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Assessing North Korea's Nuclear and Missile Programmes: Implications for Seoul and Washington

by Lorenzo Mariani

ABSTRACT

2016 was a pivotal year for North Korea's nuclear and missile programmes. Numerous tests carried out throughout the year demonstrate that the regime is on the verge of developing thermonuclear warheads and intercontinental ballistic missiles, as well as the capability to launch missiles from ground facilities, submarines and mobile platforms. The US has responded by resorting to UN Security Council sanctions – which have now become wide-ranging, having also been endorsed by China – while in South Korea, more confrontational options have been proposed in recent months. The new leaderships in Washington and Seoul thus need to devise a new strategic approach to the DPRK's nuclear threat – without, however, jeopardizing Northeast Asian stability, which has so far guaranteed economic growth and prosperity for the whole region.

North Korea | Nuclear | Non-proliferation | Arms control | US foreign policy | Northeast Asia | South Korea | China | Sanctions

keywords

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Introduction

North Korea's (the Democratic People's Republic of Korea, DPRK's) nuclear and missile capabilities have developed well beyond the primitive nuclear programme that triggered the first United Nations sanctions in May 1993. After more than ten years since the country's first nuclear test, carried out in October 2006, Pyongyang's military breakthroughs of 2016 confirm that the regime will shortly present a serious challenge not only to regional powers but likely also to the US mainland. Indeed, for the first time since the end of the Korean War Pyongyang seems to be on the verge of developing the technological abilities, both in terms of warheads and ballistic missiles, that would allow the regime to pose a direct threat to US territory.

These achievements prove, on the one hand, the success of the *Byungjin* ("parallel development") strategy launched by Kim Jong-un in 2013, which has allowed the country to expand its nuclear and missile programmes and to partially recover its economy after the devastating 1990s famine. On the other hand, the international sanctions, aimed at squeezing North Korea's weak economy and forcing the regime to return to the negotiating table, have failed to halt or even reduce the pace of the country's military development. Over the last few years, US-led international efforts have increasingly resorted to UN Security Council sanctions, which have now become wide-ranging and comprehensive, having also consistently been actively supported by China. However, even if Beijing has adopted a less lenient approach vis-à-vis its historical ally it has so far proved to be unwilling to fully implement the sanctions. China's primary goal is to maintain stability in North Korea since it represents a strategic buffer zone against the US military presence in the region and, as has been demonstrated on a number of occasions, it has used

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the cover of humanitarian aid to bypass its own sanctions on Pyongyang.¹

The US was seriously concerned about North Korea's military developments to the point that, during the 2016 electoral campaign, both vice-presidential candidates, Michael Pence and Tim Kaine, claimed to be in favour of possible pre-emptive strikes against North Korean military facilities in order to eradicate the problem.² The United States is not the only regional actor that has begun reconsidering the idea of a direct confrontation: South Korea (the Republic of Korea, ROK), Washington's long-term ally, which remains under direct threat from Pyongyang, shows a similar trajectory. After the failure of President Park Geun-hye's *Trustpolitik* and of the Northeast Asia Peace and Cooperation Initiative (NAPCI), as well as Park's recent impeachment, more confrontational options have been advanced in Seoul. These range from extending military exercises and anti-missile defence to developing nuclear weapons in South Korea. Since a political transition is taking place in Washington and a presidential election is approaching in Seoul, the future currently appears uncertain: the new US administration will have to set a fresh course in order to deal with a nuclear-armed state while maintaining peace and stability in Northeast Asia.

This paper aims to assess the DPRK's latest achievements in nuclear and missile technology, and examine the effectiveness of the responses put forward by the US and South Korea – including discussion of the strategic options being examined by the new leaderships in Washington and Seoul.

1. The *Byungjin* policy and its strategic success

The advent of the DPRK's new leader, Kim Jong-un, meant the establishment of a new strategic posture. On 31 March 2013, during a plenary session of the Party Central Committee (PCC), the young leader announced the beginning of a transition from his father's *Songun* ("military-first") strategy to new strategic policy guidelines based on the parallel development of economic and military capabilities.

The introduction of minor agricultural and labour reforms allowed a real income growth that has lifted the living standard for a segment of the population, both in cities and the countryside. Agricultural production has been relieved thanks to a reduction in the size of collective farms and, because of lowered controls over the redistribution system, farmers are now allowed to retain a larger part of their

¹ See Hong Nack Kim, "China's Policy Toward North Korea Under the Xi Jinping Leadership", in *North Korean Review*, Vol. 9, No. 2 (September 2013), p. 83-98. A different viewpoint is outlined in Sun Ru, "Beijing and Pyongyang: a 'Special Friendship' Facing the Final Curtain", in *ISPI Analysis*, No. 297 (May 2016), <http://www.ispionline.it/en/node/15072>.

² Anna Fifield, "North Korea is 'Racing towards the Nuclear Finish Line'", in *The Washington Post*, 8 October 2016, <http://wapo.st/2dBYuBE>.

harvests. Kim Jong-un seems prepared to tolerate a minimum of entrepreneurial activity – even in the cities, where managers are reported to now have some degree of freedom since they can set salaries and privately manage human resources. The level of growth in 2016 has suffered from setbacks, such as China's decision not to admit North Korea into the Asian Infrastructure Development Bank (AIIB) because it was not able to present a "snapshot" of its economy and finances. Nonetheless, this improvement is sufficient to prove the invalidity of a basic assumption about North Korea: the regime is not on the verge of collapse, and it has partially recovered from the deep crisis of the 1990s.³

The second pillar of the "parallel development" strategy is a renewed focus on nuclear development. While the *Songun* approach placed the DPRK's entire military apparatus at the centre of the state's economic effort, the *Byungjin* strategy gives priority only to the nuclear sector, which requires a much lower budget commitment than the conventional army (only 2-3 percent of the North's GNP, according to some estimates).⁴ The year 2016 witnessed the materialization of *Byungjin* in the form of two nuclear tests and more than a dozen missile tests. These demonstrated North Korea's capability to test thermonuclear warheads (September 2016 test) and intercontinental ballistic missiles (Taepodong), as well as to launch missiles from ground facilities (Musudan, Nodong), submarines (Pukkuksong-1), and from mobile platforms (Hwasong-6). The various missiles could carry not just nuclear warheads but also chemical and biological weapons. In order to properly grasp the magnitude of North Korea's 2016 achievements, it is important to analyse its arsenal in more detail. The following sections will review the North Korean armoury and its tests.

2. The growing nuclear threat

Because of the DPRK's isolation, it is difficult to analyse and quantify the advancement of its nuclear programme. In this regard, the main source of information is the North Korean government itself, whose reliability can be questioned. The lack of data regarding the number and the efficiency of plants and centrifuges currently used by Pyongyang for the realization of weapons-grade uranium (WGU) makes it difficult to estimate with certainty the number of warheads already completed. In 2012, a RAND Corporation report concluded that North Korea's nuclear capability is much lower than it looks, but it is inflated by the higher ranks of the regime.⁵ This "bluff" hypothesis has both an internal and an external purpose. Internally, the North Korean regime is mainly concerned with

³ Peter Hayes and Roger Cavazos, "'Yes I Can!' Byungjin and Kim Jong Un's Strategic Patience", in *NAPSNet Special Reports*, 29 March 2016, <http://nautilus.org/?p=47135>.

⁴ Georgy Toloraya, "Byungjin vs the Sanctions Regime: Which One Works Better?", in *38 North*, 20 October 2016, <http://38north.org/2016/10/gtoloraya102016>.

⁵ Markus Schiller, "Characterizing the North Korean Nuclear Missile Threat", in *RAND Technical Reports*, 2012, p. 16, http://www.rand.org/pubs/technical_reports/TR1268.html.

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convincing its elites, and especially its military, that it is creating a powerful state, which seems to be essential for regime survival.

Externally, the strategy is twofold: in addition to deterrence, the traditional purpose of any nuclear programme, Pyongyang also aims to gain bargaining leverage vis-à-vis the United States, its main security threat, and American allies in Northeast Asia. The objective, allegedly, is not the deployment of nuclear facilities during a conflict but the avoidance of the conflict altogether: the North Korean missile programme is intended for strategic leverage and political reasons, and not as a reliable operational tool for wartime use. However, while the "bluff" hypothesis could be used to accurately describe Kim Jong-il's "nuclear diplomacy", the divergent posture adopted by the country's new leader calls this view into question.

According to 2015 estimates, North Korea's current stockpile is composed of 6-8 plutonium-based warheads and 4-8 devices fashioned from uranium.⁶ The country is nowadays considered to be self-sufficient for every stage required for the creation of nuclear weapons, as it can rely on industrial-scale uranium mines, processing plants for conversion and refinement, a fuel-fabrication plant, a nuclear reactor and a reprocessing plant. As demonstrated with the latest tests, North Korean engineers have acquired solid expertise on how to process plutonium-239 and highly enriched uranium (HEU), and how to stock fissile materials. However, the future growth of the country's nuclear arsenal will depend primarily on North Korea's ability to expand its uranium-enrichment programme. To date, it has been estimated that the country is able to produce 6 kg of plutonium per year.⁷ The three tests carried out under the Kim Jong-un leadership demonstrate that the young leader has decided to distance himself from his father's nuclear strategy, regarded as more cautious and willing to use the arms race only as a diplomatic tool. With the advent of Kim Jong-un the number of tests has grown exponentially, reaching its peak in 2016, and, as was confirmed by international observers, the latest two nuclear tests highlighted remarkable technological advancements.⁸

On 9 January 2016, Pyongyang announced that it had detonated its first thermonuclear warhead. Although the news met with general scepticism, the possibility cannot altogether be excluded that the regime has acquired the capability to build a two-stage bomb. According to US scientist Siegfried Hecker, it is unlikely that a real hydrogen fusion bomb was tested; however, it is possible that North Korean engineers managed to miniaturize the bomb by using "hydrogen" components (probably hydrogen fuel) to boost the explosion.⁹

⁶ Joel S. Wit and Sun Young Ahn, "North Korea's Nuclear Futures: Technology and Strategy", in *North Korea's Nuclear Futures Series*, February 2015, p. 17, <http://38north.org/2015/02/nukefuture022615>.

⁷ Mary Beth Nikitin, "North Korea's Nuclear Weapons: Technical Issues", in *CRS Report for Congress*, No. RL34256 (3 April 2013), p. 21, <https://fas.org/sgp/crs/nuke/RL34256.pdf>.

⁸ Georgy Toloraya, "Biyungjin vs the Sanctions Regime: Which One Works Better?", cit.

⁹ Steve Fyffe, "Hecker Assesses North Korean Hydrogen Bomb Claims", in *CISAC News*, 7 January 2016, <http://cisac.fsi.stanford.edu/node/220361>.

This warhead's reduced size would allow it to be placed on middle-to-long range missiles that might reach not just South Korea and Japan but also the US Pacific military base in Guam. The second nuclear test, however, raised more concern. This weapon, detonated on 9 September 2016, demonstrated that the process of warhead assemblage has reached a level of standardization that will allow safer and speedier future production.¹⁰ Moreover, the ability to miniaturize plutonium-based warheads, as demonstrated by the latest test, brings with it more serious strategic implications. In the near future, North Korea will be able to house this kind of weapon on both its medium-range and intercontinental ballistic missiles. The latest nuclear test is also believed to have had important implications for the Kim Jong-un regime's strategy. Park Young-Ja from the Korean Institute for National Unification (KINU) maintains that the new test marks a shift from the regime's initial short-term need to consolidate its hold on power (2012-16) to a middle-term goal (2016-20) of imposing North Korea's nuclear status "as a fait accompli".¹¹

3. The missile programme

While the two most recent nuclear tests have caused most international concerns, the missile programme overall should not be underestimated: the credibility of any weapon of mass destruction (be it nuclear, chemical or biological) is based on the precision and reliability of its host country's missile capability. The development of long- and medium-range ballistic missiles has been one of Pyongyang's major goals since the early 1960s, when the country officially started its indigenous ballistic-missile programme. The programme had a dual purpose for the regime: while the creation of a cheap, indigenous arsenal was essential to counteract and discourage the US and South Korean threat, at the same time the export of ballistic missiles represented one of the most important sources of foreign hard currency for the country. Despite the fact that over the last few decades the DPRK managed to adopt a substantial stockpile of ballistic missiles, its missile programme has proved slow to adapt to the strategic needs of the country. Major achievements occurred during the power-transition period following the death of Kim Jong-il and the adoption of the *Byungjin* policy, when the research programme was focused on the implementation of four strategic goals: the development of a new road-mobile missile, the production of a submarine-launched missile, the implementation of the dual-use space programme and the development of solid-fuel rocket technology.¹² Seen from this perspective, 2016 has marked the real turning point for the missile programme.¹³

¹⁰ Charles P. Vick, "Warhead Miniaturization", in *GlobalSecurity.org*, <http://www.globalsecurity.org/wmd/world/dprk/nuke-miniature.htm>.

¹¹ Park Young-Ja, "Fifth Nuclear Test, in Line with Strategy for Pro-longed Ruling of Kim Jong-un Regime", in *KINU Online Series*, No. 16-25 (13 September 2016), p. 6, <http://lib.kinu.or.kr/DLiWeb20/components/searchir/viewer/frame.aspx?cid=1477492&type=FILE&id=18064>.

¹² Joel S. Wit and Sun Young Ahn, "North Korea's Nuclear Futures: Technology and Strategy", cit.

¹³ Geoff Brumfiel, "Why Analysts Aren't Laughing at these Silly North Korean Photos", in *Parallels*,

North Korea has carried out missile tests many times in the past, but they were not as frequent as in 2016 and the regime had previously never advertised them as prominently. A total of 21 missiles were launched on 14 different occasions last year (with multiple tests sometimes being carried out), the majority of which were regarded as successful – not just in Pyongyang, but also by international observers.¹⁴ The Hwasong-6, Nodong, Musudan, Taepodong and Pukkuksong-1 tests demonstrated that the regime has reached the capability to successfully launch medium- and long-range missiles from the ground and from the sea, as well as the ability to design a relatively precise trajectory for them. Moreover, in the aftermath of the latest nuclear test, the DPRK claimed to have acquired the ability to transport a miniaturized warhead in a missile. Therefore, it is important to consider the North Korean arsenal in detail in order to gain a clearer picture of its recent achievements and current capabilities.

3.1 Hwasong-6

More than seven years after its last launch, on March 2016, the DPRK restarted firing and testing of the Hwasong-6 from TELs (transporter erector launchers) mobile stations. The Hwasong-6 is a short-range tactical ballistic missile equipped with a liquid-propellant engine. The missile was derived from Soviet Scud-B technology; however, during the indigenization process, which commenced in 1988, North Korean engineers managed to extend the reach of the rocket, increasing its maximum range capacity to 500-600 km.¹⁵ Even if this missile is not a newcomer, it represents one of the most important tactical assets for the regime today, since it is one of the most reliable and efficient ballistic missile in the military stockpile.

3.2 Nodong

The Nodong is a medium-range ballistic missile that belongs to the first stage of the North Korean missile programme. As with the DPRK's other ballistic missiles, the Nodong was built with the aid of a technological transfer from the Soviet Union and the assistance of China. The single-stage missile is an enhanced version of the Soviet Scud-C; it is assessed as having a range of 1,300 km and a maximum payload of about 1,200 kg.¹⁶ The Nodong can be launched from mobile stations, and in ground-launched scenarios it does not require concrete slabs. These two key factors are strategically relevant since they allow concealment of the location of

21 March 2016, <http://www.npr.org/sections/parallels/2016/03/21/470976577>.

¹⁴ Amanda Macias, "Mr. Kim Has Missile Lust, And He's Not Giving Up": A Timeline of North Korea's Brazen Missile Tests So Far in 2016", in *Business Insider*, 29 October 2016, <http://read.bi/2eesF09>.

¹⁵ "Hwasong-6 Missile", in *GlobalSecurity.org*, <http://www.globalsecurity.org/wmd/world/dprk/hwasong-6.htm>.

¹⁶ Anthony H. Cordesman et al., *The Korean Military Balance. Comparative Korean Forces and the Forces of Key Neighboring States*, Washington, Center for Strategic and International Studies (CSIS), July 2011, p. 125-126, <https://www.csis.org/node/27430>.

offensive positions, thus avoiding the possibility of being targeted by pre-emptive strikes.

Two years after its last launching test, the DPRK restarted its Nodong testing programme on 18 March 2016, when two missiles were fired and one of them travelled almost 800 km before landing in the sea off the country's eastern coast.¹⁷ Tensions soared when a second test was carried out on 19 July that year, in response to the South Korean decision to proceed with the installation of the THAAD (Terminal High Altitude Area Defense) missile shield. The DPRK subsequently fired two Nodong on 3 August, managing to break into Japan's exclusive economic zone with one of the missiles.

3.3 Musudan

The Musudan (also called Hwasong-10, or BM-25) is a ground-launched intermediate-range ballistic missile (IRBM) indigenous to North Korea. The one-to-two stage missile uses a 4D10 liquid-propelled engine that allows it to cover a range of 2,500-4,000 km, and has an estimated payload capacity of 500-1,200 kg. The Musudan can be armed with single high-explosive or nuclear warheads.

Until April 2016, when the first test was carried out, there was some scepticism among analysts about the actual state of progress in the development of this ballistic missile.¹⁸ The Musudan was displayed for the first time on October 2010; however, the photographic analysis conducted by several international observers concluded that the missiles paraded in Pyongyang were mere mock-ups.

The Musudan was tested for the first time on 15 April 2016 (the "Day of the Sun", the birthday of founding supreme leader Kim Il-sung), but the launch turned out to be a failure.¹⁹ The test was followed by other two fiascos on 28 April and 31 May. On 22 June, one Musudan successfully reached an altitude of 1,000 km and travelled 400 km, ending its flight in the East Sea.²⁰ The Musudan is still in its experimental stage and the reliability of the missile, especially during the launch phase, remains highly uncertain – as was demonstrated by its two failed test launches, occurring on 14 and 20 October 2016. Nonetheless, the successful launch demonstrated that North Korea is in the final stage of the development of a missile that could be capable of reaching not only regional targets but also the US military outpost in Guam.

¹⁷ Jack Kim and Ju-min Park, "Defiant North Korea Fires Ballistic Missile Into Sea, Japan Protests", in *Reuters*, 19 March 2016, <http://reut.rs/1RptL4x>.

¹⁸ Michael Elleman, "North Korea's Musudan missile effort advances", in *IISS Voices*, 27 June 2016, <http://www.iiss.org/en/iiss-voices/blogsections/iiss-voices-2016-9143/june-2c71/north-koreas-musudan-missile-effort-advances-5885>.

¹⁹ Ju-min Park, "Failed North Korea Missile Launch Prompts Chinese 'Saber-Rattling' Jibe", in *Reuters*, 15 April 2016, <http://reut.rs/1qt2LLD>.

²⁰ Choe Sang-hun, "North Korea's Successful Missile Test Shows Program's Progress, Analysts Say", in *The New York Times*, 22 June 2016, <https://nyti.ms/2mCNbN7>.

3.4 Taepodong

Under the supervision of Chinese and Russian engineers in the early 1990s, the DPRK initiated the development of two indigenous intercontinental ballistic missiles (ICBM) – namely, the Taepodong-1 and the Taepodong-2. These devices, however, have always been presented as non-military rockets. The missiles were probably assembled using pre-existing technologies borrowed from the Nodong, Musudan and Hwasong programmes, and existing literatures agree on the fact that medium-range missile design might have been used in the Taepodongs' first or second stages.

The Taepodong-1 is a two-stage liquid-fuel-propellant ICBM that can cover almost 1,500 km. The missile was tested for the first and last time on 18 August 1998 in its satellite-launch configuration, but failed to place into orbit its Kwangmyongsong-1 satellite. The Taepodong-1 programme was halted shortly thereafter, in order to favour the development of a new intercontinental missile with a greater range.

On 5 July 2006, the DPRK attempted to launch its second ICBM prototype, called Taepodong-2, but the missile failed about 40 seconds into its flight. Following this demonstration, the United Nations Security Council (UNSC) enacted Resolution 1695 aimed at stopping North Korea's missile programme and restraining the import of military technologies to the DPRK.²¹ In 2009, under the name of Unha-3, the Taepodong-2 was fired again in its space-launch configuration, and it flew for almost 3,800 km before landing in the Pacific Ocean. The regime carried out other two space launches, in April and December 2012.

A month after its successful fourth nuclear test, which was carried out on 9 January 2016, Pyongyang once again raised international concerns when a Taepodong missile was used to place in orbit the Kwamongsong-3 satellite. This latest test reflected the ambitions and technical advances of the North Korean ICBM programme, which, if combined with the ability to miniaturize nuclear warheads, will provide the regime with more bargaining power.

3.5 Pukkuksong-1

In October 2014, satellite photographs of the Sinpo South Shipyard revealed that the DPRK was preparing its SINPO-class submarine in order to test a new prototype of submarine-launched ballistic missiles (SLBM).²² The first launch took place in May 2015, but it is still not clear whether the missile was fired from a submarine or, as is more likely, from a submerged barge. The little information leaked after the test made it possible to reconstruct some of the main features of the missile, called

²¹ UN Security Council, *Resolution 1695 (2006)*, 15 July 2006, [http://undocs.org/S/RES/1695\(2006\)](http://undocs.org/S/RES/1695(2006)).

²² Joseph S. Bermudez Jr., "North Korea: Test Stand for Vertical Launch of Sea-based Ballistic Missiles Spotted", in *38 North*, 28 October 2014, <http://38north.org/2014/10/jbermudez102814>.

Pukkuksong or Kn-11. Similarly to other North Korean equipment, the Pukkuksong has a Russian design and has probably been derived from the Soviet R-27/SS-N-6 SLBM. This two-stage ballistic missile is equipped with a solid-propellant design that reduces its range to 900 km but offers a significantly shorter launch and reload time. The missile can host either high-explosive or nuclear warheads.

Despite its limited range, this missile proved to be strategically relevant when, in a 24 August 2016 test, a Pukkuksong was shot into Japan's air identification zone. Although the missile will not be ready before 2020, it will represent a significant tactical response to the THAAD system that the US wants to install in South Korea. With the Pukkuksong-1, it will not be difficult for North Korean submarines to circumvent the THAAD's radar, which provides a limited 120-degree field of view, and hit the missile-defence system from behind. Furthermore, the US missile shield is not designed to intercept intermediate-range ballistic missiles but has been tested only against medium-range devices.

4. What options for South Korea and the United States?

The Park Geun-hye presidency started off in 2013 with a pledge to engage in dialogue with North Korea: "Through a trust-building process on the Korean Peninsula [...] I will move forward step by step to build trust between the South and the North on the basis of credible deterrence."²³ The advent of Park's *Trustpolitik* brought back hope of a resumption of the stalled nuclear talks. To implement *Trustpolitik*, Park proposed the creation of the Northeast Asia Peace and Cooperation Initiative (NAPCI), a multilateral forum through which to overcome the security deficit in Northeast Asia and build an atmosphere of cooperation – focusing first on non-security issues, with the aim of discussing territorial disputes and denuclearization in the long run.²⁴

Both NAPCI and Park's *Trustpolitik* have dramatically failed to restart talks and cooperation with North Korea, or to stop the expansion of the DPRK's nuclear and missile programme. The Pyongyang regime, boosted increasingly in confidence with its nuclear tests, consequently lowered its need for dialogue and cooperation with South Korea. Seoul responded by increasing military exercises with the United States and closing doors to cooperation: in February 2016, the Kaesong Industrial Complex – which employed 50,000 North Korean workers and 800 South Korean staff – was shut down in response to the nuclear and missile tests, and it has not been reopened at the time of writing.²⁵

²³ Park Geun-hye, *The Full text of the 18th Presidential Inauguration Speech*, 25 February 2013, <http://www.korea.net/Government/Briefing-Room/Presidential-Speeches/view?articleId=105853>.

²⁴ Lee Sang-Hyun, "The Northeast Asia Peace and Cooperation Initiative (NAPCI): A Vision toward Sustainable Peace and Cooperation in Northeast Asia", in *The ASAN Forum*, 15 December 2014, <http://www.theasanforum.org/?p=4646>.

²⁵ J.H. Ahn, "S.Korea Temporarily Closes the Kaesong Industrial Complex", in *NK News*, 10

Moreover, any attempt to revive *Trustpolitik* has been blocked by Park Geun-hye's impeachment in December 2016. Today, both the political and the strategic scenario are less favourable to Seoul than at any time over the past decade. The ROK's democratic institutions are proving weak and unable to provide a strong response to North Korea's nuclear and missile achievements. Given the failure of *Trustpolitik*, several strategic options have been raised – all of which may spur crises in Northeast Asia.

The first option is to enhance the nuclear protection of South Korea by deploying the THAAD system on the Korean Peninsula. This system is designed to intercept theatre missiles during late, mid-course or final-stage flight, flying at high altitudes within and even outside the atmosphere. This allows it to provide broad area coverage against threats to critical assets such as population centres and industrial resources as well as military forces – hence, its designation. The missile shield would be effective in preventing attacks carried out with short- or medium-range missiles such as the Hwasong-6 or the Nodong, which are the designated carriers for biological and chemical strikes.

The United States and South Korea have long discussed the possibility of deploying THAAD, but they finally opted for its implementation after the latest, groundbreaking North Korean nuclear test.²⁶ However, while internal disagreement in Seoul is diminishing, vocal opposition has been raised from Beijing, which regards the THAAD as being directed not against North Korea but against China. Chinese claims have pointed out that with a radar range of 1,000-2,000 km, the shield is designed to shoot down missiles at a relatively high altitude, well beyond the geographical limits of the Korean Peninsula. Thus, the *People's Daily* insists, "it is ridiculous to use the THAAD missile defense system to 'deter nuclear threats from DPRK'".²⁷ Despite the defensive nature of THAAD, China fears that the anti-missile system deployment, if integrated with the US missile-defence network, would hinder its own ability to retaliate in the event of nuclear coercion or war.²⁸ China has responded to the ROK-US decision by undermining Seoul's business ties with Beijing, hoping to coerce it to step back. However, with the new US Secretary of Defence, James Mattis, reaffirming the THAAD decision in early February 2017, the main fear is that the missile-defence deployment will prompt a military response from China and trigger an arms race in Northeast Asia.²⁹

February 2016.

²⁶ Ankit Panda, "THAAD Coming to South Korea 'As Soon As Possible'", in *The Diplomat*, 29 September 2016, <http://thediplomat.com/?p=95338>.

²⁷ Zhong Sheng, "Directed Against China: New Site for U.S. THAAD Missile Deployment in South Korea", originally published in *People's Daily*, 1 October 2016, <http://wp.me/p2vCQD-nhCr>.

²⁸ Robert Cantelmo, "THAAD Could Spark a Dangerous Arms Race in East Asia", in *The Diplomat*, 22 July 2016, <http://thediplomat.com/?p=89878>.

²⁹ Bruce Harrison, "Mattis Pumps up THAAD, But China Likely to Keep 'Bullying' Korea", in *The Diplomat*, 3 February 2017, <http://thediplomat.com/?p=104002>.

A second, more radical, option is to respond to the nuclear threat by developing South Korea's indigenous nuclear programme. The ROK attempted to secretly build a nuclear-weapon programme under President Park Chung-hee in the 1970s, but since its discovery the United States has worked to prevent a nuclear South at all costs.³⁰ However, in September 2016, after the latest DPRK nuclear test, the most conservative wing of the South Korean political spectrum called for "a radical new approach".³¹ A few members of the Saenuri Party, the majority conservative party in Seoul, formed the "Nuclear Forum", in which they advocated for withdrawal from the Non-Proliferation Treaty and the development of nuclear armaments in order to deal with Pyongyang's direct threat to South Korean territory.³² More MPs have since joined the Nuclear Forum, increasing its membership to 31, especially after China threatened retaliation over the deployment of THAAD. The United States, as previously stated, has vowed to prevent any nuclear escalation in the Asia-Pacific region by extending its nuclear umbrella over its allies, including South Korea, as the THAAD decision confirms. However, the election of new American president Donald Trump, who during the electoral campaign had claimed that Japan and South Korea should provide for their own security, might further fuel the hopes and the size of the Nuclear Forum.³³ Although the new US President has retreated on his threat to allow nuclear proliferation, the idea of nuclearizing South Korea has emerged in Seoul. If the current trend is not reversed, the nuclear option may gain ground. In 2016, according to a Japanese non-profit organization (NPO) Genron survey, 59 percent of South Koreans gave a positive answer when asked, "Should South Korea possess nuclear weapons?"³⁴

The ROK's third strategic option concerns the use of conventional military forces, whose balance is overwhelmingly in favour of Seoul over Pyongyang. South Korean sea, land and air forces demonstrate a much higher level of development and technological sophistication than their Northern counterparts.³⁵ Key components of the South Korean military strategy, as well as central pillars of the US-ROK alliance, include the presence of US forces on Korean territory and joint US-ROK military exercises. And yet, doubts have arisen as to whether these two practices will continue in the future. First, the US troop presence in South Korea cannot be

³⁰ Peter Hayes and Chung-in Moon, "Park Chung Hee, the CIA, and the Bomb", in *NAPSNet Special Reports*, 23 September 2011, <http://nautilus.org/?p=4320>.

³¹ "Radical New Approach Needed to Deal with N.Korea", in *The Chosunilbo*, 12 September 2016, http://english.chosun.com/site/data/html_dir/2016/09/12/2016091201423.html.

³² Sarah Kim, "Saenuri Wants a Nuclear South", in *Korea JongAng Daily*, 13 September 2016, <http://koreajoongangdaily.joins.com/news/article/Article.aspx?aid=3023772>.

³³ Jeffrey Lewis, "Did The Donald Suggest South Korea Build The Bomb? No, But That Might Be the Outcome Anyway", in *38 North*, 8 December 2016, <http://38north.org/2016/12/jlewis120816>.

³⁴ The Genron NPO and East Asia Institute, *The 4th Japan-South Korea Joint Public Opinion Poll (2016)*, August 2016, p. 30, http://www.genron-npo.net/en/opinion_polls/archives/5305.html; Daniel Bob, "Encouraging Japan to Go Nuclear Won't Denuclearize North Korea", in *38 North*, 24 January 2017, <http://38north.org/2017/01/dbob012417>.

³⁵ Anthony H. Cordesman, Charles Ayers and Aaron Lin, *The Conventional Military Balance in the Koreas and Northeast Asia*, Washington, Center for Strategic and International Studies (CSIS), 2 August 2016, <https://www.csis.org/node/37532>.

taken for granted, due to South Koreans' protests and the costs associated with the maintenance of standing armies overseas, which has been a key foreign-policy theme of the Trump campaign. One analyst, in a blog of *The National Interest*, recently argued that the withdrawal of US troops, in addition to easing the burden on the US military budget, would transform the threat environment that Pyongyang exploits to develop its nuclear programme.³⁶ Counterarguments stress the US troops' role in keeping stability and ensuring the status quo, by countering North Korean adventurism and preventing South Korean unilateralism.³⁷

The 2017 round of military exercises between the United States and South Korea, which traditionally elicits alarm in Pyongyang and criticism in Beijing, will run through 30 April 2017.³⁸ There is the risk, however, that the Trump Administration will reduce the frequency and magnitude of these joint exercises, replacing them with a faster THAAD deployment. The end of joint drills might trigger South Korea's fear of abandonment, stiffen Chinese retaliation over THAAD and embolden North Korea in its nuclear programme; consequently, the chances of Seoul "going nuclear" would increase.

Conclusion

2016 was truly a pivotal year for the DPRK's nuclear programme. The numerous tests carried out demonstrated Pyongyang's technological advancement, the diversification of its stockpile and an improved operational capability. Since the beginning of 2017, Kim Jong-un's rhetoric has become more aggressive and self-assured as he promises the firing of a new ICBM that can potentially target the United States.³⁹ Never in the past could Kim be so confident; he has consolidated his hold on power, established his strategy of parallel development and set the track for the establishment of his country as a *de facto* nuclear power.⁴⁰

North Korea's nuclear and missile advancements risk jeopardizing the Asia-Pacific region at a time of transition in both the United States and South Korea. In Seoul, the North Korean breakthrough and the failure of *Trustpolitik* have revived more

³⁶ Doug Bandow, "Leaving Korea Would Unburden US Troops and Help South Korean Economy Grow Up", in *The Skeptics* blog, 6 July 2016, <http://nationalinterest.org/blog/the-skeptics/leaving-korea-will-unburden-us-troops-help-south-korea-grow-16866>.

³⁷ Khang Vu, "The Ultimate Nightmare: U.S. Withdrawal from South Korea", in *The National Interest*, 10 July 2016, <http://nationalinterest.org/feature/the-ultimate-nightmare-us-withdrawal-south-korea-16904>.

³⁸ Terri Moon Cronk, *U.S., South Korea Launch Annual Foal Eagle Exercise*, 3 March 2017, <https://www.defense.gov/News/Article/Article/1102331/us-south-korea-launch-annual-foal-eagle-exercise>.

³⁹ Cha Du-hyeogn, "Kim Jong Un's New Year's Day Speech: What Did We Learn?", in *NK News*, 2 January 2017.

⁴⁰ Park Young-Ja, "Fifth Nuclear Test, in Line with Strategy for Pro-longed Ruling of Kim Jong-un Regime", cit.

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confrontational approaches, including the proposal to develop South Korea's own nuclear weapons. The deployment of the THAAD system risks disrupting relations with China. Finally, joint US-ROK military exercises will need to be confirmed by the new US administration. Donald Trump faces a stronger North Korea, which is more likely than ever to become a serious threat to US territory.⁴¹ It will therefore be the US President's task to formulate – in consultation with his Asian allies, and in particular South Korea – a new strategic approach to the DPRK's nuclear threat without jeopardizing that particular order and stability in Northeast Asia that has guaranteed economic growth and prosperity in the last few decades.

Park's effort to engage Pyongyang in a relationship based on mutual trust has not met with success. The main issue with Park's approach was that North Korea would never accept denuclearization as a prerequisite for dialogue. In a strategic environment such as Northeast Asia's, in which the United States' nuclear umbrella covers Tokyo and Seoul, North Korea lives with a very high security dilemma: survival is its very first priority.⁴² Its nuclear programme, as previously explained, provides survival through deterrence. Thus, from the DPRK's viewpoint it makes no sense to give up its only assurance of deterrence prior to the beginning of any talks. A new policy based on trust must be welcomed, but it should take the interlocutors' viewpoints into consideration.

As for the United States, Donald Trump's ambiguity does not permit easy predictions about his approach to North Korea. He should, in any case, avoid the previous administration's approach. Barack Obama's "strategic patience" policy, which was based on the erroneous assumption that the DPRK regime was on the verge of collapse, granted Pyongyang precious time to implement its nuclear programme. While the US was pushing for multilateral sanctions, Kim Jong-un consolidated his hold on power and concentrated resources on the nuclear programme. Trump should start with the idea that North Korea is more stable than is often claimed, as the events of 2016 have demonstrated. The new president should also welcome a trust-building approach, dropping demands for denuclearization as a prerequisite for talks.

In this regard, the deployment of THAAD does not help but rather lowers the possibility of building a climate of strategic trust. South Korea has legitimate concerns that the US should address. However, the new missile system provokes not only Pyongyang but also Beijing, which sees its nuclear-response capabilities curtailed by THAAD's interaction with the broader US nuclear umbrella. The Northeast Asian trust deficit will thereby only worsen.

⁴¹ Geoff Dyer, "The Time for 'Strategic Patience' Is Over. Donald Trump Must Confront North Korea", in *The National Interest*, 26 December 2016, <http://nationalinterest.org/feature/the-time-strategic-patience-over-donald-trump-must-confront-18864>.

⁴² Van Jackson, "Why North Korea's Fifth Nuclear Test Is Not Like the Others", in *Beyond Parallel*, 12 September 2016, <http://beyondparallel.csis.org/?p=447>.

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Finally, Trump and the other actors must take into account the new role of China. Beijing today is not just Pyongyang's patron: under President Xi Jinping, it has assumed a global and regional leading role. China's self-assumed new role requires it to undertake more responsibility and actively make an effort to diminish frictions on the Korean Peninsula. In the past, China presented itself as the only viable interlocutor on behalf of North Korea. More recently, by supporting sanctions, China has become a more impartial stakeholder in the issue. However, the sanctions regime has dramatically failed to stop North Korea (partly due to China's non-compliance). China rightfully deserves an important role in the resolution of North Korean nuclear questions, but its involvement should take place within the context of a different kind of engagement – not confrontational but trust-building.

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