

Emerging Technologies

New Threats and Growing Opportunities for South Korean Indo-Pacific Strategy

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Abstract

As strategic competition in the Indo-Pacific theater intensifies, states are more actively searching for ways to strengthen their position in the great power game. Emerging technologies are at the center of this new geopolitical, geostrategic chess board, and their dual capabilities are opening new domains for the conduct of hostilities as well as cooperation. This article examines the new threat posed by emerging technologies and growing opportunities with the case of South Korea. It looks into threat perception and Seoul's national security imperatives, and further investigates strategic motives and the goals behind South Korea's pursuit of emerging technologies development, acquisition, and application. It argues that these emerging technologies are necessary for South Korea's viable military strategy, and that they will likely be a positive push toward Seoul's bigger role in integrated military strategy in the Indo-Pacific.

From its naissance in the 2017 Asia-Pacific Economic Cooperation (APEC) meeting, the Indo-Pacific strategy (IPS) has come a long way. The vision of a Free and Open Indo-Pacific (FOIP) that emphasized preparedness, partnership, and promotion of a networked region has begun to take a more concrete shape under the Biden administration as US *Indo-Pacific Strategy*. One of the noticeable advancements made is the Quadrilateral Security Dialogue (the Quad). The Quad is at the core of US *IPS* that competes with China's Belt and Road Initiative.¹ Another step forward is the Australia–United Kingdom–United States (AUKUS) deal signed on 15 September 2021, a pact among Washington, London, and Canberra that addresses technologies related to artificial intelligence (AI) and nuclear-powered submarines, among others.

Under the 10 action plans for the next 12- to 24-month period, reinforcing deterrence was emphasized. The US *Indo-Pacific Strategy* issued in February 2022 reads:

The United States will defend our interests, deter military aggression against our own country and our allies and partners . . . and promote regional security by developing new capabilities, concepts of operation, military activities, defense initiatives,

and a more resilient force posture. . . . we will deepen cooperation and enhance interoperability through a concrete program of work on advanced capabilities, including cyber, artificial intelligence, quantum technologies, and undersea capabilities.²

In the security domain, the *IPS* is a more comprehensive form of the US Third Offset Strategy, which named China and Russia as strategic competitors of the United States and reevaluated civil-military fusion in technology. This competition is becoming more comprehensive across multiple sectors from semiconductor, telecommunication, to green energy, and the strategic roles and the significance of cooperation among the Quad and Quad Plus members is expected to rise.

The most severe competition lies in emerging military technologies that open new domains for the conduct of hostilities. These domains not only apply to the sheer size and speed of an act of aggression, but also to the nature of destruction in conflicts. New technologies mentioned in the 2018 *National Defense Strategy* are AI, lethal autonomous weapons, hypersonic weapons, directed energy weapons, biotechnology, and quantum technology.³ These technologies are linked to developing and implementing new types of assets in the new era of counterforce and beyond.⁴ China and Russia have been executing military modernization plans focusing on these new capabilities to increase survivability against the US missile defense system and potential conflicts in new domains.⁵

China, for example, tested a new space capability, the Fractional Orbit Bombardment System (FOBS) with a hypersonic glide vehicle carrying “a nuclear-capable rocket,” on 7 August 2021.⁶ Even though FOBS is nothing new, the fact that China upgraded the system, which is prohibited by the Soviet-US Strategic Arms Limitation Treaty II, with a hypersonic glide vehicle and tested it was a wakeup call for Washington.⁷ The new system will allow China to place nuclear weapons into low earth orbit and maneuver the warhead laterally and vertically when reentering the atmosphere. This an offensive antiaccess area denial (A2AD) asset that is capable of directly interfering with the US missile defense system. Thus, it is a recent example of deepening strategic competition between China and the United States. In addition, China has been investing in multiple independently targetable reentry vehicles (MIRV) and hypersonic glide vehicles (HGV), as well as a space-based early warning system.

On 15 November 2021, Russia tested a direct-ascent antisatellite missile that “clearly demonstrate that Russia, despite its claims of opposing the weaponization of outer space, is willing to jeopardize the long-term sustainability of outer space.”⁸ This shows that Russia is exploring the use of emerging technologies and has an interest in new space technologies. Russia has been operating under the doctrine of “escalate to de-escalate” based on limited nuclear use and reiterated this point in its Basic Principles of State Policy of the Russian Federation on Nuclear De-

terrence, 2020.⁹ Through military modernization plans, it focuses on developing “exotic weapons,” various delivery systems to weaken the US missile defense system such as HGVs (Project 4204), autonomous underwater vehicles (AUV, Status-6 or Kanyon), nuclear-powered cruise missiles (NPCM), air-launched ballistic missiles (ALBM), hypersonic cruise missiles (HCM), and more.

South Korea (ROK) has also issued new budgets and retailored its policy to adapt to the changing security environment. The Defense Acquisition Program Administration (DAPA) in June 2021 announced a new defense program to develop an Israeli Iron Dome-like interceptor system, targeting completion in 2035. The approved budget for the project totals over \$2.5 billion.¹⁰ Last year, in 2020, Seoul launched an Adaptive Acquisition Framework (AAF), benchmarked after the US AAF, for the first time and issued \$30 billion for AI, drones, and autonomous weapons. Other military modernization planning and investments include developing indigenous vertical takeoff and landing (VTOL) unmanned aircraft by 2033 with a \$1.109 billion budget, upgrading CH-47 Chinook choppers by 2032 with \$1.13 billion, and so forth. It is also actively pursuing the legal foundations for emerging civil-military technology and new weapon systems applications.

As the US nuclear umbrella protects South Korea from external threats, the US-ROK bilateral alliance relationship is an imperative factor in Seoul’s security policy. In this context, South Korea’s perspective on Indo-Pacific strategy is inseparable from its relations with the United States, threat perceptions, and its strategic motives. This article identifies those drivers of Seoul’s Indo-Pacific vision, and the role emerging technologies play in maximizing the effective use of the Indo-Pacific military strategy and Quad Plus for South Korea.

Threat Perception and National Security Imperatives for Seoul

While the group of four—the United States, India, Japan, and Australia—announced that “the Quad is a flexible group of like-minded partners dedicated to advancing a common vision and to ensuring peace and prosperity,”¹¹ South Korea, supposedly the “linchpin” for security and prosperity in the Indo-Pacific,¹² showed no more than a lukewarm response to the quadrilateral cooperation. Only after the Moon and Biden administrations’ summit in late May 2021 has Seoul officially agreed on full participation and support for US *IPS* with the promise of a supply of COVID-19 vaccines for its 550,000 servicemembers who are in regular contact with the US Forces Korea in Seoul.

Contrary to active promotion of Indo-Pacific cooperation from Japan and Australia, Seoul did not announce an official stance on the Quad or Quad Plus, initially. It is interesting how domestic debate on Quad participation is anchored on fear of being left out, especially South Korea’s own comparison with another US

ally in the region, Japan. Seoul, however, was observed to be “hesitant” to fully participate in the strategic cooperation due to a number of reasons. First and foremost, South Korea still suffers from the memory of Terminal High Altitude Area Defense, (THAAD) where China boycotted the Korean tourism industry to penalize Seoul for its decision to host a US missile defense system in Seongju. Beijing and Seoul have come a long way from their “amicable cooperative relationship” in the 1990s to “strategic partnership” in 2008. However, as interdependency grew, policymakers in Seoul seem to have lost a long-term direction on how to thrive under Sino-US rivalry.

Another factor that contributes to Seoul’s lukewarm stance is nuclear North Korea. The Moon administration has been from the beginning sensitive to North Korean reaction to South Korean policy and cooperative gestures. As an administration that has dedicated policy priorities to its rapprochement with Pyongyang, the Moon administration has shown reluctance in acceding to the Quad, which may read as an outright alignment with the United States. South Korea after the summit, however, did officially state that “the United States and the ROK also reaffirm support for enhanced cooperation with Pacific Island Countries and acknowledge the importance of open, transparent, and inclusive regional multilateralism including the Quad.”¹³

Whether it be Beijing or Pyongyang, the essence of such indecisiveness reflects a significant flaw in Seoul’s thinking. If China or North Korea sees that South Korea perceives an outright alignment with the United States as a risk that it needs to take, then that will be the starting point of their undermining of Seoul’s diplomatic and foreign policy capacity in pursuing its own terms in the international political arena. Furthermore, North Korea will see this as an opening for achieving its long-term strategic goal: decoupling the US–ROK alliance. On a similar note, if the United States is convinced that that is the view Seoul holds, then it will be the beginning of an underconfident alliance with serious trust issues.

Recent, more updated, policy of the Moon administration, however, seems to address this issue and move away from any complications of such indecisiveness. Reaffirming the alliance relationship, Seoul and Washington are working together in strategic sectors such as semiconductors and electric cars. The Biden administration on 12 April 2021 held a supply chain meeting with CEOs in the semiconductor industry from the United States, the Netherlands, South Korea, and Taiwan to bolster investment in and cooperation with the United States.¹⁴ Such movements in the semiconductor sector to strengthen US ties with the world’s largest semiconductor suppliers in South Korea, Taiwan, and the Netherlands who possess an exclusive extreme ultraviolet (EUV) laser technology could further limit Chinese influence in global semiconductor supplies. South Korea is

supporting these US efforts to secure global semiconductor supplies and related investments. In the electric vehicles sector, LG Energy Solution and SK Innovation signed a contract for lithium-ion battery supply for Ford and Volkswagen electric vehicle (EV) plants in the United States.¹⁵

The longstanding US–ROK alliance is an indispensable piece of Seoul’s security calculations, and anything that damages the healthy relationship is considered as a potential threat factor. In this context, strengthening the alliance relationship based on comprehensive cooperation in broader areas and issues is crucial for Seoul not to become a weak link in Sino-US rivalry.¹⁶

Historically surrounded by great powers and involved in great power competitions, South Korean policy making is sensitive when it comes to independence, self-defense, and autonomy since those factors often dictate the domestic political agenda. Thus, national security policy tends to suffer from dilemmas such as (1) idealist self-defense and dependence on the US nuclear umbrella, (2) China, strategic partner who may help solve the North Korean puzzle and strategic competitor of the United States, (3) the picture of a reunified Korea and the currently threatening North Korea, and (4) Russia who can counter/leverage China and Sino-Russian cooperation.

Major external threats to national security for South Korea come from three neighbors mentioned above: China, North Korea, and Russia. What concerns Seoul regarding China is Beijing’s unilateralism and economic retaliation. From South China Sea or East China Sea territorial disputes to the Taiwan Strait, potential conflicts in the area may limit Seoul’s freedom of navigation, which is critical for securing oil and gas supply for an energy-deprived country. China’s vigorous pursuit of military modernization and new capabilities such as its “Blue Ocean Information Network” pose threats in this context.¹⁷

Moreover, China’s physical violation of Korean territory has raised continuous concerns, especially Chinese fishing boats in the Yellow Sea. A South Korean coast guard was stabbed to death in 2011 apprehending a Chinese vessel. In 2017, South Korea fired 249 warning shots over illegal fishing boats;¹⁸ there were over 4,600 cases of illegal fishing reported in 2020 between January and August.¹⁹ This concern turned into fear when Chinese H-6 bombers flew over the Korean Air Defense Identification Zone (KADIZ) in 2019 without any warnings. Similar incidents of Chinese violation of the KADIZ occurred over 410 times between 2017 and 2019.²⁰ China also surprised Seoul by sending a warship to the waters near Baengnyeongdo past the self-imposed boundary in December 2020.²¹

In addition, China’s recent test of FOBS with hyper-glide capability, as well as new nuclear weapons with emerging and space technologies seem to show how China is serious about growing its military forces—supporting such growth with the largest military expenditure in history.²² While Chinese assertive tour de force

is becoming more visible in the military and security realms, recently, there were multiple cases of Chinese media portraying and claiming hanbok (Korean traditional attire) and kimchi as Chinese. This ignited tension between furious Koreans and Chinese on virtual platforms, and the tension is only getting more intense.

Russia, on the other hand, does not pose imminent direct threat. Its course of development in strengthened autocracy and deteriorating democracy, alongside its military modernization, however, does pose threat in the long run. In July 2019, it flew two Tu-95 bombers and an A-50 in violation of South Korea's KADIZ under coordination with China. It was the first time since the Korean War that Seoul experienced violation of its territorial airspace.²³ Russia has violated KADIZ around 90 times between 2017 and 2019.²⁴ This act triggered serious doubts on the intentions of Russia and revealed the face of "a revitalized malign actor."²⁵

Finally, the most direct and longstanding military threat is posed by North Korea. In January 2022 alone, Pyongyang has conducted five missile tests and eight missiles of various ranges were used in those tests. This recent series of missile tests is, to some degree, instigated by Seoul's test of locally developed submarine-launched ballistic missiles (SLBM) on 15 September 2021 and, at the same time, by Kim Jung-un's desire to shape the political environment to his favor in the early stages of the Biden administration, the final stages of the Moon administration, and for the upcoming elections in South Korea.

North Korea's insatiable appetite for nuclear weapons and new missiles resulted in 132 missile tests under Kim Jong-Un, who has been in power since 2011. The number includes newly introduced SLBM, KN-11, and PK-1 in 2015, Hwasong-14 with 7–8,000 km flight distance, and Hwasong-15 with 13,000 km flight distance in 2017.²⁶ This is an exponential increase in the number of launches and in the variety of missile types compared to Kim Jung-il (1994–2011), who recorded only 47 tests.

Pyongyang's first hypersonic missile was fired in a missile test nine days after South Korea's SLBM test; an antiair missile test and a SLBM test followed suit, all three in one month period. In addition, Pyongyang claimed that the second ballistic missile of the year had a detached hypersonic glide vehicle (HGV) and the two short-range missiles of the third missile test were launched from two separate trains—part of a new railway-born missile regiment, similar to the ones Russia has been working on. The different ranges—short-range, long-range, intermediate range—and types of the missiles, both cruise and ballistic, launched during the tests, along with the high volume of missile tests, all imply that there is high possibility of unwanted escalation dragging not only the two Koreas, but other stakeholders in the Indo-Pacific into instability.

Beyond conventional weapons, North Korea also poses great threat in cyber domains. Seoul has been warned by East Security Response Center (ESRC) of

cyber hacking attempts by Thallium, a North Korean hacker group that was behind hacking Microsoft in 2019. Their activities against South Korean entities took place in 2014 against Korea Hydro Nuclear Power (KHNP) under the code name “Kimsuky” and in June 2021 via the Ministry of Unification and the Korea Institute for National Unification (KINU) emails, Korea Atomic Energy Research Institute (KAERI) or by impersonating the Institute for National Security Strategy (INSS) and Korea Internet and Security Agency (KISA).

Moreover, the concern over physical infiltration by unmanned aerial vehicles (UAV, i.e., drones) is intensifying lately. There were multiple accounts of North Korean drones infiltrating the border in 2014. Focused near Paju in order to fly over military facilities, one of them had taken pictures of South Korea’s presidential compound in addition to military installations.²⁷ In addition, there were two cases of North Koreans crossing the border on foot to be captured by South Korean guards in less than a one-year period, one in February 2021 and the other in November 2020.²⁸ The Moon administration was criticized for the late detection of the trespassers and its delayed response in capturing them.

These actors in the theater are actively pursuing military buildups and modernization through emerging technologies such that some posit that a qualitative arms race is on the trend.²⁹ The increasing threats supported by emerging technologies and advanced capabilities have pushed South Korea to invest in its data protecting, gathering, and processing capabilities; intelligence, surveillance, and reconnaissance (ISR) capabilities; missile and antimissile capabilities; AI-based weapons; and UAV technologies. The pursuit of emerging technologies, thus, contributes to achieving the following three strategic goals for South Korea:

- **Maintaining military superiority over North Korea:** Among the three countries mentioned above, North Korea is the one who poses the most direct military threat. With the two Koreas technically still at war, North Korea shares borders with South Korea and has been aggressive in pursuit of its own offensive capabilities. As Pyongyang remains Seoul’s key adversary, it is imperative to maintain military superiority over North Korea and escalation dominance. Thanks to the US nuclear umbrella, South Korea has that advantage, however, evolving technologies pose a challenge to suppress and prevent strategic and tactical surprise completely. Investing in emerging technologies and their military applications such as antidrone technologies and AI-based radar detection technologies place South Korea one step closer to achieving this strategic goal.
- **Bolstering domestic economic innovation and protecting Korean intellectual property:** Emerging technologies trigger domestic innovations and

their cumulation contributes to advancing weapons systems and platforms. Securing these intellectual properties is critical in military terms. The military use of emerging technologies when obtained by adversaries, leading them to not only replicate the technology-applied product but also to exploit its weakness may bring severe damage to South Korea's national security. Thus, investing in emerging technologies to develop defensive and offensive capabilities and to secure them is in South Korea's best interest.

- **Increasing interoperability with the United States:** The emerging technologies help enhance South Korea's interoperability with US assets that are also heavily invested in maximization of these technologies. Interoperability is a critical aspect of US–ROK military alliance cooperation that can further boost general data processing, the collection of ISR capabilities, and resiliency and readiness. Seoul has increased its expenditure on force improvement programs from 32.9 percent in 2019 to 38.2 percent in 2024.³⁰

Emerging Technologies: ISR system, Missiles, UAV and VTOL, AI, and Autonomous Weapons

Seoul's drive for emerging technologies coincides with its efforts to put forward a Fourth Industrial Revolution policy. While acknowledging the important merge of physical, biological, and cyber technologies, Seoul established the Presidential Committee on Fourth Industrial Revolution (PCFIR) on 22 August 2017 to focus on digital "ICBM" comprised of Internet of Things (IoT), cloud computing, big data, and mobile technology as its priority sectors.³¹ Especially in the security domain, Seoul is investing in military buildups in the following areas to counter external threats: ISR systems and sensors, UAVs and VTOL capabilities, AI, and other autonomous weapons.

Strengthening ISR capabilities is becoming a priority for Seoul with the rising number of North Korean infiltration and reconnaissance attempts, border crossings, and China's assertive push in the waters of the theater. The ROK Air Force (ROK AF) on 23 December 2019 received its first Northrop Grumman RQ-4 Global Hawk, which has an enhanced integrated sensor suite (EISS) and airborne signals intelligence payload (ASIP) that enables sophisticated situation awareness and intelligence gathering. With an increasingly heavy emphasis on ISR, South Korea also signed a memorandum of understanding (MOU) with Israel to cooperate in the field of unmanned airborne intelligence, surveillance, targeting, and reconnaissance (ISTAR) on 15 March 2021. The MOU between Elbit Systems and Korea Aerospace Industries (KAI) targets developing future unmanned airborne ISTAR capabilities for the ROK AF and for international customers. Seoul

has four Boeing E-737 airborne early warning and control Peace Eye platforms, two Dassault Falcon 2000 ISR platforms, and eight Hawker 800 Peace Krypton signal intelligence and ISR platforms³².

UAVs are a central piece in ISR capabilities, and South Korea recently selected 11 AAF projects, seven of which were on UAV, two on antidrone technologies.³³ South Korea is investing in developing indigenous technologies such as a radar-linked antidrone integrated solution that uses active electronically scanned-array radar, sense-and-avoid navigation technology, and attack drones of many sizes and functions. The DAPA announced on 22 June 2021 that the ROK Army, Navy, and Air Force will test new indigenous anti-UAV technology developed by K-NETZ under a \$4.3 million contract.³⁴ The six-month trial of a “radar-linked anti-drone integrated solution” targets detecting micro-UAVs with radar cross sections of 0.01m² out to 8km to protect military facilities.³⁵

The DAPA is investing \$2.5billion in purchasing three types of offensive UAVs—a suicide drone, an attack drone with a rifle, and a small-sized drone for reconnaissance and offensive operations. The suicide drone, a “fire-and-forget platform” is built by Datz Corporation; the attack drone, developed by UMAC and equipped with a 5.56mm K2 rifle and an electronic optics camera;³⁶ and the multifunctional drone is a VTOL small drone for ISR and precision strike capability developed by LIG Nex1 and SAMCO.

In addition, the Agency for Defense Development (ADD) announced in May 2021 that they have completed the development of “sense-and-avoid” navigation technology. The technology, which took four years to develop, will enable UAVs to autonomously navigate through obstacles and increase their survivability in battlefields. The ADD also mentioned its plans to “conduct research on artificial intelligence-based technologies that can recognize tactical solutions, and on technology that optimizes the simultaneous operation of multiple UAVs, as part of efforts to continuously improve the performance of UAV autonomy.”³⁷

AI is another key component for supporting and advancing ISR capabilities and utilizing UAVs. In a joint venture with the private sector, the Research Center for the Convergence of National Defense and Artificial Intelligence was established by Hanwha and the Korea Advanced Institute of Science and Technology on 20 February 2018. The institution works on four research areas including: an AI-based command and decision system, composite navigation algorithms for mega-scale unmanned undersea vehicles, AI-based smart aircraft training system, and AI-based smart object tracking and recognition technology.³⁸

Developed in 2018 by the Korea Institute of Science and Technology, Gyunma Robot, a four-legged unmanned combat vehicle is an example of robots with AI and deep-learning capability used for ISR and communication. Under a \$2.5 mil-

lion contract, the DAPA plans to deploy an AI surveillance system this October to strengthen the demilitarized zone border. The new system employs deep-learning technologies that allow its detection capabilities to improve constantly.³⁹ As part of an AAF project, the South Korean government has signed a contract for ten types of UAVs and drones to guard the nautical border against Chinese trawlers whose presence has been increasing—an average of 180 vessels were spotted in May 2021, three times more than a year before.⁴⁰

These investments and developments in the emerging technologies sector contribute to building South Korea's defensive strategic weapons system, 3Ks, that is to be expanded into the Strategic Strikes System. Initially conceptualized to counter Pyongyang's growing missile capability, the 3Ks stand for Kill Chain, Korean Air Missile Defense (KAMD), and Korean Massive Punishment and Retaliation (KMPR). Kill Chain is a preemptive strike capability that can target North Korean nuclear missiles while launching is in process. It involves various precision guided bombs, sensor technologies, and ground and sea based ballistic and cruise missiles. The KAMD is a layered missile system that allows Seoul to intercept missiles in midair. The KMPR is more of an operational concept that emphasizes Seoul's second-strike capability and airpower using kinetic and non-kinetic capabilities such as ballistic and cruise missiles, blackout bombs, and electromagnetic pulse weapons.

Expanding on the concept of 3Ks, Seoul is spending heavily on airpower or missile capabilities, including building a \$2.56 billion interceptor system. The new system will detect, identify, and destroy any incoming short-range missiles, artillery shells, and UAVs. More robust 3Ks and the Strategic Strikes System became viable with the termination of the bilateral missile guidelines that took place in May 2020. The missile guidelines, first signed in 1979 as part of an agreement with the United States, had been restricting Seoul's missile development by limiting the range to under 800 km (500 miles) and payload to under 500 kg. Without these limits, South Korea can develop missiles that can reach more major Chinese cities and the latest revision notes that it has gained approval for developing solid-propellant space rockets.⁴¹

Strategic Motives and Opportunities

Seoul's strategic motives for pursuing emerging technologies are threefold: strengthening the US–ROK alliance, nurturing the South Korean defense industry and bolstering related exports, and expanding Seoul's middle power status in Southeast Asia. The three strategic considerations are also related to new opportunities South Korea seeks in IPS cooperation.

First, the alliance commitment of the United States is indispensable to Seoul's security. While Pyongyang and Beijing try to loosen the linchpin, it is in Seoul's best interest to maintain and strengthen the bilateral alliance.⁴² Investing in emerging technologies and further developing their applications to improve military capabilities help South Korea to consolidate the relationship by allowing South Korea to assume bigger roles in various fields in Indo-Pacific security cooperation. This may reward South Korea with growing prestige in the global political arena. In addition, having more stakes in global affairs through expanding networks helps internationalize the regional security issue of nuclear North Korea. This, in a practical sense, contributes to gaining global support and stronger agenda-setting powers, which will lead to more successful neutralization of North Korean threats and realizing reunification on the Korean peninsula in the long run.

Second, South Korea's defense industry has grown substantially in recent years. South Korea ranked ninth in international arms transfers with 2.7 percent global market share after Israel, who ranked eighth place with 3.0 market share; it was followed by Italy with 2.2 percent market share.⁴³ For example, Korea Aerospace Institute (KAI) signed a \$240 million contract to export T50s, supersonic jet trainer/light fighter jets, to Indonesia. Since 1999, KAI has exported T-50 advanced trainer jets and KT-1 basic trainer jets to Indonesia, Iraq, Thailand, Turkey, Peru, and the Philippines.⁴⁴ Annual average exports record \$3 billion for past decade, led by major companies in the defense industry such as KAI, Hanwha, LIGNex1, and Daewoo Shipbuilding & Marine Engineering.⁴⁵ Seoul's pursuit of emerging technologies is a way to nurture and strengthen its defense industry.

Last but not least, expanding Seoul's middle power status in Southeast Asia is another strategic motive South Korea carries. Mentioned under strengthening the US-ROK alliance, agenda-setting power is an example of middle power strategy. As the strategic importance of Southeast Asia rises due to intensifying Sino-US competition and potential conflicts in the South China Sea, East China Sea, and in Taiwan, Association of Southeast Asian Nations (ASEAN) countries are gaining Seoul's attention. Strong middle power status in the region provides opportunities to strengthen the US-ROK alliance by allowing Seoul to build tighter networks in Southeast Asia and linking the United States with ASEAN countries. Close networks with ASEAN countries also will be South Korea's valuable assets in the future, and emerging technologies are one of the keys that opens those doors.

Conclusion

South Korea is faced with new threats to military strategy triggered by both improved and new capabilities supported by upgraded ISR sensors, precision technology, multifunctional UAVs, AI-based weapons, and deep learning. These emerging

technologies, however, are also providing opportunities for Seoul to become a more valuable ally and play expanded roles in the Indo-Pacific. That being said, Seoul needs to reconfirm its commitment to the strategic goal of the US-ROK alliance and put a foot forward in promoting the cohesive front of these aligned goals.

Supporting the US Indo-Pacific vision, Seoul should take proactive steps to operationalize military strategy in Indo-Pacific and can start with resuming joint military exercises, including large-scale joint military exercises, both command post exercises (CPX) and field training exercises (FTX), promoting dynamic information exchange, and role sharing to increase interoperability.

Its investment in emerging technologies in ISR systems, missiles, UAVs and VTOL, AI, and autonomous weapons will all be necessary for viable military strategy. Furthermore, these emerging technologies, when combined with Seoul's political determination, government-led defense industry, and its strong IT network will likely result in a positive push toward an essential role for Seoul in integrated military strategy in the theater. ✪

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Notes

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