense" plan. It should have had such a concept since North Korea's success in the development of nuclear weapons in 2013. The authors want to recommend a "combined precision deterrence and defense" strategy for the South Korean military. As is the case with the South Korean government, an alliance should be considered a key element for the South Korean military, as expressed by the word "combined." There has been a Combined Forces Command (CFC) between United States and South Korean forces in South Korea, and the two forces are supposed to conduct most military operations on the Korean Peninsula together. The word "precision" required the South Korean military to acquire the necessary capabilities and equipment to conduct precise preemptive strikes, precise KAMD, and precise KMPR. If the South Korean military adopts this concept, it should strengthen the combined nuclear deterrence and defense posture with the U.S. forces and invest more budgets, resources, technology, and time to develop the precision weapons for its "three-axis systems."

There may be a few things that need to be balanced, especially in the course of implementing the "allied-based all-out deterrence and defense" strategy of South Korea and the "combined precision deterrence and defense" strategy of the South Korean military. First, South Korea should be able to strengthen its deterrence and defense posture but should not provoke North Korea. Second, while strengthening cooperation with the United States, it should not give up too much of its autonomy to the United States in order to maintain the South Korean people's support for its strategy. Third, it should be able to strengthen its nuclear preparedness but not provoke too much public anxiety. Fourth, it should focus on the practical improvement of its nuclear preparedness instead of verbal promises or rosy visions of unachievable goals. The South Korean government and military should do their best to maintain balance among these conflicting elements and come up with the most balanced and effective nuclear deterrence and defense measures.

Key Tasks of South Korea

1. The Diplomatic Denuclearization of North Korea

As has been clearly revealed through the real negotiations that have been pursued so far, the effort to induce North Korea's voluntary denuclearization was an illusion that could not succeed in the first place. Caught in this fantasy, South Korea and the United States wasted more than 30 years and allowed North Korea to strengthen its nuclear weapons to a level that could threaten the existence of South Korea. In particular, the Moon Jae-in administration (2017–2022) naively believed in North Korea's deceptive promise of denuclearization and immersed itself in fruitless denuclearization negotiations. It ended up providing North Korea with a decisive opportunity to acquire a strategic nuclear force capable of threatening the U.S. mainland. All efforts for the denuclearization of North Korea that the United States and South Korea have pursued thus far have failed miserably.

Now, based on a situational awareness that North Korea will not voluntarily denuclearize, we must devise practical measures to force North Korea to denuclearize. South Korea and the United States should not allow North Korea to repeat the vicious cycle of "provocation → negotiation → compensation → provocation." A significant number of South Koreans insist that the effort itself for the denuclearization of North Korea should be stopped, and it is true that the possibility of success in the denuclearization of North Korea is very low in reality. However, South Korea cannot afford to give up the diplomatic denuclearization of North Korea. It's a peaceful approach consistent with the globally accepted principle of non-proliferation, and most of all, other alternatives for South Korea seem to be very risky, costly, or not feasible. South Korea should not give up the denuclearization project but pursue it differently.

1) The Revision of South Korea's "Audacious Initiative"

The current South Korean Yoon Suk-yeol Administration (2022–) proposed its "Audacious Initiative" to North Korea. It explained that "if North Korea enters into denuclearization negotiations, South Korea will provide large-scale food supply; power

generation, transmission, and distribution infrastructure support; ports and airport modernization projects for international trade; technical support to improve agricultural productivity; hospitals and medical infrastructure; etc., from the initial stage of negotiations." In other words, South Korea is willing to support North Korea's economic development if only North Korea comes to the negotiation table for its denuclearization.

However, this initiative, like other initiatives or proposals from previous administrations, was not welcomed by North Korea. North Korea rejected this initiative without talking about its content. North Korea seems to have a clear policy that it will negotiate only with the United States when it comes to nuclear weapons. Even in its recent negotiations with the United States during 2018–2019, North Korea did not show any intention to give up its nuclear weapons in exchange for economic prosperity. It only proposed to dismantle the old Yongbyon nuclear facilities in exchange for the lifting of the most recent and critical UN economic sanctions. It is necessary to review the initiative and replace it with new proposals that can be realistic and accepted by North Korea. If there is no such proposal, the South Korean government could inherit the "Denuclearization and Openness 3000," which was proposed by the Lee Myung-bak administration (2008–2013) and looks more logical than the "Audacious Initiative."

At the same time, the initiative seems to have a serious discrepancy between its title and its content. The general public that encounters this policy usually ends up asking, "How is this content so audacious?" At the same time, the contents are not much different from the Lee Myung-bak administration's "Denuclearization and Openness 3000" or the "Peace Process on the Korean Peninsula" of the Park Geun-hye administration (2013–2017). The Yoon administration explained that its initiative is different from those of previous administrations because it will provide support "from the initial stage of negotiations." However, it is not realistic to provide these proposed supports just because North Korea agreed to have a denuclearization negotiation.

2) Initiation of "Four-Party Talks"

In any form, it is necessary to promote international cooperation for denuclearization negotiations and responses to the Nuclear threat from North Korea. By introducing certain international mechanisms to deal with the North Korean nuclear issue, South Korea can garner international support for its denuclearization efforts and expect international pressure

on North Korea. Actually, it is almost impossible to resolve the North Korean nuclear issue without the active participation of the great powers surrounding the Korean Peninsula.

In this sense, the Six-Party Talks could be a good tool for international cooperation for the denuclearization of North Korea. However, the talks failed to achieve denuclearization of North Korea during the 2003–2009 period when North Korea expedited its development of nuclear weapons, as demonstrated by North Korea's two nuclear tests in 2006 and 2009. The United States and China, who are the staunch and powerful allies of South Korea and North Korea, respectively, should talk one-on-one because they are the most important shareholders and stakeholders regarding the denuclearization of North Korea. As North Korea manages to have a considerable number of nuclear weapons, only serious and intensive talks between the key players can be effective.

In this way, it is important to think about the four-party talks as an alternative that could give South Korea's diplomatic efforts to get rid of North Korea's nuclear weapons a new boost. At the Panmunjom summit between the two Koreas in 2018, North Korea agreed to have four-party talks to officially declare the end of the Korean War. Needless to say, as the negotiation proceeds, other countries such as Russia and Japan could join the negotiation if they are believed to contribute to the resolution of the issue.

3) Emphasis on "Peaceful Coexistence" between the Two Koreas

South Koreans need to consider the side effects of their aspirations and discussions for the reunification of two Koreas. Of course, peaceful reunification of the two Koreas is the best, and it is natural to pursue it. However, excessive emphasis on the reunification can rather make North Korea skeptical of South Korea's true intention as the reunification through absorption by South Korea. The fact that two Koreas insist on reunification means each other does not recognize the other as a legitimate entity. This has been the serious side effect that aggravates the relationship between the two Koreans and leads to serious confrontations all the time. Both South Korea and North Korea have wanted to reunify the whole Korean Peninsula on their terms, respectively. By emphasizing peaceful coexistence between the two Koreas first, they can prevent or at least reduce conflicts and frictions between them.

The South Korean government should clarify and emphasize the principle that it does not seek unilateral unification of the Korean Peninsula. It should promise North Korea that it

will respect North Korea's own systems and will not intervene in the internal affairs of that country. It should propose to establish and maintain peaceful coexistence mechanisms and accumulate histories of peaceful coexistence between the two Koreas. It should try to accumulate examples of consultations and agreements between the two Koreas based on the principle of peaceful coexistence. If this peaceful coexistence continues, the enmity between the two Koreas will diminish, and the two Koreas can strengthen cooperation in all fields, just like their relations with other countries.

However, South Korea should not stick to the signing of the so-called "peace agreement" with North Korea. The agreement itself cannot guarantee anything and could give North Korea a chance to deceive South Koreans. There is no precedent in human history where a peace agreement alone has ensured peace. The two Koreas should take actions that ensure peaceful coexistence and continue to accumulate the actions and results until they have real peaceful coexistence. Then, two Koreas could talk about peaceful reunification naturally.

4) Linking Denuclearization Negotiations with the Strengthening of U.S. Extended Deterrence

South Korea should relate its pursuit of denuclearization to the strengthening of its deterrence posture against North Korea. In other words, it should be able to use its deterrence measures to compel North Korea to come to the denuclearization negotiation table. If it feels that its deterrence against North Korea and its denuclearization negotiation efforts with North Korea conflict, it should select the former. It should not repeat the failed policy of the Moon Jae-in administration, which selected the latter at the sacrifice of the former.

If North Korea does not come to the denuclearization negotiation, South Korea should ask the United States to strengthen their combined deterrence and defense postures in an exponential way, such as through the forward deployment of U.S. nuclear weapons. If the United States and South Korea strengthen their deterrence posture like that, North Korea could think that it had better engage in denuclearization negotiations in order to stop the forward deployment of U.S. nuclear weapons to South Korea. At least China and Russia, which do not want to face the forward-deployed nuclear weapons in Northeast Asia, could pressure North Korea to agree on the denuclearization negotiation. If North Korea comes to the denuclearization negotiations, South Korea and the United States can freeze or

gradually reduce their strengthened deterrence postures based on the principle of reciprocity. In this way, the United States and South Korea can pursue both denuclearization negotiations with North Korea and effective deterrence against it.

2. Reinforcement of the U.S. Extended Deterrence Posture

The United States has promised to extend its deterrence concept to its allies. During the Cold War, deterrence meant nuclear deterrence, and the U.S.'s extended deterrence was called the nuclear umbrella," which focused on the use of nuclear weapons. Recently, however, the United States became reluctant to use the term "nuclear umbrella" in order not to be automatically entrapped in a nuclear war to protect its allies. South Korea needs to understand the U.S.' position instead of criticizing the U.S.' lack of resolve, because no country in the world could put its alliance commitment before its national survival. Based on this understanding, South Korea needs to do its best to make sure the U.S.'s promise of its extended deterrence is implemented as a nuclear umbrella.

1) The ROK-U.S. Intelligence Sharing on the Nuclear threat from North Korea

Deterring and defending against the Nuclear threat from North Korea is a common task that South Korea and the United States must prepare for most. The two allies must come up with various efforts and cooperative measures to address the Nuclear threat from North Korea in a way that protects the national interests of both countries at the same time. In this sense, the two allies should share most analyses and evaluations of North Korea's nuclear threat first.

The two allies constantly and continuously analyze, assess, and share the level and degree of the North Korean nuclear forces, nuclear strategy, and nuclear war plan. They should make all the necessary efforts to gather the necessary intelligence and information about North Korea. They should strengthen their mechanism to jointly analyze, assess, and use their intelligence on North Korean nuclear forces. They should even develop scenarios for North Korea's possible nuclear attacks to develop the necessary countermeasures to deter and defend the attacks.

The two allies need to expand their sharing of intelligence on the Nuclear threat from North Korea to other allies and friendly countries such as Japan, Australia, etc. Especially, they need to establish intelligence sharing mechanisms and examples with Japan, which has

been facing the Nuclear threat from North Korea exactly like them. As South Korea reactivated its agreement for information sharing with Japan, the trilateral information sharing mechanism should be strengthened as the Nuclear threat from North Korea exacerbates.

2) Strengthening the Extended Deterrence Consultative Mechanisms

Since the implementation of extended deterrence is such a serious issue, there is a need for active consultation between the United States and South Korea. Most of all, the communication channel between the heads of the South Korean Office of National Security (ONS) and the U.S. National Security Advisor for the President must be open at all times. The Extended Deterrence Strategy Consultative Group (EDSCG), which is comprised of vice ministers of defense and foreign affairs, should function actively. Most importantly, the Deterrence Strategy Committee (DSC), which is composed of key defense officials from two allies, should be expanded and function actively. There is a great need to further expand and strengthen the DSC as the Nuclear threat from North Korea grows. The committee should be converted into a full-time organization and could be moved to Guam to ensure constant consultation on U.S. extended deterrence.

In addition, if North Korea's nuclear threat worsens, the DSC should be expanded into the "Nuclear Planning Group (NPG)" that has been functioning in NATO to include discussions on NATO-style nuclear sharing or the forward deployment of U.S. nuclear weapons. The new NPG in Northeast Asia or East Asia could include other U.S. allies such as Japan, Canada, Australia, and the Philippines. If the Nuclear threat from North Korea exacerbates, the NPG should be the organization to discuss all the options the United States and other allies could take to deter a North Korean nuclear attack.

3) Strengthening of the CFC Role Regarding U.S. Extended Deterrence

South Korea and the United States should strengthen the deterrence functions of their combined forces command, the CFC, because that command should be in charge of or coordinate most of the implementation of U.S. extended deterrence. If the commander of the CFC requests the implementation of extended deterrence, the U.S. president will recognize the request seriously and can decide on the implementation more easily. Because the commander of the CFC wears multiple hats, including that of the representative of the

U.S. Joint Chiefs of Staff to South Korea, his assessment and recommendation will be very important regarding the U.S.' decision for the implementation of the extended deterrence promises.

Actually, the CFC is supposed to function at the issuance of DefCon-III, which is the situation in which the two allies assess that a North Korean attack is imminent. In other words, it is not easy for the commander of the CFC to find his clear role regarding the strengthening of deterrence measures against North Korea in peacetime, in other words, before the issuance of the DefCon-III state. However, the CFC has given itself the mission of deterring war on the Korean Peninsula, and that mission should not exclude nuclear deterrence. In this sense, the commander should recognize that deterring and responding to North Korean nuclear provocations in peacetime are also his most important tasks and develop a plan to conduct these tasks. To ensure the active role of the CFC commander in nuclear deterrence, South Korea should not discuss any change in the wartime operational authority of the CFC commander until the nuclear threat from North Korea is completely resolved.

The CFC commander should also do his best to revise his operational plans to include and deal with North Korea's use of nuclear weapons. He should direct all the forces under his command to conduct combined exercises based on the new nuclear operational plans. He could establish the "Nuclear Response Center" in the CFC to deal with North Korea's nuclear provocations. Through this organization, the CFC commander should take care of nuclear deterrence and defense against North Korea in the field all the time.

4) Strengthen Strategic Communication with North Korea.

In order to deter nuclear threats from North Korea, the United States and South Korea need to further strengthen their capabilities, the credibility of their actions, and their communication with North Korea to make the country aware of the capabilities and credibility of two allies. No matter how strong the deterrence and countermeasures of the two allies are, they cannot succeed in their deterrence if North Korea does not acknowledge their strength. In this sense, they should review, take, and demonstrate various measures to achieve and strengthen the psychological impact of their deterrence measures on North Korean leaders, including Kim Jong-un.

The two allies should develop effective ways and means for "strategic communication" with North Korea to make it clearly recognize their strong will and capabilities. They should use both punishment and incentives to North Korea according to the situation. They should deliver direct and indirect messages to North Korea for that strategic communication, assess the impact or results of the communication, and adjust their messages for more effective deterrence. They need to increase and expand the ways and means for successful strategic communication with North Korean leaders.

3. The Forward Deployment of U.S. Nuclear Forces

In principle, it does not matter if U.S. nuclear weapons are on the homeland or somewhere else, as long as the United States is determined to provide the promised nuclear umbrella. In theory, however, the success or failure of deterrence depends on how North Korea assesses the U.S.'s determination. Needless to say, moving U.S. nuclear weapons near South Korea enhances the deterrence effect of the U.S. extended deterrence just as the forward deployment of U.S. conventional forces does. In this regard, many experts have called for the forward deployment of nuclear weapons near or on South Korea as the Nuclear threat from North Korea has become serious.

Most South Korean officials and scholars discuss the forward deployment of U.S. nuclear weapons to their country through the concept of "nuclear sharing," which has been used in NATO. However, the term "sharing" can lead to misunderstandings for both South Koreans and Americans. South Koreans could misunderstand that they could use U.S. nuclear weapons like their own. The U.S. people could be reluctant to deploy their nuclear weapons in fear of South Korea's partial ownership of the weapons. Even in NATO, "sharing" means the consultation of allies about the use of deployed U.S. nuclear weapons and the preparation of the air forces of allies to conduct the nuclear mission together. The final authority for the control and use of nuclear weapons solely belongs to the U.S. President.

Some South Korean scholars even differentiate nuclear sharing from the forward deployment of U.S. nuclear weapons. However, the two concepts cannot be separated because the concept of sharing cannot be discussed if there are no forward-deployed U.S. nuclear weapons. Most South Korean scholars usually try to put the adjective "tactical" in front of the nuclear weapons based on their experience in the Cold War, but the adjective cannot be accurately used to represent the current U.S. nuclear weapons, which do not include many small nuclear weapons that were deployed to U.S. allies during the Cold War. The United States does not use that kind of differentiation. Considering the narrow area of operations, all the nuclear weapons that could be used in South Korea could be strategic. A few South Korean scholars also argue that the United States and South Korea have already shared U.S. nuclear weapons to some extent because the South Korean military has discussed the employment of U.S. nuclear weapons through the DSC and the combined

operational plans that include nuclear defense scenarios. However, that level cannot be called "nuclear sharing."

In this sense, South Korean scholars had better not use such phrases as "re-deployment of U.S. tactical nuclear weapons" or "nuclear sharing." They should discuss options using phrases such as "the forward deployment of U.S. nuclear weapons" near or on South Korea or "consultation on the use of nuclear weapons with the United States." If the United States deploys its nuclear weapons to South Korea, it will consult with that country before using the deployed weapons, because South Korea will not allow the deployment without that kind of consultation. In addition, South Korea needs to make the most of the sea that exists around it, which is a different environment from NATO's case, to have more flexibility regarding the forward deployment of U.S. nuclear weapons. In other words, the United States can use seaborne forward deployment of its nuclear forces in a way to reduce the expected opposition from China and Russia, and even from some South Koreans.

1) Discussion of Forward Deployment of U.S. Nuclear Forces in the Context of Extended Deterrence

North Korea's strategic nuclear buildup, which includes the development of hydrogen bombs, ICBMs, and SLBMs, has made the credibility of U.S. extended deterrence much weaker. This lowered credibility has caused a lot of South Koreans to worry about the deterrence failure of the U.S. extended deterrence commitment. The U.S. government has claimed that U.S. extended deterrence is solid. However, North Korea seems to believe that the U.S. nuclear extended deterrence will not be provided to South Korea because North Korea could launch a nuclear attack on U.S. cities as its counter-retaliation through its ICBMs and SLBMs. In fact, North Korea has been emphasizing its "second mission," which means an attack on South Korea, since the beginning of 2022, implying that its "first mission," which means blocking the U.S. nuclear umbrella, has been achieved to some extent. It has recently developed, deployed, and tested various SRBMs to attack South Korea. Therefore, it is necessary to change North Korea's such perceptions through the forward deployment of U.S. nuclear forces.

In this sense, South Korea and the United States should consider the forward deployment of U.S. nuclear weapons as the key measures for strengthening U.S. extended deterrence and take an incremental approach in accordance with the aggravation of the Nuclear threat

from North Korea. The two allies should gradually increase the strength of the U.S. nuclear weapons for forward deployment and their proximity to South Korea as the Nuclear threat from North Korea increases. They should adjust the level of the consultation system between themselves in response to the increasing level of North Korea's nuclear buildup. They could tell North Korea, China, and Russia that as soon as North Korea starts to denuclearize itself, they will move the U.S.'s forward-deployed nuclear weapons to the mainland.

2) The establishment of the Nuclear Planning Group

As a few U.S. defense practitioners have recommended, the United States and South Korea should establish another NPG with their allies in Northeast or East Asia. The two allies expand and strengthen their DSC into the NPG by adding Japan, Canada, and Australia. They may expand the NPG gradually to include the Philippines, Thailand, and other allies. The NPG will assess the level of the current nuclear threat from North Korea and recommend necessary countermeasures to the allies. The organization should be expanded or shrunk in accordance with the strengthening or weakening of the Nuclear threat from North Korea. It should be the organization that discusses and decides the overall nuclear policy against North Korea.

3) The U.S. SSBN in the East Sea

If the Nuclear threat from North Korea continuously increases, the United States can deploy one of its SSBNs in the East Sea of South Korea to warn North Korea by demonstrating its on-site capabilities for constant and quick retaliation. North Korea cannot ignore the warning because Pyongyang, the North Korean capital city, is just 150 kilometers from the sea. The United States and South Korea, or the NPG, could decide and announce that it will maintain at least one nuclear-armed U.S. SSBN around the Korean Peninsula 24 hours a day, seven days a week. Although the SSBN should be under U.S. control, the NPG could be provided with basic information about their activities from the U.S. military and sometimes be asked to provide recommendations about the necessary activities of the U.S. SSBN. The NPG members could share some of the operational costs of the SSBN.

4) Employment Consultations on the Use of U.S. SLBMs

If North Korea continues to strengthen its attacking capabilities on the U.S. mainland without engaging in denuclearization talks, the United States and its allies will seek the first, limited, close "employment consultation (in NATO's terminology, sharing)" of the deployed U.S. nuclear weapons. Firstly, they should consult on the employment of low-yield SLBMs, such as the W76-2—which has an explosion power of about 5 kt TNT—in the U.S. SSBN. They should discuss all the related issues regarding the use of these low-yield SLBMs, while the United States retains the final decision-making authority over their use.

If the situation deteriorates further, secondly, the United States and its allies may expand their employment consultation to the deployed SSBN itself, including the strategic SLBMs, minus the sensitive U.S. strategic assets contained in the SSBN. In other words, the NPG should discuss the movement and engagement of the deployed U.S. SSBN, while the United States retains the final decision-making authority over the SSBN and the nuclear weapons in it. The United States and its allies can announce that the primary mission of the SSBN deployed around the Korean Peninsula is to provide the promised nuclear umbrella to South Korea. Needless to say, the SSBN should participate in necessary combined exercises between the United States and its allies. NPG member countries need to cover some of the operating costs of the SSBN around the Korean Peninsula.

Even though the availability of the U.S. SSBN has been questioned by some South Korean scholars, the United States has more than 60 nuclear-powered submarines, 14 of which are SSBNs that transport and deliver nuclear SLBMs. Because about 8 of the 14 SSBNs are deployed in the Indo-Pacific region, the constant and alternate deployment of one SSBN around the Korean Peninsula will not be that difficult. In the long term, the United States may need to increase the number of its SSBNs by reducing its nuclear warheads on ICBMs or bombers if it cannot violate its agreement with Russia.

5) Forward Deployment of U.S. Nuclear Forces to Guam

If North Korea makes an SSBN, the United States might have to send nuclear missiles and bombs to Guam, which is in the western Pacific, to increase the U.S.' warning of credible retaliation. It can send nuclear bombs for aircraft or medium-range nuclear missiles to Guam. Such a forward deployment will multiply its deterrence effect if South Korea and/or Japan prepare nuclear retaliatory strike missions by sending their F-35s for dual use,

just like the current nuclear system in NATO. Since Guam is a U.S. territory, the deployment of nuclear weapons will not raise any controversy regarding the non-proliferation principle of the international society. It will be implemented immediately as soon as the United States decides to do so. North Korea cannot help but consider the high probability of a retaliatory nuclear attack by South Korean aircraft.

Some South Korean scholars also doubt the availability of U.S. nuclear weapons for the deployment, but the United States has 100–300 employable nuclear bombs now in addition to the 100 deployed in Europe. The United States has been improving the existing bombs, which are B61-3 and 4 to B-12, so, an additional production will not be difficult if the United States decides to make it. The United States could reemploy some nuclear weapons from its 1,964 reserve nuclear warheads and 1,720 nuclear warheads waiting to be dismantled. Since North Korea is a small country, the United States may not need many nuclear warheads.

6) Forward deployment of U.S. Nuclear Bombs to South Korea and Japan

If North Korea attempts to carry out a nuclear attack despite the deployment of U.S. nuclear forces in Guam, the United States will have no choice but to deploy its nuclear weapons and allies' aircraft to conduct nuclear missions on the Korean Peninsula for a clear on-site nuclear balance. This could be a combination of the Cold War-era deployment of U.S. nuclear weapons and the current nuclear sharing of NATO. For this deployment, the best candidate place for the U.S. nuclear bombs could be Jeju Island, which is the southernmost province and island of South Korea. Because Jeju Island is 620 km away from Pyongyang, the U.S. military can have more time to detect North Korea's nuclear missile attack on the nuclear storage sites, and, more importantly, it can make most of its SM-3 sea-borne missile interceptors thanks to the existence of sea between North Korea and Jeju Island. In this sense, South Korea may need to take a few preparatory measures for the possible deployment, such as constructing emergency storage facilities for U.S. nuclear bombs.

4. Emergency Nuclear Armament of South Korea

As the Nuclear threat from North Korea has become serious, the most frequently and intensively discussed option in South Korean society is the necessity to develop South Korea's own nuclear weapons. Most South Koreans think that the United States will not provide its nuclear umbrella if North Korea threatens to attack U.S. cities such as New York. They also think that only the presence of nuclear weapons in South Korea could deter North Korea's nuclear threat. In this regard, about three-fourths of South Koreans support South Korea's nuclear armament, though they do not seem to clearly understand the side effects of the option.

Nobody could deny the necessity of South Korea's own nuclear armament if the United States does not seem to be willing to provide the promised nuclear umbrella for South Korea. South Korea must deter North Korea's nuclear attack even by developing its nuclear weapons for its survival as an exercise of its right of self-defense, which is guaranteed by the UN Charter. In this sense, South Korea needs to take a few precautionary measures for the emergency nuclear armament while strengthening the effectiveness of the U.S. extended deterrence.

Unfortunately, the feasibility of South Korea's own nuclear armament at this point is not high. South Korea has more than 20 nuclear power plants and has tremendous knowledge and technology for the peaceful use of nuclear energy. However, it does not have plutonium or highly enriched uranium, which are essential for the development of nuclear weapons. It does not have the necessary facilities to produce these nuclear materials, either. So far, South Korean leaders have focused on emphasizing the necessity of emergency nuclear armament but have not done anything productive to increase their country's potential capabilities for emergency nuclear armament.

1) Hedging Strategy for Emergency Nuclear Armament

South Korea cannot give up its survival under any circumstances. Under extreme situations like the U.S.'s decision not to provide the promised nuclear umbrella to it, South Korea should develop its own nuclear weapons to deter North Korea's nuclear attack.

However, nuclear armament cannot be quickly achieved without preparations in advance. Therefore, South Korea should pursue the "hedging strategy," or, in other words, increase its potential to expedite its emergency nuclear armament. The South Korean government needs to assemble a team of experts for the hedging. The team should assess South Korea's current level of capability for emergency nuclear armament, identify the elements that the country should fulfill to raise the level, and work to strengthen the country's potential for emergency nuclear armament, while adhering to the constraints of the NPT and in close consultation with the United States.

South Korea needs to seriously discuss whether or not to nullify the "Joint Declaration on the Denuclearization of the Korean Peninsula," which was agreed between the two Koreas in 1991. This declaration has been practically nullified by North Korea's development of nuclear weapons, but South Korea, which values the rule of law, cannot act as if the declaration did not exist. If South Korea nullifies the declaration, it will be in for considerable negative repercussions both domestically and internationally. It is necessary to examine this issue in depth, including whether or not to nullify, the timing and method of announcement on the nullification, and the plan to persuade the United States if South Korea decides to nullify the declaration. However, without the nullification of the declaration, South Korea cannot do anything useful for the emergency nuclear armament. At least, the partial nullification of the declaration to do the reprocessing of spent fuel rods for plutonium production or uranium enrichment should be reviewed and implemented.

Some South Korean scholars who advocate South Korea's own nuclear armament demand that South Korea withdraw from the Nuclear Non-Proliferation Treaty (NPT). Article 10 of the treaty stipulates that member states can withdraw from it if "extraordinary events...have jeopardized the supreme interests of the country." However, in the case of an actual withdrawal, the international community may impose various sanctions on South Korea instead of simply accepting it. In particular, the ROK-U.S. alliance may be endangered because the United States will not approve South Korea's withdrawal from the NPT. Although South Korea can decide on the withdrawal as a sovereign state, it needs to closely consult with the United States. South Korea cannot give up the ROK-U.S. alliance since North Korea already possesses nuclear weapons and the U.S.' nuclear umbrella is indispensable to deterring North Korea's nuclear attack until it succeeds in developing its own nuclear weapons. If South Korea consults with the United States on the issue, the United States could strengthen its extended deterrence posture in order to convince South

Korea not to make nuclear weapons. South Korea should not make any unilateral decisions about its own nuclear armament.

2) Production of Nuclear Materials

For emergency nuclear armament, South Korea should secure nuclear-weapons-related materials such as plutonium or highly enriched uranium (HEU). However, South Korea will have to persuade the United States to produce either one of these because the United States has provided nuclear materials for South Korea's nuclear power plant on the condition that it does not produce any of these materials. That is the reason why South Korea stores its huge amount of spent fuel rods without reprocessing and receives enriched uranium from the United States for its more than 20 nuclear power plants. South Korea has made considerable efforts to persuade the U.S. government, but has not achieved any results yet.

South Korean leaders need to adopt a top-down approach in which they focus on persuading U.S. leaders, including the president, of the necessity of emergency nuclear armament. They should persuade the leaders of the U.S. that the increase of South Korea's potential for an emergency nuclear armament is necessary to effectively deter North Korea, because the U.S. nuclear umbrella has become uncertain due to North Korea's ICBMs and SLBMs. They should explain that allowing South Korea to have a certain amount of nuclear potential could reduce the U.S.' risk of automatically getting involved in a nuclear war. At the same time, they must clearly promise that South Korea will not develop its own nuclear weapons without in-depth consultation with the United States and will accept any control or surveillance systems demanded by the United States. Once the U.S. leaders agree on the principle to support the increase of South Korea's potential, the working-level discussions can allow some leeway for South Korea to reprocess its spent fuel rods or enrich uranium for power plants, as the United States allowed Japan to do.

3) Development of Preliminary Plans for Emergency Nuclear Armament

South Korea needs to develop its own plans for how to turn its potential into real nuclear armament when the situation dictates in the future. It could set the target date for its emergency nuclear armament based on the level of the nuclear threat from North Korea and

strengthen its potential capabilities in accordance with the threat level. If it sets a goal of getting new nuclear weapons in a year, it should try to get all the infrastructure ready to meet that goal. If North Korea's nuclear threat intensifies, it could shorten the period of its emergency nuclear armament to six months, three months, and so on. It should make all the preparations without deceiving the United States, its ally.

The United States should also try to understand how much worse the situation is regarding North Korea's nuclear threat and work with South Korea to find solutions not to risk its nuclear non-proliferation policy instead of pressuring it not to do anything about South Korea's own nuclear armament. It might need to ease some of the bilateral restrictions it had imposed on South Korea, which are stronger than NPT restrictions. It may sometimes act like it doesn't know about certain things South Korea is doing or let South Korea's hedging strategy move forward. The two governments should have strong trust in each other when they talk about this option. They should be able to discuss frankly what steps should be taken, how to put plans into action, who should do what, and other details about South Korea's nuclear option. In this way, the United States should help South Korea carry out the "sheltered pursuit" strategy, in which it controls the level of South Korea's own nuclear armament. South Korea should promise the United States that it will get rid of its nuclear potential as soon as the Nuclear threat from North Korea disappears.

4) A Bargain Chip for the Denuclearization of North Korea

Instead of seeing South Korea's nuclear option as something that makes things worse, South Korea and the United States should use it as their bargaining chip to get North Korea to give up its nuclear weapons. The two allies should say that if North Korea gives up its nuclear weapons, they will immediately get rid of South Korea's emergency nuclear capabilities. At the same time, they should warn that if North Korea does not give up its nuclear weapons, they cannot help but allow South Korea to possess its own nuclear weapons.

Actually, South Korea's pursuit of its own nuclear armament should not be seen as a last resort or a separate event. It should be seen as a continuous process to pressure the denuclearization of North Korea. It may make China and Russia pressure North Korea to give up nuclear weapons so as not to face a nuclear-armed South Korea. If the United States, South Korea, and Japan pursue a gradual, step-by-step, and de facto sheltered pursuit of

South Korea's nuclear armament proportionally to the level of the Nuclear threat from North Korea, China and Russia must become more serious about the denuclearization of North Korea.

5. Four-Axis System + α

The South Korean military's most critical defense concept against the Nuclear threat from North Korea is the "three-axis system." The first axis, the Kill Chain for preemptive strikes, is a concept in which the South Korean military attacks and destroys North Korean nuclear missiles within 30 minutes after detecting signs of an imminent North Korean nuclear attack. Due to North Korea's development of solid-fuel nuclear missiles that could be launched in a few minutes after arriving at the launch site, the effectiveness of this first axis has been greatly reduced. The effectiveness of the second axis, which is the KAMD or the South Korean missile defense systems, has been lowered due to the development of North Korean SRBMs that could perform pull-up maneuvers at the terminal stage around their targets. South Korea needs to examine the effectiveness of the current "three-axis system" and complement it.

Despite the abovementioned shortcomings, the three-axis system has secured a wide consensus from the South Korean people and military. However, without more reinforcement of the system by changing priorities and adding new elements, it cannot meet the expectations of South Koreans. For example, South Korea needs to place more emphasis on its KMPR, the third axis, or the so-called decapitation operations against North Korean leaders, and add information and cyber/electronic warfare capabilities as the fourth axis. The U.S. military has been developing this fourth axis under the name "left of launch," which focuses on destroying nuclear weapons and missiles before they are launched. In addition, it is necessary to incorporate efforts for the "democratization of North Korea" as one of the measures to deter North Korean nuclear weapons, since the ultimate solution to the North Korean nuclear issue is to transform the North Korean regime into a democratic system. However, this axis is not an exclusive military issue, so we could include it for now as "+ α ."

1) **1st Axis: Reinforcement to Destroy North Korea's Solid Fuel Missiles**

In theory, the best way to stop them is to strike North Korea first and destroy its nuclear and missile capabilities before they are launched. A preemptive strike is conducted when

the imminent enemy attack is clear, so it is often accepted as justifiable in international society. However, in South Korea, the term 'preemption' is understood as the first strike. In this sense, the South Korean military needs to discuss this option using the term "blocking strike" instead of "preemptive strike."

In order to preemptively destroy North Korea's solid-fuel nuclear missiles before their launches, South Korea needs to strike the targets in about five minutes after identifying the arrival of missiles at launch sites. For this purpose, South Korea could adopt the "emergency kill chain" concept, which includes the hovering of aircraft in the air. It also needs to strengthen its capabilities for real-time target detection and identification, ensure quick decisions by national level leaders, and enable precision strikes on the target. The South Korean military should establish an organization to prepare and control all the processes for the emergency kill chain.

South Korea should discuss the necessity of adopting a "preventive strike" concept to adapt to the limited strike time. The concept is to attack the target even though there are no signs of an imminent attack. In other words, South Korea should try to attack the solid-fuel North Korean nuclear missiles in the storage sites, after their movement from the storage sites, or on the road to the launch site in order to ensure sufficient time for its current normal kill chain. Because the preventive strikes could be considered a first strike in international society and provoke North Korea's responsive nuclear attack, the South Korean political and military leaders should discuss them in depth to ensure a balance between the necessity and the risk. For the successful execution of the preventive strike, South Korea needs to improve the decision-making process through robust examinations and exercises.

2) 2nd Axis: Shifting Focus to the Protection of Cities

Due to the narrowness of its territory and proximity to North Korea, the KAMD of the South Korean military or the interception of North Korean nuclear missiles in the air will not be easy. At the same time, the South Korean military has only lower-tier defense capabilities for its terminal-stage interception of incoming North Korean missiles. The U.S. forces in South Korea have one set of upper-tier defenses, the Terminal High Altitude Area Defense (THAAD) system, for terminal-stage interception against North Korean nuclear missiles. The South Korean military even deployed most of its lower-tier interceptors to

defend air force bases. As a result, South Korean cities are very vulnerable to a North Korean nuclear missile attack.

The South Korean military needs to review the necessity of defending major cities in South Korea because North Korean nuclear missiles could strike cities using the counter-value strike concept, which is more common in nuclear attack scenarios. It should change the focus of its KAMD from the protection of air forces to the protection of South Koreans. In this regard, it should improve and produce more of its medium-range surface-to-air missiles (M-SAM) to cover the lower-tier defense for the cities and deploy them around major cities. It should also accelerate the development of its long-range surface-to-air missiles (L-SAM) to cover the medium-tier defense of the cities. It may need to procure one or two more THAAD batteries to provide reliable upper-tier defense for the cities while ensuring close integration between its missile defense capabilities and those of the U.S. forces in South Korea.

3) 3rd Axis: Emphasis on Decapitation Operations

As preemptive strike and missile defense become less effective, the weight of KMPR in the three-axis system has increased. The KMPR is South Korea's own retaliation concept using conventional weapons mainly targeting the leadership of North Korea. Considering the dynastic nature of the North Korean regime, South Korea's threat to kill North Korean leaders, including Kim Jong-un, could have a big deterrent effect. It will be difficult for the North Korean leaders to decide to initiate a nuclear attack at the cost of their own lives. During the Iraq War, the United States recognized Hussein as the center of gravity in Iraq and pursued him relentlessly. As a result, it succeeded in excluding Hussein from the command of the war and ending the war with minimal effort. Even the U.S. Secretary of Defense agreed with this concept and put a sentence in the joint communiqué of the annual meeting with the South Korean defense minister since 2022. He noted that "any nuclear attack against the United States or its allies and partners, including the use of non-strategic nuclear weapons, is unacceptable and will result in the end of the Kim regime."

The South Korean Moon Jae-in administration eliminated the KMPR concept from South Korea's nuclear deterrence and defense option and stopped strengthening the unit that was designated to perform the decapitation operations. The South Korean military should put more emphasis on this KMPR and strengthen its capabilities to conduct decapitation

operations on North Korean leaders when necessary. I should be able to have accurate and real-time information about the movements of North Korean leaders and strike them at the necessary time. Especially, it should use new high-tech weapon systems to eliminate North Korean leaders under any circumstances. Sometime, it should demonstrate its capabilities to accurately track the movements of North Korean leaders and to strike them with precision weapons to deter North Korea's nuclear provocations.

4) 4th Axis: Development of Cyber and Electronic Warfare Capabilities

The 4th axis is about using cyber and electronic warfare to disrupt and stop North Korea's command and control systems that are related to the launch of nuclear missiles. South Korea needs to discuss how to destroy the incoming nuclear missile itself in the air through electronic warfare or an electromagnetic pulse (EMP) attack. It should think about how to interfere with North Korea's nuclear attack command systems, in which the decision of Kim Jong-un to launch the nuclear missiles is delivered to higher-level commanders, middle-level commanders, field commanders, and personnel for the missile launch. It should also develop various ways and means to impede or slow North Korea's nuclear weapons production.

For the 4th axis to work, it's also important to improve offensive cyber operations against North Korea or the North Korean military as a whole. South Korea should put more emphasis on offensive cyber operations against North Korea and foster cyber warriors to perform this mission. The offensive cyber operations can also prevent the cyber operations of North Korea against South Korea. It will be effective in reducing North Korea's overall military capabilities as well.

5) Democratization of North Korea

Democratization of North Korea is to change the North Korean regime into a democratic one like South Korea, based on the recommendations of "democratic peace" theories. If North Korea becomes more democratic, its motive and probability of making the decision to conduct a nuclear attack on South Korea will be reduced. The two Koreas could eventually discuss peaceful coexistence, denuclearization, and reunification.

Since North Korea has been completely isolated from the world, it is not easy for South Korea to raise the level of democratization in North Korea. However, it should do everything possible for this purpose. It should develop various ways to infuse North Koreans and their leaders with more knowledge and information about democracy and the outside world. It should raise serious questions to North Korea about the human rights violations, such as various atrocities in prisons, concentration camps, and the whole society. It should record and release the human rights abuses in North Korea and express its determination to punish the culprits whenever punishment becomes possible.

South Korea also needs to talk about how to deal with North Korea's "sudden political change," which was discussed seriously during the late 1990s to use the change to turn North Korea into a democratic country or bring about unification. Considering the increase of human rights abuses in North Korea, the exacerbation of autocratic rule, and the continuous worsening of the economic situation, the probability of North Korea's political sudden change seems to be higher than that in the late 1990s. South Korea should be able to change North Korea into a democratic country by exploiting a small political change in North Korea through good planning and perfect execution of contingency plans to deal with North Korea's sudden political change.

6. Attrition of North Korea's Military and National Power

U.S. President Ronald Reagan escalated an arms race with the Soviet Union through active countermeasures to defend his country from the Soviet Union and was eventually able to win the Cold War as the Soviet Union collapsed as the consequence of the fierce arms race with the United States. South Korea has far more overwhelming economic power over North Korea than the U.S. had over the Soviet Union during the Cold War. South Korea could expect similar consequences from North Korea by adopting an approach similar to that of President Reagan during the Cold War in a way to reduce North Korea's military and national power.

In fact, South Korea drew a few helpful lessons from North Korea's response to the "Vigilant Storm" exercise that was conducted by South Korean and U.S. air forces in October 2022. In response to the combined robust aircraft exercises and training of the two allies, North Korea conducted various missile test-fires and large-scale air force demonstrations. However, many of the North Korean missiles and aircraft turned out to be obsolete, and North Korea could not repeat the same large-scale demonstrations after that response. In other words, the attrition competition could dry up the resources and weapons systems in North Korea quickly and effectively considering North Korea's weak economy.

1) Active Combined Exercises between the United States and South Korea

During the Moon Jae-in administration, the militaries of South Korea and the United States did not conduct the necessary level of combined exercises and training. The two allies even officially cancelled all their major military exercises to appease North Korean leader Kim Jong-un at the Singapore summit between the United States and North Korea in June 2018. As a result, the combined combat readiness of the two allies has dramatically lowered, and North Korea could concentrate its resources on its offensive nuclear build-up.

The robust and frequent combined exercises and trainings between the militaries of the United States and South Korea will not only enhance the combat readiness of the militaries of the two allies but also contribute to strengthening their deterrent effects against North Korea. They can also be used as an arms race strategy that can compel North Korea to distribute its resources toward the buildup of its conventional forces, which will not be comparable to those of South Korea and the United States. They will also relieve public anxiety over North Korea's threat and boost the South Korean people's morale by demonstrating the strong U.S. extended deterrence posture and commitment. North Korea has to spend more resources and money to improve its conventional defense forces in response to the frequent combined exercises and trainings of the two allies. The more angrily North Korea responds, the more the two allies need to increase the intensity and scale of their combined exercises and training.

Moreover, South Korea and the United States should review the pros and cons of their drills for offensive air operations, which could be the most fearful activities from the standpoint of Kim Jong-un. Because of North Korea's poor and outdated air defense systems, Kim Jong-un may feel that he is totally exposed to U.S. offensive air operations without any protection. Actually, North Korea responded very aggressively to the air operations of the two allies. It is necessary to actively conduct large-scale combined air operations between two allies, such as the Vigilant Storm, to make North Korea spend more resources on defensive measures. However, the two allies should be cautious not to push North Korea too much.

2) Proportional but Active Response to North Korea's Provocations

South Korea and the United States usually restrain themselves from responding to North Korea's provocations in order not to escalate the situation. However, that absence of response emboldened North Korea to provoke whenever it thinks the provocation is necessary, such as North Korea's sinking of the South Korean warship Cheon-an and North Korea's artillery bombardment of a South Korean island in 2010. The two allies should change their policy and respond to North Korea's provocations quickly and in a proportional manner. If they conduct some retaliation operations, North Korean leaders would think twice before deciding on provocations. If provocations and responses continue, North Korea should spend lots of its resources and will end up with attrition of its forces.

The political leaders of the United States and South Korea should have a firm resolve, and the people of the two allies must be united to support their leaders' decisions.

On the one hand, the two allies should keep talking with North Korea to keep things from getting worse and leading to the use of nuclear weapons. They should not take retaliatory actions until they have thought of effective ways to stop North Korea from making trouble again. During the Lee Myung-bak administration, an important principle was established: "respond decisively but prevent escalation." Some South Korean scholars criticized the administration for the conflicting nature of these two demands, but the peacetime response of democratic nations should strike a balance between these two conflicting but indispensable demands.

3) Provoking a Qualitative Competition of Conventional Forces with North Korea

As shown by North Korea's unmanned aerial vehicles that infiltrated into South Korean territory in December 2022, North Korea's regular military equipment is of much lower quality than that of South Korea. Although North Korea has nuclear weapons, its leaders may feel that their pride is damaged if the inferior quality of their conventional weapons is exposed to the world. If they order their military to reduce the quality gap in conventional forces between the two Koreas, North Korea should spend more resources and money on the improvement of conventional forces. South Korea needs to provoke a conventional military competition with North Korea.

South Korea needs to show North Korea more of its high-quality military weapons that use cutting-edge technologies. For example, if South Korea demonstrates state-of-the-art drones or laser-based drone shooting capabilities, North Korea can accelerate its efforts to secure higher-quality drones and interception systems against South Korean drones. If South Korea intensifies its efforts to use space for military purposes, North Korea can increase its efforts in that area to keep up with it. If South Korea strengthens its more advanced cyber warfare capabilities, North Korea could increase its investment in the field as well. In this way, South Korea can divert North Korea's interest away from nuclear weapons and consume its resources for conventional forces. Considering South Korea's huge economic superiority over North Korea, this strategy will be workable and effective

in shifting military competition between the two Koreas from nuclear weapons to conventional weapons.

7. Nuclear Civil Defense Posture

As soon as Russia managed to possess nuclear weapons, Europe took "civil defense" steps to make sure its people would be safe even in the event of a nuclear explosion. Civil defense is not an option but a necessity when the opponent has nuclear weapons. During the Cold War, South Korea strengthened its civil defense against North Korea's conventional attacks, so it should expand the civil defense to include North Korea's nuclear attack scenarios.

Unfortunately, South Korea has not properly implemented nuclear civil defense until now, claiming that it could provoke North Korea and make South Koreans uneasy. It never conducted nuclear civil defense even though North Korea managed to possess nuclear weapons in 2013, ten years ago. South Korea's Moon Jae-in Administration even almost stopped the conventional civil defense drill. Although Hawaii in the United States and Tokyo in Japan conducted nuclear civil defense drills when North Korea fired missiles in 2017, Seoul in South Korea never had that kind of drill. South Korea should begin its nuclear civil defense from scratch.

1) Designation of Nuclear Civil Defense Organizations

Nuclear weapons are weapons of mass destruction, causing extensive damage once detonated. The South Korean presidential office, specifically the Office of National Security, should become a control tower and link the military and non-military sectors for nuclear civil defense. In accordance with the directions of the presidential office, the Ministry of Public Administration and Security should take charge of the nuclear civil defense in cooperation with the Ministry of National Defense. The ministry should make basic policies, plans, and detailed guide lines for the nuclear civil defense. It should plan and execute the civil defense drills with the help of the responsible local governments in South Korea. It should also organize professional personnel for nuclear civil defense and educate South Koreans on civil defense.

South Korea has more than 3 million civil defense forces. However, they are not adequately educated and trained for nuclear civil defense. The Ministry of Public Administration and Security should reform all things regarding the civil defense forces to

adapt to the nuclear explosion situation. The organizations of the civil defense forces should be further systematized, and training hours for them should be increased with various incentives to encourage their participation.

Because nuclear attacks can come out of nowhere, local governments should also be actively involved in nuclear civil defense because they have close, direct, and constant contact with ordinary people. Based on the plan made by the Ministry of Public Administration and Security, each local government identifies what measures it should take in case of a nuclear explosion and how to warn, evacuate, and protect its people from the explosion. The day-to-day issues of civil defense should be handled by local governments.

2) Establishment of a Warning and Education System

For nuclear civil defense, evacuation facilities are important, but a warning system that will ensure a safe evacuation is also important. Evacuation itself will not take place if the necessary warning is not delivered early enough. However, South Korea has not improved its warning systems to deal with nuclear explosion situations. It needs to redesign the overall warning system to reach people quickly and accurately enough to make them relevantly aware of the situation and take the necessary actions. Once a warning system has been established, it should be practiced so that people become accustomed to it.

South Korea's warning system should include all available methods, such as TVs, radios, sirens, text messages, and so on. South Korea should strike a balance between efficiency and redundancy in its warning systems. Needless to say, it should examine and evaluate the effectiveness of its warning system and improve if it finds problems. The type of siren should also be set in advance so that the public can quickly understand what kind of alarm it is.

South Korea needs to systematize the education of its people in civil defense. Without continuous education, the public may not have the necessary knowledge about nuclear civil defense. The Ministry of Public Administration and Security should prepare a few brochures for the education of the people, distribute them to them in advance, and make them available in public places so people can pick them up when necessary. It should load these brochures on the internet so that the public can easily view them when necessary. Schools also need to find ways to educate their students about nuclear civil defense. The

South Korean people should try to actively participate in the various education programs of their government.

3) Improvement of Evacuation Shelters for Nuclear Civil Defense

According to the data of the Ministry of Public Administration and Security, there are 17,000 civil defense shelters in South Korea. However, most of them are basements of apartments or public buildings. In particular, the current civil defense shelters are not prepared for a nuclear explosion situation. Some of the shelters are used for other purposes and cannot function as shelters in a real situation.

The South Korean government should check the relevance of current civil defense shelters in terms of a nuclear explosion situation and improve them to be appropriate for the nuclear explosion situation. It should create an evaluation system regarding the relevance of the shelters and mandate improvements to the irrelevant shelters. It should try to make the most of the underground parking lots under most of the buildings and increase the survivability of the people in the parking lots by preparing a minimum level of water and food for emergency use. It could make a law to force the constructors of buildings to include underground nuclear explosion shelters. It should review the necessity of constructing big and higher-protection-level nuclear shelters for key government officials and people to continue its war against North Korea under any circumstances.

4) Regular Nuclear Civil Defense Drills

Currently, South Korea is supposed to conduct civil defense drills eight times a year by law. However, even the mandated drills have not been conducted for various reasons recently. Needless to say, South Korea should conduct civil defense drills as demanded and include the nuclear explosion situation as the top priority scenario.

At the same time, South Koreans should have the mindset of "protection on my own." Instead of demanding their government do the most necessary thing to protect them, the people should try to learn, prepare, and implement the necessary protective measures for themselves and their families. In the event of a nuclear explosion, government officials or military forces should take care of themselves and cannot afford to take care of other people. In this sense, the government should make its people aware of the inevitability of self-

protection by the people themselves and ask the people to take precautionary measures for their own protection.

The South Korean government could make facilities for nuclear civil defense education and experience for the people. The facilities should make the public understand the horrors of a nuclear explosion and how to survive one. The people should learn the importance of nuclear civil defense and tips for survival in a nuclear war. They should even learn how to survive when there are no appropriate shelters to accommodate them, including the construction of improvised shelters. The students of various levels of schools could visit these facilities for education and experience in civil defense in groups.

Recommendations to the South Korean Government

All government tasks are the same, but tasks that have to do with national security require more cooperation and coordination among all the ministries and agencies in the government than any other task of the government. The government, the military, and even the people need to work together to protect themselves from the nuclear threat from North Korea, which threatens South Korea's very existence. The following is a list of some key tasks to be performed by the South Korean government to deter a North Korean nuclear attack and to protect the South Korean people when deterrence fails.

First, needless to say, the one organization that has to carry out the most important tasks for deterring and defending the Nuclear threat from North Korea is the Presidential Office of South Korea. As stated in Article 66 of the South Korean Constitution, the President, as the Commander-in-Chief of the Armed Forces, must carry out the duty to ensure "the national independence and territorial integrity." South Korea established the Office of National Security (ONS) under the Presidential Office to primarily take care of the Nuclear threat from North Korea just after North Korea's success in developing nuclear weapons in 2013. The ONS should be the practical control tower of South Korea's deterrence and defense against the Nuclear threat from North Korea for the President.

The President should make a public announcement to remind all government ministries and citizens that the ONS is responsible for taking care of the Nuclear threat from North Korea under the direction of the president. The ONS needs to increase its concentration on North Korean nuclear issues and reinforce its capabilities by adding a third deputy director to exclusively handle the Nuclear threat from North Korea because the current ONS organizations are busy handling urgent and ongoing diplomatic and security-related issues. In particular, the ONS should write and publish an overall national nuclear deterrence and defense strategy against the Nuclear threat from North Korea, such as the "Alliance-based All-Out Deterrence and Defense" that was recommended by this report, to direct all the ministries and agencies of the government to do their parts to implement the strategy.

Since it is the National Security Council (NSC) that plays a crucial advisory role in the president's decision on security, the ONS must support this council in making the key decisions to handle all the issues related to the Nuclear threat from North Korea. It should

convene the committee periodically to evaluate the level of the Nuclear threat from North Korea and make up for any deficiencies, rather than just convening to show off the government's determination. The President could add a professional advisory organization that offers direct and professional advice to the president about the Nuclear threat from North Korea, deterrence, and defense options for South Korea.

The South Korean government should form a special team of experts to examine the current level of South Korea's potential for emergency nuclear armament and to set long-term goals for its emergency nuclear armament efforts while observing the nuclear non-proliferation treaty and other nuclear energy-related agreements with the U.S. government. It should prepare for exercising its right of self-defense in extreme circumstances such as the U.S.' hesitation to provide the promised nuclear umbrella to South Korea.

Second, the South Korean Ministry of National Defense should take more active measures to practically deter and defend the Nuclear threat from North Korea. Since nuclear weapons are "weapons," no matter how potent they are, the military, which is supposed to be commanded by the ministry, should lead all the practical efforts on them. The ministry should do all the practical and detailed work on South Korea's deterrence and defense issues. Needless to say, the President should direct the ministry as the commander in chief.

The Ministry of National Defense should make and publish its military-level deterrence and defense strategy against the Nuclear threat from North Korea, such as the "Combined Precision Deterrence and Defense," and report it to the President, National Assembly, and the people. Needless to say, this strategy should receive direction from South Korea's national-level strategy. This strategy should lead and concentrate all military efforts for effective deterrence and defense against the Nuclear threat from North Korea.

The ministry should do its best to ensure the implementation of U.S. extended deterrence in emergencies such as North Korea's nuclear attack on South Korea. The South Korean defense minister and members of the DSC should closely consult with their U.S. counterparts to increase the credibility of U.S. extended deterrence. However, they should understand the inherent uncertainty of U.S. extended deterrence and always be prepared with a Plan B. For example, if the situation worsens, they should demand the United States deploy its nuclear forces near South Korea, such as stationing U.S. nuclear submarines in the East Sea of South Korea constantly and deploying some of its nuclear bombs and missiles to Guam, which is just 3,400 km from Pyongyang. They should make the most of

the CFC and U.S. forces in South Korea as a tripwire or advancement for the deployment of U.S. nuclear forces.

The ministry should direct its military to be fully prepared for its own options to deter and defend against the Nuclear threat from North Korea. For example, it should expand the current "three-axis system" into a "four-axis + α " in order to strengthen the effectiveness of South Korea's military options. It should be able to cancel or reduce any of the large-scale military buildup projects that are not essential for the deterrence and defense of the Nuclear threat from North Korea. Nuclear deterrence and nuclear defense should be the primary criteria used to determine the relevance of defense spending.

The ministry should change the ways it measures how ready troops are for battle. The criteria should have a strong focus on how ready and able the troops are to defend against a possible nuclear attack from North Korea. It should educate its officers to preserve their troops and not lose them in the nuclear war against North Korea. All the troops must learn and train on how to survive in a nuclear explosion situation and to continue to fight. The higher officers of the South Korean military should always discuss nuclear deterrence theories and strategies and nuclear warfighting theories, North Korea's nuclear strategy and nuclear warfighting doctrines, and South Korea's deterrence and defense strategy.

The ministry should regularly report to the National Assembly (the body that represents the people) and the President about the level of the Nuclear threat from North Korea and the South Korean military's nuclear preparedness. The essential facts and policies, excluding sensitive information, ought to be made public. Needless to say, the ministry should include a realistic and impartial assessment of North Korea's nuclear threat in its defense white paper.

The Agency for Defense Development (ADD) must play a bigger role in nuclear deterrence and defense because the successful implementation of "four-axis + α " requires the development and production of cutting-edge weapons and equipment. The Ministry of National Defense directs the agency to do its best in research and development to contribute to the nuclear deterrence and defense of South Korea while providing a better working environment for successful research and development. The ministry should discuss how to acquire and maintain high-quality researchers for the agency.

Third, since the international principle of non-proliferation of nuclear weapons and the ROK-U.S. alliance are the basis for dealing with North Korea's nuclear program, the Ministry of Foreign Affairs should work to convince the international community of the inevitability of South Korea's efforts to deal with North Korea's nuclear threat. South Korea's continued efforts for the diplomatic denuclearization of North Korea will make it garner more international support for its actions. Regardless of the existence of a real denuclearization negotiation or not, South Korea should do its best to approach North Korea with diplomatic ways and means in cooperation with international society.

The South Korean Ministry of Foreign Affairs needs to create an organization that has sole responsibility and authority in handling the denuclearization of North Korea and deterrence of its nuclear threat. That office should make plans, proposals, and policies for both the denuclearization of and deterrence against North Korea. At the same time, the organization should find ways to support the decisions of the Ministry of National Defense in terms of nuclear deterrence and defense. The South Korean foreign ministry should also do its best to ensure the implementation of the U.S. policy of extended deterrence. In this sense, the primary focus of South Korea's foreign policy should be the strengthening of its alliance with the United States.

The Ministry of Foreign Affairs should identify its role in the possible forward deployment of U.S. nuclear weapons closer to South Korea and South Korea's own nuclear armament in an extreme situation. For the former, the officials in the ministry should do their best to persuade the United States to accept South Korea's demand for the forward deployment in a way to strengthen the deterrent effects against North Korea. For the latter, the officials try hard to convince the United States that the increase of South Korea's nuclear potential will be another strong deterrence measure without increasing the U.S.' risk of entrapment. For these two tasks, the key officials of the foreign ministry should understand the overall deterrence and defense strategies of the South Korean government and military. The officials should be able to explain to the world the seriousness of the Nuclear threat from North Korea, such as North Korea's reunification ambitions, and lead the world to exert stronger pressure on North Korea to give up its nuclear weapons.

Fourth, since major cities in South Korea will be the primary targets of a nuclear strike by North Korea, nuclear civil defense that can reduce harm to people in an emergency should be a critical issue for South Korea. The Ministry of Public Administration and

Security should examine South Korea's overall civil defense posture, identify shortcomings, and strengthen its level to meet the requirements of nuclear civil defense. It could create an organization to exclusively improve the quality of South Korea's nuclear civil defense readiness. Needless to say, all government agencies must fully cooperate with the organization.

The Ministry of Public Administration and Security should delegate or distribute some of the nuclear civil defense tasks to local governments and work closely with them to make sure there are no gaps or duplicate efforts. The ministry and the local governments continuously discuss the appropriateness of their readiness to handle a nuclear attack situation by North Korea and enhance capabilities to effectively respond to the worst scenarios. They should coordinate the necessary levels and types of civil defense drills in accordance with the developing situations. They should fully cooperate to provide sufficient knowledge and information to the people of South Korea to ensure their own survival. The necessary pamphlets should be prepared, distributed, and stored in the appropriate locations for people's information.

Fifth, the National Intelligence Service (NIS) should focus most of its efforts on gathering, analyzing, and disseminating intelligence and information about North Korean nuclear forces. There is nothing more important than these tasks for the NIS now. The organization should reflect on its mistakes regarding its active participation in the denuclearization negotiation during the Moon Jae-in administration and concentrate solely on intelligence gathering and analysis of North Korean nuclear forces. The organization should be the first and most informed agency in the world when it comes to intelligence and information about North Korean nuclear forces.

The NIS should put more emphasis on human intelligence sources (HUMINT) for the intelligence about North Korean nuclear forces because only a few North Korean leaders could know the exact strategy, strengths, and shortcomings of North Korean nuclear forces. It will take lots of work because creating HUMINT takes time, and a few previous South Korean governments seriously neutralized the HUMINT that had been created since the Cold War. It should make great efforts to persuade North Koreans working on North Korea's nuclear and missile programs to deliver the facts. Needless to say, the NIS should strengthen its information cooperation with the United States and other friendly countries, such as the "5 Eyes" countries.

Sixth, the Ministry of Unification should try to find its proper role in relation to the Nuclear threat from North Korea. The ministry has been actively involved in denuclearization dialogues with North Korea and has usually requested more incentives for that country to make it come to the negotiation table. Under this serious nuclear threat from North Korea, the ministry should not demand dialogue or negotiations with North Korea for dialogue or negotiations sake. It should actively look for ways to assist in the deterrence of North Korea's nuclear threat.

According to the "democratic peace theory," the more democratic North Korea becomes, the less likely it is to resort to war. In this sense, the Ministry of Unification should concentrate all of its efforts on improving the degree of democracy in North Korea rather than on efforts for "unification." The ministry should focus its interests and resources on supporting organizations or people in North Korea who challenge the current regime for the democratization of that country. The constant attention given to human rights abuses in North Korea will also help the democratization of that country. In other words, long-term deterrence and defense against North Korean nuclear weaponry can be achieved through regime change in North Korea toward democracy.

The Ministry of Unification should promote more "peaceful co-existence" between the two Koreas than short-term rapprochement or eventual reunification. The hasty rapprochement initiatives of South Korea failed to have any lasting effect. The mutually strong yearning of two Koreas for reunification has made them confront each other, because each side wanted to reunify the whole Korean Peninsula on its terms and was afraid of reunification on the other's terms. The ministry should emphasize peaceful coexistence between the two Koreas in order to reduce North Korea's concern over its absorption by South Korea.

Seventh, other ministries and agencies of the South Korean government should also search for and identify necessary tasks to contribute to the successful deterrence and defense against the Nuclear threat from North Korea. For instance, the Ministry of Commerce, Industry, and Energy will need to consider how to reduce damage to South Korean industries and recover the necessary capabilities quickly after a possible North Korean nuclear attack. At the same time, the ministry should pay close attention to the necessity, technology, and other issues related to the emergency nuclear armament of South Korea. The Ministry of Science and Technology should think about its tasks and contributions

when the South Korean government decides to pursue emergency nuclear armament. Strengthening civil-military technology collaboration is essential for the realization of the "four-axis "+ α ." The Ministry of Health and Welfare should think about how to deal with the massive casualties that will be caused by nuclear explosions in South Korea. The Ministry of Education should review the necessity of including this serious Nuclear threat from North Korea and nuclear civil defense requirements in its educational programs for students. Without a whole-of-government approach, the South Korean government cannot protect its people from the Nuclear threat from North Korea.

Eighth, the National Assembly should also take the necessary actions to deal with the Nuclear threat from North Korea. While vehemently denouncing North Korea's nuclear-related provocations, it should pressure the South Korean government to take sufficient measures to protect its people. It should ensure the necessary budgets for necessary projects to deter and defend North Korea's nuclear threat. It should ask the ONS, NIS, and other ministries of the government to report necessary information and problems frequently and regularly, such as by mandating the submission of the "Nuclear threat from North Korea and Response Posture Assessment" to it every year. They should exercise their oversight authority over the government's handling of the Nuclear threat from North Korea more actively than they are now.

Ninth, South Koreans should participate in the government's war on nuclear deterrence against North Korea. Without the people's support, the efforts of the government and military cannot be active and resolute enough to credibly deter North Korea's nuclear attack. The South Korean government and military should work hard to win the people's cooperation, participation, and support for their "alliance-based all-out deterrence and defense" against North Korea.

Conclusion

The Nuclear threat from North Korea has become the most serious threat to the existence of South Korea and the safety of its people. After possessing considerable amounts of nuclear weapons and missiles to deliver them to the United States and South Korea, North Korea declared that it had moved to its "second mission," which is its reunification war against South Korea, from its "first mission," which is to deter the U.S.'s extended deterrence for South Korea. The South Korean government, military, and people must put all their efforts into deterring North Korea's nuclear attack by conducting a "nuclear deterrence war against North Korea."

South Korea needs to understand the idea of "trinity" in order to win the nuclear deterrence war against North Korea. The prominent Prussian military theorist, Carl von Clausewitz, found that the trinity among the government, the military, and the people of a certain country must be the key to winning a war. The three trinity elements of South Korea should accurately understand the seriousness of the current situation and be completely united to deter and defend the Nuclear threat from North Korea. Needless to say, the government should lead the trinity.

The South Korean government should take primary responsibility for deterring and defending against the Nuclear threat from North Korea. It, including the President, must set deterrence against North Korea as the top priority of state affairs and achieve this by integrating and coordinating the all-out efforts of South Korea. It should establish a national-level deterrence and defense strategy to deal with the threat and provocations, and all the governmental officials should execute it.

Most of all, the South Korean government should accurately assess the real threat level of the North Korean nuclear forces, report its assessment to the South Korean people regularly, and strengthen national-level readiness accordingly. For example, the Presidential Office should clearly designate the ONS as the office to plan, coordinate, and integrate all national-level efforts to deal with the Nuclear threat from North Korea. The NIS should focus on collecting and analyzing necessary intelligence and information on North Korean nuclear forces and disseminating it to appropriate ministries and agencies for use. The Ministry of National Defense and the Ministry of Foreign Affairs should establish

special organizations to handle deterrence and defense against the Nuclear threat from North Korea.

The South Korean government should also do its best to encourage, acquire, coordinate, and integrate effective deterrence and defense measures that could be taken by the United States and other friendly nations such as Japan. First of all, it should strengthen its consultation mechanism with the United States on the implementation of U.S. extended deterrence. It needs to establish the necessary processes and detailed procedures by which South Korea and the United States discuss and decide on the implementation of U.S. extended deterrence in the event of a North Korean nuclear attack. It should make the most of the U.S.-ROK Combined Forces Command (CFC) in responding to North Korea's nuclear threat and possible provocations. Needless to say, it should officially stop the discussions on the restoration of its wartime operational control over its military forces from the commander of the CFC, the U.S. General, until the Nuclear threat from North Korea issues are resolved. The South Korean President needs to ask the commander of the CFC to explain the combined deterrence and defense plans of the two militaries against North Korea's nuclear attack and provide the necessary support for the commander. The president should strengthen close consultations and cooperation with friendly countries in Northeast Asia and the world on deterrence and defense against North Korea.

The South Korean military must put all of its efforts into stopping North Korea's nuclear threats and provocations, which could be compared to cancer in the human body, and protecting itself from the threats and provocations. It should focus on the treatment of the cancer-like threat of North Korean nuclear forces and try not to diffuse its focus to less important issues. Especially, it should establish a military strategy to deter, respond to, and defend against the Nuclear threat from North Korea and take the necessary measures to implement such a strategy. The Ministry of National Defense and the Joint Chiefs of Staff, as well as units at all levels, should be reorganized to effectively deal with the Nuclear threat from North Korea. The military should put the first priority on discussion, coordination, and decision-making on how to deter the Nuclear threat from North Korea and how to continue to fight under North Korea's nuclear attacks. It should do its best to select, educate, use, and promote the professional officials who have deep knowledge and expertise on nuclear deterrence and defense.

The South Korean military should strengthen its cooperation and coordination with the U.S. military regarding an effective combined nuclear deterrence and defense posture between the United States and South Korea. It should reinforce and expand its consultation mechanisms, such as the Deterrence Strategy Committee, with the U.S. military on its nuclear deterrence and input its opinions to the plan and execution of the U.S.' extended deterrence measures for South Korea. It should strengthen its military exercises with U.S. military forces as the key measures for combined military-level nuclear deterrence and defense. It should try to acquire cutting-edge equipment to effectively conduct necessary preemptive strikes, missile defense, and conventional retaliation, the so-called "three axis system."

Especially with regard to its current "three axis system," the South Korean military should put more emphasis on decapitation operations against the North Korean leaders. It should declare its intention to neutralize North Korean leader Kim Jong-un if he orders a nuclear attack on South Korea. Because the North Korean leadership is the source of North Korea's power, the threat of the decapitation operation will have a strong deterrent effect.

The South Korean military should expand its current "three-axis system" to the "four-axis + α ." It should add cyberwarfare to interfere with the North Korean command systems that will be used for North Korea's nuclear attack on South Korea as its fourth axis. Particularly, it should do its best to neutralize the command and control systems of North Korean nuclear forces. It should also take necessary and feasible measures to change the North Korean regime to be more democratic or less hostile with cooperation with other government agencies of South Korea.

The South Korean people should also actively participate in the nuclear deterrence war against North Korea. The degree of their participation in the nuclear deterrence war is decisive and fundamental. Actually, people's participation in war was recognized as a "forgotten dimension" that was not recognized as the key element that had decided the outcome of all wars but was the actual element that decided victory or defeat in war. The human dimension could be more important in nuclear war than conventional war. The more nuclear nature the war comes to have, the more decisive the people's will and cohesion become.

All South Koreans should be able to demonstrate their strong resolve to fight until death against North Korea. The U.S. people should also be determined not to be intimidated by

North Korea's nuclear threat, which is to destroy their cities. In order to do so, all South Koreans and most Americans must accurately understand the seriousness and reality of the Nuclear threat from North Korea as it is. They must clearly recognize that North Korea is attempting to communize South Korea using nuclear weapons. In particular, all South Koreans should have their own self-survivable skills in a nuclear war situation and actively participate in civil defense drills in peacetime.

The government, military, and people who make up the present South Korea have been given a critical mission that could decide the cessation or continuation of their country. If they are complacent now, they will not be able to deter North Korea's nuclear attack and make the entire Korean Peninsula a nuclear battlefield. They should do their best to win the "nuclear deterrence war against North Korea" and survive. They should always remember the old adage, "If you want peace, prepare for war."