

Jane's Defence Weekly

## **Briefing: Korea progression - Seoul adapts to threats from the North**

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### **South Korea is dealing with the ever-present threat from its northern neighbour by developing new doctrines and acquiring new systems.**

While the ongoing crisis in Ukraine has given the international community a reminder of what the Cold War was like, for South Korea it never went away.

The continued partition of the Korean Peninsula into a liberal-capitalist south and totalitarian-socialist north means it is the one corner of the world where, strategically speaking, it is still 1989.

The 'miracle on the Han River' - the economic boom that started in the 1960s and turned South Korea into Asia's fourth-largest economy - has not changed the fundamental security threats that North Korea presents. Instead, the North's development of weapons of mass destruction (WMD) and continued investment in its armed forces have offset the widening wealth gap between the two countries. As Seoul's 2012 defence White Paper states: "North Korea is pursuing a concentrated upgrade of its asymmetrical forces, including weapons of mass destruction, special operation forces, long-range artillery, underwater warfare forces, and cyber attack capabilities, while selectively upgrading its conventional forces."

In previous times of strained relations, Pyongyang has generally engineered tensions to extract concessions from Seoul. In doing so it affords itself 'first mover advantage' against Republic of Korea (RoK) forces, choosing the time, location and manner of provocation. Further to this is Pyongyang's seemingly unpredictable nature: a North Korean response to South Korean actions may not be accurately predicted, further complicating Seoul's options. To put it another way, as the Pentagon's annual report to Congress on North Korea did in March: "North Korea's calculus of the threshold for smaller, asymmetric attacks and provocations is unclear."



Military bases and flashpoints on the Korean peninsula. (IHS)

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The extent to which uncertainty over this "threshold" can hamstring South Korean forces became apparent in 2010 when two attacks - the sinking of Republic of Korea Navy (RoKN) corvette RoKS *Chon An* off Baengnyeong island and an artillery attack on Yeonpyeong island - highlighted systemic failures in their ability to deter or respond to North Korean provocations.

To remedy this Seoul established a joint command to deal with contingencies in its West Sea (Yellow Sea) islands. "Our ground, naval and air forces along with RoK-US combined forces will rally around the newly established NWIDC [North-West Island Defense Command] and perform an effective joint response," Vice-Minister of National Defense Baek Seung-joo told *IHS Jane's* in early April.

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### **'Kill Chain' and pre-emptive deterrence**

The attacks on *Chon An* and Yeonpyeong had effects on the South Korean Ministry of National Defense (MND) beyond the establishment of new joint commands for the West Sea islands, leading the administration of then president Lee Myung-bak to adopt a significantly more aggressive doctrine than his predecessors. "The RoK military will decisively strike not only the origin of enemy provocation, but also the command and support forces behind the provocation," the 2012 White Paper said.

"To this end, the RoK military is not only reinforcing its precision surveillance, target acquisition, and precision strike capabilities in the Northwest Islands and the surrounding areas, but is also significantly strengthening its 'immediate retaliation forces', including air defence and anti-missile defence capabilities, as well as airborne and standby forces," the White Paper added.

These upgrades are accompanied by a change from what Bowers called "classic responsive deterrence to active and now proactive deterrence". He also noted that this could have "significant implications if pre-emption is involved in this doctrine".

To enable this new form of deterrence, South Korea has outlined plans to design, build and deploy a 'Kill Chain' system, described by President Park Geun-hye in October 2013 as "an integrated information, surveillance, and strike system".

One element of this is the Korean Air and Missile Defense (KAMD), which is intended to provide lower-tier air defence against ballistic missiles, aircraft, and cruise missiles. Due to be completed by 2015, KAMD is understood to be built around LIG Nex1 FPS-303K low-altitude air-defence radars that are linked to batteries of upgraded second-hand Patriot PAC-2 missile systems bought from Germany. PAC-3 missiles, which offer improved anti-missile capabilities, are to be procured after 2015 and Raytheon Standard Missile-3 (SM-3) ship-launched missiles may also be bought for deployment on the RoKN's Sejong the Great-class Aegis destroyers.

According to graphics provided by the MND, the 'Kill Chain' system is more ambitious than the KAMD in that it aims to destroy North Korean ballistic missiles and other threats before they are unleashed.

It would use data from manned and unmanned airborne-, space- and ground-based ISR assets to provide targets - such as a North Korean ballistic missile on a transporter-erector-launcher (TEL) - for an emerging stable of ballistic and cruise missiles that have the ability to hit sites across North Korea. Bowers describes it as "a major change in how South Korea will prosecute North Korean threats. Its benefits could be questionable given the extant artillery threat to [South Korean] population centres, but is worth a much closer look by analysts."

South Korea is in the early stages of developing and deploying the ISR assets it needs for 'Kill Chain'. In January 2014 the MND unveiled details about a new initiative to explore high-altitude long-endurance (HALE) unmanned aerial vehicle (UAV) technology. The KRW45.2 billion "stratosphere endurance UAV design technology" programme aims to demonstrate the viability of an ultra-light UAV capable of remaining aloft at altitudes of up to 50,000 m (164,000 ft) for around three days. Seoul is also buying four Northrop Grumman RQ-4 Global Hawk HALE UAVs and plans to put reconnaissance satellites into space by 2021.

While 'Kill Chain' ISR capabilities remain at a relatively undeveloped stage, the same cannot be said for the kinetic elements of the system: Seoul's long-range ballistic and cruise missiles.

South Korea's path to its current ballistic and cruise missile capabilities remains murky, although Russian assistance is strongly suggested by photographs and video recordings of an April 2012 test launch that showed a Hyunmu-2 (also known as Hyeonmu or Hyunmoo) ballistic missile similar to the Russian KB Mashinostroyeniya Iskander (SS-26 'Stone'). There are precedents for such bilateral co-operation: Seoul's KM-SAM air-defence system is based on the Russian 9M96E missile developed for the S-400 Triumf (SA-21 'Growler') system.

Vital to the operational success of these indigenous missile programmes was then president Lee's success in October 2012 in getting the United States to relax Seoul's obligations under the Missile Technology Control Regime (MTCR).

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## **External threats, challenges**

As 'Kill Chain' and other major investments outlined below illustrate, South Korea continues to focus the lion's share of its military posture, planning and procurement on the North Korean threat. However, the RoKN and Republic of Korea Marine Corps (RoKMC) are developing missions and procuring equipment to protect South Korean interests beyond the peninsula.

Those interests, in the opinion of Dr Robert Kelly, an associate professor of international relations at Pusan National University, are the result of South Korea's geo-strategic situation. "It is an encircled middle power," he wrote in *Newsweek Japan* in December 2013. "Three great powers border it, as does North Korea. ... Korean geography is immutable, and Korean demography is stagnant. In other words, Korea cannot move out the way of Sino-Japanese competition, even if it wishes to, and Korea's economic 'miracle' days are over."

This concept of South Korea as an 'encircled middle power' is not a subject given much coverage by domestic media, which appear to prefer to indulge in (what to outsiders appears to be) an unhealthy obsession with the threat posed by a 'remilitarising' Japan. In this narrative, Japan is seeking to steal away the South's symbol of national unity, Dokdo: the East Sea/Sea of Japan islets known internationally as the Liancourt Rocks and claimed by Tokyo as Takeshima.

South Korean politicians also seem to understand the domestic benefits of anti-Japanese rhetoric. Defence planners in Seoul, however, appear to be more concerned with China.

"There seems to be an evolving perception of China by South Korean defence planners as a potential security concern in the maritime realm in light of growing Chinese military and paramilitary activities in the disputed waters of Northeast Asia," said Dr Alessio Patalano, a lecturer in War Studies at King's College, London.

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## **Changes to force structure**

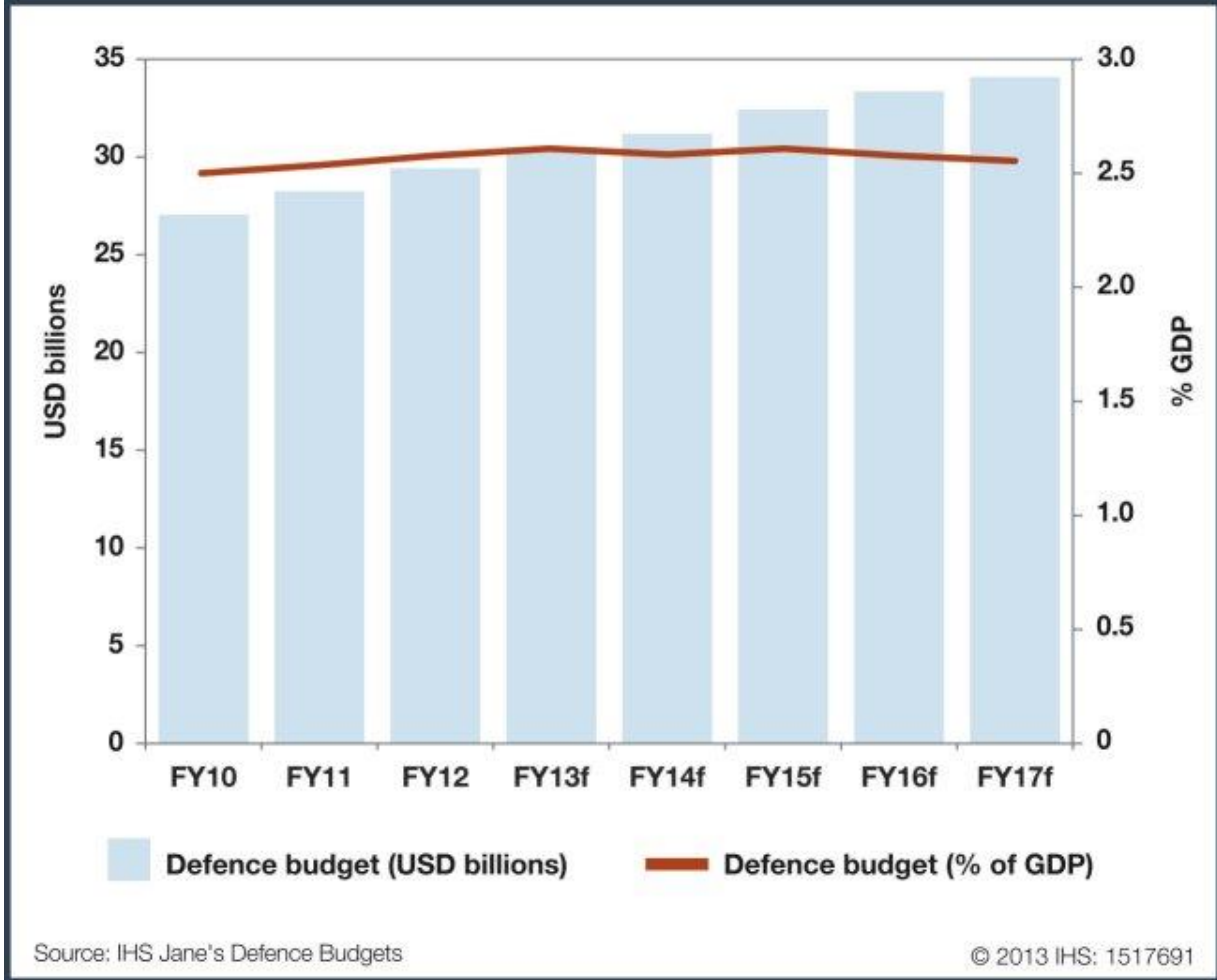
Beyond the unique challenges created by North Korea, the RoK armed forces have had come to terms with problems faced by militaries in many developed nations. These include lower public tolerance for casualties (something that North Korea's military provocations expertly exploit), lower public appreciation for the value of national service, and greater expectations of decent conditions and training for conscripts.

The 2012 White Paper tried to address these concerns in detail - not least better conditions for conscripts and retirement benefits for professional personnel. Nonetheless, the greatest challenge facing the MND and the armed forces is the "stagnant demographic" mentioned by Kelly. South Korea's birth rate in 2011 was 1.24 children per woman, which is even worse than Japan's: the perennial poster child for demographic crises.

In March the MND confirmed that active-duty troop numbers will be cut from 640,000 to 522,000 by 2022. The Republic of Korea Army (RoKA) will soak up the majority of the cuts, with the number of troops expected to be cut from 498,000 to 387,000. It is looking to plug the capability gap by increasing the number of specialist non-commissioned officers from 116,000 to 152,000, the intention being that the quality of the smaller professional force will make up for the cut in overall numbers.

"The reduction in forces is clearly a matter of demographics," said Bowers. "This level is quite large but has been proposed before in 2005/6 under the Defence Reform Plan 2020, but was resisted by the military. I think this time, however, it might go through as they will literally run out of recruits."

## A: Defence spending (USD billions based on constant values for the current year / % GDP)



South Korea's defence budget from fiscal year 2010 to fiscal year 2017 (projected). (IHS)

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### Conventional upgrades

As well as changing rules of engagement for commanders to deal with tactical-level 'provocations', South Korea has sought to give them the right equipment to respond with. One example of materiel purchases is the Rafael Spike NLOS electro-optically guided missile, which has been deployed by the RoKMC on the West Sea islands and will also arm RoKN AgustaWestland AW159 Lynx Wildcat helicopters.

Seoul continues to use a number of government agencies and bodies to support local industry's development of conventional land systems such as the K2 main battle tank (MBT) (see box).

The RoKA has ordered 100 K2s with an expected in-service date of 2016, according to Hyundai Rotem officials, who also claimed a number of improvements over the K1A1: the RoKA's current frontline MBT. Notable among these is that the 120 mm L/55 smoothbore gun provides a longer effective distance than the K2's 120 mm L/44 installed on the K1A1, while an autoloader increases the K2's firepower and reduces the crew from four to three.

Also of note is the EVO-105 self-propelled howitzer. A standard South Korean KM500 (6x6) five-tonne truck chassis with the rear cargo area modified to accept the upper part of the US M101 towed gun, the EVO-105 was marketed at the 2013 Seoul International Aerospace & Defence Exhibition (ADEX) with the indisputable tagline: "Not your father's 105 mm self-propelled howitzer".

Samsung Techwin officials confirmed that the RoKA plans to acquire 800 EVO-105s with an in-service date of 2017.

RoKA aviation is also getting an upgrade in the form of 36 Boeing AH-64E Apache attack helicopters, which will replace ageing Hughes 500MD/TOW Defender and Bell AH-1S Cobra helicopters and provide the kind of close-air support and anti-tank firepower that the army would need against massed North Korean armour.

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## **RoKAF: less is more?**

The RoKAF has also invested in conventional armed capabilities that allow it to better respond to North Korean attacks. Given the size of the peninsula and the proximity of the threat these have mostly revolved around strike fighters and other fast jets (see box).

In March the Defense Acquisition Procurement Agency (DAPA) finally signalled an end to the torturous FX-III acquisition by officially opting for the Lockheed Martin F-35A Lightning II Joint Strike Fighter. The decision came six months after Seoul had rejected the chance to buy 60 Boeing F-15 Silent Eagles, even though this option was the only one of three platforms to come in at cost.

The RoKAF decision to go for 40 F-35s rather than 60 F-15s keeps South Korea on the cutting edge of fighter technology but at the expense of 20 airframes.

Another recent key procurement was the 2013 decision to purchase the Taurus KEPD 350 cruise missile for the existing F-15K Slam Eagle fleet. Seoul's first choice for its KRW388 billion (USD344 million) stand-off missile requirement was the Lockheed Martin AGM-158 Joint Air-to-Surface Standoff Missile (JASSM), but the US was unwilling to supply it.

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## **RoKN & RoKMC**

Although the predominance of the land threat has seen the RoKN somewhat overshadowed by the army and air force, in recent years the navy has built up a substantial surface fleet that it continues to expand (see box).

South Korea is also developing into a significant submarine manufacturer and operator. Starting out with local assembly by Daewoo Shipbuilding & Marine Engineering (DSME) of HDW-designed 1,285-tonne Chang Bogo-class (Type 209) boats in the 1990s, Hyundai Heavy Industries followed this with the manufacturing of the first KSS-II (Type 214) air-independent propulsion (AIP) submarines from 2009. Nine boats are scheduled to be delivered, with production split between Hyundai and DSME.

In late 2012 DSME was awarded a contract to build the first two 3,000-tonne KSS-III (also known as KSS-3) submarines for the RoKN. The KSS-III programme envisages the navy buying up to nine of the large conventional submarines, again with production split between DSME and Hyundai. The first two vessels, which will be the largest submarines in the RoKN inventory, will be completed by the end of 2022.

The boats are expected to be equipped with Hyunmu-3C cruise missiles. Based on models displayed at exhibitions in 2012, these would be fired from a locally developed vertical launch system (VLS) to be integrated aft of the sail.

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**LAND SYSTEMS - MAJOR SPENDING ON ARMOUR AND ARTILLERY** South Korea's 2014-2023 military ground vehicle market is worth USD16.03 billion with a compound annual growth rate (CAGR) of 2.4%. South Korea is one of the highest spenders in the Asia-Pacific market, leading the 'second tier' of spenders following the huge USD30 billion Indian and USD51 billion Chinese markets.

A large part of this spend is on heavy armour, including the K2 main battle tank (MBT), K21 infantry fighting vehicle (IFV), as well as K9 Thunder and EVO-105 self-propelled artillery systems.

The K2 MBT has finally entered serial production, with first vehicles being handed over this year. Hyundai Rotem officials have confirmed that they still anticipate further orders towards an acquisition objective of 600 vehicles, with the next batch to be powered by a Doosan DST engine and an S&T Dynamics transmission. Assuming there are no further major delays relating to these powertrain components the K2 is expected to represent over USD4.1 billion in spending over the forecast period.

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**Jon Hawkes** Senior Analyst, IHS Jane's DS Forecast, London

**AIR SYSTEMS - INDIGENOUS AMBITIONS** The RoKAF continues to support domestic research, development and manufacturing of fast jets.

KAI is the manufacturer of the T-50 Golden Eagle lead-in fighter trainer. In January 2012 DAPA agreed to buy 20 FA-50 light attack variants for the RoKAF and awarded KAI a follow-on contract for an unknown number of additional aircraft in May 2013. The FA-50s, which were originally intended as conversion trainers for pilots transitioning from T-50s to F-16s, will replace ageing fighters, including around 100 Northrop F-5E Tigers.



One programme that remains up in the air - metaphorically if not literally - is the Korean Fighter Xperiment (KFX) indigenous stealth fighter. Originally envisioned as a single-seat, twin-engine design equipped with stealth features, AESA radar and internal weapons carriage, it was suspended by the Park administration in 2013 after baulking at the KRW8 trillion (USD7.4 billion) development costs. Speaking to *IHS Jane's* at ADEX 2013 in October, an industry source said that DAPA and the Agency for Defense Development (ADD) believed the first technology demonstrator had "development risks - basically the stealth configuration means it could cost more money".

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**James Hardy** *JDW Asia-Pacific Editor, London*

**NAVAL SYSTEMS - MODERNISATION UNDER WAY** The RoKN has made great strides in its transformation into a blue-water force, but continues to modernise across the board, with programmes in virtually all corners of the fleet, from submarines to destroyers, large deck amphibious vessels to mine countermeasures vessels and salvage ships. One of the most ambitious projects is the local development and construction of large 3,000-tonne submarines under the KSS-3 project, although details are only slowly emerging. In the near term, one of the largest and most interesting programmes continues to be the FFX, or Incheon-class frigate programme, which will replace the RoKN's nine Ulsan-class frigates and go some way towards also replacing its 24-strong Pohang class of corvettes.

Six FFX Batch I ships were ordered from Hyundai Heavy Industries and STX between 2008 and 2012 and are being delivered between 2013 and 2016. These 3,251-tonne ships feature a combined diesel or gas turbine (CODOG) propulsion system, feature extensive use of radar signature-reduction measures, and are fitted with an increasing number of indigenously developed combat systems.

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**Alex Pape** *Senior Analyst, IHS Jane's DS Forecast, London*

**BUDGET - STEADY AS SHE GOES** Given the ongoing security situation on the peninsula, it is unsurprising that South Korea possesses one of the largest defence budgets in Asia with annual expenditure set at USD32.6 billion for 2014. Until the mid-1980s defence expenditure stood at a level of around 5.0% of GDP, although this fell to around 2.5% by the end of the Asian financial crisis of 1997: a level the budget has roughly remained at since. In recent years related spending has increased marginally, rising from 2.52% of GDP in 2010 to 2.61% in 2014, although this figure follows a fall from 2.72% in 2009 in the aftermath of the global financial crisis.

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