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# New Frontiers for Security Cooperation with Seoul and Tokyo

Edited by Henry D. Sokolski


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Cover images, from top left clockwise: 1) testing of 5G networks in Thailand, 2) a Japanese H-IIA rocket carrying the NASA-Japan Aerospace Exploration Agency (JAXA), Global Precipitation Measurement (GPM) Core Observatory at launch pad 1 of the Tanegashima Space Center, Thursday, Feb. 27, 2014, Tanegashima, Japan, 3) an Asian woman using face detection and recognition technology, 4) a demolition charge detonating 1,500 meters from the Avenger-class mine countermeasures ship USS Scout.

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## Nonproliferation Policy Education Center

The Nonproliferation Policy Education Center (NPEC), a 501(c)3 nonprofit organization, is a nonpartisan, educational organization founded in 1994 to promote a better understanding of strategic weapons proliferation issues. NPEC educates policymakers, journalists, and university professors about proliferation threats and possible new policies and measures to meet them.

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# Acknowledgments

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Several of these PEL fellows contributed to the workshops that followed and to the research in this volume. Bryan Port, who has extensive knowledge and insights from his military service in South Korea, was extremely helpful in guiding these discussions.

Once the working group completed most of its research, Steph Haggard of UCSD's Korea-Pacific Center kindly offered to host a series of NPEC workshops. Covid prevented holding the events in person. His help is much appreciated as is his friendship.

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# Executive Summary and Policy Recommendations

With a new Democratic administration, Washington is almost certain to moderate its demands that Japan and South Korea pay more for American forces on their soil. This should ease tensions with Seoul to Tokyo. To strengthen security relations with Japan and South Korea, though, more will be required.

Rather than simply increase their conventional military deployments, Washington, Seoul, and Tokyo will need to collaborate in new ways to enhance allied security. This will entail working more closely on new military frontiers, such as enhancing allied command of outer and cyber space as well as in underwater warfare. Washington, Seoul, and Tokyo will also want to carve out new functional areas of cooperation to make existing energy sources more secure, communications more reliable, data sharing easier and safer, and allied economic assistance to developing nations in strategic zones more effective.

Enhanced collaboration in each of these areas has begun but is not yet locked in or fully institutionalized. It should be. Washington, Seoul, and Tokyo need one another to deal with China and North Korea. Yet, how each currently strategically views Beijing and Pyongyang differs. Nor is America's preferred military approach to deterring Chinese and North Korean adventurism — by preventing Beijing and Pyongyang from projecting military strikes against their neighbors — all that easy to achieve.

Adding new, more tractable items to America's Asian security alliance agenda won't immediately eliminate these misalignments. But it will strengthen the security ties they have as liberal democracies — bonds Beijing and Pyongyang are straining to fray.

As both Zack Cooper of the American Enterprise Institute and Richard Samuels and Eric Heginbotham of MIT note in their essays, the most basic security challenge Seoul, Tokyo, and Washington faces is China.[1] The United States certainly wants to deter Chinese adventurism. Japan shares this objective too but, given its proximity to Beijing and its trade with it, Tokyo has far more to risk militarily and economically than the United States if relations with Beijing sour. South Korea, which is geographically and economically even closer to China, is preoccupied with its relationship with the North, seeking to promote an ambitious political and economic North-South agenda. It also, like China, is obsessed with settling historical scores with its one-time occupier — Japan.

So, while Japan and Seoul both want to deter North Korea, their approaches differ. While South Korean President Moon favors accommodating Pyongyang over actively defending against it, Japan's approach is nearly the opposite. This draws Seoul closer to Beijing's orbit and pushes Tokyo further away.

Unfortunately, political legitimacy in China, South Korea, and North Korea still depends all too much on focusing on Japan's failure to atone fully for its war crimes. For South Korea this "soft" conflict has hard military consequences: To the extent Seoul focuses on making military investments, these are frequently

1. For Samuel's and Heginbotham's full analysis of US-Japan-Korean security futures, see the research they competed for NPEC, "Vulnerable Alliances: U.S. Unpredictability and the Search for a 'Plan B' in South Korea and Japan" http://npolicy.org/article.php?aid=1489&rt=&key=heginbotham&sec=article&author=

colored by a desire to operate more freely of Washington's command and to equal or outmatch, not just North Korea, but Japan.

This is unhelpful. Washington's most popular current military strategy — deterring China and North Korea by denying them the means to sustain military attacks against its neighbors — is demanding. By one calculation, targeting just 40 Chinese airfields requires nearly 600 accurate conventional missiles (and by last count, China had at least 235 airfields and North Korea 80 or more).[2]

Meanwhile, Japan and South Korea, which lack robust missile defenses, are all well within range of China's short to intermediate-range surface-to-surface missile arsenal, which currently consists of more than 3,000 ballistic and cruise missiles. Multiply these numbers by how many weapons are needed to neutralize other Chinese and North Korean military assets and the number of munitions needed to support America's strategy of deterrence by denial, climbs exponentially.

It would be comforting if Washington, Tokyo, and Seoul were able to amass such an arsenal and could agree on how to use it. This, however, will take time. Until then, additional forms of deterrence may be needed. Developing additional strategies, as with mending Japanese-Korean relations, will be challenging. Fortunately, the threats from China and North Korea are real, growing, and large enough to keep the United States, Japan, and Seoul focused on these problems long enough to solve them.

To maintain this focus and keep Seoul and Tokyo from going their own way (by acquiring nuclear deterrents of their own), the United States, South Korea, and Japan will want to broaden their concept of mutual defense beyond the contentious metric of military spending. More of the later, of course, is needed but what is at least as important is that America, Japan, and South Korea collaborate on new forms of security, forms that make it clear to Beijing and Pyongyang that the ties that bind Washington to Seoul and Tokyo are growing and are stronger than any force Beijing or Pyongyang can devise to tear them apart.

What might these new forms of security cooperation be? NPEC held a battery of workshops to find out. These gatherings, held over three years, drew ideas from early and mid-career officers and staff from the military, Pentagon, Intelligence Community, State, Energy, Commerce, and the Senate and the House. In addition, senior retired officials, and outside government advisers contributed. The workshops focused on six specific areas for increased alliance cooperation:

1. Artificial intelligence (AI)
2. 5-G
3. Reducing civilian "value" targets' vulnerability to missiles and drones
4. Anti-submarine warfare
5. Competing against China's One Belt One Road initiative
6. Military space

2. See Shlapak, David A., David T. Orletsky, Toy I. Reid, Murray Scot Tanner, and Barry Wilson, *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute.* Santa Monica, CA: RAND Corporation, 2009. https://www.rand.org/pubs/monographs/MG888.html.

### *Artificial Intelligence (AI)*

On AI, the group benefited immensely from the analysis of Tarun Chhabra and his parent organization, the newly formed Center for Science and Emerging Technology. In his brief, Chhabra notes that just Japan, the United States, South Korea, and three other allied states bankroll 50 percent of the world's high-technology research and development (vice China's 26 percent). To prevail in the coming AI competition and reap AI's military and security benefits, the United States, Japan, and South Korea, though, will need to cooperate.

Towards this end, Chhabra recommends ten, specific initiatives including measures to protect the transfer of sensitive information, help coordinate the screening of investment, block hostile penetration of allied supply chains, and harmonize AI-related export controls. He also recommends that the United States, Seoul, and Tokyo work with other allied governments to establish common standards to share, pool and store non-sensitive datasets; share the costs of developing privacy-preserving machine learning systems; promote allied military AI interoperability and software development; coordinate national AI research and development agendas; and develop inter-allied AI human capital pools. Finally, Chhabra recommends that Washington, Seoul, and Tokyo join other key, friendly AI-advanced states create an OECD-like multilateral pro-democracy organization to establish international standards for testing and verifying AI technologies and AI firms.

### *5G*

This last recommendation is an idea Eric Brown of the Hudson Institute also emphasizes in his discussion of the development of yet another military-critical dual-use technology — 5G, the new pipeline AI innovators will rely on to acquire and manipulate data. Competition to export 5G communication systems, he notes, is an emerging geotechnical battle ground. China is subsiding Huawei and ZTE 5G exports to the developing world, creating new technological dependencies that, in turn, cast a major influence over developing nations' economies and political development. China also is sharing surveillance and population control software, which, when combined with AI and 5G technologies, enables techno-authoritarianism.

Fortunately, there may be technical fixes to short-circuit China's head start in 5G exports. One such fix that Brown spotlights is to offer alternatives to China's end-to-end 5G systems that are based on buying Chinese software and equipment. Rakuten Mobile in Japan as well as Nokia, Cisco, and NEC are experimenting with Open RAN 5G software that allow countries to use almost any 5G handset or terminal without sacrificing control over the data that flows to and from them. This has led to the creation of commercial groups, such as the O-Ran Alliance and the Open RAN Policy Coalition. More could be done. South Korea's Samsung Corporation, Brown notes, is currently the only large 5G firm located in a major democracy that is a member of the Open RAN Policy Coalition.

To correct this, Brown recommends creating a "democratic ecosystem" for 5G cooperation. Japan, South Korea, Taiwan, Australia, and the US should play a prominent role in developing such a 5G coalition. It should also include India and Western Europe. A step in this direction is the recent creation of a US-led Multilateral Telecommunications Security Fund, which aims to leverage US financing along with that of Australia, the UK, New Zealand, Canada, and Japan. Given China's subsidization of its 5G exports, Washington could also focus the US International Development Finance Corporation resources to back safer 5G developments overseas. Japan could do likewise with its Japanese Bank of International Cooperation. Other select allied development banks could do the same.

### *Reducing Civilian "Value" Targets' Vulnerability to Missiles*

Another East Asian alliance security concern is the growing vulnerability of civilian nuclear facilities to accurate missile and drone attacks. This vulnerability has been publicly discussed in South Korea for several years.[3] The threat has only grown.

NPEC's executive director, Henry Sokolski, who worked in the Pentagon, offered a brief on this problem. His assessment benefited from NPEC's commissioned analysis by Jungmin Kang, the former chairman of South Korea's Nuclear Safety and Security Commission. This research details the radiological effects of accurate missiles and drone attacks on a variety of specific nuclear facilities — spent fuel ponds, reactor cores, and reprocessing plants—in South Korea, Japan, and Taiwan.[4]

Accurate missiles and drones, which all of the countries in the region have or are developing, including North and South Korea, Japan, Taiwan, and Mainland China, can produce a variety of impacts against nuclear facilities. The least, a non lethal attack, could nonetheless prompt the immediate closure of all nuclear plants in any given country. At the high end, an attack against the large spent fuel reprocessing plant in Rokkasho, Japan (and in the future, against similar plants in China and possibly South Korea), could produce Chernobyl-like radiological releases or worse. Such strikes would, at a minimum, produce public alarm and the likely evacuation of thousands to millions of residents.

Sokolski offers a number of recommendations. First among these is to add the topic of missile and drone attacks against nuclear plants to the agendas of existing East Asian nuclear security forums that the Japanese, South Koreans, and Chinese conduct. Bilaterally, the United States should share its own assessments and take in the thinking Japanese, South Korean, Chinese, and Taiwanese experts. To date, such joint assessments have yet to be discussed in a serious fashion among or between any the states listed.

Specific measures worth discussing include moving more spent reactor fuel from pond storage to safer spent fuel casks, which most East Asian states have begun doing; delaying efforts to build or expand spent fuel recycling plants, which are the most radioactive of targets and are uneconomic in Japan, South Korea, and China; hardening spent fuel ponds roofs with ultra-high performance concrete; installing emergency sprinkler cooling systems for the ponds; building remote nuclear reactor control rooms, as Japan has begun to do; building passive bird cage slat barriers to key parts of each nuclear facility to limit missile and drones threats; and employing active point defenses.

Cooperative threat assessments of the vulnerabilities of other major civilian targets that, if hit, would produce significant, harmful effects would also be useful.

3. See GI Korea, "South Korea's Nuclear Power Plants Highly Vulnerable to Ballistic Missile Attack, Korea Drop, April 17, 2017, available at https://www.rokdrop.net/2017/04/south-koreas-nuclear-power-plants-highly-vulnerable-to-ballistic-missile-attack/.

4. For his detailed analysis, see "Understanding and Reducing Military Vulnerabilities of Civilian Nuclear Plants: The Case for the Northeast Asia" at http://npolicy.org/article_file/Understanding_and_Reducing_Military_Vulnerabilities_of_Civilian_Nuclear_Plants_The_Case_for_the_Northeast_Asia.pdf

### *Anti-submarine Warfare*

The ultimate objective of NPEC's Frontiers project is to identify new forms of alliance security cooperation that can strengthen alliance security ties and deterrence and thereby reduce our East Asian allies' temptation to secure nuclear deterrents of their own. Early on, the working groups decided against making recommendations on what specific, new weapons systems the United States or its East Asian allies should buy. The thinking here was that dictating what should be spent on what weapons systems was best left to the Defense Department and Japanese and South Korean defense ministries.

An exception that the group encountered to this rule was South Korea's interest in nuclear submarines. These boats need enriched uranium, which is normally produced in domestic uranium enrichment plants. Given the nuclear weapons proliferation risks associated with such activity, the group decided it was desirable, in this case, at very least, to examine How much sense it made for South Korea to acquire nuclear submarines.

The group took in a series of briefings from US nuclear submarine operators and experts. The experts made it clear that investing in nuclear submarines to operate in the closed seas surrounding South Korea was a poor anti-surface, anti-submarine option. Building off these briefings, James Campbell, who a US Navy seas systems manager for, wrote an analysis of South Korea's proposed nuclear submarine program, its costs, risks, and, most important, its alternatives.[5]

Mr. Campbell's conclusion is that if South Korea is serious about anti-submarine and anti-surface naval warfare, it should put aside building nuclear submarines, which are far more expensive, laborious to develop and deploy, and far less effective than nonnuclear alternatives. These alternatives include air independent propulsion submarines, which Japan and South Korea are acquiring; anti-submarine aircraft (e.g., P-8s) and modern frigates, which Japan and South Korea have deployed; unmanned anti-submarine submersible vehicles, anti-submarine patrol drones, acoustic and non-acoustic anti-submarine sensors; and artificial intelligence systems to process and analyze anti-submarine warfare signals and intelligence.

Although NPEC was unsuccessful in making Mr. Campbell's brief available to South Korean officials, the US Navy should present its own brief to Seoul. It might also identify where and how the United States and other East Asian allied states (e.g., Japan and Australia) could share insights on ways to conduct anti-submarine warfare. Such multilateral working groups might also include states worried about Chinese submarine operations, such as Indonesia, Singapore, and India.

### *Competing against China's One Belt One Road Initiative*

Although recent reports indicate Beijing may be reducing its financial support for its One Belt One Road Initiative, China is unlikely to stop using its financial prowess to influence developing states in South East Asia, the Middle East, and Africa. So far, Washington officials have sounded alarms about the dangers developing nations run in accepting Chinese developmental assistance. Yet, the question remains of what should Washington do to compete against China.

5. See James Campbell, "Seoul's Misguided Desire for Nuclear Submarines," September 13, 2020, available at http://npolicy.org/article.php?aid=1520&rtid=2.

The short answer Karl Friedhoff of the Chicago Council of Foreign Affairs gives is to follow China's lead along with that of Japan and South Korea. In his analysis, he argues against Washington trying to go toe-to-toe with China building major infrastructure projects. Beijing, he notes, will always be quicker and the low bidder in building rail lines, roads, ports, bridges, and power generators compared to the United States.

That does not mean the United States and its allies should not compete. Instead, Friedhoff argues that Washington and its wealthier East Asian and Pacific allies should leverage their comparative advantages in providing services — schooling, medical care, business financing, legal counsel, and secure IT — and exploit the large transportation and energy projects One Belt One Road might construct. China can build big, cheap infrastructure but the United States, Japan, and South Korea can easily best Beijing at providing the high technology services that are essential to improve human capital in the developing world.

South Korea and Japan are already begun taking this approach in South East Asia. Washington could help by standing up a trilateral coordinating council that could make optimal use of US, Japanese, and South Korean developmental financial resources to broaden their developmental beachheads in Southeast Asia.

Yet another area where the United States could work with Japan and South Korea, which the workshops explored, is offering space-related services to the developing world. China is expanding its space service offerings under its Space Silk Road initiative and Asia-Pacific Space Cooperation organization. Japan, South Korea, the United States and other space-faring allied democracies could offer alternatives.

As Taro Sato of Japan's Air Self-Defense Force explains in his analysis, Japan's Free and Open Asia Pacific initiative affords a logical venue for allied space development assistance. A key market for such aid would be the South East Asian Nations (ASEAN). They all have maritime, navigational, environmental, disaster relief, agricultural, fishing, and communications security requirements. These can best be met with space-satellite-related services from Japan, South Korea, the United States and other allied space fairing nations. One possible venue Washington could use to coordinate the provision of such services, Mr. Sato argues, is the Asia Pacific Regional Space Agency Forum.

### *Military Space*

This brings us to the last set of recommendations, which relate to military space cooperation. Sam Wilson of Aerospace Corporation makes the case Washington needs to increase not just commercial and civilian, but military cooperation with key allies, such as Japan and South Korea.

Although South Korea is not known for its space activities, it is one of six nations that can launch satellites in to medium and geostationary orbits and ranks in the top ten nations for the number of satellites it has in orbit and what it spends on its space programs. It also has plans to explore the moon and is one of six states to have its own navigation timing positioning satellite system. Seoul currently has a space situational awareness agreement with Washington, which is of military value. It would like to do more. Japan, meanwhile, has one of the world's most advanced space programs. It too has orbited the moon and plans to land a spacecraft there in 2022. Japanese industry produces some of the world's most spacecraft and space sensors.

Given the United States has agreed to launch an American military satellite in 2022 off a New Zealand satellite dispenser, Mr. Wilson argues Washington should now consider additional forms of military space

cooperation with Japan and South Korea. This could reduce costs to achieve US military space missions, complicate Russian and Chinese anti-satellite operations thereby increasing allied military space resilience and deterrence.

Taro Hayashi, of Japan's Defense Ministry and the Hudson Institute, argues these points in his brief. Japan and South Korea both can offer geographical space launch advantages. As former Japanese Defense Minister Karo Taro recently noted, the Cold-War Five Eyes (US, UK, Canada, Australia, and New Zealand) intelligence and military space cooperative needs updating. At a minimum, the US military space program should dial Japan and South Korea in.

# Chapter 1

## The Current and Future State of Security Ties with Seoul and Tokyo

*Stephan Haggard*

The two bilateral alliances with Japan and Korea that are at the core of the security architecture in Northeast Asia were forged in war. North Korea's invasion of the south in June 1950 had profound effects for US foreign policy not only in Asia but in the European theatre, most importantly with respect to Germany. The war paved the way for the reintegration of Japan as well. Not coincidentally, the foundation of the "San Francisco system" were laid in September 1951 by the signing of both the formal peace treaty with Tokyo and the bilateral security treaty, subsequently amended in 1960. The Korean War triggered a succession of other hub-and-spokes treaty arrangements. These remain key to the offshore balancing strategy the US has pursued in the region throughout the postwar period, recently reformulated—and by both political parties—as an Indo-Pacific strategy. Those alliance partners include Australia and New Zealand, the Philippines, and--initially through the Southeast Asia Treaty Organization--Thailand. Formal alliance partnerships with South Korea and the Republic of China on Taiwan followed in the wake of the Korean armistice, in 1953 and 1955 respectively.

What is striking about these treaties is their brevity and overwhelming focus on the problem of extended deterrence: outlining the underlying American commitment to provide an effective security guarantee and sketching the basic legal and institutional mechanisms for affecting it. By any metric, this system appeared to have worked. Since the American withdrawal from Vietnam, the Asia-Pacific has witnessed an almost unprecedented era of peace and prosperity. Whatever *Sturm und Drang* might follow in the wake of North Korea's relentless pursuit of nuclear and missile capabilities and particular provocations, the underlying fact remains that the likelihood of major conflict is low; from a strategic perspective, Northeast Asia is surprisingly stable.

This has proven the case because the Asian alliances did not prove to be static arrangements, nor did they remain as narrow--even skeletal--as the signed pieces of paper might suggest. Initially preoccupied with building credible, workable and interoperable military-to-military relations, the alliances naturally evolved with a more complex and technology-driven security agenda, and in response to both global and regional challenges. Not surprisingly, formal defense industry cooperation was an early add-on; a Defense Industry Consultative Committee with Korea was formed as early as 1993. More recently, the Abe government's re-interpretation of Article IX of the Japanese constitution permits much more extensive cooperation between the allies, not only at the military level but with respect to defense industry cooperation as well. Among those changes: more permissive Guidelines for Defense Cooperation, a restructured Systems

and Technology Forum that permits engagement on a wider array of common acquisition interests, a new "base" strategy that prioritizes international cooperation and relaxed guidelines with respect to military exports that extend the reach of alliance cooperation to other partners in the region and beyond it. The contributions from Heginbotham and Samuels as well as Cooper address these issues.

But the very *concept* of the alliances also expanded over time, and broadly in line with the capabilities that came with the region's rapid economic growth. Initially taking a very restricted view of the legal boundaries of its peace constitution, Japan gradually ventured outside of the region through participation in multilateral peacekeeping operations; the alliance in effect supplemented the objectives the US pursued through multilateral initiatives. With the changes engineered by Prime Minister Shinzo Abe, the alliance also shifted from a unilateral security guarantee by the United States into one in which Japan's right to engage in collective defense in support of the US was openly asserted, albeit with strongly defensive limits. Korea similarly took on greater security responsibilities, from peace-keeping to anti-piracy operations and even a highly controversial commitment to American operations in Iraq. High-level consultative structures, initially among Secretaries of Defense but coming to incorporate Secretaries of State in a "2+2" format followed, reflecting the wider strategic significance of the alliance arrangements.

But the growth of the alliances was by no means limited to the security sphere. Economic integration was initially managed through bringing Japan and Korea into multilateral economic institutions. But both relationships have a long and sometimes bumpy history of intense bilateral economic negotiations aimed at liberalizing historically closed markets as well. As the two countries gradually moved away from more statist economic strategies, bilateral economic relations have come to be governed by formal trade agreements as well, most notably in the Korea US Free Trade Agreement of 2007. Had the Trans-Pacific Partnership been ratified, it would have had at its core a US-Japan free trade agreement, and a first step in that direction was taken in 2019.

These arrangements cannot be seen through a narrow economic lens; economic ties are themselves a core component of the credibility of American commitments. But the economic components have deepened on their own as well; in a 2009 "vision statement" for the US Korea alliance, the joint statement made mention of piracy, organized crime and narcotics, climate change, poverty, infringement on human rights, energy security and epidemic disease. Nor were these simply platitudes; in each of those areas and others, summits between American presidents and their Korean and Japanese counterparts have signed dozens of cooperative agreements facilitating cooperation in these and other areas, both bilaterally and through multilateral channels as well.

The current conjuncture poses three central challenges to these two alliance partnerships, although these issues are by no means limited to the Northeast Asian alliances. The first is the China question, which is linked closely to the changing demands on national security strategy. The extent to which Japan and Korea want to align around a confrontational posture toward China is an ongoing issue, to some extent a function of shifting political winds in Tokyo and Seoul. Setting aside that question, however, the important point to underscore here is not *whether* interests are aligned but *around what*. The challenges posed by China are by no means limited to the military sphere as traditional conceived; rather, they extend both to the new technologies that are emerging as the foundations and platforms of national power and which have a direct effect on the pace of innovation, and ultimately on economic growth. In this regard, alliances are crucial force multipliers and a smart alliance strategy needs to think about how cooperation can be structure not only to augment capabilities, but to converge around standards that provide competitive advantage broadly conceived.

A second challenge has to do with the hub-and-spokes nature of the American security architecture in the Asia-Pacific. The differences between Europe and Asia in this regard have been analyzed in some detail, and particularly how the US might have favored bilateralism in the 1950s as a way of controlling the propensity for risk taking on the part of the leaderships in Seoul and Taipei. However, there is now a deeper problem. It is a common misperception in the United States that Japan and Korea are similar advanced industrial democracies with broadly similar values and facing quite similar strategic and economic challenges. As a result, American observers are continually puzzled by the current downward spiral in bilateral relations. Why can't they simply get along?

In fact, the US should not expect that the interests of Japan and Korea would necessarily align. Japan is much more exposed to direct Chinese military pressure than Korea; Korea by contrast is both smaller and more dependent on China. Politics in the two countries are also quite different. In Japan, the LDP continues its remarkable run with few coherent challengers on its left; a more nationalist foreign policy vis-à-vis China may have limits but it also works politically. In Korea, power has oscillated but the left currently has the upper hand; in any case the right in Korea is not necessarily aligned with a hawkish foreign policy vis-à-vis China.

But most important are the recurrent history issues—around comfort women, forced labor and the broader meaning of the imperial era—that have proven a recurrent stumbling block to closer cooperation. It is unlikely that these issues can be finessed, or that the US even has that much latitude to intervene to mediate between Seoul and Tokyo. But a premise of this project is that changing the subject often makes good politics. The US goal for managing the Korea-Japan relationship should not be seen as the nirvana of a final solution, but rather the incremental building of cooperative ventures—rooted in functional but nonetheless common interests—that can strengthen trilateral cooperation and even cooperation among larger clusters of major democratic allies.

The final challenge is what might be called the Pogo problem, after cartoonist Walt Kelly's observation that "we have met the enemy and he is us." We have just survived four difficult years in our bilateral relations with the two countries, rooted in a suspicion that allies are free riders and therefore focusing relentlessly on burden sharing issues. The problems should not be exaggerated; atop the apparent policy vicissitudes and missteps, the very institutional machinery of the alliances that I have alluded to continued to move forward, Secretaries of Defense and State reiterated long-standing alliance talking points, military and other forms of cooperation continued, and there were even areas of measurable advance, such as a preliminary bilateral trade agreement with Japan. Nonetheless, there is damage to repair, and while a recitation of homilies will do at least some of that work, innovating is more convincing than simply resting on accumulated laurels.

# Chapter 2

## Making the Case for the U.S.-Japan and U.S.-ROK Security Alliances

*Eric Heginbotham and Richard Samuels*

Scholars and practitioners long have been predicting that China's rise would prompt greater security cooperation between America's Japanese and South Korean allies—Asia's "middle powers"—and among Washington, Seoul, and Tokyo. Many reasons have been offered why this has not come to pass. Some focus on institutional inertia, domestic obstacles, and identity politics. Others offer moral hazard and the tendency of states to "buck pass" or to "cheap ride." These all matter, but our paper for the NPEC argues what matters most are the different strategic circumstances under which all three states operate. This combines with the oscillations of American foreign policy and its heavy-handed pressure on host nation support. Both Northeast Asian allies are very naturally debating what sort of "Plan B" might be crafted to enhance their security. This paper argues that their options are not entirely appealing – either for them or for the United States. In Seoul, there is renewed consideration of nuclear breakout, which could prompt Tokyo to follow suit– is likely to backfire. A less dangerous alternative is that U.S. allies will be encouraged to hedge against uncertainty by reproducing capabilities supplied by the United States, rather than produce a more rational division of labor. Given this landscape, we conclude that Washington's best option to avoid becoming involved in another Asian conflict is to remain engaged as an active ally and security partner, while adjusting its approach.

### *The Problem*

Japanese and South Korean leaders are grappling with twin challenges, specifically: a more hazardous regional security environment, with a rising China and nuclear-armed North Korea on the one hand; and a more unpredictable US ally on the other. Former President Trump's "America First" doctrine has focused allies' recognition that continuity in America's engagement is not guaranteed. US allies have been aware since the end of the Cold War that the US consensus on deep global engagement has been under challenge.

They have read academic calls for a strategy of Restraint or Offshore Balancing. And they have heard U.S. politicians advocate defense cuts and a smaller U.S. military footprint abroad.

Former President Trump attacked "Deep Engagement" from a different flank— increasing the defense budget, questioning the value of alliances, and acting unilaterally. And now the pandemic—and its fiscal implications—will surely accelerate America's inward turn. We think that the canary in the coal mine is negotiations over host nation support. A U.S. withdrawal from its commitments in East Asia would fun-

damentally jeopardize the security of both Japan and South Korea – at least if they had no nuclear weapons—and breakout would create altogether new problems.

The extent and nature of the security problems faced by each—both now and in a hypothetical future—are not equal. The ROK is more vulnerable than Japan. Japan's GDP is more than three times that of the ROK; and that translates into military potential.

Korea is also closer to sources of potential threat. China has fully 5 times as many ballistic missiles capable of hitting Korean targets as it does missiles capable of hitting Honshu.

And of course, Korea's strategic position is complicated by living on the same peninsula with a dangerous and unstable DPRK regime. Japan forms part of the first island chain and can position naval and supporting forces behind the sensors deployed on those islands.

Partly as a consequence, the US– ROK alliance is also in greater political jeopardy. The problem is not ideological. Even under conservative governments, Korea's inherent vulnerability makes it less prone to balance against Chinese power. And the current combination of a progressive government in Seoul, paired with a demanding one in Washington, exacerbates the risk of a political falling out that would benefit neither. To make this case, let's start by looking at the evolving debates in South Korea and Japan.

*Japan Debate*

For starters, Japanese elites seem increasingly comfortable assigning little or no strategic importance to their estranged South Korean neighbor. We understand their disaffection but believe this assessment to be non-strategic. Even if their falling-out has been shaped by political pettiness on both sides, it must nevertheless be dealt with as a real, if not immutable, constraint. Washington should clarify minimum expectations, but not look to force deep partnership.

Second, even before Trump's election in 2016, the shifting balance of power had raised questions about America's reliability in Tokyo. Japanese planners naturally ask whether the United States will maintain its security commitments. None of the "Plan B-s" now bubbling to the surface prescribes replacement of the alliance, but all seek to increase Japan's autonomy. Each explores ways to hedge against deterioration of the alliance, if not its demise, and deserves our attention.

We separate them into three categories. The first is to strengthen Japan's own military capabilities. Takeda Yasuhiro from the Defense Academy has written two widely cited books on what it would take to replace some key U.S. military functions vital to Japan. His answer is roughly $20 billion. We are skeptical because that amount only covers some forward deployed capability. With the exception of the right-wing fringe, none suggests a fully independent defense, largely because that would require nuclear weapons. But among mainstream thinkers there is an almost universal call to end the "sword and shield" division of labor within the alliance. This would give Japan more offensive punch but would not an efficient use of alliance resources.

The second approach entails deepening strategic relations with other like-minded partners. Journalist Akita Hiroyuki's "Plan B" would see increased defense spending and a shift from the US-dominated hub-and-spokes model to a US-led regional security regime. The base for this is already set. Japan has deepened defense ties with Australia, India, and Southeast Asian states, and Tokyo has broadened its aid portfolio to include military assistance.

And the third Japanese option would be to rebalance its position between Beijing and Washington. One of Japan's most distinguished former diplomats, Tanaka Hitoshi, writes that the United States has lost the trust of its allies, and suggests it is "time to review the US-Japan alliance." Tanaka-san would reduce the presence of U.S. marines in Okinawa, raise Japan's defense budget, and boost regional cooperation on nonproliferation. Now that Washington has abandoned multilateralism, he suggests Japan should invite new partners (including "potential enemy nations") into a "multi-layered" "soft" security architecture that would enhance Japan's role in the region.

If these Plan Bs are defined as a cheap down payment on greater future independence that requires the Japanese to confront squarely at least three obstacles. First, there is China's power. Last year, China's defense budget rose by an amount equal to 25 percent of Japan's defense budget. Adding one percent here and there to Japan's defense effort, buying a designer assemblage of strike systems, and pairing up with other weak states does little to offset Japan's growing dependence on the alliance. Second, it is not clear that China would accept Japanese accommodation on terms that would be palatable to Japan. And third, any real down payment on autonomy would have to include nuclear weapons, which provides a natural segue to our discussion of the ROK.

*ROK Debate*

In some ways, the ROK discussion of a Plan B is more advanced than Tokyo's. Not only is Seoul's predicament more dire, but its relationship with the US has also been more rocky. That said—and given the alternation between progressives and conservatives in power—alternatives have been more thoroughly tested. Indeed, it is difficult to ascertain what is "Plan A" and what is "Plan B."

Progressives have sought to edge away from the alliance and adopt a more independent middle power position; the results have not been encouraging. Their efforts to convince North Korea to surrender its nuclear weapons now seem chimeric. And Beijing, for its part, refuses to take "yes" for an answer. Its openly coercive reaction to the deployment of THAAD alienated Koreans of all political stripes but convinced President Moon to agree to China's "Three Nos": No additional THAAD deployment, no participation in U.S. missile defense, and no trilateral military alliance with the U.S. and Japan.

While the conservative opposition has predictably characterized Moon's foreign policy toward North Korea as naïve, conservatives too have shown little appetite for risk in confronting China when core security interests are not at stake. It was, after all, Park's conservative government that broke with the U.S. and Japan and refused to label the ICA's 2016 ruling on the South China Sea as binding on China.

Erratic and demanding U.S. behavior has confirmed the left in its perception of U.S. perfidy while denting conservative confidence in the alliance. Shifts in U.S. policy have yanked Korea one way and then the other: The United States first adopted a belligerent posture toward Pyongyang in 2017. The following year, Trump met Kim in Singapore and declared that North Korea was "no longer a nuclear threat." Since then, he has given them a pass while they continue testing short-range ballistic missiles. 2019 and 2020 have been dominated by the U.S. effort to shake down Korea for higher payments to keep U.S. forces deployed there. The amount demanded would be about 12 percent of the Korean defense budget. It also comes despite the fact that Korea spends a higher percentage of its GDP on defense than virtually any NATO member.

All this leaves Seoul with few good options. While there is no longer idle chatter about alternative political or security partnerships – and no support for yielding to Washington's demands – there IS a new seriousness about building new military capabilities that might mitigate the effects of a partial U.S. withdrawal. Following his predecessors, Moon has pushed a more "autonomous defense" as well as independent diplomacy. The last three years have seen defense growth above 7 percent, faster than that achieved by his two conservative predecessors.

More startling is the increased discussion of nuclear options within both political camps. The conservative Park Geung-hye asked the Obama administration about bringing tactical nuclear weapons back to the peninsula but was rebuffed. President Moon's defense minister asked DOD to increase patrols by U.S. strategic assets in the air and waters around Korea and declared "the redeployment of tactical nuclear weapons is an alternative worth a full review." Lee Byong-chul, a former security advisor to progressive President Kim Dae-jung, wrote last year "South Korean elites understand that the country is fundamentally responsible for ensuring its own security in an anarchic world," noting pointedly that "support for nuclear weapons is more and more in fashion."

Public support for the acquisition of nuclear weapons has regularly surpassed 60 percent since about 2014. It is well known that, like Japan, Korea has cultivated many components of a nuclear weapons program, and that unlike Japan, Seoul authorized a program to develop nuclear weapons decades ago.

*Conclusion*

Serious threats have elevated Japanese and ROK public support for their U.S. alliances. But congruence of U.S. interests with those of our Asian allies is not a realistic goal.

The overlap of interest in balancing Chinese power is greater between the U.S. and Japan than between the U.S. and Korea. And we note there are also costs in NOT maintaining the alliances, especially if the ROK were to tip towards an indigenous nuclear weapons capability, a move that would not be taken lightly, but which serious people in Korea suggest has become a possibility. And if it does come to pass, it would spark consideration of nuclear weapons in Japan.

Several knock-on effects are possible. First, China would almost certainly look to maintain its military options vis-à-vis Japan, so changes to China's nuclear policy and doctrine could follow. Second, possession of nuclear weapons by either Japan or Korea would make it more likely that either they or Washington walk away from the relationship. Third, without the alliance, it is unlikely that even nuclear weapons would enable Japan to balance against Chinese power regionally. And nuclear breakout would make an already dangerous neighborhood more so. Moreover, since both Japan and Korea would surely continue to trade with the United States, the regional economic system, as well as its political order, would almost certainly come to reflect Chinese priorities. In short, on both the military and economic fronts, the costs of alliance failure, while uncertain, would be high.

So, what does all this mean for U.S. policy? First, and most immediately, Washington should adjust its approach to alliance burden sharing. The demands made of Korea on SMA are unfair to a country that spends heavily on defense. We risk rupturing an important alliance over what amounts to pocket change in the U.S. defense budget.

Second, Washington should invest diplomatic capital to prevent allies from directly undermining key U.S. interests, but we should be realistic about our allies' circumstances and interests. We cannot expect them to sign on to policies that put their own security at unreasonable risk. And it would be unproductive—and possibly counterproductive—for Washington to pressure Japan and Korea towards deep reconciliation.

Third, any drawdown of U.S. forces should be designed to improve effectiveness, clearly explained as such, and must avoid even the appearance of being punitive. Hasty or punitive measures would further allied inclinations for autonomy, with the consequences we noted earlier. A larger regional security architecture, like the quad, should not be ruled out. But priority should be placed on maintaining existing alliances, which would, in any case, form the bedrock upon which expansion might proceed.

Our final conclusion is the most controversial. While maintaining the much-maligned "hub and spokes system," those relationships will probably need to be reconfigured to reflect new realities. The rise of China, a growing nuclear arsenal in North Korea, and the unraveling of the U.S. consensus for deep engagement has created new insecurities in Asia. The most important concerns center on extended nuclear deterrence. As that unease grows, it will produce stronger calls for autonomous options, including nuclear weapons.

Keeping allies "onside" may require more serious efforts to address deteriorating faith in extended deterrence. While this might be achieved by returning U.S. tactical nuclear weapons to Japan and Korea and keeping them under U.S. control, we suspect this will be problematic on several grounds. U.S. commanders will not want them. Local opposition to new U.S. forces is likely to be intense. And nuclear systems based in Korea or Japan would be vulnerable to attack and would require additional resources to defend. From an operational standpoint, the mission can be executed by aircraft and warships based elsewhere.

Nuclear weapons sharing might then become the least bad option. We would assume that decisions on release authority and use would be reserved to the U.S. government, as it has been in the case of sharing with NATO allies. But given the more restrictive mission of nuclear weapons in Asia today (deterrence against nuclear attack or blackmail, rather than against conventional attack), these might be physically located on bases outside of Japan and Korea (e.g., Guam) or on warships located offshore. While deploying US tactical nuclear weapons or nuclear sharing are problematic, either would be preferable to an indigenous nuclear weapon in South Korea or Japan.

# Chapter 3

## What to Expect from Japan and Korea in a Taiwan Contingency

*Zack Cooper and Sheena Greitens*

What are the prospects for ally contributions if a major contingency takes place between the United States and China? Several recent commentaries suggest that America's leading allies might sit out a conflict with China, and that some might also limit U.S. basing access. Mike Mazza contemplates the possibility "that in the event of a conflict, allies and partners by and large stay on the sidelines." Similarly, John Culver expects "a chilling set of answers if you approached authoritative people in our treaty allies… and ask them in the event that China attacks Taiwan, will you back our military alliance?"[6] Divergent expectations about potential allied involvement have the potential not only to threaten Washington's relationships with key allies, but also to undermine America's ability to deter a contingency with China in the first place.

Taiwan is the trickiest potential challenge from an ally perspective. In a contingency over Taiwan, one can imagine at least three possible scenarios, of varying likelihood, each with different political dynamics and implications for U.S. allies.

In the first and most escalatory scenario, Beijing could attempt to invade Taiwan outright, while launching first strikes against U.S. forces and bases in the region, as well as those of U.S. allies. Japan, Australia, South Korea, and perhaps even the Philippines could find themselves forced into an undesired contingency. Depending on the circumstances that lead into this scenario, they may also have little warning, meaning that they could become participants in a contingency for which they are not politically or operationally prepared.

In a second scenario, Beijing might attempt to invade Taiwan, but avoid attacking U.S. forces and bases, or those of U.S. allies. This scenario presents China with distinct military risks, but it also comes with political benefits: Beijing may well bank on the reluctance of America's allies to get dragged into a costly shooting war, and on domestic politics to slow or constrain their military support. Additionally, China might consider striking U.S. forces or bases, but avoid hitting U.S. allies directly, in an effort to split Washington from its key regional allies. This would place the United States and its allies in the position of having to decide whether to intervene in a cross-Strait conflict, rather than responding to a direct attack on their own forces and personnel, slowing or complicating adversary responses.

6. David Wertime, "Former Intel Officers: U.S. Must Update Its Thinking on Taiwan," *POLITICO*, October 8, 2020, https://politi.co/36LgfuS.

A third scenario—and perhaps the most likely—could be even more difficult from a coalition-building perspective. Beijing might seek to coerce Taiwan without directly attacking, opting instead for an embargo, cyber-attack, and/or limited strikes short of full invasion. In this case, the United States would have to both calibrate its own actions while attempting to coordinate a regional response. Securing ally participation and basing permissions could prove particularly challenging in this scenario, leaving the United States with a smaller regional coalition and fewer access points, as well as uncertain political footing in the region during a conflict that could become protracted and economically damaging to a wide range of countries in the region.

In the two scenarios involving a direct invasion attempt, the allies most likely to contribute forces would probably be Japan and Australia. They would likely desire more defensive roles, acting as the alliances' shields rather than spears.[7] They might also allow U.S. basing access, but this too would be a politically fraught decision, particularly if U.S. and allied forces were not targeted in an initial strike. Furthermore, Beijing would likely try to place blame on Taipei for the crisis or conflict, undermining domestic support among U.S. allies in the region.

Discussions of these issues are already tense in Tokyo and Canberra. Jeffrey Hornung notes that, "Japan expects that the United States will consult with it prior to conducting combat operations to obtain Japan's consent if the United States is considering using its bases in Japan to engage in armed conflict with another country when Japan itself is not a party to that conflict."[8] Meanwhile, Natasha Kassam and Richard McGregor argue that, "Australia has no interest, or indeed ability, to be a decisive player in the Taiwan dispute."[9] As a result, political debates in both countries would take center stage and could impede rapid and coordinated responses to an invasion of Taiwan by the People's Liberation Army.

Other allies, namely South Korea, the Philippines, and Thailand, would be even less likely to commit their forces to engage in an American-led coalition. Although these countries—as well as partners such as Singapore—might allow basing access, this would likely come with severe limitations. Seoul might be reluctant to widen a conflict or open a second contingency involving the Korean Peninsula, plus it would want to reserve its own forces for a peninsula-specific contingency. One Korean analysis, for example, notes that a request from Washington for ROK participation in a FONOP or a U.S.-China military conflict will put South Korea in a "compromising position," in which Seoul will have to "reach an agreement with Washington about strategic flexibility."[10] For these and other reasons, Jung Pak concludes, "Beijing perceives Seoul as the weakest link in the U.S. alliance network, given its perception of South Korea's deference and history of accommodating China's rise relative to other regional players."[11]

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7. Ankit Panda, "US-Japan Alliance: Still 'Sword and Shield'?," *The Diplomat*, November 5, 2014, https://thediplomat.com/2014/11/us-japan-alliance-still-sword-and-shield/.
8. Jeffrey W. Hornung, "Japan's Potential Contributions in an East China Sea Contingency," RAND Corporation, December 14, 2020, https://www.rand.org/pubs/research_reports/RRA314-1.html.
9. Natasha Kassam and Richard McGregor, "Taiwan's 2020 Elections," Lowy Institute, January 7, 2020, https://www.lowyinstitute.org/publications/taiwan-s-2020-elections.
10. Lee Dae Woo, "The Possibility of U.S.-China Military Conflict in the South China Sea," Sejong Institute, September 2, 2020, http://sejong.org/boad/22/egoread.php?bd=23&itm=0&txt=South+China+Sea&pg=1&seq=5497 and full Korean text at http://www.sejong.org/boad/1/egoread.php?bd=2&itm=&txt=&pg=1&seq=5482. For a perspective that emphasizes quiet alliance coordination and "promotion of joint operational awareness" to try to maintain stability in the Western Pacific, see "China's Naval Buildup and U.S.-China Military Competition," Institute of Foreign Affairs and National Security (Korea National Diplomatic Academy, September 28, 2020).
11. Jung H. Pak, "Trying to Loosen the Linchpin: China's Approach to South Korea," Global China: Assessing China's Role in the World (Brookings Institution, July 6, 2020), https://www.brookings.edu/research/trying-to-loosen-the-linchpin-chinas-

The Philippines and Thailand might be similarly skeptical of basing access, particularly given recent U.S. criticism of leaders in Manila and Bangkok. Philippine president Rodrigo Duterte, for example, has vowed, "I will not go to America anymore. We will just be insulted there… So time to say goodbye my friend."[12] While Duterte's words are partially motivated by his ire at American criticism—for example, he once told President Obama to "go to hell" over condemnation of his conduct in combating illegal drugs—he is also explicit about a desire to avoid getting involved in a military standoff with China.[13] He has even noted of disputes in the South China Sea, "China is claiming it, we are claiming it. China has the arms. We do not have it. So, it's as simple as that… Unless we are prepared to go to war, I would suggest that we better just cool off."[14] Meanwhile, he has threatened to terminate U.S. military access by ending the Visiting Forces Agreement, and has scaled back joint exercises.[15] These and other comments suggest that political support for basing access is far from guaranteed, even from some U.S. treaty allies in peacetime.

Finally, an even larger group of countries—including many concerned about China's rise, such as Vietnam and India—would probably not contribute either forces or basing access. Many of these countries lack existing basing agreements with the United States, and have limited experience operating jointly with U.S. forces beyond basic training and exercises. Combined command structures and joint operational concepts have not been tested, particularly the kinds of close coordination that would be needed in a major contingency. As a result, the United States should not expect substantial force contributions or basing access from Vietnam, India, Malaysia, Indonesia, or most other regional players beyond those identified above.

Likely Ally and Partner Roles in a Taiwan Contingency

| | | **Direct Military Engagement** | |
|---|---|---|---|
| | | **Some** | **None** |
| **Basing Access** | **Some** | Japan<br>Australia | South Korea<br>Philippines<br>Singapore<br>Thailand |
| | **None** | Taiwan | Vietnam<br>Indonesia<br>Malaysia<br>India |

approach-to-south-korea/.

12. Ben Blanchard, "Duterte Aligns Philippines with China, Says U.S. Has Lost," *Reuters*, October 20, 2016, https://www.reuters.com/article/us-china-philippines-idUSKCN12K0AS.

13. "Philippines' Duterte Tells Obama to 'Go to Hell,'" *BBC News*, October 4, 2016, https://www.bbc.com/news/world-asia-37548695.

14. Richard Javad Heydarian, "Duterte Bans Exercises with US in South China Sea," *Asia Times*, August 4, 2020, https://asiatimes.com/2020/08/duterte-bans-exercises-with-us-in-south-china-sea/.

15. U.S. forces' access to the Philippines occurs on a rotational basis because the 1987 Philippine constitution forbids permanent foreign military bases. "The US-Philippine Alliance: Opportunities and Challenges," *Strategic Asia 2014-15* (National Bureau of Asian Research, 2014-15).

In short, if a major contingency erupts between China and the United States over Taiwan, Washington will find its large number of regional allies and partners reduced to a handful of willing contributors, and even those may place significant restraints on the use of their forces or U.S. access to their bases.

These dynamics are likely to sharpen, not subside, if a conflict becomes protracted. As American analysts of the People's Liberation Army have noted, a failed amphibious assault on Taiwan will not necessarily end the conflict—and in an extended phase of conflict, such as a blockade, Beijing would retain significant advantages over even the most robust U.S.-led coalition.[16] Even less is known about how U.S. allies and partners in the region could or would contribute to Taiwan's ability (and political will) to survive this kind of protracted scenario. There has been, as yet, almost no discussion of how America's regional allies and partners might view, let alone participate in, activities such as resupplying the island in the face of a Chinese maritime or air blockade, engaging in mine-clearing operations, or the risky but critical question of whether and how to suppress China's integrated air defense system.

What does this mean for how Washington should be approaching its allies and partners? First, the United States should be leading a series of detailed discussions with key allies about their roles in different contingency scenarios involving China and Taiwan (and for some, the South China Sea).[17] These conversations should begin quietly, and many of the details can and should remain private. However, if these discussions do not ultimately engage the publics in these countries as well, then there will not be political support for participation in a contingency, and alliance coordination is likely to founder. This is especially true if part of Beijing's strategy in the early moments of a contingency is to split the United States from its allies and partners.

Perhaps more importantly, Beijing might not believe that key allies would fight in a contingency, increasing the possibility of China stumbling into an otherwise deterrable conflict. It is critical that the United States carefully balance the need to communicate a reliable deterrent with the necessity of avoiding unnecessary provocation. But this delicate balance would be easier if Washington is able to come to agreement with Tokyo, Canberra, Seoul, and other allies and partners before a crisis, and if some baseline expectations of allied and partner responses can be clearly signaled in peacetime. Part of that discussion should also include planning for how the United States and others would support countries against possible retaliation by China, not just militarily but also economically – an especially important factor in any protracted conflict scenario.

What does all this mean for U.S. military posture and the Biden administration's upcoming global posture review? As it stands now, the United States will have to be prepared not only to "fight tonight," but also to fight far from home with limited ally and partner support. Ongoing tensions over basing arrangements in South Korea and the Philippines, unless resolved quickly, are likely to hold back the kinds of forward-looking conversations on regional contingencies that Washington should be having with its allies.[18] As

16. Lonnie Henley, "PLA Operational Concepts and Centers of Gravity in a Taiwan Conflict," Testimony before the U.S.-China Economic and Security Review Commission, Hearing on Cross-Strait Deterrence, February 18, 2021.
17. Jeffrey W. Hornung, "The United States and Japan Should Prepare for War with China," War on the Rocks, February 5, 2021, https://warontherocks.com/2021/02/the-united-states-and-japan-should-prepare-for-war/.
18. "US committed to 'mutually acceptable' SMA deal with S. Korea: State Dept.," *Yonhap*, February 6, 2021, http://www.koreaherald.com/view.php?ud=20210206000029; "Philippines extends termination process of U.S. troop deal, eyes long-term defence pact," *Reuters*, November 11, 2020, https://www.reuters.com/article/us-philippines-usa-defence/philippines-extends-termination-process-of-u-s-troop-deal-eyes-long-term-defence-pact-idUSKBN27R0RD.

a result, American dependence on Guam and other U.S. territories in Asia may grow, rather than shrink, despite U.S. efforts to distribute forces throughout the region. Dependence on Japan and Australia may increase as well, both for basing and for some key niche capabilities. Perhaps most importantly, Taiwan could find itself even more dependent on the United States.

Finally, what does this mean for U.S. force structure? The contingencies with China described above require greater emphasis on a set of forces that can credibly deny Beijing the ability to take the island or prevail in a protracted coercive campaign. They also require Washington to think about, and discuss with Taipei, the capabilities required to survive a protracted blockade even after an initial invasion attempt fails. This puts a premium on undersea systems, long-range stealthy aircraft, and ground-based missile forces to prevent a quick invasion, and mine clearing, logistics capacity, and munitions stockpiles to prevail in a protracted conflict. The major bureaucratic losers in this construct would likely be land forces, short-range fighter aircraft, and less survivable elements of the surface fleet. At present, however, Japan, Australia, and Taiwan have all invested significant sums in relatively expensive and vulnerable systems, meaning that it will be necessary for all three to consider more denial-focused postures, as Australia has recently done in its Defence Strategic Update.[19] The United States should be talking with and pressing its allies to develop their own anti-access capabilities, rather than replicating the power projection capabilities of U.S. forces. Doing so would help to ensure that the United States and its allies and partners have the capabilities needed to credibly deny Beijing the ability to invade Taiwan, which will be especially critical if the United States can expect only limited basing access and force contributions from its regional allies and partners.

19. "2020 Defence Strategic Update & 2020 Force Structure Plan," Australian Government Department of Defence, July 1, 2020, https://www1.defence.gov.au/strategy-policy/strategic-update-2020.

# Chapter 4

## Coordinating Artificial Intelligence and Cybersecurity

*Tarun Chhabra*

How can the United States collaborate with allies and partners to shape the trajectory of artificial intelligence in ways that will promote liberal democratic values and protect against efforts to wield AI for authoritarian ends?

America's broad network of alliances and security partnerships is a singular asset in defending liberal values, and must be leveraged to address the ways in which China, Russia, and other authoritarian powers seek to achieve strategic advantage through AI and the export of censorship and surveillance technologies to countries across the globe.

While U.S. allies will likely vary in their strategic orientations toward China and Russia, there is a growing consensus on the need to showcase a democratic way of AI. The right approach would leverage U.S. alliances and partnerships as a major competitive advantage over any single country that attempts to develop a robust AI ecosystem on its own.

The broad vision should one in which AI enables strengthened data privacy standards and respect for civil liberties; economic empowerment of citizens within rules-based market economies; cleaner, safer, and more efficient transportation; precision medical diagnosis; greater access to education; and more effective disaster response.

Novel, if preliminary, data based on survey research and metrics (reflecting both AI-relevant capability in terms of data, algorithms, talent, and computing power, as well as compatibility of their interests and values with those of the United States) developed by the Center for Security and Emerging Technologies suggests the United States should consider an agenda with like-minded allies and partners that includes the following 10 strategic initiatives that would (a) defend against the threats posed by digital authoritarianism, (b) network with like-minded countries to pool resources and accelerate technological progress, and (c) project influence and leverage safe and reliable AI in support of inclusive growth, human rights, and liberal democratic values.

*Defend*

• Prevent the transfer of sensitive technical information. U.S. counterintelligence, law enforcement, and other relevant government officials should coordinate with their counterparts in allied countries to gather and analyze data on technology transfers at scale, standardize visa screening procedures, and develop shared standards and metrics to evaluate transactions over the short, medium, and long term. Optimal

Partners include Germany, the United Kingdom, Japan, Canada, France, and Australia, and multilateral for in which this initiative can be pursued include the European Union, North Atlantic Treaty Organization, the Department of State's Multilateral Action on Sensitive Technologies conference, and the Office of the Director of National Intelligence- and Federal Bureau of Investigation-led multilateral dialogues with counterintelligence and law enforcement officials of allied and partner countries.

• Coordinate investment screening procedures. The United States and its allies should coordinate investment screening procedures, clarify the transactions posing a national security risk to U.S. and allied supply chains, and establish data-driven criteria for assessing risk. Optimal Partners include the United Kingdom, Germany, the Netherlands, France, Italy, and Japan and relevant multilateral fora include the European Union, Joint Committee on Foreign Investment in the United States-European Union screening dialogues, Group of Seven, Office of the Director of National Intelligence- and Federal Bureau of Investigation-led multilateral dialogues with counterintelligence and law enforcement officials of allied and partner countries.

• **Exploit hardware chokepoints.** The United States should coordinate with allies and partners on export controls targeting components of the supply chain, such as semiconductor manufacturing equipment, that increase the probability of maintaining China's dependence on imports of AI chips. Optimal partners include Taiwan, South Korea, Japan, Israel, Singapore, and the Netherlands, and relevant fora for engagement include SEMI (Semiconductor Equipment and Materials International), World Semiconductor Council, U.S.-South Korea-Japan Trilateral Strategic Dialogue, Group of Seven, and Wassenaar Arrangement.

*Network*

• **Share, pool, and store non-sensitive datasets.** The United States should work with allied and partner governments to develop common standards for sharing, pooling, and storing non-sensitive, government-owned datasets, including datasets related to weather patterns, epidemiological data for disease control, video and navigation data from self-driving cars, and relevant data for predictive maintenance and maritime domain awareness. Optimal partners include the United Kingdom, Germany, Japan, France, the Netherlands, and New Zealand Multilateral Fora: North Atlantic Treaty Organization, the European Commission, Five-Eyes, Organization for Economic Cooperation and Development, and the Association of Southeast Asian Nations.

• **Invest in privacy-preserving machine learning.** To protect individual privacy, the United States and its allies and partners should explore techniques in data analysis that would allow them to perform operations on non-sensitive datasets without sharing or storing personally identifiable information. Optimal partners include Canada, India, Germany, Australia, Japan, and the United Kingdom, and multilateral fora include the European Union, Organization for Economic Cooperation and Development, the Quadrilateral Security Dialogue (India, Japan, Australia, and the United States); and National Institute of Standards and Technology- and National Science Foundation-led bilateral and multilateral partnerships.

• **Promote interoperability and agile software development.** As countries integrate AI into military systems, the United States and its allies must ensure that hardware and digital systems are interoperable and secure, beginning with common standards for interpretability, safety, and security of AI systems, including AI-enabled, safety-critical systems. Optimal partners include Canada, Australia, the United Kingdom, Germany, Italy, and Japan, and relevant fora include the Five Eyes, North Atlantic Treaty Organization, North Atlantic Treaty Organization-European Union "test bed partnership," U.S.-Japan-South Korea Tri-

lateral Defense Cooperation, and National Technology and Industrial Base (Australia, Canada, the United Kingdom, and the United States).

• **Launch an AI R&D collaboration challenge.** U.S. and allied science funding organizations should expand coordination to solicit research on complementary agendas, such as human-machine teaming methods, autonomous vehicles, and verification techniques for complex control systems and AI-enabled, safety-critical infrastructure. Optimal partners include Japan, Germany, South Korea, France, the United Kingdom, and the Netherlands, and relevant fora include the European Union, Multilateral Action on Sensitive Technologies conference, Organization for Economic Cooperation and Development, Association of Southeast Asian Nations, National Science Foundation-, National Institutes of Health-, and Department of Energy-led innovation dialogues.

• **Develop inter-allied human capital for AI.** The United States should facilitate the exchange of knowledge and best practices on AI among allied and partner countries by convening workshops among AI researchers, fostering international networks of AI researchers, and deepening partnerships with existing networks, including coordination with the private sector on job placement and training programs. Optimal partners include India, the United Kingdom, Germany, France, Canada, and South Korea, and relevant fora include the European Union, Institute of Electrical and Electronics Engineers, exchange programs modeled on CRDF Global and the United States Telecommunication Training Institute, National Science Foundation international partnerships viii Center for Security and Emerging Technology.

*Project*

• **Shape global norms and standards for AI.** Building on the Organization for Economic Cooperation and Development Principles on AI, the United States should lead a multilateral effort with allies and partners to set international rules of conduct for AI, including standards for testing, evaluation, verification, and validation of AI technologies, as well as common practices for certifying companies that support democratic values and privacy. Optimal partners include Canada, the United Kingdom, Ireland, Australia, Singapore, and Japan, and relevant fora include the European Union, Organization for Economic Cooperation and Development, International Organization for Standardization, World Trade Organization, 3rd Generation Partnership Project, and North Atlantic Treaty Organization-European Union joint initiative on standards for emerging technologies.

• **Establish a multilateral digital infrastructure network.** The United States and its allies should launch a multilateral digital infrastructure network to ensure that digital systems in emerging markets are open, secure, resilient, and interoperable, while empowering developing countries to protect data privacy, meet their domestic needs, and access high-performance computing and mobile internet technologies. Optimal partners include Germany, Japan, France, the United Kingdom, Ireland, and Canada, and relevant for a include the European Union, International Monetary Fund, World Bank, European Bank for Reconstruction and Development, Asian Development Bank, and Digital Nations (The Digital 9).

In advancing these initiatives, the U.S. and its allies will face **familiar alliance management trade-offs**:

First, **between capability and dependence**: Pooling resources, coordinating policies, and sharing best practices and information will amplify U.S. power and influence, but will also create inefficiencies and

require compromise. America will need to embrace its role as a "systems integrator" among like-minded allies and partners.

Second, **between competition and cooperation**: Cooperation among democracies is necessary to guard against and compete with authoritarian uses of AI, but democratic nations also will need to manage cooperation with strategic competitors. The United States also competes with its allies and partners for top talent and resources in AI, and must find ways to cooperate with China and Russia on AI safety and security, strategic stability, and crisis management.

Managing these dynamics will be worth the effort. Taken together, the R&D spending of the United States and just six like-minded nations with a true commitment to R&D funding represents more than 50 percent of global R&D investment. China, on the other hand, makes up approximately 26 percent of global R&D, with other competitors like Russia contributing only two percent. And particularly since the outbreak of the COVID-19 pandemic, the appetite for allied cooperation on AI and other technologies has deepened significantly. By pursuing a broad-based agenda that addresses diverse inter-allied interests, opportunities and anxieties about the future of AI, the stage is set for the United States and its allies to rise to the challenge.

# Chapter 5

## Creating Alternative 5G Strategies

*Eric Brown*

If "data is the new oil," as one Japanese official observed in a NPEC workshop, then control of the digital infrastructure or "pipelines" through which the world's data will flow may well become a major source of 21st Century power and influence.

That, it appears, is also the wager that China's ruling Communist Party made when it decided to pour billions into the build-up of its domestic data technology industry. China's (PRC) state-directed enterprises have since seized first-mover advantages in the global race to dominate 5G—the superfast data networks which are set to be the foundation of the looming "Fourth Industrial Revolution," including key industries from Artificial Intelligence and automation, to the "Internet of Things." Heavily subsidized "national champions" like Huawei and ZTE have monopolized the construction of telecommunications networks in consequential countries from Southeast Asia and Oceania, to Central and South Asia, to Africa.

The PRC's expanding "sphere of technological influence" is a central component of Beijing's larger Belt and Road Initiative to improve its strategic positioning and establish economic dominance across Eurasia. It therefore matters to the security and future competitiveness of the democratic allies and partners in the Indo-Pacific and the Atlantic realm.

The now intensifying diplomatic battles over leadership of the 5G landscape are the opening salvos in the geo-technological wars to come. One allied concern is that PRC is creating *de facto* "tech vassals" and acquiring outsized influence over other countries' economic and political life which PRC will use for its own gain. A related concern is that PRC's control of information infrastructure gives it unfettered access to other countries' data, exposing them to manipulation of all kinds, espionage, or even sabotage. Meantime, Beijing has used data technology at home to erect the world's most sophisticated surveillance state and repress its own people, from Hong Kong to Xinjiang. Beijing has also been actively exporting its population surveillance and control systems globally, thus driving a new era of "techno-authoritarianism."

So far, the world's leading democracies have failed to offer commercially attractive alternatives to PRC-made 5G. The most sophisticated 5G firms headquartered in democratic nations have remained principally confined to wealthier markets in Asia and the West, while the PRC has taken a large lead in developing countries especially. Closing this gap will require dramatically expanded cooperation between the democracies.

One promising area for cooperation between Japan, South Korea, Taiwan and the United States is in the development of new "virtualized" or "Open RAN" 5G networks. Most large players in the 5G space currently only offer "end-to-end" solutions, in which the network is based on a single company's hardware

and software. Open networks, however, decouple the hardware from software. This promises to disrupt the vendor dependency that PRC firms have thrived on while leveling the commercial playing field, thereby giving nations greater digital development choices and smaller companies greater room to innovate, compete, and contribute to the design of future technologies. Open networks, in principle, may also help secure and put control of a country's data firmly back into the hands of their sovereign governments. This will not roll back the phenomena of "techno-authoritarianism," but it does have the potential to complicate the PRC's bid to make more countries beholden to it.

Virtualized or open 5G tech is still unproven on a large scale, although pilot implementations in Japan show open networks can be used for commercial applications. New industry groups such as the O-RAN Alliance and the Open RAN Policy Coalition, which include some of the world's largest technology and telecom firms in Asia, the U.S. and Europe, are promising signs of private sector leadership, as one NPEC workshop participant observed. But, for this and other open technology to be commercially scalable and competitive, there is greater need for policy coordination among the democracies.

The U.S.'s new Multilateral Telecommunications Security Fund represents one potentially major step in the right direction. The fund aims to leverage U.S. financing to form a coalition of the "Five Eyes" countries— the U.S., Australia, the United Kingdom, New Zealand, and Canada—plus Japan to secure critical supply chains and construct 5G alternatives to PRC.

Fostering a "democracy-led ecosystem" to sustain democratic leadership over the key technologies of the future will inevitably become more of an issue for alliance diplomacy. One immediate goal must be to enhance common standards in data governance, foreign finance oversight, and industrial security to plug the many "leaks" which have enabled the PRC to buy or poach cutting-edge tech know-how from democratic nations. Promoting greater commerce and rules-based competition will also be essential if the democracies are to maintain their innovation edge and ensure technological progress serves democratic ends, not authoritarian ones.

Keeping the Indo-Pacific free and open is likely to hinge on whether the Pacific Rim democracies and India can offer the dynamic economies of Southeast Asia compelling alternatives to PRC's expanding techno-sphere. With its tech prowess and potential to become a leading AI power, India will be a crucial swing state. Following PRC's military incursions in the Indian Himalayas in 2020, New Delhi dramatically curtailed its tech trade with PRC on national security grounds. India is big enough to set its own rules in areas like data and tech commerce, but this could also limit India's economic and strategic potential. India and the Pacific democracies should therefore make cooperation across a range of foundational technologies, not just 5G, a top priority. In all this, there is an important role for organizations like the Japanese Bank of International Cooperation and the U.S.'s International Development Finance Corporation to play in establishing joint Indo-Pacific ventures and de-risking private sector involvement in the build-out of secure digital infrastructure across the Indian Ocean region.

# Chapter 6

## Understanding and Reducing Military Vulnerabilities of Civilian Nuclear Plants

*Henry Sokolski*

Middle Eastern nuclear plants' vulnerability to military aerial attacks have a long history. Yet, the vulnerability of East Asian plants to such attacks have rarely, if at all, been discussed. Googling the topic, one can find but a single mention — a brief South Korean news piece on how inadequate reactor containment buildings are in protecting against ballistic missile strikes. Otherwise, all that is available analyses of how much damage terrorists might inflict against nuclear facilities.

It is unclear what explains this analytic omission. Perhaps it is just history: Middle Eastern nuclear plants have been targeted by states with aerial and missile strikes some 13 times. China, Russia, the United States, North Korea, South Korea, and Japan have yet to even threaten such attacks in East Asia.

That, however, may change. Until the 1970s, in the most militarily disputed region in Asia—Korea—the only way Pyongyang could attack targets in South Korea or Japan was with commandos, artillery barrages, or air attacks. The same would be true of South Korea against the North. Such non-missile attacks, however, could be risky as they might precipitate all-out war or be deflected by air defenses or repulsed by domestic forces. Over the last decade, however, both North and South Korea and China have acquired missiles with sufficient range and accuracy to not just target, but to hit specific subsystems at civilian nuclear sites.

In the 1990s, this was not the case. Then, North Korea's and China's missile accuracies were measured in kilometers or hundreds of meters. Today, they are measured in meters.

### *Targeting East Asian Nuclear Plants: Why and How*

It's unlikely North Korea or China would target South Korea, Japanese, or Taiwanese nuclear plants in the opening round of any shooting war. Given the size and high accuracies of their missile arsenals, though, Pyongyang or Beijing might well threaten such strikes either in the ramp up to hostilities or in the midst of conflict to deter further resistance or shape the character of battle.

Consider the following 2025 scenario. North Korean troops exchange small arms fire, as they recently did, at the Demilitarized Zone (DMZ). This time, however, a newly elected conservative South Korean government is less quick to dismiss the shots as accidents as one ROK serviceman is killed and another

wounded. Washington, to show solidarity with Seoul and to deter further North Korean provocations, fly's "deterrence" B-2 sorties from bases in the United States into the North's declared air defense zones.

The North, undeterred, again fires small arms shots against DMZ personnel. Eager to show its independence, the South Korean government shows its stuff: It fires one of its Hyunmoo 2c missiles in a demonstration shot intended to fall harmlessly off the coast near the North Korea naval and missile base at Mayans-do. It misses its mark and instead hits land. The North Koreans mistakenly assume the missile was aimed at the nearby Simpo reactors.

Pyongyang considers retaliating by targeting a nuclear plant in the South. It could threaten to do so to extract some concession from Washington or Seoul. Or, to prove the seriousness of its intent, it could conduct a demonstration shot, firing one of its accurate KN-23 ballistic missiles from its missile base at Chiha-ri at a parking lot just outside one of South Korea's nuclear power plants. Pyongyang decides to go for the demonstration shot. This spooks Seoul, which takes the precautionary measure of shutting down all of its nuclear power plants. This powers down over 20 percent of the country's electrical supply. Brown outs and blackouts ensue.

At this point, there could be a break in hostilities or things could escalate with more missile exchanges. In the latter case, the North could up its game by targeting either the electrical grid wires feeding into a South Korean nuclear plant or, alternatively, targeting the plant's emergency generating diesel station. Neither, if destroyed, would prompt a loss of coolant accident, core meltdown or a radiological release.

Any such strike, however, would clearly raise fears that the North might up its game in yet another follow-on strike. This could be accomplished by knocking out the emergency generating diesel station or the nuclear control room or the reactor containment building itself. Fears of such follow-on attacks would likely prompt massive voluntary or state-mandated evacuations of millions of South Koreans, who would flood the public roads. This alone could distract South Korea from engaging any further military or defensive operations against the North.

Finally, if the conflict continued to escalate, the North might, at some point, threaten to target the spent fuel ponds at one or more of South Korea's nuclear plants. Depending on the prevailing winds (see below), the massive amounts of radioactivity such an attack would release would force the evacuation of between roughly 10 and 100 million South Korean and Japanese civilians.

This scenario is for Korea. Similar results could be induced if China or North Korea targeted nuclear plants in Japan or Taiwan. In the case of possible attacks against Japan's reprocessing plant at Rokkasho, the releases and evacuations would range between roughly nine and 90 million citizens.

*How Destructive Might the Incoming Missiles Be*

The accuracies of the latest generation of cruise and ballistic missiles assures a very high probability of kill against a variety of nuclear plant aim points. These include electrical power feed-in supply lines, emergency electrical diesel generator buildings, nuclear control rooms, reactor containment buildings, and spent reactor fuel pond buildings. All of these nuclear plant subsystems are nearly as large at the circle of error probable of the missiles North Korea or China might fire against them: One or two missiles should be sufficient to knockout any single aim point.

As for the targets themselves, most can be dispatched either with unitary or, if necessary, with tandem-charged munitions. The later use shaped charges are designed to penetrate metal armor and concrete. The thickest concrete structures at a reactor site are rarely more than one and a half meters thick. Reactor containment structures are designed to keep several hundred pounds per square inches of internal pressure from escaping into the atmosphere after a loss of coolant or fuel melt-down from accident. They are not designed to deflect missile attacks, much less tandem charged munitions. The roofs of the nuclear control rooms, the diesel generator buildings, and the spent fuel storage ponds are generally much thinner than the reactor's main containment walls.

*What Might Be Done*

Structurally, the roofs of the spent fuel ponds, the nuclear control room, and the diesel generator buildings could be strengthened by using ultra high-performance concrete. This advanced material can sustain compressions of 35,000 psi or more—a several hundred-fold increase over existing plant roof structures. This could be done for at modest cost.

In addition, slat armor structures could be built to prevent tandem charged munitions from properly coupling with their aim points. This also could be accomplished at a modest cost around the spent fuel pond, diesel generating building, and the nuclear control room.

The National Research Council made a series of additional recommendation in a 2006 report on nuclear plant vulnerabilities to Congress. First among these, was to remove as much of the older spent fuel from reactor storage ponds as possible and to space out the remaining hotter, newer spent fuel so as to reduce the amount of radiation that might otherwise be released if the storage pond was ever hit. The report also recommended that sprinkler cooling systems be installed over the spent fuel ponds and coolant level monitors so if a pond was hit and the coolant level dipped, the sprinklers would be set off to keep the spent fuel from overheating.

Another suggestion that Japan has already acted on to limit the harm a possible terrorist attack might inflict against its nuclear reactors is to build additional, remote reactor control rooms. Finally, active and passive defenses can be installed. These include covering potential reactor aim points with birdcage like slats, which would set off incoming missiles and dual-charged munitions before they could have a chance to couple physically with the target. And finally, air and missile defenses could be deployed to fend off possible attacks. Belarus has done this in the case of its Astravets nuclear plant. Of all the nuclear plant mitigation strategies, active defenses are the most expensive.

*Talking the Talk*

This brief memo should get the ball rolling. Nuclear security forums already exist internationally and regionally to discuss how best to protect against terrorist attacks. These should be expanded to include the topic of military aerial and massive attacks. At these forums, best practices in defending and responding to military attacks against nuclear plants should be established as a routine topic.

Taking on this topic may prove challenging. South Korean politicians and diplomats, still eager to improve relations with the North, may be loath to publicly discuss war scenarios involving Pyongyang. Nor will they want to suggest that China might attack them. The Japanese government, still committed to opening

up scores of reactors, also will be reluctant to discuss its nuclear plants military vulnerabilities in public. Taiwan authorities, who have yet to determine how they intend to fully replace the nuclear plants they intend to close in 2025, may be squeamish about identifying new immediate vulnerabilities that could require additional spending of any sort.

As for the United States, it, luckily, is not yet vulnerable to conventional missile attacks. Yet, the nuclear industry and the Energy Department have persistently promoted working with South Korea and Japan on advanced reactor and nuclear fuel cycles and have extolled the virtues of making nuclear power great again. Asking Washington to take the lead in opening discussions on military vulnerabilities to nuclear plants won't be easy.

Unfortunately, not discussing these vulnerabilities would only make matters far worse. In that there ought to be some solace for all parties sufficient to encourage private talks, at the very least.

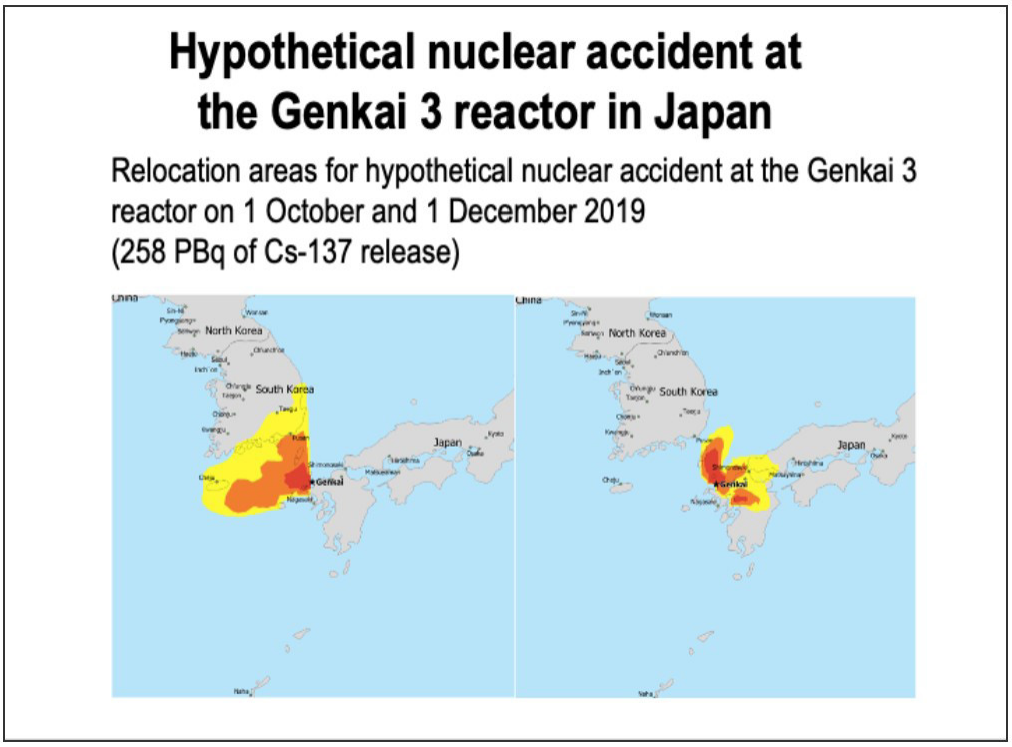


**Figure 1: Hypothetical radiation map for a nuclear accident at the Genkai 3 reactor in Japan.**

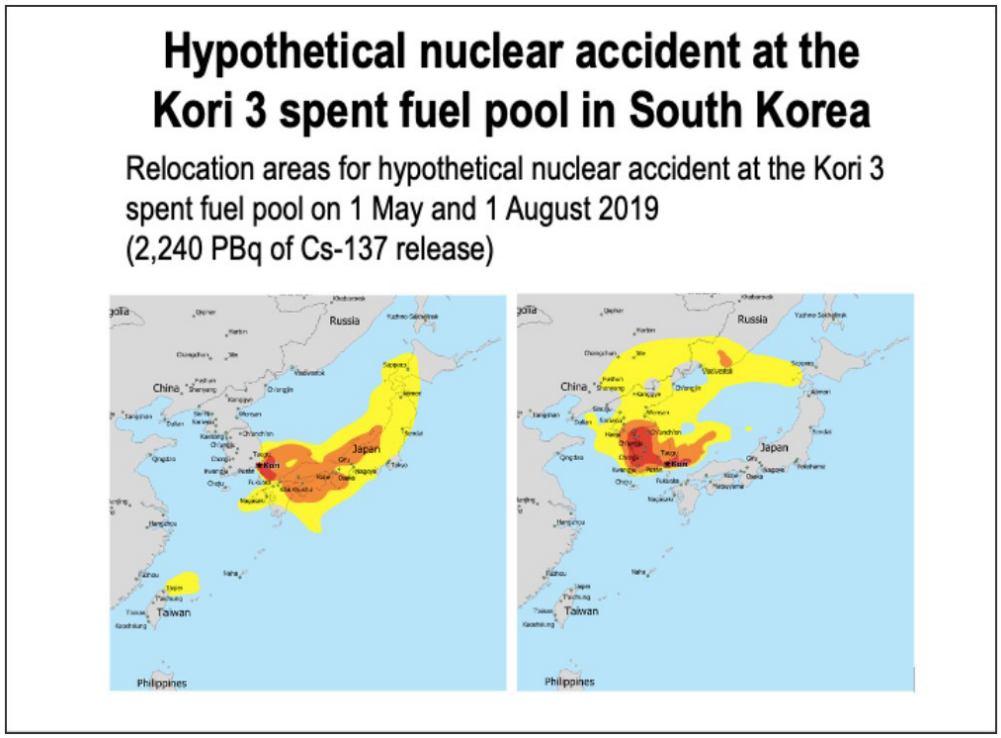


**Figure 2: Hypothetical radiation map for a nuclear accident at the Kori 3 spent fule pool in South Korea.**

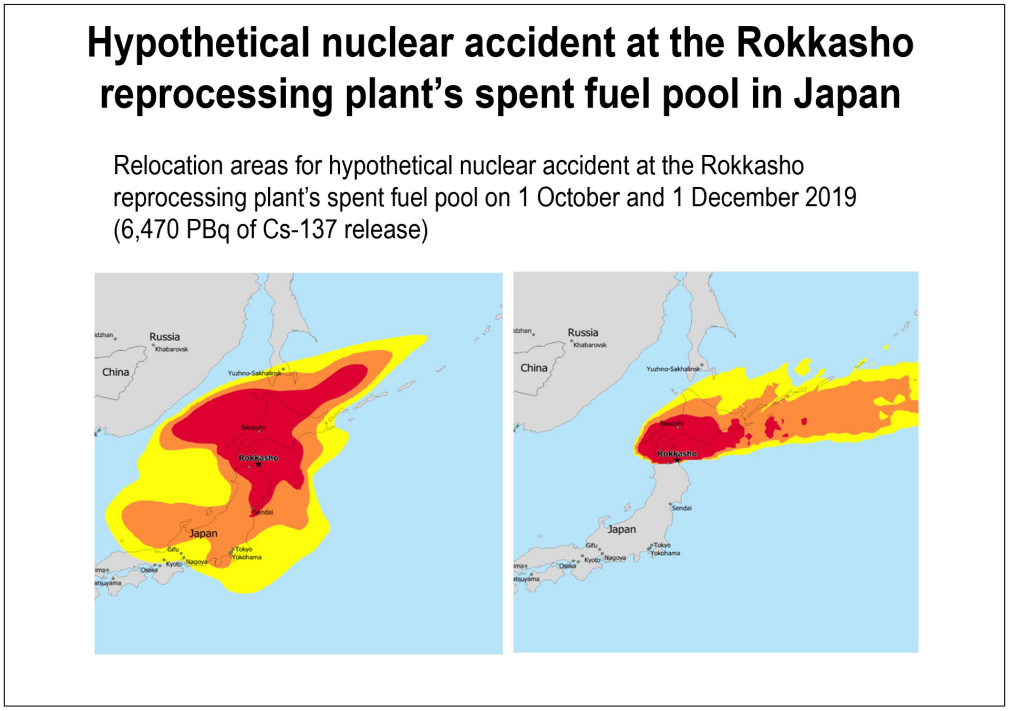


**Figure 3: Hypotheical radiation map for a nuclear accident at the Rokkasho reprocessing plant's spent fuel pool in Japan.**

# Chapter 7

## Seoul's Misguided Desire for Nuclear Submarines

*James Campbell*

In 2017, President Moon Jae-in endorsed the development and acquisition of a South Korean nuclear submarines. South Korean proponents of nuclear submarines favor the program for two technical reasons. First, nuclear submarines can stay underwater for months rather days or weeks as conventional diesel/electric submarines do. Second, nuclear submarines can maintain speeds of up to 30 to 40 knots at depth, whereas nonnuclear submarines have difficulty sailing much above 20 knots at depth for any significant duration and must frequently surface to recharge its batteries (which makes them easier detect). These two attributes, South Korean nuclear submarine proponents argue, make nuclear submarines ideal for detecting and neutralizing the North Korean ballistic missile submarines.[20]

Since Moon's 2017 endorsement, South Korean interest in developing an indigenously designed nuclear submarines has only grown. Recent press reports indicate the navy's intention to modify three KSS-III submarines (Dosan Ahn Chang-ho class) to 4,000-ton nuclear powered submarines.

This is a major commitment. Not only does the addition of nuclear power to the final three submarines severely impact the defense budget, but South Korea must find a reliable long-term fuel supplier. South Korea has nuclear fuel purchase agreements with the United States, but for civilian applications only. Press reports attributed to unnamed military sources suggest that once the United States agrees to supply low enriched uranium for naval use, the development process will be a breeze.[21] This statement glosses over the complexities associated with renegotiation of the existing South Korean-US 123 agreement and the difficulties of building nuclear submarines.

In fact, acquiring nuclear submarines dictates a dedicated line of funding that would affect other ROK Navy programs. This trade off immediately raises the issue of how useful the operational advantages of nuclear submarines are for South Korea, whose navy operates in relatively shallow, local, regional waters.

In addition, South Korea must consider the legal aspects of promoting a nuclear submarine program. Can the Moon Administration negotiate with nuclear fuel suppliers to acquire the necessary enriched fuel to power a nuclear submarine fleet? South Korea will likely have to renegotiate its 123-Agreement with the United States to utilize purchased enriched fuel for military purposes.

20. Kim Tong-Hyung, "SKorea Scrambles to Improve Weapons Following NKorea Test", *AP News*, 5 Sep 2017, https://apnews.com/1dd5019ccaa94213b59701a4bd8d18dc.
21. Sang-Ho Yun, "S. Korean Military Announces Plan to Develop 3 4,000-ton Submarines", *The Dong-A Ilbo*, 11 Aug 2020, https://www.donga.com/en/article/all/20200811/2147590/1/S-Korean-military-announces-plan-to-develop-3-4-000-ton-submarines.

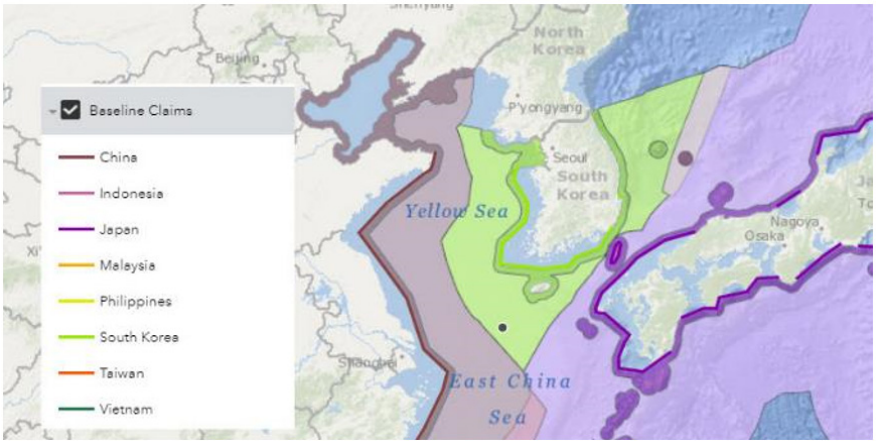


**Figure 4: National claims to sea lanes in Northeast Asia**

Weighing the pros and cons of acquiring nuclear submarines, South Korea should consider alternatives. The ROK Navy is updating its surface and underwater fleets with highly capable anti-submarine warfare (ASW) systems. It can rely on the United States to support state of the art airborne anti-submarine assets to enhance the South Korean navy's capabilities to detect, track, and if necessary, prosecute hostile sub threats. The Moon Administration may seek to create and foster cooperative ASW agreements with Japan and/or the United States. As a highly technical economy, South Korea might invest in technologies, such as drones, laser, magnetic anomaly detection, and artificial intelligence (AI), that could enhance all facets of ASW. The high costs of nuclear submarine permit acquisition of only a very limited number; whereas, the same money could purchase greater nonnuclear ASW capabilities. Finally, nuclear submarines typically operate as an ASW platform, while the surface and air assets can perform multiple missions beyond just those associated with ASW.

Seoul's case for acquiring nuclear submarines assumes South Korea must have nuclear submarines for its strategic defense. As North Korea develops missile submarines and Russia and China deploy new nuclear submarines, South Korean officials insist South Korea must have "corresponding military power."[22] In fact, South Korean spending on a nuclear submarine fleet will actually undermine its overall national security as compared to spending intelligently on a nonnuclear ASW force.

Certainly, the current planned timeline for deploying the first nuclear submarines is inappropriate: Seoul may be lucky to deploy before 2035. South Korea may reduce that timeline by modifying its existing KSS-III design, but a reasonable assumption is that the timeline will not shrink significantly. This makes acquisition of nuclear-powered submarines a poor response to the current DPRK submarine threat.

Also, South Korea's surrounding seas make nuclear submarine operations problematic, at best. The West Sea (Yellow Sea) is too shallow (50 meters deep) for large nuclear submarines. While the East Sea (Sea of Japan) at average depth of 1,500 meters provides the necessary operating environment for large nuclear submarines, the addition of a few South Korean nuclear submarines there will do little to reduce the DPRK missile submarine threat. In 2015, North Korea sallied about fifty submarines simultaneously. Countering

22. Sang-Ho Yun, "S. Korean Military Announces Plan to Develop 3 4,000-ton Submarines", *The Dong-A Ilbo*, 11 Aug 2020, https://www.donga.com/en/article/all/20200811/2147590/1/S-Korean-military-announces-plan-to-develop-3-4-000-ton-submarines.

such a large number of submarines demands higher quality ASW capabilities than a handful of nuclear submarines could ever afford.[23]

Rather than waste its money on nuclear submarines, South Korea can lock down a superior suite of ASW capabilities that would have multiple mission capabilities. A recent study on. ASW concluded that "Based on Cold War experience, some U. S. experts assume the United States would need to possess five nuclear submarines to keep track of each Chinese SSBN at sea."[24] Based on that assessment, the ROK Navy's desire for 3-6 nuclear submarines will prove to be insufficient. Instead, the ROK Navy requires a fleet of 15-20 submarines to deal with DPRK and Chinese missile submarines. At a conservative cost of $1.6 billion per copy, the ROK defense budget would have to absorb an acquisition cost of between $24 and $32 billion dollars, that does not include associated ancillary costs. As noted previously, the ROK annual defense budget was approximately $45 billion in 2019. Funding for pushing forward down a nuclear submarine acquisition path would compete with funding for the ROK Army and Air Forces risking the ROK's overall defense posture against the Kim regime.

The better investment of limited ROK defense funds is the expansion of current ASW assets, frigates, destroyers, diesel/electric & AIP submarines and ASW aircraft. Acquisition of these assets cost less than acquiring nuclear submarines, and Seoul already has the infrastructure to support and maintain such assets. The ROK's shipbuilding industry would not suffer from the lack of a nuclear submarine program. Instead, the ROK Navy would be purchasing additional conventional fleet units which would support the ROK's shipbuilding industry.

The ROK Navy also could partner with leading technology industries to research and field new ASW sensors both acoustic and non-acoustic. This would allow the ROK to leverage the technical expertise that domestic industry is developing in the robotic and AI sectors. Combining new technologies with existing ROK Navy platforms would provide a multi-dimensional ASW capability versus a nuclear submarine program that would provide a single-dimension response.

As one analyst noted, "Nuclear submarines are superior for travel to distant employment areas, not for tracking a neighbor's diesel/electric submarines in nearby waters."[25] South Korea is not a global military nation. It is a nation with regional security requirements. Producing and operating nuclear submarines would constitute a costly venture that will do little to increase Seoul's national security.

23. Sanghoon Kim, "Time for South Korea to Build Nuclear submarines?", *The National Interest*, 22 Aug 2020, https://nationalinterest.org/blog/korea-watch/time-south-korea-build-nuclear-submarines-167496.
24. Tong Zhao, "U.S. Anti-Submarine Warfare & It's Impact", Carnegie-Tsinghua Center for Global Policy, 24 Oct 2018, https://admin.carnegieendowment.org/2018/10/24/u.s.-anti-submarine-warfare-and-its-impact/jzdx.
25. Frank von Hippel, "Mitigating the Threat of Nuclear Weapon Proliferation via Nuclear-Submarine Programs", *Journal for Peace & Nuclear Disarmament*, vol. 2, issue 1, 2019, https://doi.org/10.1080/25751654.2019.1625504.

# Chapter 8

## One Belt One Road: What the U.S., ROK, and Japan Can Do

*Karl Friedhoff*

As the United States and China move towards greater competition around the world, the United States has yet to clearly define how it intends to take part in that competition. Thus far, the approach has focused on calling out what many see as China's nefarious motives for projects around the world, with a particular focus on the Belt and Road Initiative (BRI). But this focus on motives is no substitute for offering real alternatives to countries with needs in infrastructure development, health, education, and other areas.

Yet there is no easy alternative on offer for the United States. For the first time, the United States is confronted with a competitor that can not only outdo US largesse but also delivers funding and projects without requiring internal political reforms in the recipient country. And funding infrastructure development abroad, at a time when US infrastructure is in such poor shape, may prove politically problematic.

To compete with China will require the United States to move beyond the decades-old focus on roads, bridges, and power generation. It will need to create a new formula. That formula must be based on the realities of the United States in the 21st Century and draw on its core competencies and competitive advantages.

First, the United States must make a conceptual leap in its views of China's infrastructure projects. These projects should not be viewed as an obstruction to US goals to be opposed at every turn. Instead, the United States should see them as the very foundation for the projection of US competitive advantages. Road and rail in themselves do not deliver value to populations. It is the services that surround infrastructure which unlock their potential to both populations and business alike. And it is in services that the United States holds a key competitive advantage.

Second, the United States should narrow its scope of where the primary competition with China is going to unfold—Southeast Asia. This does not mean that other regions are unimportant, but it is Southeast Asia—home to more than 600 million people and the world's fifth largest economic bloc—where China and the United States will come into contact across all dimensions of national power.

China's focus on infrastructure is often said to be laying the groundwork for a new series of economic corridors throughout Southeast Asia. This approach is not new. Japan has already constructed the East-West Economic Corridor, stretching from Myanmar to Vietnam. The problem is that economic corridors are such in name only. In reality, these massive infrastructure projects are better understood as transportation corridors—aimed at moving resources, goods, and people from point A to point B faster than could previously be attained.

Transportation facilitation corridors are only the first step. The ability to move goods from one place to another faster and more reliably is an accomplishment, but the true potential of these networks can only be unlocked if there are corresponding reforms at national borders ensuring delays are minimized. This allows a transportation corridor to evolve into a trade facilitation corridor. But both of these corridors are "narrow" in scope, meaning that the benefits accrue to only a select number of actors—governments, companies, and a small slice of the population. The benefits rarely reach the wider population that lives in the vicinity of these newly connected and influential infrastructure lines.

The transition to the "broad" scope of creating economic corridors means expanding the wider population's access to and utilization of existing or newly built infrastructure. Connectivity, banking, education, law services, and health care are all areas that would help to bring the benefits of roads and rail to the wider population. These are the areas that hold the capacity to transform the region in the longer-term. They also happen to be the areas in which the United States and its allies excel.

Moreover, the move to focus on the broad scope of corridor development does not mean the complete absence of infrastructure building. But the infrastructure projects that are included are localized and aim to better connect nearby communities with new infrastructure and services.

Third, the United States must reinvigorate its alliances—and those with Japan and South Korea in particular. The current US approach to China has been combative and has largely positioned Japan and South Korea to choose sides. Each country is a treaty ally of the United States, but neither country wants to openly take part in a set of policies that China sees as contributing to its encirclement. Both rely on China for a significant portion of their economy and angering China could have severe economic consequences.

Engaging both of these countries will require a degree of flexibility for the United States. Neither Japan nor South Korea is keen to pursue security cooperation with the United States in the South China Sea. But it is a mistake to ward off possible cooperation on economic development projects in Southeast Asia. Japan is already a major player in the region and South Korea is poised to make a significant push in the coming decade.

While the United States, Japan, and South Korea are already active in Southeast Asia their efforts are largely siloed as they independently pursue projects that are sometimes redundant or even competing. Standing up a trilateral committee responsible for project proposals, impact analysis, and seeking outside investments will help to coordinate those activities as well as ensuring complete end-to-end services when a project is undertaken.

Tying this trilateral effort together should be the recently established International Finance Development Corporation (IDFC). Established by the BUILD Act in 2018, the IDFC is called to focus its activities that further the interests of the United States. In achieving that goal, the IDFC is able to pursue agreements with foreign governments and multilateral organization in projects which are small, highly developmental, and in the least developed areas. These projects are intended to overcome market gaps and encourage entrepreneurship, with a focus on the impact on economic opportunities for women.

China's activities in Southeast Asia have done little to win it friends among local populations. The projects are completed primarily by Chinese labor and often require the displacement of local populations. The economic degradation which accompanies them is also unwelcome. Moreover, the economic benefits of those projects are not reaching the populations that are most in need. A coordinated trilateral effort to pursue projects and investments will help unlock the untapped potential of new infrastructure across the region. In the process, it will provide US businesses a platform to pursue investments across the region.

This cooperation should focus on building services, equipping those services, and training local populations in their sustainable operation in Southeast Asia. Build, equip, train: BET on Southeast Asia.

# Space Cooperation with Developing Countries in the Indo-Pacific Region

*Taro Sato*

*Executive Summary*

The U.S.-China strategic competition is a comprehensive competition over diplomatic, informational, military, and economic powers. Two concepts, One Belt One Road (OBOR) and Free and Open Indo-Pacific (FOIP) strategy, might symbolize this broad competition. While the U.S. and Japan have focused on infrastructure development in the regional developing countries, both countries have not paid much attention to space cooperation from the standpoint of the FOIP strategy. Given that the growing significance of space for information, military, and economy, the U.S. and Japan should strengthen their commitment to cooperating with space developing countries in the Indo-Pacific region as a tool of diplomacy. Therefore, this paper offers the promotion of the integration of the U.S.-Japan efforts in cooperation with space developing countries to achieve the principles of the FOIP strategy.

## *Backgrounds and Challenges of the Issue: One Belt One Road and Space Silk Road*

### One Belt One Road and "Win-Win Cooperation"

China has increased its foreign aid since the 1997 Asian Financial Crisis and is significantly expanding its global economic influence. The OBOR initiative is a critical driver of Chinese foreign aid in which China advancing the partnership of infrastructure development to promote Chinese access to the global markets. Although those infrastructure developments are advantageous to the local countries, China's aid is designed to increase Beijing's economic, political, and military influence over them. The dual character of this aid is characterized by the Chinese government's term "win-win cooperation."[26]

One example of the "win-win cooperation" might be a connection between China's investment for seaport construction and the construction of potential military ports in the regional countries. Beijing has been leveraging on naval base construction by promoting infrastructure investment. The most prominent case of this is China's "debt trap," and Sri Lanka's formally handing over Hambantota port to Chinese firms on a 99-year lease.

### Space Silk Road

A similar phenomenon is occurring under the Space Silk Road.[27] China is expanding its global space network while promoting space cooperation with developing countries. One framework of China's Space Silk Road might be the Asia Pacific Space Cooperation (APSCO). The APSCO was established in 2008 as an inter-governmental organization. Currently, China, Bangladesh, Iran, Mongolia, Pakistan, Peru, Thai-

26. The State Council, the People's Republic of China, "Premier stress priorities in six areas," May 15th, 2020 http://english.www.gov.cn/premier/news/202005/15/content_WS5ebdd4ebc6d0b3f0e9497aee.html
27. U.S.-China Economic and Security Review Commission, "2019 Report to Congress of the U.S.-China Economic and Security Commission," November 2019, p. 373
https://www.uscc.gov/sites/default/files/2019-11/2019%20Annual%20Report%20to%20Congress.pdf

land, Turkey, Mexico (Observer), and Indonesia (Signatory country) are joining this organization. The APSCO provides a cooperative mechanism for developing countries and promotes multilateral cooperation through resource sharing in space science, space technology, and space application in the region to facilitate the capacity building of its members.[28] Additionally, Beijing has been advancing space-related foreign aid to the South American and African countries such as Namibia and Argentina.

Not surprisingly, China's "win-win cooperation" is also the case in the Space Silk Road. Along with the space cooperation, China has been expanding its ground-based tracking stations, including in Namibia, Kenya, Pakistan, Brazil, Argentina, Chile, and even Australia and Sweden.[29] Also, there is a possibility that China will further expand its space-related footprints to APSCO member countries. Thus, if the U.S. and Japan take the example of Hambantota port as a lesson learned, both countries should not make the same mistakes in space.

## *The Free and Open Indo-Pacific Strategy and Regional Challenges*

### The Free and Open Indo-Pacific Strategy

Japan first formally announced the Free and Open Indo-Pacific strategy in Prime Minister Abe's speech at the Sixth Tokyo International Conference on African Development in August 2016. Japan's FOIP strategy has three principles: 1) Promotion and establishment of the rule of law, freedom of navigation, and free trade, 2) The pursuit of economic prosperity, and 3) Commitment for peace and stability.[30] Moreover, the Japanese and the U.S. government have successfully shared these ideas as the 2017 U.S. National Security Strategy also referred to the "Indo-Pacific" rather than "Asia-Pacific" and following the establishment of the U.S. Indo-Pacific Command in 2018. Therefore, U.S.-Japan space cooperation with developing countries should be in line with these principles.

### Regional Challenges

U.S.-Japan space cooperation with developing countries must proceed in a direction that solves the regional challenges. For instance, in the Southeast Asia region, ASEAN countries recognize the following issues as regional challenges: 1) Maritime security, stability, and freedom of navigation, 2) Maritime pollution, 3) Climate change and increasing disaster risks, 4) Information and communication technologies (ICTs) security,[31] and 5) Poverty.[32] Thus, the U.S.-Japan space cooperation with developing countries should proceed to solve these challenges in line with three FOIP principles and, more importantly, to prevent "Space Hambantota."

28. Asia-Pacific Space Cooperation Organization (APSCO), "About APSCO." http://www.apsco.int/html/comp1/content/WhatisAPSCO/2018-06-06/33-144-1.shtml
29. Elsa Kania, "China's Strategic Situational Awareness Capabilities," Center for Strategic and International Studies, Spring 2019, p. 11 https://res.cloudinary.com/csisideaslab/image/upload/v1564246946/on-the-radar/China%20strategic%20SA.pdf
30. Ministry of Foreign Affairs of Japan, "Free and Open Indo-Pacific," p. 3 https://www.mofa.go.jp/files/000430632.pdf
31. Association of South-East Asian Nations, "Chairman's Statement of the 26th ASEAN Regional Forum," Bangkok, August 2nd, 2019, pp. 2-4 https://asean.org/storage/2019/08/26th-ARF-Chairmans-Statement_FINAL.pdf
32. ASEAN Ministers Meeting on Rural Development and Poverty Eradication (AMRDPE) https://asean.org/asean-socio-cultural/asean-ministers-meeting-on-rural-development-and-poverty-eradication-amrdpe/

*Recommendation: Integrating U.S.-Japan Space Cooperation Efforts with Space Developing Countries*

A Strategic Approach: Ends, Ways, and Means of the Space Cooperation

First, the U.S. and Japan need to share a common strategic approach -- Ends, Ways, and Means -- to optimize the allocation of resources and to define roles, missions, and capabilities (RMC).

**Ends**: Given that those five challenges in the previous section are the issues to overcome from space, capabilities such as 1) Maritime domain awareness, 2) Environmental monitoring, 3) Disaster management, 4) Communication, and 5) Agriculture and fishery support are critical to overcoming regional challenges. In fact, those capabilities also support the three principles of the FOIP strategy.

**Ways**: If those critical capabilities are the Ends, the U.S. and Japan have two Ways to achieve them. One is building THEIR capabilities -- the development of space developing countries' own problem-solving capabilities from space. The other is providing OUR capabilities -- the application of U.S.-Japan space capabilities to those countries as direct support.

**Means**: The U.S. and Japan can utilize government and private sectors' satellites, rockets, space services, and training. While governments can make larger investments, cooperation through the private sector might be more sustainable in the long run if they can establish a business ecosystem. While Japan and the U.S. should lead those efforts, both governments should also consider inviting other space-faring countries or organizations such as India or the European Space Agency.

Aligning the U.S.-Japan Space Cooperation Frameworks

Second, the U.S. and Japan need a common framework to implement this strategic approach. While an integrated framework is ideal, at least two countries should collaborate between each framework.

One candidate for the space cooperation framework with the Indo-Pacific countries is the Asia-Pacific Regional Space Agency Forum (APRSAF).[33] The APRSAF was established in 1993 and is currently operated under the leadership of Japan Aerospace Exploitation Agency (JAXA). Space agencies, governmental bodies, international organizations, development assistance agencies, private companies, universities, and research institutes from over 40 countries and organizations are participating in the APRSAF. The key advantages of APRSAR are: 1) Openness and flexibility in which any entities can participate, 2) Voluntarism and cooperativeness, and 3) Concreteness of its activities to solve regional issues.[34] Because of these characteristics, particularly its openness and voluntarism, perhaps the APRSAR is compatible with the idea of "ASEAN Way,"[35] in which ASEAN countries tend to avoid creating rival blocks or forcing countries to take sides, the U.S. or China.

The other example of space cooperation framework is SERVIR. SERVIR started in 2004 and is a joint venture between the U.S. Agency for International Development (USAID) and the U.S. National Aeronautics and Space Administration (NASA) to help improve environmental decision-making among de-

33. Asia-Pacific Regional Space Agency Forum, "About APRSAF" https://www.aprsaf.org/about/
34. Asia-Pacific Regional Space Agency Forum, Asia-Pacific Regional Space Agency Forum, p. 1 https://www.aprsaf.org/about/leaflet/APRSAF_leaflet_en.pdf
35. David Shambaugh, U.S.-China Rivalry in Southeast Asia: Power Shift or Competitive Coexistence? International Security, Volume 42, Number 4, Spring 2018, p. 91
"ASEAN Way"—a descriptor for the priority placed on decisions reached by consensus, non-interference in each other's internal affairs, and voluntary cooperation.

veloping nations in eastern and southern Africa, the Hindu-Kush region of the Himalayas and the lower Mekong River Basin in Southeast Asia.[36] For instance, the SERVIR-Mekong project promoted the use of publicly available satellite imagery and geospatial technologies to the Lower Mekong region such as Burma (Myanmar), Cambodia, Laos, Thailand, and Vietnam.[37]

If the APRSAR is a good example of building THEIR capabilities approach, the SERVIR-Mekong project was a good practice of providing OUR capabilities approach.

Even though the U.S. and Japan share fundamental values and principles of the FOIP strategy, why don't these two allies align their efforts in space cooperation with developing countries?

While the U.S. maintains technological leadership in space, space cooperation with developing countries by the U.S. alone may cause friction with the idea of the ASEAN Way. By contrast, while Japan's space cooperation is suitable for avoiding friction with the ASEAN Way due to China's participation in APRSAF and Japan's long-term accomplishments of Official Development Assistance, Japan alone is insufficient to compete with China. Therefore, the U.S.-Japan space cooperation with the regional developing countries will compensate for each other's weaknesses and maximize their strengths at the same time.

*Conclusion*

Since the space domain is a critical arena of informational, military, and economic competition, the U.S. and Japan should not overlook China's ambition through the Space Silk Road and should prevent the same problems, accompanied by the OBOR, in space. Considering the broad nature of strategic competition, the U.S. and Japan must expand and integrate their effort to cooperate with space developing countries from a diplomatic perspective as well. The U.S. and Japan share fundamental values and principles through the concept of the FOIP strategy and a widely inclusive space cooperation framework. Above all, the two countries have mutually complementary advantages. Thus, Japan and the U.S. should take advantage of this strength to promote rules of law, economic prosperity, and peace and stability in space.

36. The U.S. National Aeronautics and Space Administration, "SERVIR Overview," https://www.nasa.gov/mission_pages/servir/overview.html
37. The U.S. National Aeronautics and Space Administration, "NASA and USAID Bring Climate Change Tools to Lower Mekong Region," October 21st, 2014 https://www.nasa.gov/mission_pages/servir/mekong-release.html.

# Chapter 9

## Commercial and Military Space Cooperation Opportunities

*Robert "Sam" Wilson*

In a panel session on U.S.-Japan-South Korea space partnership prospects, Sam Wilson from The Aerospace Corporation discussed why security space partnerships are important and briefly highlighted South Korea's and Japan's space capabilities. Below is a summary of his comments.

*Why Space Partnerships Are Important*

Unlike in civilian space activity, the United States has typically carried out its military space engagements on its own.

- In 2022, the United States is planning put secure communications payloads on Norwegian satellites. This is the first time that a foreign satellite bus will carry U.S. national security payloads.
- I see this as striking in that we haven't done this before. We have been operating in space for 60 years and we are just beginning to leverage our allies.
- Contrast that with civilian space activity—we have been using Russian space launch vehicles to get our astronauts to the International Space Station for nearly the past decade.
- There are legitimate reasons for the lack of military space partnerships, but now we are entering an era in which the United States may want to take space partnerships more seriously.

*Democratization in Space*

- In contrast with the past, when space was dominated by a few major powers, space is becoming much more democratized. More than 70 countries own or operate satellites in orbit, and over 60 countries have a national space budget.
- The most mature space nations in the world are largely U.S. allies so there's a lot of opportunity for the United States.
- Defense space partnerships offer clear advantages.
    - (1) Leveraging Allied Capabilities: Some of these countries offer unique capabilities and geography that we can leverage.
    - (2) Deterrence: Having our allies expand our networks and constellations makes those networks more resilient and perhaps makes it less likely that an adversary would attack

such a network.

- (3) Shared Financial Burden: Space is expensive, and these partnerships create opportunities for financial burden sharing.

*Japan and South Korea*

- South Korea is a mature space nation. They have their own rockets, their own satellite buses, and their own space port.
    - It ranks in the top 10 nations in the world in terms of its budget dedicated to space and the number of satellites it has in orbit.
    - It is one of six countries, plus the European Space Agency, that can independently launch satellites into high orbit (MEO or GEO).
    - In early 2018, South Korea issued its "Third Basic Plan for the Promotion of Space Development, 2018-2022," which notes the country's ambitions for its next generation space launch vehicles and satellites, the South Korea Lunar Exploration Program, and a South Korean position, navigation, and timing satellite system—currently, five countries have their own position, navigation, and timing satellites (Japan being one).
    - South Korea has also expressed interest in space situational awareness capabilities and has a space situational awareness sharing agreement with U.S. Space Command.
- Japan is one of the most mature space nations in the world.
    - In addition to being one of the five countries that has its own position, navigation, timing satellites, Japan ranks in the top five nations in the world in terms of budget allocated to space and number of satellites in orbit. Like South Korea, Japan can also independently launch satellites into high orbit.
    - I just authored a paper on Japan and in that paper, I touched on some of the current debates in Japan for its defense space activity. One of those debates relates to this discussion.
        - Japan has been debating whether to pursue independent systems or systems that complement U.S. capabilities.
            - Recent Japanese strategic guidance emphasizes both complementary capabilities and independent systems.
            - This came up with Japan's decision to develop a deep-space radar.
                - At that time, some in Japan were saying to instead put that money into an early warning satellite system. The advocates of the deep-space radar pointed out that the United States already has an early warning system and argued that the deep-space radar could complement what already exists—providing unique value to U.S. capabilities as part of the broader space surveillance network. As this debate shows, prioritizing independent or complementary systems could drive you to different investment decisions.

- The United States may want to anticipate these conversations and perhaps, in some cases, argue for more space partnerships and complementary systems. In the case of Japan, it is an easy sell, but it still is an argument that needs to be made.
- I wrote the Japan paper because my leadership agrees that we could do more to collaborate with our allies. Japan and South Korea are extremely important space nations and we may want to think more about how we can collaborate effectively with them in space security and part of that requires understanding the direction of their defense space efforts.

# Overview of Japanese Space Policy

*Taro Hayashi*

## *1 Overview of Japanese Space Policy*

To understand Japan's current space policy—especially in terms of the security use, we should look at three documents: (1) the Basic Space Law in 2008, (2) the Basic Plan on Space Policy (Basic Plan) in 2020, and (3) the National Defense Program Guidelines (NDPG) in 2018.

The Basic Space Law officially opened the door to the security use of space.

The Basic Plan placed space security as one of the three pillars of Japan's space policy. The Basic Plan was just revised in June 2020 and we can see the ideas about the space cooperation opportunities in the new Basic Plan.

The NDPG says that Japan's security environment is becoming more testing and uncertain at a remarkably faster speed than expected. In such an environment, the NDPG emphasizes that, in order to deter and counter qualitatively and quantitatively superior military threats, it is crucial to adopt cross-domain operation that combines capabilities in new domains—space, cyberspace, and electromagnetic spectrum—and traditional domains—land, sea, and air. About the space, the NDPG says that, in order to ensure superiority in the use of space, the Self Defense Force (SDF) will continue to improve various capabilities such as information-gathering, communication and positioning, navigation, and timing (PNT). Also, the SDF begins to strengthen mission assurance capability and capability to disrupt the opponent's command, control, communications, and information.

Based on these documents, especially based on the NDPG, now space capability is one of the top priorities in strengthening Japan's defense capability. For example, on May 18, 2020, the Ministry of Defense established the SDF's first space unit called "Space Operations Squadron" in the Air Self Defense Force to conduct space operations. To begin with, the squadron will start the Space Situational Awareness (SSA) mission using its deep space radar and information from JAXA. About SSA, Japan will also start to procure an SSA satellite in the budget for the fiscal year 2020. Also, the SDF is expanding its information-gathering capability by satellites.

## *2 Space Cooperation Opportunities*

To obtain such space capabilities effectively and efficiently, it is crucial for Japan to strengthen space cooperation with the United States and also with the civil sectors. For example, Japan's new SSA system has been designed to exchange information with the US CSpOC and with JAXA. Japan's geographical location will also add a unique advantage to the US-led global SSA system. Beyond that, the new Basic Plan will emphasize the importance of strategic cooperation with the US and other countries, as well as making use of private-sector dynamism.

With regard to the Japan-US bilateral cooperation, SSA will be the center of cooperation while PNT and maritime domain awareness are also areas of potential cooperation. Also, the cooperation will include more specific efforts, such as loading American SSA sensors to Japan's Quasi-Zenith Satellite. Such

expansion of hosted payload cooperation will not only efficiently improve space capabilities but also strengthen the resiliency of the space systems of both countries.

In addition, the small satellites and their constellations will be another key area of cooperation both in terms of security use and civilian use. This effort will also strengthen the resiliency of the space system. And, the cooperation with the American space industry, which has continuously lowered the cost of launching rockets and organizing constellations of small satellites, will be an important factor.

Japan has been clearly heading toward strengthening its space capabilities. From now on, the issue will be more practical ones like how to secure the budget, how to train the personnel, and how to develop the space industry. The space cooperation with the US through military-to-military, government-to-government, and industry-to-industry relationship will accelerate the speed of Japan's change and will enable both Japan and the US to conduct bilateral activities effectively in the space.

# Appendix A: Additional Workshop Research Papers

**Seoul's Misguided Desire for Nuclear Submarines**

*James O. Campbell, Jr.*

**Vulnerable Alliances: U.S. Unpredictability and the Search for a "Plan B" in South Korea and Japan**

*Eric Heginbotham and Richard J. Samuels*

**Understanding and Reducing Military Vulnerabilities of Civilian Nuclear Plants: The Case for the Northeast Asia**

*Jungmin Kang*

# Appendix B: Participants

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| Alexander Bowe | U.S.-China Economic and Security Review Commission |
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| John Lauder | Independent Consultant |
| Richard Lawless | New Magellan Ventures |
| Paul Lee | United States Institute of Peace |
| Peter Leutz | Congressional Research Service |
| Don MacDonald | Office of Rep. Brad Sherman |
| Charles Mahaffey | U.S. Department of State |
| Terrence Matsuo | The Nelson Report |
| Tim McDonnell | Nuclear Policy Program, Carnegie Endowment for International Peace |
| Ian Merritt | Office of Representative Jeff Fortenberry |
| Stephanie Mitchell | Defense Fellow, U.S. Air Force |
| Michiru Nishida | Embassy of Japan |
| Bong Park | Radio Free Asia |
| Jaehan Park | Clements Center for National Security, University of Texas \| Johns Hopkins University, SAIS |
| Bryan Port | U.S. Army Futures Command |
| Eric Quam | U.S. Department of State |
| Christina Richards | Missile Defense Capabilities Branch USSTRATCOM |
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**Eric Brown** is a senior fellow at Hudson Institute where, since 2004, he has conducted research across Eurasia and parts of Africa on geopolitics, alternative futures, political reform and development, and U.S. national security and diplomatic strategy. His recent work has focused on the future of India and South Asia, the sources of the PRC's conduct and strategy and the struggles inside Sinophone Asia, military deterrence, upgrading U.S. alliances in the Indo-Pacific and West Asia, reforming U.S. civilian agencies to cope with political fragility and ideological contests, and on various geo-economic and geo-technological issues. He maintains a special interest in mountainous areas, from the Atlas and Zagros to the Himalayas. In 2018, he was a senior advisor to the United States Institute of Peace's congressionally-mandated Task Force on State Fragility and Extremism. Brown has studied and traveled throughout Asia, and his graduate work was in the classical thought of China, India and Japan.

**James Campbell** is currently the lead yard production manager for the Arleigh-Burke Destroyer program office. Before this, he was a program analyst in the Frigate Program Office at the Naval Sea Systems Command from 2016 to 2020. Prior to that, he was signed to the DDG-1000 (Zumwalt) Program Office performing configuration management from 2009-2016. Before government service, he was a Development Engineer in the automotive sector working at the Tier 1 or OEM organizations. Campbell is a recent graduate of the Missouri State/NDU Masters program in Defense & Strategic Studies/Countering Weapons of Mass Destruction. He also holds MBA and BSME degrees from Indiana Tech and University of Akron, respectively. Campbell resides in the Loudoun county area with his wife of 18 years and high school age son.

**Tarun Chhabra** is a fellow with the Project on International Order and Strategy at the Brookings Institution, and also with the Center for Security and Emerging Technology at Georgetown University. His current research focuses on U.S. grand strategy, U.S.-China relations, and U.S. alliances. Chhabra co-leads a Brookings Foreign Policy-wide initiative, Global China, focused on the implications of China's growing global influence. Previously, Chhabra served on the White House National Security Council staff as director for strategic planning and director for human rights and national security issues. Before that, he worked at the Pentagon as a speechwriter to Secretaries of Defense Chuck Hagel and Ash Carter. Chhabra also was a fellow at the University of Pennsylvania's Perry World House, and worked at the United Nations in the office of Secretary-General Kofi Annan and as a staff researcher for Annan's U.N. High-level Panel on Threats, Challenges, and Change. Chhabra has a law degree from Harvard, where he was a Paul and Daisy Soros Fellow for New Americans; a Master of Philosophy in international relations from Oxford University, where he was a Marshall Scholar; and a bachelor's from Stanford University. He also has held a Harvard Law School Heyman Fellowship and a graduate fellowship at Harvard's Edmond J. Safra Center for Ethics.

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**Taro Hayashi** is a Japan Chair Fellow at Hudson Institute. His research areas include Japanese defense strategy and U.S.-Japan defense cooperation. Prior to joining Hudson, he was a deputy director at Defense Policy Division and Strategic Planning Division, Ministry of Defense, Japan. There he was in charge of drafting the National Defense Program Guidelines (a 10-year defense strategy) and developing strategically important programs, including stand-off missiles, Space Situational Awareness system, and refurbishment of Izumo-class destroyers. Taro received his master's degree from Johns Hopkins University, School of Advanced International Studies, Juris Doctor's degree with valedictorian honors from the University of Tsukuba, and LL.M. degree with the Thomas Bradbury Chetwood, S.J. Prize for the highest academic average from Georgetown University..

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