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SOUTH KOREA'S PLACE IN THE INDO-PACIFIC

A Research Showcase for Pacific
Forum's Korea Foundation Fellows

Edited by
Rob York

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South Korea's Place in the Indo-Pacific

*A Research Showcase for Pacific Forum's
Korea Foundation Fellows*

Edited by
Rob York

ISSUES & INSIGHTS

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Brief

Papers by the Pacific Forum's current and previous Korea Foundation Fellows examine pressing issues facing the Korean Peninsula in the 21st century. These include the Great Power Competition between the US and China, North Korea and nuclear security, critical new technologies, and energy security. These papers by emerging leaders in the Korean Studies field offer fresh perspectives on Korean security issues – both well-known and emerging – useful for watchers of the peninsula both inside and out of Northeast Asia.

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INTRODUCTION

Fostering conversations on emerging and enduring security challenges

By Rob York

The alliance between South Korea and the United States has endured, through a wide variety of challenges and shifts, since the 1953 Mutual Defense Treaty signed by the two governments. Both Seoul and Washington have seen changes in governments—sometimes dramatic changes—in the decades since, but both have consistently affirmed the alliance’s importance. For Seoul, Washington is the guarantor of its security and has been a key supporter of its economic development during key points in its miraculous post-war rise. For the US, having South Korea as an ally provided a foothold on the Asian continent during the Cold War and, closer to the present, its thriving economy and democracy has evinced the success of the liberal democratic system the US has championed.

A unique set of headwinds buffeted the alliance in the 2010s, but the governments of the two countries now sound similar notes on issues that were once contentious: responding to North Korea’s recalcitrance and growing nuclear/missile arsenal, coordinating with the like-minded government in Tokyo, resolving questions over alliance burden-sharing through negotiations and gradual shifts, and addressing China’s growing military might and economic influence. However, the challenges the alliance faces today are not the same as in 1953—or 2017. Continued support for fresh thinking about evolving and emerging threats to the alliance remains essential.

The Pacific Forum continues, through the generous support of the Korea Foundation, to foster such thinking through the Korea Foundation Fellowship, which allows rising Korean scholars, policymakers, and professionals in training the opportunity to conduct research under Pacific Forum staff’s guidance. Through the Pacific Forum, fellows receive mentoring on research and career guidance informed by our years of experience. Through the fellows, the Pacific Forum—and the policymakers, academics, and officials we work with—benefits from the fresh perspectives of young thinkers attuned to the emerging challenges facing South Korea, the alliance, and the Indo-Pacific region as a whole.

Many of the papers in this volume touch on emerging security issues—Kangkyu Lee discusses supply chains for semiconductors, without which much of the technology powering our modern economy would not be possible. Jong-Hwa Ahn delves into the avenues for bilateral counter-disinformation cooperation, a crucial effort for addressing the forces that threaten to undermine democracies from within. Juyoung Kim addresses energy, an area at the intersection of economics and security, which is gradually being reshaped by climate changes and alternative energy sources.

Even those touching on familiar issues—North Korea, China, and trade—inject new thinking into the discussions. With North Korea’s capability to inflict mass destruction continuing to grow, Seongwon Lee examines scenarios that alliance leaders might one day have to react to, including the threat of nuclear weapons. Eun A Jo, with assistance from Jae Chang, assesses the newly elected South Korean administration and its promises to more fully align with the US, as well as the political factors that might hinder that effort. With the underlying tensions behind the US-China trade war that began in 2018 unresolved, Su Hyun Lee makes suggestions on how Korea can endure, and thrive, amid the dispute despite trade headwinds.

Many challenges present for the alliance today will likely endure through the 2020s, and beyond. Other new concerns will emerge. Collaborations between the two countries that cross generational boundaries are essential for meeting these challenges. The Pacific Forum, with the support of the Korea Foundation, is proud to play its part in fostering these conversations.

1. Choose to win: Two scenarios on future weapons and their implications for Korea, the US, and Asian security

By Seongwon Lee

Seongwon Lee is a lecturer at the Graduate School of International Studies at Korea University. Previously, he was a non-resident Korea Foundation fellow at Pacific Forum (2020), deputy director for international cooperation at the Ministry of Unification, and interpretation officer at the Republic of Korea Marine Corps.

ABSTRACT

The history of war has proven how new weapons can determine the outcome of a battle, if not the fate of a nation. Even today, new weapons and systems are appearing on battlefields from the Middle East to Ukraine. Home to some of the most technologically advanced countries in the world, East Asia may well become the next testbed for future weapons. For instance, if North Korea decides to use its nukes, how should a non-nuclear South Korea respond? If US and Chinese destroyers equipped with different levels of weapons accidentally engage in a naval skirmish in the South China Sea, which side will win? If the Republic of Korea (ROK)-US alliance had to focus its defense budget on developing either an offensive or defensive future weapon, which one should they choose? This paper presents a simplified game theoretical approach to these scenarios through a decision tree analysis and payoff matrix analysis. It concludes with a general recommendation on how the study of future scenarios can add scientific value to international politics and the study of warfare, thus helping policymakers determine important waypoints that lie ahead.

INTRODUCTION

The history of war has proven that novel warfare technology and tactics can determine the outcome of a battle, if not the fate of a civilization.¹ We need only look back to the colonization of the New World or, more recently, the Gulf War to understand how a gap in weapon technology can act as a game changer. Nuclear weapons are another example that shows how superior weapons can topple the conventional balance between states. Recent wars have started to show that the term “futuristic weapons” is no longer reserved for the future. New weapons and systems are appearing on contemporary battlefields from Yemen to Ukraine and, witnessing the military value that these weapons bring, belligerents toil to stay ahead in the new arms race. Keeping a technological edge in warfare is now an imperative for major powers.

Home to some of the most technologically advanced countries in the world, East Asia may well become the next testbed for future weapons. North Korea’s nuclear threats and China’s assertiveness in the maritime domain are just two factors adding verisimilitude to such forecasts. A non-nuclear South Korea and its far-away ally, the US, may both look to more advanced weapon systems as a solution to such problems.

By implementing two simple game theory methods—decision tree analysis and payoff matrix analysis—two separate scenarios are analyzed in this paper. The first provides an analysis on how a non-nuclear weapon state should deal with a nuclear threat from its adversary. The second provides an analysis on how two naval vessels will engage each other in a skirmish according to different armament options. Both scenarios aim to shed light on whether a country should funnel resources into offensive or defensive weapons under different circumstances.

Three central arguments are presented in this paper:

- (1) If a non-nuclear state has to choose between improving offensive (pre-emptive) or defensive capability, it should choose the latter.
- (2) The optimal weapon-acquisition strategy changes in accordance with the dominant weapon of the era and what the opponent acquires.
- (3) Improvement in offensive weapon capabilities favors the defender (or hegemon) versus the aggressor (challenger).

¹ Abundant examples can be found in seminal works on the history of military technology including:

Trevor Dupuy, *The Evolution of Weapons and Warfare*, (Jane’s, 1982);
William McNeill, *The Pursuit of Power: Technology, Armed Force, and Society Since A.D. 1000*, (The University of Chicago Press, 1982);
Robert O’Connell, *Of Arms and Men: A History of War, Weapons, and Aggression*, (Oxford University Press, 1989);
Martin Van Creveld, *Technology and war: from 2000 BC to the present*, (Simon and Schuster, 1989); Examples of new military technologies that have shaped the world are well summarized in:
George Raudzens, “War-Winning Weapons: The Measurement of Technological Determinism in Military History,” *The Journal of Military History*, 54, 4, (1990), pp.403-433;
Spencer Tucker, *Instruments of War: Weapons and Technologies That Have Changed History*, (ABC Clío, 2015).

As the purpose of this paper is to provide strategic implications on the development of future weapons and not to come up with a detailed mathematical model, game theory is an effective and efficient analytical tool. As Snidal states, “[its] usefulness therefore depends on whether it poses interesting questions about the politics of international issues and suggests fruitful directions for empirical elaboration, rather than on whether it provides correct answers in any narrow sense.”²

SCENARIO 1: NUCLEAR ATTACK ON A NON-NUCLEAR STATE

Scenario Design

Scenario-1 presents a two-party sequential game in which a notional country “nK” has nuclear weapons, while a notional country “sK” has only conventional pre-emptive strike and missile defense capabilities. Conflict between the two countries leads to nK seriously considering an imminent nuclear attack on sK. In this case, nK can start the game by either displaying its nuclear weapons as a strategic message or concealing them to increase the weapon’s survivability. If nK decides to display, it may do so with either a real nuke or a decoy. sK can respond by either conducting or not conducting a pre-emptive strike on the displayed nuke and the strike may succeed or fail depending on sK’s capabilities. Whether the strike succeeds or not, nK has the liberty to either launch or not launch a retaliatory nuclear strike, using sK’s pre-emptive attempts as an excuse. However, if sK does not conduct a pre-emptive strike, nK may or may not launch a pre-emptive (not retaliatory) nuclear strike. If nK launches any nuclear strike, sK automatically activates its missile defense system, which also may succeed or fail depending on its capabilities.

Our goal is to analyze the possible outcomes of the scenario to figure out whether sK should focus its limited resources on acquiring an offensive or defensive weapon if it must choose one. Detailed notations and their meanings are summarized in Table 1. The model follows a set of rules and assumptions outlined in Table 2.

Table 1 Summary of notations used in Scenario-1

Notation		Explanation
Players	nK	nuclear weapon state
	sK	non-nuclear weapon state with conventional pre-emptive and defensive capabilities
Decision Variables	nK	DN, DR, DD, CN (predetermined) - DR: display real nuke - DD: display decoy nuke CN: conceal nuke
		PN, RN, nNA PN: pre-emptive nuclear strike RN: retaliatory nuclear strike nNA: no action (by nK)
	sK	MD (predetermined) MD: missile defense (automatically activated when nK fires nuke)
		PS, sNA PS: pre-emptive strike sNA: no action (by sK)
		Sx, Fx Sx: success Fx: failure
	Parameters	p(x)
{a,b,c,...p}		Actions “a,” “b,” “c,” ... and “p”
x/y		Action “x” happens, and then action “y” happens

² Duncan Snidal, “The Game Theory of International Politics,” *World Politics* 38, 1 (1985): 25-57.

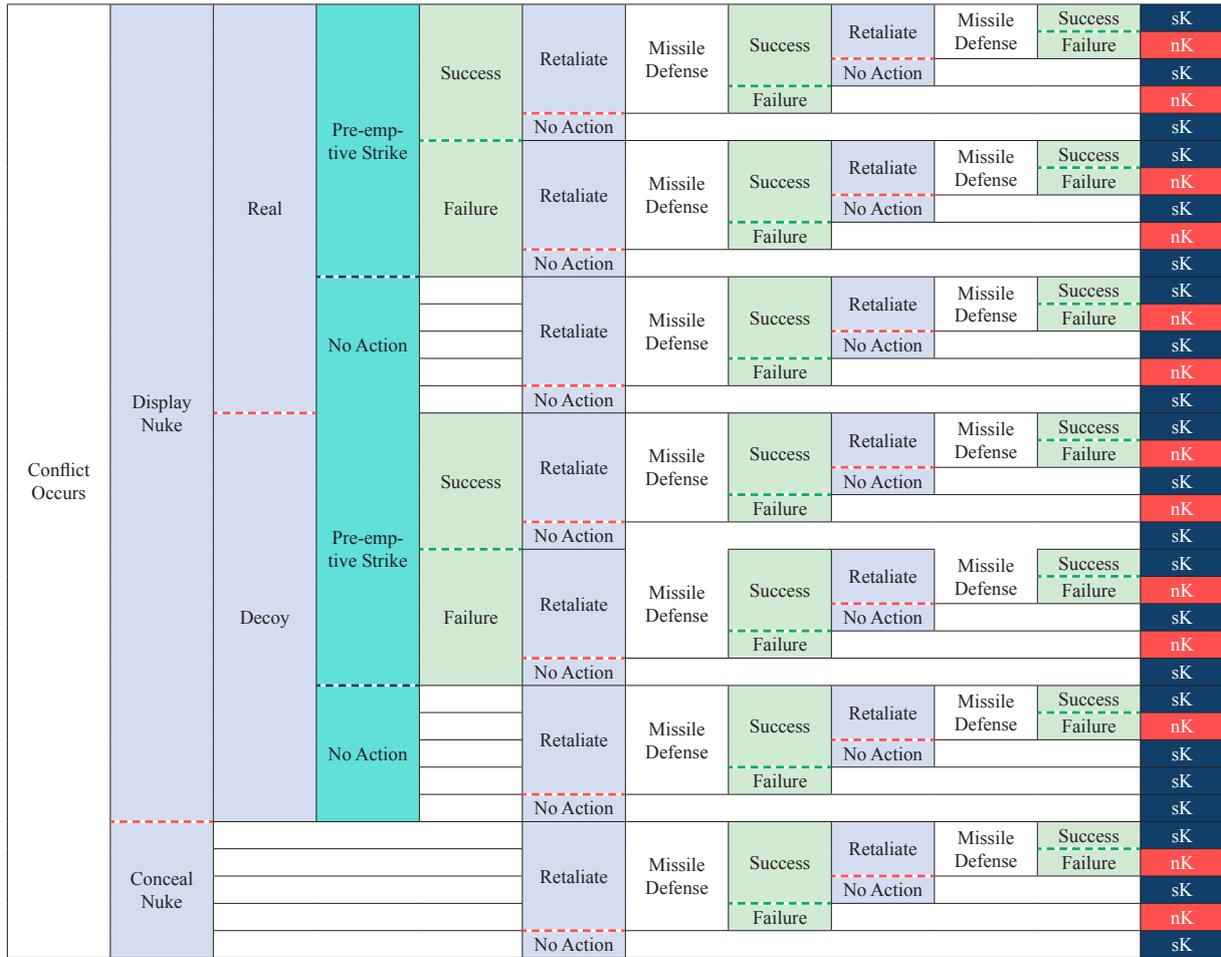
Table 2 Rules and rationales of Scenario-1

Rule	Rationale
$p(\text{DR}/\text{PS})=p(\text{DN}/\text{PS})$ and $p(\text{DR}/\text{sNA})=p(\text{DN}/\text{sNA})$	sK cannot distinguish decoy and real nuke at display.
sK loses game if {MD/Fx} (except {DD/NA/PN/MD/Fx})	Failure to defend nuclear missile results in annihilation of sK (except when missile is decoy).
sK wins game if {nNA}	No additional action from nK means that the nuclear crisis is controlled, which is a desired end-state for sK.
$p(\text{PS}/\text{Fx})=1-p(\text{PS}/\text{Sx})$ and $p(\text{MD}/\text{Fx})=1-p(\text{MD}/\text{Sx})$	sK's actions can either succeed or fail—no other possible outcomes.
$p(\text{CN})=1-p(\text{DN})$ and $p(\text{DD})=1-p(\text{DR})$; therefore $p(\text{DN}/\text{DR})+p(\text{DN}/\text{DD})=p(\text{DN})=1-p(\text{CN})$	nK can either display or conceal nuke, and either display real or decoy nuke—no other possible options.
$p(\text{PN}/\text{MD})=p(\text{RN}/\text{MD})=1$	When nK launches pre-emptive or retaliatory strike, sK automatically activates MD.
nK takes 1st and 2nd decision nodes {DN, CN} and {DR, DD}, followed by sK response {PS, sNA}, and so on	nK has first-move advantage over sK due to its nukes, and can decide whether or not to display the nukes. sK can decide whether or not to launch pre-emptive strike against nK displayed nukes.
$p(\text{CN}/\text{PS})=0$	sK cannot launch pre-emptive strike if nK conceals nuke.
$p(\text{PN}/\text{Sx})=p(\text{MD}/\text{Fx})$ and $p(\text{RN}/\text{Sx})=p(\text{MD}/\text{Fx})$ (No Sx & Fx parameters assigned to nK, for parsimony)	nK nukes are technically reliable; therefore, success of nK nuke attack is only dependent on failure of sK missile defense.
$p(\text{PS}/\text{Sx}) \propto p(\text{PS})$ $p(\text{MD}/\text{Sx}) \propto p(\text{PS})$	As success rate of sK's pre-emptive strike and missile defense increases, sK becomes more confident and willing to conduct the strike.
$p(\text{PS}/\text{Sx}) \propto p(\text{CN})$ $p(\text{MD}/\text{Sx}) \propto p(\text{nNA})$	As success rate of sK's pre-emptive strike increases, nK becomes more willing to conceal its nukes. As success rate of sK's missile defense increases, nK becomes less willing to launch a nuclear strike.
{PS} \propto p(RN) {sNA} \propto p(nNA)	sK's pre-emptive strike increases likelihood of nK's retaliatory nuclear strike, and sK's non-action increases likelihood of nK's non-action.
$p(\text{CN}/\text{nNA}) \approx 0$	Not showing any activity and backing down will simply mean defeat of nK, which is a very unlikely act of a state that is pushed to the brink of deploying nuclear weapons.
No other actions (diplomacy, sanctions, subversion, etc) at play	The scenario focuses solely on 'the eve of war' phase, in which a conflict has already triggered nK to seriously consider use of its nukes.
All actions are sequential	The scenario is laid out in sequential order (from left to right in diagram).
sK has no retaliatory options	Post-mortem retaliation is not a feasible option against nK. ³
nK has more than 1 nuke, and most of it is well hidden in hardened sites	The scenario is loosely based on real-world countries such as North Korea. ⁴

³ It would be fair to disclaim that in reality ROK *does* have a defense plan based on all three axes, namely the Kill Chain (pre-emptive surgical strike), KAMD (Korea Air and Missile Defense), and KMPR (Korea Mass Punishment and Retaliation). See Ian Bowers and Henrik Stålhane Hiim, "Conventional Counterforce Dilemmas: South Korea's Deterrence Strategy and Stability on the Korean Peninsula," *International Security* 45, 3 (2021): 7-39.

⁴ The exact number of nuclear warheads North Korea currently possesses varies according to different studies. For a more detailed summary, see: Hans Kristensen and Matt Korda, "North Korean nuclear weapons 2021," *Bulletin of the Atomic Scientists* 77, 4 (2021): 222-236, <https://www.tandfonline.com/doi/pdf/10.1080/00963402.2021.1940803>.

Figure 1 Decision Tree of Pre-emptive Scenario-1



Default actions
 nK actions
 sK actions
 chances
 end nodes (sK wins)
 end nodes (nK wins)
 - - - - - nK decision nodes
 - - - - - sK decision nodes
 - - - - - chance nodes

Results and Discussion

As can be seen from Figure 1, the model has 18 decision nodes (nK=16, sK=2), 18 chance nodes (sK only), and 35 end nodes (nK=13, sK=22). Important probabilities of outcomes that are in favor of sK are listed in Table 3. Based on the scenario analysis above, we are able to devise a set of strategies for sK.

(Strategy-1) One particular decision node that deserves attention is {DD/sNA/PN/MD/Fx}— nK displays a decoy nuke → sK doesn’t react → nK launches the decoy → sK missile defense fails.

Unlike other end nodes, this one is peculiar in that the failure of sK missile defense doesn’t lead to the destruction of sK because the fired nuke is a decoy. In fact, it is rather unlikely that nK will fire a decoy. This only increases the probability of nK choosing the alternative node, “no additional action,” which is the desired end-state for sK. Therefore, one strategy for sK is to increase the probability of the favorable {DD/sNA} node.

(Strategy-2) In order to increase p(DD/sNA), sK must decrease p(DD/PS). Since p(PS) is positively affected by p(PS/Sx), an increase in p(PS/Sx) will harm sK’s security interest. In other words, as sK’s success rate of—and confidence in—its pre-emptive capability increases, sK will become more inclined to launch the pre-emptive strike. This increases the possibility of sK falling into the “retaliation versus missile defense” nodes which aren’t necessarily in favor of sK.

(Strategy-3) Since p(CN/nNA)≈0, p(CN/PN)≈1 and p(CN/{Fx})=2/4. In simple words, simply concealing its nukes

and making no further action will mean defeat and therefore is an unlikely decision for nK. This leaves nK with the only other node in “conceal nukes,” which is to launch a pre-emptive nuclear strike on sK ($\{CN/PN\}$). If nK takes this node, sK risks a losing probability of 50% (two out of four possible outcomes), which is the highest among all decision nodes. Therefore, this node should be avoided. If nK has information that sK’s pre-emptive strike success rate is high, there is a bigger chance that nK will decide not to display its nuke ($p(DN) < p(CN)$), which means that sK will not have the chance to use its pre-emptive strike capabilities no matter how credible they are. Once again, an increase in $p(PS/Sx)$ harms sK’s security interest.

(Strategy-4) In fact, the best way to increase the possibility of winning for sK is quite obvious and simple—increase the success rate of missile defense ($p(MD/Sx)$). Unlike the increase in $p(PS/Sx)$, which can harm sK’s interest in the big picture by increasing $p(CN)$, increase in $p(MD/Sx)$ increases $p(nNA)$ and sK’s chance of ultimate victory at the same time.

Let us translate these strategies into policy vernacular. First, if nK displays a decoy, sK is better not to strike first. Whether nK displays a real nuke or decoy, sK’s pre-emptive strike ultimately leads to the same chance of winning/losing by automatically triggering a retaliatory nuclear strike from nK. On the other hand, sK’s inaction can at least leave the possibility open for a more benign scenario in which nK has displayed a decoy.⁵

Second, as sK’s confidence in a pre-emptive strike increases, its willingness to conduct the strike will also increase. Not only does such a situation push sK into an unfavorable node for the same reasons mentioned above, but it also pushes nK towards concealment of its nukes, the worst node for sK. For instance, if South Korea declares that it will import a hypersonic missile that can strike North Korean missile sites in a matter of seconds, North Korea would probably conceal its nukes to make them difficult for the South to target.

Third, even if sK succeeds in the pre-emptive strike, nK will most likely strike back with retaliatory nukes. Then, the game spirals down once again to missile defense versus nuclear attack, ironically leaving no room for sK’s pre-emptive strike capability to prove its utility further.

Fourth, missile defense is always at the terminal node of decisions, which means that it remains unaffected by other events. Therefore, more defensive capabilities do no harm to sK’s security interest.

Let us suppose that sK has just enough R&D budget to develop either an offensive future weapon, such as a flotilla of destroyers with hypersonic railguns, or a defensive future weapon, such as a laser-based missile interception system. According to the scenario analysis above, it seems wiser for sK to funnel the budget into the latter.

SCENARIO 2: NAVAL SKIRMISH BETWEEN TWO DESTROYERS

Scenario Design

Scenario-2 presents a two-party zero-sum game that simplifies a naval skirmish between destroyers of two notional countries, “U” and “C.” The two countries are assumed to possess a similar level of military technologies, and each destroyer can be armed with four types of weapons: conventional gun, anti-ship missile, laser CIWS (Close-In Weapon System), and electromagnetic railgun (EMRG). The conventional gun and anti-ship missile are installed as default, whereas the laser and railgun are optional. Scenario-2A assumes that railguns have better performance compared to conventional guns, but cannot outperform missiles. Scenario-2B assumes that railgun technology has matured to the point that railguns can outperform missiles.

⁵ This situation is akin to the “Schrödinger’s cat experiment.” In sK’s perspective, if it doesn’t launch a pre-emptive strike, the authenticity of the displayed nuke remains unknown, which means there is still chance for a better node ($DR/sNA \neq DD/sNA$); If it does launch a pre-emptive strike, however, the situation leads to two identical nodes ($DR/PS = DD/PS$).

The game aims to provide an illustrative account of the results of the engagement under different weapons as their comparative advantages change. The game is laid out in the form of a matrix with three payoff values—“win,” “lose,” and “draw.” Detailed notations and their meanings are summarized in Table 4. The model follows a set of rules and assumptions that are outlined in Table 5. Table 6 depicts the labels assigned for each event.

Table 3 Summary of notations used in Scenario-2

Notation		Explanation
Players	U, C	the two countries involved in naval skirmish
Weapons	G	conventional naval gun (default offensive)
	M	anti-ship cruise missile (default offensive)
	R	electromagnetic railgun (optional offensive)
	L	laser CIWS (optional defensive)
Results	u	U wins, C loses
	c	C wins, U loses
	draw	U and C draw
Parameters	p(x)	probability of event “x”

Table 4 Rules and rationales of Scenario-2

Rule	Rationale
$G < R < M$ (scenario-2A)	Railgun technology shows lower performance than missiles, but overpowers conventional gunnery.
$G < M < R$ (scenario-2B)	Railgun technology matures to overpower the offensive performance of missiles.
$M \ll L$ (scenario-2A & -2B)	Laser defense can shoot down missiles.
$L \ll G$ & $L \ll R$ (scenario-2A & -2B)	Laser defense is ineffective against gunnery warfare (conventional & electromagnetic) due to the sheer volume they can deliver.

Table 5 Label of Events

C U	None	Laser	Railgun	Both
None	NN	NL	NR	NB
Laser	LN	LL	LR	LB
Railgun	RN	RL	RR	RB
Both	BN	BL	BR	BB

Results and Discussion

The result of scenario-2A, which postulates that missiles perform the offensive role better than railguns, is laid out in Table 7. The observations show some noticeable traits. For convenience, we will look into the results from U’s perspective.

Table 6 Scenario-2A Weapon selection and payoff matrix

U \ C	None	Laser	Railgun	Both
U None	M	M	M	M
U Laser	M	G	M	G
U Railgun	M	M	M	M
U Both	M	G	M	R

U \ C	None	Laser	Railgun	Both
U None	DRAW	C	DRAW	C
U Laser	U	DRAW	U	C
U Railgun	DRAW	C	DRAW	C
U Both	U	U	U	DRAW

First, regardless of C’s choice, U benefits from acquiring lasers. Probability of win/draw increases if a default U destroyer acquires lasers (2/4→3/4) and if a U destroyer that already has a railgun adds lasers (2/4→4/4).

But if C is at default setting, then adding railguns does not affect the payoff.

Second, if U is at default setting, adding railguns **does not** affect the payoff. The outcomes are the same for a U destroyer when it is at default and when it acquires railguns.

However, if U has already installed lasers, adding railguns **can** increase the chances of winning or not losing. Probability of win (2/4→3/4) and draw (3/4→4/4) increases if a U destroyer that already has lasers adds railguns.

This is especially true when the opponent has installed lasers. If both U and C destroyers are equipped with lasers, U can win by adding railguns. If a C destroyer has both, while a U destroyer only has lasers, U can at least draw by adding railguns.

Third, if C has lasers and railguns, the only meaningful effort to make would be to acquire both. Adding only one weapon to a default U destroyer will make no difference in the outcome.

In policy terms, when the performance of missiles is better than railguns, U should funnel resources to develop defensive laser weapons; if U already has developed these laser weapons, adding railguns **will** make a difference. If U knows that C has both capabilities, the only meaningful option for U is to acquire both as well.

Table 8 Scenario-2B Weapon selection and payoff matrix

U \ C	None	Laser	Railgun	Both
U				
None	M	M	R	R
Laser	G	G	R	R
Railgun	M	M	R	R
Both	G	G	R	R

U \ C	None	Laser	Railgun	Both
U				
None	DRAW	C	C	C
Laser	U	DRAW	C	C
Railgun	U	U	DRAW	DRAW
Both	U	U	DRAW	DRAW

The result of scenario-2B, which postulates that railguns have started to outperform the offensive capabilities of missiles, is laid out in Table 8.

First, regardless of C’s choice, U benefits from acquiring railguns. Probability of win/draw increases if a default U destroyer acquires railguns (1/4 → 4/4) and if a U destroyer that already has lasers adds railguns (2/4 → 4/4).

But if C is at default setting, then adding lasers would also suffice.

Second, if U is at default setting, adding lasers **does** affect the payoff. This is in contrast with scenario 2-A, in which adding railguns to a default destroyer did not affect the payoff.

However, if U has already installed railguns, adding lasers **cannot** increase the chances of winning or not losing. Probability of win/draw remains the same when U adds lasers to its railgun destroyer, regardless of C’s weapon set.

Third, if C has a railgun, the only meaningful effort to make would be to acquire a railgun.

In policy terms, when railguns start to outperform missiles, U should funnel resources to develop more offensive than defensive weapons. If U already has railguns, adding lasers **will not** make a difference; oppositely, if U knows that C has railguns, there will be no point in adding lasers.

Table SEQ Table * ARABIC 9 Change in 'Win' vs 'Not Lose' ratio of country 'U'

U \ C	None	Laser	Railgun	Both
U				
None	DRAW	C	DRAW	C
Laser	U	DRAW	U	C
Railgun	DRAW	U	DRAW	C
Both	U	U	U	DRAW



U \ C	None	Laser	Railgun	Both
U				
None	DRAW	C	C	C
Laser	U	DRAW	C	C
Railgun	U	U	DRAW	DRAW
Both	U	U	DRAW	DRAW

	Scenario-1	Scenario-2	Δ
Win	5/16	4/16	-20%
Not Lose	7/16	8/16	+14.3%

Also noteworthy is the change in the “win(p(u))” to “not lose(p(u+d))” ratio of the weapon of choice. As depicted in Table 9, as the dominant weapon in the scenario shifts from defensive (laser) to offensive (railgun) weapons, chances of winning decreases by 20%, whereas chances of not losing increases by 14.3%. Such a result seems to betray the common-sense conjecture that advancement of offensive weapons will likely lead to an increase in the chances of a complete win or decrease in the chances of a draw. Although such a slight change in probabilities may not seem dramatic, it is not to be taken lightly in the strategic sense given that the outcomes of even one naval skirmish can significantly change the tide of war.

An increased chance of not losing also comes with important strategic implications. According to war history, seldom does the offensive side attack to maintain the *status quo* or draw; in most cases, offense is used as a medium of change or to win.⁶ To quote a seminal work that provides a time series analysis on the correlations of hegemony and wars, “once a hegemon dominates the world economy, its interests shift to maintaining the global *status quo* and to opposing any intra-core wars that might upset its dominant position ... At their peak, hegemons have little to gain and everything to lose in a major war.”⁷ If, in accordance with this study, the probabilities of a decisive victory decline as future weapons begin overpowering existing ones, so will the challenger’s willingness to antagonize the defender. Naturally, the evolution of warfare will favor those who prefer the *status quo*—the defenders and the hegemon—who are more risk-averse and fearful of decisive defeat, compared to those who aim to disrupt the *status quo*—the offenders and the challengers—who seek the opportunity when it comes.⁸

CONCLUSION

This paper attempts to analyze the strategic implications that the advent of future weapons will bring through two simple game-theoretical scenario studies. In the first scenario, we analyzed the interrelations of two strategic options—pre-emption and defense—that a non-nuclear weapon state can choose to counter a nuclear attack from an adversary. The result was counterintuitive, suggesting that enhancing pre-emptive strike capabilities can, in fact, harm the non-nuclear state’s security interest. The main reason behind such irony is that increased pre-emptive strike capability leads to increased confidence and willingness to use such capability, which in turn decreases the likelihood of the nuclear adversary backing down or to display its nuclear weapons. This is especially true when the adversary has—and in most cases they will have—the option of displaying a decoy nuke. Under such precautions, this paper suggests that a non-nuclear state should focus on enhancing its defensive capabilities rather than its pre-emptive strike capabilities if it must choose one.

The second scenario looked into the possible outcomes of a naval skirmish, according to the combatant’s weapon combination and how the outcome changes as the hierarchy among weapons evolves. We laid out a simplified payoff matrix with conventional guns and anti-ship missiles as the default armaments, and lasers and railguns as optional armaments. As the performance of railguns exceeded that of missiles, the best weapon selection strategy also changed. The second game also showed a counterintuitive result: as the dominant future weapon changed from

⁶ A political explanation to such an argument can be found in: Hal Brands and Michael Beckley, “China Is a Declining Power—and That’s the Problem,” *Foreign Policy*, Sept. 24, 2021, <https://foreignpolicy.com/2021/09/24/china-great-power-united-states/>.

⁷ Terry Boswell and Mike Sweat, “Hegemony, Long Waves, and Major Wars: A Time Series Analysis of Systemic Dynamics, 1496-1967,” *International Studies Quarterly*, 35, 2 (1991): 128.

⁸ Hong-cheol Kim and Patrick James, “The Paradox of Power Asymmetry: When and Why Do Weaker States Challenge US Hegemony?” *All Azimuth*, 5, 2 (2016): 5-28; According to an analysis, the U.S. resulted in 12 wins, 9 losses, and 43 draws for the past 100 years. Such results might serve as post-mortem evidence that shows how a hegemon tends to prefer “not losing” over “winning”.

defensive (laser) to offensive (railgun), the probability of “winning” the battle decreased, whereas “not losing” increased. The findings of this study bear implications as to where a country should funnel its R&D budgets for future weapon systems.

The methods employed in this paper are rudimentary and simple; it is much easier to extract lessons from simplified scenarios than from detailed ones that aim to represent a specific situation. Not only do simple scenarios have an advantage in terms of parsimony, but they also show more flexibility in terms of where the lessons learnt can be applied. This is an especially useful trait when navigating the future, which evades the conventional scientific dogma of hypothesis-verification. Hypotheses about the future can only be verified when the future comes, and when it does, it’s usually too late.

Though notional, both scenarios in this paper bring significant implications to possible futures in the real world. If, for instance, North Korea decides to launch a nuclear attack on the ROK tomorrow, where should ROK invest its resources? If US and Chinese destroyers patrolling near the Scarborough Shoals accidentally collide next year, how will the skirmish end? What future weapons should the US acquire? How can ROK and US statesmen choose to win in the unknown domain—the future? Simplified scenario analysis is an affordable tool that could be further developed to assist decision-making in the policy sector.

2. South Korea's role amid US-China strategic competition

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ABSTRACT

During the Trump administration, US-China relations went from bad to worse. Now, during the Biden administration, increased economic, ideological, and technological competition between China and the US has narrowed the potential space for cooperation between the two powers. This paper suggests three different policies for South Korea to avoid the risks caused by Sino-US rivalry. First, South Korea should construct a long-term foreign policy based on democracy and the market economy. This would eventually allow South Korea to avoid the pressure of maintaining “strategic ambiguity.” Second, South Korea should promote multilateralism. This approach will allow Seoul to moderate the pressure caused by the US and China as tensions continue to escalate. Finally, South Korea should continue to invest in technology and play a significant role in constructing global governance over the economy. Being a major force in technology will grant South Korea an opportunity to play an active role as the US and China seek partners to construct global governance in the fields of economy, technology, and security.

INTRODUCTION

After China joined the WTO in 2001, it became the “world’s factory,” the biggest beneficiary in the international order, and, as of 2010, the world’s second-largest economy. By taking advantage of low costs and abundant labor resources, China quickly positioned itself as a central player in global value chains. The growing trade deficit with China eventually became a major political issue in the 2016 US presidential campaign and to reduce it, former US President Donald Trump promised to address China’s unfair trading practices, including intellectual property (IP) theft, forced technology transfers, lack of market access for American companies in China, and Beijing’s subsidies for favored Chinese firms.¹

The US-China trade war began on July 6, 2018, when the US imposed a 25% tariff on \$34 billion in Chinese imports. As the US and China imposed tariffs on each other’s products, import costs continued to rise until they reached an agreement in principle on a Phase 1 Trade Deal in mid-December 2019. In addition to other trade commitments, the 2020 Phase 1 Trade Deal required Chinese leaders to purchase an additional \$200 billion worth of American goods and services over 2017 levels by the end of 2021.²

South Korea was one country affected by the US-China trade war. An export-oriented economy vulnerable to trade friction, in 2018, South Korea’s foreign trade dependence reached 68.8%, of which 26.8% was dependent on China and 12% on the US.³ As China and the US are the country’s first and second-largest export destinations, South Korea desperately needs recommendations on ways to minimize the impact of US-China friction.

This paper analyzes the trade war and offers recommendations for South Korea. Section I discusses the background of the trade war and its distinctive characteristics, including the Phase I deal. It finds that while the dispute is unlikely to escalate past a certain point due to economic integration achieved so far, there is little sign of de-escalation as the trade war takes on a new human rights emphasis under Biden. As such, Section II examines the implications of the trade war for South Korea and provides recommendations to reduce associated risks. First, South Korea should construct a long-term foreign policy based on democracy and the market economy. Second, South Korea should promote multilateralism and, finally, South Korea should continue to invest in technology and play a significant role in constructing governance in the global economy.

¹ *South China Morning Post*, “What Is the US-China Trade War?,” May 28, 2021. <https://www.scmp.com/economy/china-economy/article/3078745/what-us-china-trade-war-how-it-started-and-what-inside-phase>.

² *Ibid.*

³ Liu Rongrong, and Ru Sun. “The ROK’s Assessment of and Response to China-US Trade Friction.” *China International Studies*, (2020): 106–25.

1. LESSONS FROM THE US-CHINA TRADE DISPUTE

The immediate causes of US-China trade tensions were four of China's practices that the US trade representative called, following an investigation concluding in March 2018, unfair and justifying US response: forced technology transfer, cyber-enabled theft of US intellectual property (IP) and trade secrets, discriminatory and nonmarket practices, and state-funded strategic acquisition of US assets.⁴ In January 2020, following several rounds of tariff impositions and negotiations, the two countries signed the Phase 1 Trade Deal, requiring China to go through structural reforms in its economic and trade regime. In addition to structural reforms, it required China to purchase an additional \$200 billion in American goods and services over 2017 levels by the end of 2021.⁵ However, reports, including those by the Peterson Institute for International Economics (PIIE), indicate China is falling far short of the commitments in the Phase 1 agreement.⁶

While both the Trump administration and China said the Phase 1 deal would be a temporary truce in their 18-month trade war, the incumbent Biden administration has shown little appetite for easing up on China's trade practices.⁷ Unlike with European or other allies, where the Biden administration has publicly discussed smoothing ties ruffled by disputes during the Trump administration, it seems unlikely for the new administration to normalize ties with its Chinese counterpart in the near future.

By signing the Phase 1 deal, the US and China were able to ease trade tensions in the short term, however, it also set the stage for discussions on economic disputes such as US concerns on forced technology transfers and cyber theft of IP, industrial policies, state subsidies, and the development of new technology.⁸ To meet these growing challenges and achieve a stable, mutually beneficial economic relationship, the US must re-engage with China through a consistent, comprehensive, and strategic multilateral approach that realistically assesses US economic and security interests.

The distinctive lessons revealed by the US-China trade disputes that will continue to impact relations are as follows.

i. The complete decoupling of economies is unlikely

The trade war began with the purpose of resolving the growing trade imbalance between the US and China. Although there were several moments where the two sides failed to agree on new steps to reduce the deficit, negotiations resumed at critical moments. This may be because, despite their differences, the US and China are unlikely to fully decouple, as their economies are highly integrated.

After China joined the World Trade Organization (WTO) in 2001, the US significantly increased economic ties with Beijing. US trade ties with China peaked in 2017, with the share of US goods exported to China reaching 8.6% and the share of goods imported reaching 21.6%.⁹ The US has benefited from this increased economic integration with China. Specifically, American families and consumers have benefited from cheaper goods imported from China. According to a report by Oxford Economics and the US-China Business Council, "businesses have benefited from cost-effective inputs that boost their competitiveness, while globally integrated supply chains improve efficiency and lower production costs for US firms."¹⁰ All of these factors enabled US businesses to grow while creating jobs in the US.

⁴ Virgil Bisio, Charles Horne, and Ann Listerud, "The US-China 'phase one' deal: A background," US-China Economic and Security Review Commission, Feb. 4, 2020, <https://www.uscc.gov/sites/default/files/2020-02/US-China%20Trade%20Deal%20Issue%20Brief.pdf>.

⁵ Ibid.

⁶ Chad P. Bown, "The US-China Trade War and Phase One Agreement," *Peterson Institute for International Economics Working Paper 21-2* (2021): 805-43. <https://doi.org/10.2139/ssrn.3810026>.

⁷ Keith Bradsher, "A Temporary U.S.-China Trade Truce Starts to Look Durable," *The New York Times*, May 27, 2021, <https://www.nytimes.com/2021/05/27/business/us-china-trade-deal.html>.

⁸ Committee for Economic Development of The Conference Board, "The China Trade Challenge: Phase II," July 2020, <https://www.ced.org/solutions-briefs/the-china-trade-challenge-phase-ii>.

⁹ Oxford Economics and The US-China Business Council, "The US-China Economic Relationship," Jan. 2021, https://www.uschina.org/sites/default/files/the_us-china_economic_relationship_-_a_crucial_partnership_at_a_critical_juncture.pdf.

¹⁰ Ibid.

Since this highpoint, the trade war has grown from US fears regarding trade with China, specifically Beijing's failure to adhere to commonly accepted rules in the market economy. China's unique, state-driven economic model only intensified these fears. Yet, despite intentions of modifying China's behavior in international trade, the US economy has also suffered from US-China trade disputes. A wide range of academic and industry studies have indicated that the trade war between the US and China has lowered US GDP growth, economic welfare, and employment.¹¹ The significant increase in tariffs also contributed to a decline in bilateral imports and exports. Estimated costs to the US economy range from \$6.9-\$7.2 billion by the end of 2018, with one study suggesting that the trade war cost US firms \$1.7 trillion in market capitalization and could reduce investment growth by 1.9% in 2020.¹²

In 2022, both the US and China need their economies to perform in the face of expected tests of leadership. The US will host a midterm election in November where the outcome will serve as a referendum on President Joe Biden's first two years in office and set the table for the 2024 presidential campaign.¹³ China, on the other hand, will have its 20th Party Congress this year, where Xi's third term will be decided. The economy has always been a key indicator assessing the president's leadership.

Despite the challenges of the trade war, based on the economic interdependence of the US and China, there are limits to how far either side can escalate tensions in the field of trade.

ii. A lack of cooperation

While decoupling is unlikely, there is little sign of a breakthrough. On Nov. 15, President Biden met president Xi at a virtual summit and, despite their intention to enhance cooperation in various fields, the lack of a joint statement indicates each president's different priorities and difficulty cooperating with one another. According to official readouts from the meeting, the White House emphasized "working with allies and partners to write the rules of the road for the 21st century," while Beijing's foreign ministry called for US policy on China to be "rational and pragmatic."¹⁴ Despite China's optimism that trade disputes will be resolved gradually, their rhetoric reveals little room for increased cooperation.

As a result of the trade war, countries were able to see how commerce, technology, and security are interconnected. The disputes also clearly demonstrated the importance of maintaining technological innovation in order to become and remain a hegemonic power. Based on this belief, the US will endeavor to lead the development of the digital economy and protect IP rights in the future. Furthermore, the US will continue to criticize China for its methods of acquiring US technology and IP rights while stressing the importance of preventing unfair trade practices. All of these issues will make it difficult for two countries to cooperate.

iii. The importance of human rights issue and democratic values

With the Biden administration, the trade dispute has taken on a new dimension that emphasizes human rights. Throughout the trade war there were two cases where the scope of tensions expanded: import bans over concerns with forced labor and the reclassification of goods from Hong Kong as a result of Beijing's crackdown on democracy and human rights. According to Secretary of State Antony Blinken, "We will bring to bear all the tools of our diplomacy to defend human rights and hold accountable perpetrators of abuse."¹⁵ A number of mechanisms, including travel and financial sanctions under the US Global Magnitsky Act, will be used to address the issue.

¹¹ Ibid.

¹² Ibid.

¹³ Terence Burlij, Ethan Cohen and Melissa Holzberg DePalo, "A roadmap to the 2022 midterm elections." *CNN*, Feb. 26, 2022, <https://edition.cnn.com/2022/02/26/politics/key-dates-2022-midterm-election/index.html>.

¹⁴ David Shullman and Ashley Feng, "Fast Thinking: Breaking down the Biden-XI Virtual Summit." Atlantic Council, Nov. 16, 2021, <https://www.atlanticcouncil.org/content-series/fastthinking/fast-thinking-biden-and-xi-play-it-cool/>.

¹⁵ *Report Wire*, "US State Dept Report Says China Is Doing 'Genocide' of Uyghur Muslims," March 31, 2021, <https://www.reportwire.in/u-s-state-dept-report-says-china-is-doing-genocide-of-uyghur-muslims/>.

For starters, the US banned imports from the Xinjiang region of China out of concerns over “genocide and crimes against humanity [that] occurred during the year against the predominantly Muslim Uyghurs and other ethnic and religious minority groups.”¹⁶ Starting in September 2019, US Customs and Border Protection began to issue a series of “withhold release orders” on imported products from companies it alleged were using forced labor.¹⁷ In January 2021, these orders extended to imports of cotton and tomato products from the entire Xinjiang region. Given the region’s importance for cotton harvesting in China’s textile and apparel industry and related supply chains, these actions could affect a large share of US imports from China in the near future.

Secondly, when Beijing imposed national security legislation on Hong Kong in July 2020, the Trump administration issued an executive order indicating that the United States would no longer treat trade with Hong Kong as independent from China.¹⁸ In August, US Customs and Border Protection announced that imported goods produced in Hong Kong must henceforth be marked to indicate “China” as their origin.¹⁹ As a result, the US could apply Section 301 tariffs, antidumping or countervailing duties on Hong Kong just as it did on China.

These cases demonstrate how the scope of disputes between two countries has grown based on issues related to maintaining human rights and democratic values. As the Biden administration focuses more on these values, conflicts are likely to expand. Recent cases, such as the Bureau of Industry and Security’s (BIS’s) addition of 34 entities to the “Entity List”²⁰ and the US government’s announcement of a boycott on the Beijing Olympics due to China’s repression of Uyghurs, clearly show the likelihood of escalating tensions.²¹

2. POLICY RECOMMENDATIONS FOR SOUTH KOREA

Throughout the Trump administration, the Sino-US bilateral relationship transitioned from cooperation and relative stability to rivalry and competition. The Biden administration’s approach to China shows that the situation is unlikely to change in the short term as the rivalry between the world’s two largest economies is based on winning the hegemonic war in the realm of economy and ideology. As a result, increased economic, technological, and ideological competition between the US and China narrows the potential space for cooperation.

South Korea is a country heavily affected by the US and China. Since the Korean War, South Korea has become a close ally of the US, with the ironclad alliance having significant impacts on every aspect of Korean society. However, as China became South Korea’s major trade partner, accounting for a quarter of Korea’s total exports, it became natural to seek cooperative engagement with Beijing.²² With rising US-China tensions, South Korea has maintained its policy of “strategic ambiguity” to sustain an economic relationship with China while enhancing its security partnership with the US.²³ However, as US-China tensions continue to escalate, such a posture will impose considerable costs in maintaining a firm alliance with the US. Currently, the Biden administration is rebuilding the supply chains to exclude China from accessing advanced technologies. In order to do so, the US will enact strong

¹⁶ US Department of State, *2020 Country Reports on Human Rights Practices*, March 30, 2021, <https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/>.

¹⁷ US Customs and Border Protection, *CBP Issues Region-Wide Withhold Release Order on Products Made by Slave Labor in Xinjiang*, Jan. 13, 2021, <https://www.cbp.gov/newsroom/national-media-release/cbp-issues-region-wide-withhold-release-order-products-made-slave>.

¹⁸ Michael Crowley, Ana Swanson and Edward Wong, “Rebuking China, Trump Curtails Ties to Hong Kong and Severs Them with W.H.O.” *The New York Times*, May 29, 2020, <https://www.nytimes.com/2020/05/29/us/politics/trump-hong-kong-china-WHO.html>.

¹⁹ Bown, “The US–China Trade War and Phase One Agreement.” (2021): 805–43, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3810026.

²⁰ US Department of Commerce, *Commerce Department Adds 34 Entities to the Entity List to Target Enablers of China’s Human Rights Abuses and Military Modernization, and Unauthorized Iranian and Russian Procurement*, July 9, 2021, <https://www.commerce.gov/news/press-releases/2021/07/commerce-department-adds-34-entities-entity-list-target-enablers-chinas>.

²¹ Victor Cha, “The Biden Boycott of the 2022 Beijing Winter Olympics,” Center for Strategic and International Studies, May 23, 2022, <https://www.csis.org/analysis/biden-boycott-2022-beijing-winter-olympics#:~:text=The%20reason%20cited%20by%20White.support%20of%20the%20US%20government>.

²² Lee Gyu-lee, “Money or Freedom’: Is South Korea safe from China’s Infiltration?” *Korea Times*, Sept. 9, 2021, https://www.koreatimes.co.kr/www/nation/2022/03/120_315236.html.

²³ Yang Moo-jin, “Balancing diplomacy, strategic ambiguity,” *Korea Times*, April 28, 2021, https://www.koreatimes.co.kr/www/opinion/2021/07/790_307938.html.

industrial policies at home and foster multifaceted cooperation with like-minded countries.²⁴ If South Korea maintains its policy of “strategic ambiguity,” it would eventually risk excluding South Korea from the US-led global value chain (GVC). As such, three different policies are recommended for South Korea as tensions between the US and China grow.

i. Thinking long term

First, South Korea needs a national security strategy based on a long-term perspective across a host of issues. The current situation has evolved out of the US and China’s competition against each other for global supremacy, therefore, it is crucial for South Korea to have a long-term national security plan to minimize associated risks.

This long-term national security strategy for South Korea should be based on democracy and the market economy. At the same time, South Korea should develop a national strategy that does not neglect specific countries. For example, the US, Australia, and Japan are currently seeking cooperation to construct secured supply chains in Asia. Accordingly, South Korea should also take part in this working group and play a leading role in developing new sets of global standards that promote fair trade. In the long-term perspective, these non-discriminatory principles should help recover multilateral trade and, by clarifying its goals of maintaining global norms and standards, South Korea will have more choices as the US and China continue to compete. Having clear values to promote in foreign policy will also benefit South Korea as countries in the Indo-Pacific region focus more on exercising “value diplomacy.”

In the future, “value diplomacy” will become a strategic priority when it comes to constructing foreign policy, as seen in the G7 meeting in 2021. That year, G7 leaders put forward the Cornwall Consensus, which advocates “public-private partnership, public investment, proactive state-led governance in domestic markets, and intergovernmental cooperation among the leading democracies of the G7 and their allies.”²⁵ Through the Cornwall Consensus, the group of leading industrialized nations aims to achieve their common goal of constructing “a norm based, free and fair economic system.” As the group and its allies cooperate to construct international democratic economic governance, South Korea should also exercise “value diplomacy” to resolve various issues, ranging from climate change, labor standards, and supply chain resilience. South Korea, particularly its new administration, should pursue foreign policy from this long-term perspective in the future.

ii. Multilateral cooperation

Secondly, South Korea should cooperate with like-minded countries. There is bound to be a limit to the nation’s independent response to changes in the external environment caused by the US-China trade war. As a result, South Korea should redouble its efforts to eradicate protectionism and redesign the multilateral global economic order through solidarity with like-minded countries.

Germany and France proposed the Alliance for Multilateralism to restore UN-centered multilateralism as nationalism and isolationism rise, while Japan, Canada, and Australia are expressing their intent to join it.²⁶ In other words, major countries are already forming a consensus on the crisis confronting multilateralism. South Korea too needs to play a leading role in maintaining the multilateral global economic order.

Joining a “mega-FTA” could be one way to promote multilateralism. South Korea was one of the founding members of the Regional Comprehensive Economic Partnership (RCEP) signed on November 15, 2020. By joining the “mega-FTA,” South Korean goods exporters will get better access to growing Southeast Asian consumer markets.

²⁴ Kim Yang-hee, “Will the U.S. Be Able to Form a ‘Trusted Value Chain’?: Korea’s Perspective on Prospects and Implications,” Institute of Foreign Affairs and National Security, Nov. 17, 2021, <https://www.ifans.go.kr/knda/ifans/eng/pblct/PblctView.do?menuCl=P11&pblctD-taSn=13873&clCode=P11>.

²⁵ Azeem Ibrahim, “Climate Crisis Should Be the Final Blow to the Washington Consensus,” *Foreign Policy*, Nov. 16, 2021, <https://foreign-policy.com/2021/11/16/climate-crisis-washington-consensus-cornwall/>.

²⁶ *Deutsche Welle*, “Germany, France to launch multilateralism alliance,” May 4, 2019, <https://www.dw.com/en/germany-france-to-launch-multilateralism-alliance/a-48172961>.

RCEP will also reduce tariffs and other trade barriers to a significantly larger extent than the 2007 ASEAN-South Korea FTA.²⁷ As part of his New Southern Policy strategy, President Moon Jae-in sought to strengthen trade links with the countries in the region. While the requirements for RCEP are shallower compared to CPTPP and other FTAs, there is room for improvement. In the future, this would further facilitate South Korean exports to ASEAN while promoting a multilateral global order in the region.²⁸

In addition, RCEP supports South Korea's push to diversify diplomatic partners while expanding its economic links. By joining the "mega-FTA," South Korea could reduce its reliance on certain countries and improve diplomatic relationships with other nations involved in the partnership. In the short term, Korea needs to preemptively work to present a roadmap for RCEP and join other partnerships without forming exclusive relationships. In the long term, South Korea should seek to form a regional economic zone while promoting multilateralism in the region and playing a leading role in structuring norms and governance in the field of trade.

iii. Achieving technological sovereignty

Thirdly, South Korea should develop its policy to achieve "digital transformation." As the US-China trade disputes proceeded South Korea was able to see the importance of maintaining economic strength and technological leadership. In the near future, the United States will make international solidarity efforts to contain China in the realm of AI, 5G, big data, robots, aerospace, and quantum computers, while China will seek various long-term countermeasures to weaken American efforts.²⁹

During the trade dispute, another important phenomenon completely changed the business environment: COVID-19, an unanticipated crisis which divided businesses into online and offline services. Accordingly, digital companies dominated the market with overwhelming competitiveness while breaking down the boundaries of existing industries. By taking advantage of big data, IoT, artificial intelligence, and blockchain technology, a linear value chain has evolved into a network form.³⁰

To achieve "digital transformation," which is key to achieving supremacy in technology, both the public and private sectors should play active roles. To begin with, the government should improve the regulatory system to nurture new industries such as semiconductors, batteries, and biotechnology. For example, semiconductors are an important industry in South Korea playing a key role in the national economy and supply chain security. Despite the importance of the semiconductor industry, South Korea faces a shortage of skilled workers, numerous regulations on expanding semiconductor plants, and a lack of incentives for investment in R&D infrastructure.³¹ To achieve dominance in the sector, the government of South Korea could establish graduate schools dedicated to chip industries and expand tax support for companies investing in semiconductor facilities. As for the private sector, companies should continuously seek ways to diversify their business models. Traditionally, corporations have adopted a horizontal strategy where they expand their business to excel in specific markets. However, as technology develops further and the boundaries of business blur, companies should expand vertically, seeking ways to incorporate various industries into a single business model.³² Finally, the public and private sector should cooperate to achieve digital transformation in South Korea. If the private sector provides technology and public institutions provide infrastructure to accumulate and utilize data, an ecosystem could be developed for new digital platforms, new businesses and new jobs in Korea.

²⁷ Ramon Pacheco Pardo, "Korea Chair Explains – South Korea and the RCEP," Brussels School of Governance, Nov. 11, 2021, <https://brussels-school.be/publications/other-publications/korea-chair-explains-south-korea-and-rcep#:~:text=RCEP%20will%20reduce%20tariffs%20and,significant%20step%20in%20this%20direction>.

²⁸ Ibid.

²⁹ Deependra Singh Hooda, "The U.S.-China Technology Cold War and Its Lessons for India," Delhi Policy Group, March 22, 2022, <https://www.delhipolicygroup.org/publication/policy-briefs/the-us-china-technology-cold-war-and-its-lessons-for-india.html>.

³⁰ Lee Keun, *2022 Economic Issues & Trends*, Kyeonggi-do Paju-si: 21 (Century Books, 2021).

³¹ Im Soung-Bin, "Chip industry to be supported by new administration," *Korea JoongAng Daily*, April 12, 2022, <https://korea-joongangdaily.joins.com/2022/04/12/business/economy/semiconductor-industrial-semiconductor-industry-semiconductor-development/20220412175001142.html>.

³² Lee Keun, 2021.

Only by attaining “digital transformation” and excellence in R&D will South Korea achieve sovereignty in technology, an essential premise for achieving “economic security.”³³ By developing advanced technologies, South Korea can provide innovation to the US and China, play a leading role constructing global standards, and avoid the risks of US-China strategic competition to maintain economic security.

CONCLUSION

During the Trump administration, US-China relations went from bad to worse. By experiencing robust economic success and becoming the world’s second largest economy in 2010, China created fear in its American counterparts. In the US, attitudes towards China have hardened across the political spectrum, with the current administration embracing many of the policies the Trump administration put in place. The COVID-19 pandemic contributed to negative perceptions the US had towards China, and economics, technology, global governance, and security have entered a phase of structural competition.

In the future, the two sides will increase their competition on various fronts. This will eventually amplify the risk of confrontation between the two countries while narrowing the space for mutual cooperation. Being heavily impacted by both countries, in the past, South Korea used all of its might and diplomatic channels to continue a policy sustaining its economic relationship with China while maintaining and enhancing its security partnership with the US. However, as the rivalry between China and the US transitions from maximizing economic interests to shaping the global order, South Korea should modify its foreign policy to avoid risks caused by Sino-US rivalry. In preparation for this, it is necessary for South Korea to gradually expand its international network while preemptively diversifying Korea’s diplomatic topography from the world’s biggest economies. Playing a leading role in constructing global economic governance will allow South Korea to maintain its status as a country with various networks and influences in the international community. Furthermore, it is necessary for South Korea to prepare for a long-term strategy and vision based on its strategic priorities, allowing the nation to avert the risk associated with maintaining “strategic ambiguity.” Finally, amid the US-China trade dispute and influence of the global pandemic, South Korea should see the importance of achieving technology sovereignty. As the US and China enter a phase of structural competition, it is highly likely the two sides will seek partners to form a global standard. South Korea should continuously invest in new technologies to become an attractive partner actively contributing to the construction of global governance.

³³ Lee Kwang-hyung, “Time for a joint strategic research with the U.S.,” *Korea JoongAng Daily*, May 8, 2022, <https://koreajoongangdaily.joins.com/2022/05/08/opinion/columns/Korea-US-joint-research/20220508200544266.html>.

3. Between rhetoric and practice: Yoon Suk Yeol's choice for South Korea and the Indo-Pacific

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ABSTRACT

Yoon Suk Yeol's election has generated far-reaching speculation about a radical policy reversal in Seoul, from ambiguity toward clarity. This discussion tends to emphasize two key drivers of foreign policy change in South Korea: (1) the decreasing tolerance for ambiguity given an increasingly hostile turn in US-China relations; and (2) the traditionally pro-American attitudes among conservative elites, of which Yoon is now part. A turn to "strategic clarity," however, will likely be tamer and more selective than many expect. Assessing the rhetoric and practice of former and current South Korean presidents in concert, we find that Yoon's promises to overturn South Korea's nuclear posture and deepen participation in the Quadrilateral Security Dialogue (the Quad) appear less as blueprints for foreign policy reform and more as ideological bluster. As Yoon shapes his foreign policy agenda, the structural constraints that tie South Korean leaders to a practice of ambiguity are already beginning to show.

INTRODUCTION

With the election of Yoon Suk Yeol as South Korea's 13th president, scholars and pundits alike have generated far-reaching speculation about a radical policy reversal in Seoul. This discussion has emphasized two key drivers of foreign policy change in South Korea: (1) the decreasing tolerance for ambiguity given an increasingly hostile turn in US-China relations; and (2) the traditionally pro-American attitudes among conservative elites, of which Yoon is now part. From these perspectives, the conditions demanding South Korea's "strategic clarity" and the agentic platform of Yoon's "principled" foreign policy¹ bode well for the country's realignment.

However, a turn to "strategic clarity" is likely to be tamer and more selective than many expect. Those who anticipate such realignment tend to either overemphasize or underestimate the role of rhetoric. Considering more fully the areas of convergence and divergence between the rhetoric and behavior of South Korean leaders suggests that ambiguity lingers in more sensitive dimensions of South Korean foreign policy, including nuclear posturing and the US-led regional security architecture. This limited scope of realignment becomes even clearer when one compares South Korea with its neighbors in the Indo-Pacific, such as Japan. The same structural constraints that confronted Yoon's predecessors—economic and diplomatic reliance on China as well as political attitudes at home—remain very much at play today.

In this light, the extent to which Yoon will fulfill his promises of clarity is far less certain than his more grandiose rhetoric suggests. Indeed, his campaign rhetoric was more emotive than substantive, which might suggest ideological bluster²—vague calls to values and principles without corresponding policy agendas. When assessing rhetoric and practice in concert, a radical turn to "strategic clarity" under Yoon appears less likely.

PROMISES OF CLARITY

In the immediate aftermath of Yoon's electoral victory, *The Washington Post* declared that the "conservative president" was "poised to adopt a more hawkish foreign policy."³ This hawkish stance was widely understood to mean two corresponding changes in South Korean foreign policy: more fervent support for President Biden's Indo-Pacific Strategy and a "less deferential policy stance towards Beijing."⁴ Combined with the conventional wisdom about South Korea's conservative, US-leaning foreign policy objectives, Yoon's campaign rhetoric was welcomed in Washington as a long-awaited promise of "strategic clarity."

¹ Yoon Suk-yeol, "South Korea Needs to Step Up," *Foreign Affairs*, Feb. 8, 2022, <https://www.foreignaffairs.com/articles/south-korea/2022-02-08/south-korea-needs-step>.

² Eun A. Jo and Jessica Chen Weiss, "Ideology and Chinese Foreign Policy," in *The Routledge Handbook of Ideology and International Relations*, ed. Mark Haas and Jonathan Leader Maynard, (Oxfordshire: Routledge, forthcoming 2022).

³ Michelle Ye Hee Lee and Min Joo Kim, "Under new, conservative president, South Korea is poised to adopt a more hawkish foreign policy," *The Washington Post*, March 10, 2022, <https://www.washingtonpost.com/world/2022/03/10/south-korea-president-yoon-foreign-policy/>.

⁴ Victor Cha and Dana Kim, "Yoon Seok-youl: What to Expect From South Korea's Next President," Center for Strategic & International Studies, March 9, 2022, <https://www.csis.org/analysis/yoon-seok-youl-what-expect-south-koreas-next-president>.

Two areas of his foreign policy agenda have garnered particular interests in this regard: nuclear strategy and membership in the Quad. Already, Yoon has indicated that he will revoke the Moon administration's "three no's"—a compromise that Seoul had reached with Beijing following the Terminal High Altitude Area Defense (THAAD) backlash.⁵ The policy pledged that South Korea will (1) not accept new THAAD deployments, (2) not participate in the US-led regional missile defense system, and (3) not join a trilateral military alliance with the US and Japan. Yoon, by contrast, seeks to negotiate additional THAAD deployments on the Korean peninsula, a nuclear-sharing arrangement with the US, and trilateral cooperation with Washington and Tokyo.⁶

Yoon has also voiced more avid interest in joining the Quad and intensifying South Korea's participation with the group. Despite the growth of the Quad, South Korea under Yoon's predecessor had remained largely aloof. The Moon administration instead launched its own regional initiative, the New Southern Policy (NSP), and sought a selective integration of their policy programs. Meanwhile, Yoon has indicated that he will "positively review" joining the Quad if invited.⁷ Though the exact contours of South Korea's participation in the group have been elusive, Yoon has generated ample expectations that South Korea will embrace clarity over ambiguity in its approach to the Quad.

FROM AMBIGUITY TO CLARITY?

Yet, the emerging consensus surrounding South Korea's impending turn to "strategic clarity" has accompanied a tendency to either downplay rhetoric or overemphasize it, to the detriment of a more nuanced assessment. As a result, both sides overlook the powerful constraints that bind South Korean elites to a balanced, if contradictory, positioning between its treaty ally the United States and strategic partner China. In doing so, they arrive at the same conclusion—South Korea will balance rather than hedge—despite different reasons.

Those who downplay the role of rhetoric find South Korea's position sufficiently clear. As Ramon Pacheco Pardo writes, "this dilemma is greatly exaggerated if one analyzes South Korea's foreign policy actions rather than its rhetoric. Seoul long ago decided that when it comes to foreign policy and security, its past, present, and future lies with the US and other like-minded partners."⁸ In this view, actions speak louder than words and Seoul's rhetoric serves as little more than noise.

Still, rhetoric matters to the extent that it shapes the perceptions of Seoul's allies, partners, and competitors. The THAAD controversy provides an insightful example in this regard. The rhetorical gesture of the "three no's" provided an opening for Beijing to reign in its coercive economic campaign without losing face.⁹ At the same time, this stance also generated fears of decoupling in the United States; amid news of normalizing South Korea-China relations, then US National Security Advisor H. R. McMaster commented that he did not believe "South Korea would give up its sovereignty in those three areas."¹⁰ Others also criticized the South Korean government for conceding a "strategic reward" to China.¹¹ Despite incurring "nothing of substance" to Seoul,¹² such a rhetorical promise was considered by many as a credible and costly inhibition on South Korea's exercise of sovereignty.

⁵ Daniel Mitchum, "More Harm than Good: Why Chinese Sanctions over THAAD have Backfired," *Issues & Insights*, 21, 15 (2021), <https://pacforum.org/publication/more-harm-than-good-why-chinese-sanctions-over-thaad-have-backfired>.

⁶ Troy Stangarone, "Did South Korea's Three Noes Matter? Not So Much," *The Diplomat*, Oct. 30, 2019, <https://thediplomat.com/2019/10/did-south-koreas-three-noes-matter-not-so-much/>.

⁷ Yonhap, "Yoon says will 'positively review joining' Quad if invited: report," *The Korea Herald*, April 26, 2022, <http://www.koreaherald.com/view.php?ud=20220426000151>.

⁸ Ramon Pacheco Pardo, "South Korea as a "global pivotal state": the role of partners," Brussels School of Governance, Center for Security, Diplomacy and Strategy, April 21, 2022, https://brussels-school.be/sites/default/files/CSDS%20Policy%20brief_2207.pdf.

⁹ Ankit Panda, "China and South Korea: Examining the Resolution of the THAAD Impasse," *The Diplomat*, Nov. 13, 2017, <https://thediplomat.com/2017/11/china-and-south-korea-examining-the-resolution-of-the-thaad-impasse/>.

¹⁰ Seong Yeon-cheol and Yi Yong-in, "McMaster: US 'welcomes' news of South Korea-China agreement," *Hankyoreh*, Nov. 4, 2017, http://english.hani.co.kr/arti/english_edition/e_national/817470.html.

¹¹ John Lee, "Russian air clash is a wake-up call for South Korea," *Nikkei Asia*, July 25, 2019, <https://asia.nikkei.com/Opinion/Russian-air-clash-is-a-wake-up-call-for-South-Korea>.

¹² Stagarone, "Did South Korea's Three Noes Matter?" 2019, <https://thediplomat.com/2019/10/did-south-koreas-three-noes-matter-not-so-much/>.

By contrast, those who ascribe far too much importance to Yoon's tough-on-China rhetoric risk conflating his populist maneuvers for policy platforms. It is worth noting that Yoon has yet to specify in which areas he would resist Chinese pressure or by which means he would change South Korea's position. Instead, he has resorted to what some called "Trumpian" anti-China diplomacy,¹³ charging publicly that "the majority of Korean citizens, especially young people, don't like China"¹⁴ and calling COVID-19 the "Wuhan virus."¹⁵ These rhetorical maneuvers deflect from, more than clarify, South Korea's proposed approach to dealing with China.

It is certainly possible that the historic rise in anti-Chinese sentiments in South Korea paves the way for a harsher policy stance,¹⁶ but this also rests on a strong assumption. Indeed, while public attitudes toward China turned noticeably sour, whether this translates to increasing support for a policy of decoupling is uncertain. In 2020, a Pew survey confirmed that unfavorable views of China had reached 75% (from 35% five years prior).¹⁷ Yet, a Carnegie survey that same year also showed that a significant majority of South Koreans acknowledged China's strategic importance: 61.4% believed China should have a say in inter-Korean affairs and 76.2% believed that a unified Korea should ally with China and the United States.¹⁸ Impulsive actions on Yoon's part to decouple from China may not find the immediate resonance that he expects.

LINGERING AMBIGUITY

In this light, Yoon's foreign policy is likely to be tamer and more selective, focused around specific domains in which he finds greater strategic room to maneuver. That said, neither South Korea's nuclear posture nor participation in the Quad serve as auspicious platforms for such strategic realignment. On the former, few viable options exist, while on the latter, the possibility of a backlash looms large.

Changes in South Korea's nuclear posture are illusory for at least two reasons. First, the economic devastation that China caused South Korea in the aftermath of the THAAD controversy remains fresh in South Korean public consciousness. Though South Korea has since sought to diversify its trade portfolio, this process has been both slow and marginal:¹⁹ over a quarter of its total trade is with China, well beyond that with the United States and Japan combined.²⁰ In this light, whether and to what extent Seoul is willing to bear the manifold costs of abandoning its nuclear *status quo* remains to be seen.²¹ Estimates based on the THAAD incident likely underrate the scope of possible Chinese retaliation in the event of strengthened nuclear posturing in South Korea.

Second, Yoon's proposals for tactical nuclear deployment and NATO-style nuclear sharing lack strong internal consensus or US support. Since at least 2019, evidence of conservative support for self-nuclearization has been mounting;²² a survey from 2022 also suggests that South Korean people overwhelmingly prefer indigenous nuclear

¹³ Phelim Kine, "South Korea's 'maverick' new president rides tough-on-China platform to victory," *Politico*, March 9, 2022, <https://www.politico.com/news/2022/03/09/south-koreas-yoon-suk-yeol-new-president-china-00015960>.

¹⁴ Yim Hyun-su, "Yoon faces criticism for saying 'most S. Koreans dislike China,'" *The Korea Herald*, Dec. 29, 2021, <http://www.koreaherald.com/view.php?ud=20211229000568>.

¹⁵ Nam Hyun-woo, "Opposition contender Yoon calls COVID-19 'Wuhan virus,'" *The Korea Times*, Aug. 14, 2021, https://www.koreatimes.co.kr/www/nation/2022/05/356_313869.html.

¹⁶ Andrew Yeo, "What to expect from the incoming South Korean president's domestic and foreign policy agendas," Brookings, March 10, 2022, <https://www.brookings.edu/blog/order-from-chaos/2022/03/10/what-to-expect-from-the-incoming-south-korean-presidents-domestic-and-foreign-policy-agendas/>.

¹⁷ Kat Devlin, Christine Huang and Laura Silver, "Unfavorable Views of China Reach Historic Highs in Many Countries," Pew Research Center, Oct. 6, 2020, <https://www.pewresearch.org/global/2020/10/06/unfavorable-views-of-china-reach-historic-highs-in-many-countries/>.

¹⁸ Chung Min Lee, "A Peninsula of Paradoxes: South Korean Public Opinion on Unification and Outside Powers," Carnegie Endowment for International Peace, May 13, 2020, <https://carnegieendowment.org/2020/05/13/peninsula-of-paradoxes-south-korean-public-opinion-on-unification-and-outside-powers-pub-81737>.

¹⁹ Niklas Swanström, "South Korea's Relations With China and the US Under President-elect Yoon," *The Diplomat*, March 22, 2022, <https://thediplomat.com/2022/03/south-koreas-relations-with-china-and-the-us-under-president-elect-yoon/>.

²⁰ *Ibid.*

²¹ James Park, "Will South Korea's new leader help the US contain China? Not so fast," *Responsible Statecraft*, May 10, 2022, <https://responsiblestatecraft.org/2022/05/10/dont-expect-south-koreas-new-government-to-fall-in-line-on-containing-china/>.

²² Eun A Jo, "The Remaking of South Korean Conservatism in the Age of Trump," *The National Interest*, Oct. 20, 2019, <https://nationalinterest.org/blog/korea-watch/remaking-south-korean-conservatism-age-trump-92256>.

weapons to the deployment of US tactical weapons.²³ Meanwhile, Washington is unlikely to support sending its weapons or sharing use rights with Seoul. The American public would likely oppose becoming direct targets of North Korea's increasingly sophisticated nuclear weapons and the transfer of nuclear weapons to non-nuclear allies would be a direct breach of the Nonproliferation Treaty (NPT), of which the United States has been a fervent supporter.²⁴ Thus, South Korea's only remaining, truly plausible option for revising its nuclear posture is self-nuclearization. However, this move could challenge rather than strengthen the US-South Korean alliance that Yoon seeks to restore as the centerpiece of foreign policy.

Changes in South Korea's Quad participation are also likely to be more moderate. Much like his promises of clarity in the nuclear domain, how Yoon seeks to deepen South Korea's participation in the Quad remains far from elaborate. Beyond testing the rhetorical boundaries, more specific commitments have been slow to form and centered around working groups which Seoul had already begun engaging under Moon. Indeed, shortly after denying reports from Japan that he had requested to attend the Quad summit, Yoon clarified for *The Washington Post*: "[R]ather than thinking about whether to immediately join the Quad, the more important issue for us is to work together on vaccines, climate change, and emerging technologies to create a synergy with Quad countries."²⁵ This signifies continuity rather than departure from South Korea's approach to the Quad thus far.

YOON'S CHOICE

Answering the question of where the Yoon administration will likely pursue clarity requires parsing through the administration's rhetoric and behavior in concert. It may be too early to tell where the two will converge, but it is possible to identify where they have begun to diverge. Crucially, Yoon's earlier pledges to repeal the "three no's" and strengthen extended nuclear deterrence—most immediately by deploying additional THAAD—have gone unmet with corresponding actions. In fact, his administration left out these two objectives from his 110 key policy tasks released a week prior to the start of his official tenure on May 10.²⁶ When asked why, his Defense Minister Lee Jong-sup explained that the exclusion was "not a retreat but a change based on reality."²⁷ Already, the structural constraints that tie South Korean leaders to a practice of ambiguity are beginning to show.

The lingering ambiguity becomes even more apparent when compared with South Korea's Indo-Pacific neighbors, Japan being a prime example. In both rhetoric and practice, Tokyo has sought to facilitate the Indo-Pacific turn of the United States and preserve its forward-looking presence in the region. In 2021, the joint statement following the US-Japan summit explicitly raised "concerns over Chinese activities that are inconsistent with the international rules-based order." Concerns which were omitted from the equivalent US-South Korean summit just a month later.²⁸ This remains a telling omission in the latest such statement, this time under Yoon.²⁹ If Japan is considered to have set a benchmark for "strategic clarity," then South Korea falls short even rhetorically.

²³ Toby Dalton, Karl Friedhoff, and Lami Kim, "Thinking Nuclear: South Korean Attitudes on Nuclear Weapons," The Chicago Council on Global Affairs, Feb. 21, 2022, <https://www.thechicagocouncil.org/research/public-opinion-survey/thinking-nuclear-south-korean-attitudes-nuclear-weapons>.

²⁴ Jennifer Lind and Daryl G. Press, "Should South Korea build its own nuclear bomb?" *The Washington Post*, Oct. 7, 2021, https://www.washingtonpost.com/outlook/should-south-korea-go-nuclear/2021/10/07/a40bb400-2628-11ec-8d53-67cfb452aa60_story.html.

²⁵ Min Joo Kim, "Interview with South Korea's Next President, Yoon Suk-yeol," *The Washington Post*, April 14, 2022, <https://www.washingtonpost.com/world/2022/04/14/south-korea-president-yoon-transcript/>.

²⁶ The Presidential Transition Committee, *제20대 대통령직인수위원회, 윤석열 정부의 국정비전과 목표, 110대 국정과제 선정* [*The 20th Presidential Transition Committee, the government vision and goals of the Yun Seok-yeol government, and 110 national tasks*], May 3, 2022, <https://20insu.go.kr/news/288>.

²⁷ Donga Ilbo, May 4, 2022, <https://www.donga.com/news/Politics/article/all/20220504/113228257/1>.

²⁸ For US-South Korea joint leaders' statement, see: White House, *US-ROK Leaders' Joint Statement*, May 21, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/21/u-s-rok-leaders-joint-statement/>; For US-Japan joint leaders' statement, see: White House, *US-Japan Joint Leaders' Statement: US-Japan Global Partnership for a New Era*, April 16, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/16/u-s-japan-joint-leaders-statement-u-s-japan-global-partnership-for-a-new-era/>.

²⁹ White House, *United States-Republic of Korea Leaders' Joint Statement*, May 21, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/21/united-states-republic-of-korea-leaders-joint-statement/>.

Despite the hype of “strategic clarity” that Yoon’s victory has generated, his promises so far appear less as blueprints for foreign policy reform and more as ideological bluster. As he shapes his policy agenda, the more provocative elements of his rhetoric have begun to fade. Now that he is in the driver’s seat, Yoon will need to consider more carefully what he is willing to risk—or lose—in exchange for the “strategic clarity” he wants. Politics in the Indo-Pacific need not be zero-sum, but they are unlikely to be uniformly positive-sum.

4. South Korean semiconductors: The crux of Yoon Suk Yeol's long- term strategy toward technological leadership

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ABSTRACT

Semiconductors are the lifeblood of most major economies. Impacted by the COVID-19 global supply chain crisis and exacerbated by the war in Ukraine, many countries have crafted policies to revamp and reshore their semiconductor manufacturing operations. South Korea is in a unique position to not only bolster its already robust foundry production capacity, but also diversify its manufacturing overseas, fortify its R&D capabilities, and pursue international cooperation on global supply chain norms and resilience.

The new South Korean president, Yoon Suk Yeol, is personally invested in transforming his country into a semiconductor leader. His administration, backed by appropriate expertise, is poised to continue his predecessor's goal of achieving technological self-sufficiency, an operational metric that denotes a nation's ability to function without overt reliance on global supply chains and proprietary research. On the heels of US President Joe Biden's visit, Yoon can aggressively pursue semiconductor leadership to achieve five critical national security aims: (1) maintain economic competitiveness, (2) minimize supply chain vulnerabilities, (3) prevent supply chain poisoning, (4) stave off technological obsolescence, and (5) maximize policy options during geopolitical events.

Yoon's overarching approach should include four key facets. Foremost, his team must draft concrete proposals that emphasize semiconductor supply chain resilience and norms in international architecture, such as the nascent Indo-Pacific Economic Framework (IPEF). Second, Yoon should utilize the momentum of the US Indo-Pacific strategy to smooth bilateral ties between South Korea and Japan. Third, the Yoon administration must keep a watchful eye on US semiconductor legislation to react immediately with new cooperative initiatives. Fourth, the Yoon administration must maintain a balanced approach to China, where decoupling is strategically untenable.

INTRODUCTION

It is difficult to overstate the importance of semiconductors in the context of national security and global competitiveness. Semiconductors serve as the lifeblood of most advanced economies, enabling the functionality of high-tech goods such as mobile devices, computers, household appliances, and automobiles. Prior to COVID-19, powerful countries penned and adopted policies that would allow them to procure a larger market share of semiconductor production in recognition of their accelerating importance.

Amid the realities of the pandemic, most significantly the unremitting supply chain crisis exacerbated by the war in Ukraine, nations were compelled to revisit their approaches.¹ Overarching endeavors such as "Made in China" or "Make in India," which funnel hundreds of billions of dollars into their semiconductor industries, reflect recognition that reshoring is a critical component of contemporary policy thinking. The US also joined the bandwagon: on January 21, 2022, US President Joe Biden delivered remarks on the critical importance of reshoring semiconductor manufacturing.² He emphasized the importance of passing the US Innovation and Competition Act (USICA) that includes a robust federal package to fund the CHIPS for America Act dedicated to domestic semiconductor R&D, manufacturing provisions, and incentives.³

These inward-facing policies are a promulgation that expanding domestic semiconductor production and R&D are instrumental to building technological self-sufficiency. An operational metric best denoted by how much of

¹ Alex Bullard, "Ukraine crisis overtakes COVID as biggest threat to global supply chain," *Global Trade*, March 24, 2022, <https://www.globaltrademag.com/ukraine-crisis-overtakes-covid-as-biggest-threat-to-global-supply-chain/>.

² White House, *Fact Sheet: Biden-Harris Administration Bringing Semiconductor Manufacturing Back to America*, Jan. 21, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/21/fact-sheet-biden-harris-administration-bringing-semiconductor-manufacturing-back-to-america-2/>.

³ US Congress, Senate, *United States Innovation and Competition Act of 2021*, 117th Congress, S. 1260, introduced in Senate April 20, 2021, <https://www.congress.gov/bill/117th-congress/senate-bill/1260>; US Congress, House, *CHIPS for America Act*, HR 7178, 116th Congress, introduced in House June 11, 2020, <https://www.congress.gov/bill/116th-congress/house-bill/7178>.

a country's higher technological production and manufacturing can be done domestically,⁴ technological self-sufficiency allows a country to operate without overt reliance on global supply chains and proprietary research. The newly inaugurated South Korean President Yoon Suk Yeol is also a proponent of this approach and appears poised to strengthen South Korea's global technological foothold by focusing on the semiconductor industry while maintaining a salient role in foreign affairs.

A PRIMER: THE SOUTH KOREAN SEMICONDUCTOR INDUSTRY AND PRESIDENT MOON JAE-IN

The South Korean semiconductor industry is world class, ranking second in total foundry manufacturing (in-house production versus fabless, which outsources production). The country only trails Taiwan Semiconductor Manufacturing Corporation (TSMC), which enjoys over half the global market share of foundry manufacturing and has its own plans for expansion.⁵ Former Minister of Economy and Finance Hong Nam-ki stated the industry accounted for one-fifth of the country's 2021 exports, along with biochemicals, cosmetics, EV batteries, and agricultural exports.⁶ Since their inception, most South Korean *chaebol* (family-controlled conglomerates) have operated subsidiaries embedded in high-tech sectors, allowing national semiconductor manufacturing output to surpass that of both the US and Japan during the 1990s.⁷ Today, according to the market consulting firm Gartner, Samsung Electronics and SK Hynix account for almost 20% of global semiconductor sales.⁸ The two companies also comprised over 50% of the global NAND and dynamic and permanent memory (DRAM) chip markets in 2019.⁹

Like many other leaders, former South Korean President Moon Jae-in recognized the importance of ramping up domestic semiconductor manufacturing. In the face of slowing economic growth and a widening trade surplus, the Moon administration turned its attention to fortifying South Korea's high-tech industries as a long-term strategy with mainly economic objectives.¹⁰ In 2017, the Moon administration's five-year plan outlined goals to develop both physical and digital infrastructure to broaden access to social services and create jobs.¹¹ The State Affairs Planning Advisory Committee, charged with implementing the five-year plan, established a committee for the express purpose of researching 4th Industrial Revolution technologies (4IT) and developing core digital infrastructure for the internet of things (IoT), 5G, AI, and other future-oriented industries.¹² The committee featured prominent scientists who also set adaptable policy targets according to repercussions of the pandemic. The overarching goals of the five-year plan would later transform into the Korean New Deal 2.0.¹³

⁴ Bates Gill, "China's Quest for Greater Technological Self-Reliance," Asia Society, March 23, 2021, <https://asiasociety.org/australia/chinas-quest-greater-technological-self-reliance>.

⁵ Reuters Staff, "TSMC to invest \$100 billion over 3 years to meet chip demand," Reuters, April 1, 2021, <https://www.reuters.com/article/us-tsmc-investment-plan-idUSKBN2BO3ZJ>.

⁶ Ministry of Culture, Sports and Tourism, Se-yeon Won, 홍 부총리 "반도체, 한국경제 핵심산업... 제2의 도약 절실 [Deputy Prime Minister Hong "Semiconductor, a key industry in the Korean economy... A second leap forward"], Nov. 18, 2021, <https://www.korea.kr/news/policyNewsView.do?newsId=148895716>.

⁷ Invest Korea, "반도체 한국 경제 성장을 견인하는 반도체 산업 [Semiconductor investment driving economic growth in Korea]," Sep. 3, 2021, https://www.investkorea.org/ik-kr/bbs/i-112/detail.do?ntt_sn=491183.

⁸ Meghan Rimol, "Gartner Says Worldwide Semiconductor Revenue Grew 26% in 2021," Gartner, April 14, 2022, <https://www.gartner.com/en/newsroom/press-releases/2022-04-14-gartner-says-worldwide-semiconductor-revenue-grew-26-percent-in-2021>.

⁹ Malichanh Chiemsisoulath and Wanwisa May Vorrarikulkij, "Revival of Korea's Semiconductor Exports is In Sight," AMRO (ASEAN+3 Macroeconomic Research Office), April 23, 2020, <https://www.amro-asia.org/revival-of-koreas-semiconductor-exports-is-in-sight/>.

¹⁰ Kim Yeon-ju, "반도체의 힘...대만, 올해 한국 1인당 GDP 따라잡나 [The power of semiconductors... Taiwan to catch up with Korea's GDP per capita this year]," *The JoongAng*, April 26, 2022, <https://www.joongang.co.kr/article/25066299#home>.

¹¹ Lee Seong-han, "文정부 국정운영 5개년 계획 발표..." 새로운 대한민국 건설 [Wen government announces five-year plan for state management... "Building a New Korea" (Comprehensive)], *Yonhap News Agency*, July 19, 2017, <https://www.yna.co.kr/view/AKR20170719001451001>.

¹² Republic of Korea, Office of the President, "100 Policy Tasks Five-year Plan of the Moon Jae-in Administration 2017," Wayback Machine, 2017, <https://web.archive.org/web/20210411024426/https://english1.president.go.kr/dn/5af107425ff0d>.

¹³ Lee Ho-jeong, "Moon's New Deal gets a 2.0 overhaul," *Korea JoongAng Daily*, July 14, 2021, <https://koreajoongangdaily.joins.com/2021/07/14/business/economy/Korean-New-Deal-20-Human-New-Deal-Moon-Jaein/20210714161200360.html>.

The Korean New Deal 2.0 became a mainstay and symbol of Moon’s ambitious overhaul of various sectors such as food and clean energy self-sufficiency aimed at creating a self-sustaining nation.¹⁴ Again, this framework reflected the pandemic zeitgeist in which the realities confronting populations cajoled many world leaders towards isolationism.¹⁵ Moon strove to leverage the myriad strengths of the South Korean economy—its semiconductor industry chief among them—to minimize future vulnerabilities wrought by overt global dependency that could arise in crises.¹⁶ The Moon administration met with some success on this front, but was ultimately bogged down by a litany of socioeconomic issues, including the housing crisis, publicly-perceived foreign policy flops, and COVID-19.¹⁷ Consequently, Moon was unable to realize his lofty goals of securing a 10% market share of fabless revenue and transforming South Korea into the leader in global foundry manufacturing by 2030. These goals were planned to have been realized by a regional string of public-private facilities called the “K-semiconductor Belt.”¹⁸

YOON SUK YEOL’S VISION FOR SOUTH KOREAN SEMICONDUCTOR LEADERSHIP

Following a valiant effort to pursue technological self-sufficiency, President Moon left office in May. The new president, Yoon Suk Yeol, is now confronted with a sundry list of unresolved social, economic, and political challenges. South Koreans remain especially concerned about the economy and the direction of the country’s future. To address these worries, Yoon came into office with promises of free market approaches and cooperation with South Korean SMEs—a salient departure from the Moon administration’s approach to issues such as housing.¹⁹ Yoon also declared that his policy agenda would mainly consist of deregulation and tax cuts to bulwark investment in the private sector, in turn doubling as a bid to attract foreign investment. Yoon aims to foster an environment in which business success and job creation self-propagate, as opposed to relying on wage-led growth. In theory, this would free government spending—which had grown to \$183.5 billion under Moon—for sectors of critical importance.²⁰ One such pillar now available for government focus is 4IT, with semiconductors leading the charge.

The ruling People Power Party released a policy manifesto providing an overview of Yoon’s campaign promises.²¹ One consistency between the Yoon and Moon administrations is heavy investment in the South Korean semiconductor industry. In fact, Yoon is poised to elevate investment and carve out new trajectories for public-private partnership.²² His administration has pledged to strategically expand 4IT R&D and develop talent in private and academic spaces via incentives and tax benefits. His party also outlined plans to expand the professional 4IT workforce, including foundry employees, by 100,000 during his time in office. In addition, he has pledged to invest \$190 billion to strengthen South Korean data networks, AI R&D labs, and both foundry semiconductor manufacturing and chip design.²³

¹⁴ Choi Woo-young, “문재인의 뉴딜 전략…더 똑똑하고 깨끗해지는 산업단지 [Moon Jae-in’s New Deal strategy… Smarter and cleaner industrial parks],” *Money Today*, Feb. 16, 2021, <https://news.mt.co.kr/mtview.php?no=2021021513503194673>; Joon-yong Ahn, “文대통령 농촌이 한국판 뉴딜 핵심 되도록 할 것 [President Moon “We will make rural areas the core of the Korean version of the New Deal”],” *The Chosun Ilbo*, Nov. 11, 2020, https://www.chosun.com/politics/blue_house/2020/11/11/AD622QPGKJESFAUCOOZQJKBT74/.

¹⁵ Kemal Derviş and Sebastian Strauss, “What COVID-19 means for international cooperation,” Brookings Institute, March 6, 2020, <https://www.brookings.edu/opinions/what-covid-19-means-for-international-cooperation/>.

¹⁶ Florian Bieber, “Global Nationalism in Times of the COVID-19 Pandemic,” *Nationalities Papers*, 50, 1 (2022): 13–25, <https://doi.org/10.1017/nps.2020.35>

¹⁷ Choe Sang-hun, “‘The Den of Thieves’: South Koreans Are Furious Over Housing Scandal,” *The New York Times*, March 23, 2021, <https://www.nytimes.com/2021/03/23/world/asia/korea-housing-lh-scandal-moon-election.html>.

¹⁸ *The Dong-a Ilbo* “삼성전자 찾아간 대통령, ‘문재인표 산업정책’ 이것만으론 부족하다 [President Moon Jae-in’s visit to Samsung Electronics],” May 1, 2019, <https://www.donga.com/en/article/all/20190501/1717056/1/President-Moon-Jae-in-s-visit-to-Samsung-Electronics?m=kor>; Liu Ji-young, “대만 ‘반도체의 힘’… 1인당 GDP 19년 만에 한국 제친다 [Taiwan’s ‘semiconductor power’… GDP per capita surpasses Korea for the first time in 19 years],” *Seoul Newspaper*, May 5, 2022, <https://www.seoul.co.kr/news/newsView.php?id=20220506019007>; Xu Aiyang and Yoon Hee Young, “Plan to make Korea ‘top semiconductor power’ by 2030,” *Korea.net*, May 14, 2021, <https://www.korea.net/NewsFocus/policies/view?articleId=198152>.

¹⁹ Choi Si-young, “Yoon to reverse Moon’s housing policy,” *The Korea Herald*, March 28, 2022, <http://www.koreaherald.com/view.php?ud=20220328000876>.

²⁰ Kim Dong-won, “Saving the economy through structural reform,” *Korea JoongAng Daily*, March 15, 2022, <https://koreajoongangdaily.joins.com/2022/03/15/opinion/columns/Yoon-Sukyeol-Moon-Jaein-economy/20220315195333922.html>.

²¹ People Power Party’s 20th Presidential Election Committee, *공정과 상식으로 만들어가는 새로운 대한민국 [A new Korea made with fairness and common sense]*, 2022.

²² *Ibid.*

²³ *Ibid.*

South Korean *chaebol* involved in 4IT are optimistic about the prospects of Yoon's pro-business stance. His free market approach would theoretically engender cooperation between conglomerates, SMEs, and academia with the intent of maintaining long-term technological self-sufficiency, especially *vis-à-vis* China. In accordance with this goal, Yoon is tapping non-political entities to act as advisors, which is especially noticeable in the semiconductor industry.

Perhaps most representative of Yoon's penchant for semiconductors is his nomination of Lee Jong-ho for minister of science and ICT. Confirmed in May 2022, Lee was a professor in the department of electrical and information engineering at Seoul National University and director of the university's semiconductor joint research center.²⁴ He has accumulated vast personal wealth by virtue of his many patents in semiconductor chip design as well as a "bulk FinET" patent on 3D semiconductor wafer manufacturing.²⁵ Prior to parliamentary approval, Lee stated in interviews that he strongly believes in transforming South Korea into a leader in both foundry manufacturing and chip R&D. Likely chosen for his expertise, he is able to craft ambitious policies that could propel South Korea to become a leader in semiconductor manufacturing and R&D. During his confirmation speech, Lee stated that South Korea stood at the "crossroads" of the technological revolution, emphasizing the need to become a global leader in semiconductor design, manufacturing and other 4IT, equating national competitiveness with national security.²⁶

Indeed, Yoon's own predilection for semiconductor leadership and Lee's nomination are not coincidental. Yoon received "semiconductor tutoring" from Lee at Seoul National University in 2021 before formally joining the campaign.²⁷ One year later, during his visit to the Korea Advanced Institute of Science and Technology's (KAIST's) semiconductor research center, Yoon emphasized the importance of South Korean semiconductor leadership. "It could be said that wars are no longer being fought with guns, but with semiconductors," he said. "Semiconductors are the core of the national economy and national security."²⁸ A shared notion he reiterated during US President Joe Biden's May visit to Samsung Electronics' Pyeongtaek semiconductor manufacturing plant.²⁹

Under Yoon's policy vision, broadly outlined in the overarching document "110 National Tasks of the Yoon Administration," both the South Korean Ministry of Science, ICT and Future Planning and the Ministry of Trade, Industry and Energy are poised to go ahead with plans to expand South Korean foundry capabilities and cooperative private-public and academic projects.³⁰ The Yoon administration is also expected to place greater emphasis on AI semiconductor research for non-memory semiconductors, refine South Korean back-end processes, and develop semiconductors for clean energy. The reverberations of Biden's visit to South Korea are also significant, signaling to both US state governments and South Korean corporations that future cooperation is in the books. As of May 2022, Samsung increased a 2021 investment pledge in key sectors over five years to \$356 billion, \$151 billion of which was dedicated to boosting memory-chip design and

²⁴ Park Soo-hyun, "[프로필] 이종호 신임 과학기술정보통신부 장관 후보자 [Lee Jong-ho, the new Minister of Science, Technology and Information, Candidate]," *Chosun Biz*, April 10, 2022, https://biz.chosun.com/it-science/general_policy/2022/04/10/OG7EHN3N-6JFJ3PGBZU6BJJKNY/.

²⁵ Lee Jong-hyuk, "[단독] 반도체 석학 이종호 장관 후보...재산 수백억 더 늘어나는 이유 [아이티라떼] [Candidate Jong-ho Lee, a semiconductor scholar... The reason for the increase in wealth by tens of billions]," *Maeil Kyungjae*, April 26, 2022, <https://www.mk.co.kr/news/it/view/2022/04/371320/>.

²⁶ Gil Ae-kyung, "이종호 과기부 장관 "새로운 출발선, 국가 미래 책임 [Minister of Science and Technology Lee Jong-ho "New starting line, national responsibility for the future"]," *Hello DD News*, May 11, 2022, <https://www.hellodd.com/news/articleView.html?idxno=96857>.

²⁷ Ahn Ha-neul, "윤석열 당선인에 '반도체 특별 과외' 했던 이종호 과기부 장관 후보 [Candidate Lee Jong-ho, Minister of Science and Technology, who gave 'semiconductor special tutoring' to Yoon Seok-yeol]," *Hankook Ilbo*, April 10, 2022, <https://m.hankookilbo.com/News/Read/A2022041013550004875>.

²⁸ Cho Eun-sol, "대전 찾은 윤석열 "반도체, 4차 산업혁명 선도 핵심 전략 산업 [Seok-Yeol Yoon visited Daejeon, "Semiconductor, a key strategic industry leading the 4th industrial revolution"]," *Daejeon Ilbo*, April 29, 2022, <http://www.daejeonilbo.com/news/articleView.html?idxno=2002458>.

²⁹ Kim Mi-na, "Yoon, Biden come together over semiconductors," *The Hankyoreh*, May 21, 2022, https://english.hani.co.kr/arti/english_edition/e_international/1043775.html.

³⁰ Republic of Korea Office for Government Policy Coordination, Prime Minister's Secretariat, *110대 국정과제 [110 National Tasks]*, 2022, <https://www.opm.go.kr/opm/info/government01.do>; Republic of Korea Ministry of Science and ICT, Junyoung Cho, *Plan for Next-generation intelligent semiconductor technology development*, 2021.

semiconductor manufacturing. Samsung has also dedicated a \$17 billion investment to constructing a foundry in Taylor, Texas.³¹

NATIONAL SECURITY OBJECTIVES OF SEMICONDUCTOR SUPPLY CHAIN RESILIENCE

In a February 2022 piece in *Foreign Affairs*, President Yoon lamented his country's waning role in international affairs, declaring that the US-South Korea alliance would be the linchpin of his foreign policy.³² Yoon accentuated the importance of steadfast cooperation with like-minded actors to carve out norms on the use and research of 4IT, as these technologies will continue to be foundational to long-term foreign and economic policy. To this end, Yoon has already seen great success. Following President Biden's visit, South Korea formally joined the newly launched IPEF, a regional architecture that aims to set standards and norms across multiple pillars such as supply chain resilience and the digital economy.³³ While IPEF itself is broad and not yet well-defined, South Korea's participation will expedite implementation of policies to ramp up semiconductor manufacturing and R&D.

More importantly, joining provides Yoon a greenlight to pursue long-term public-private partnerships abroad that would establish a regional semiconductor supply chain free from the impact of global disruptions. Again, this is a favorable prospect for Yoon, who envisions a leadership role for South Korea in semiconductor design and manufacturing. Diversifying South Korean manufacturing and fortifying future-oriented R&D partnerships with the US sets his country in a better position to make valuable contributions as an ally.

The string of events since Yoon's inauguration is a demonstrable step towards South Korean technological self-sufficiency—though, more accurately the end goal is a regional technology alliance, as envisioned in the Biden-Yoon joint statement.³⁴ It is an ambition that checks off several South Korean national security concerns. Yoon likely wants to maintain a competitive advantage in foundry manufacturing for five major national security reasons. First, he understands through the guidance of policy advisers such as Lee that semiconductors will only grow increasingly important for South Korean economic competitiveness.³⁵ Ardent technological advancement and concurrent educational and economic progress have kept South Korea at the forefront of regional affairs in spite of the “shrimp among whales” trope—a description Yoon is eager to discard. As discussed earlier, semiconductors are not only a major South Korean export, but are also the lifeblood of its equally important industries such as automobile manufacturing. Yoon wants to minimize the impact of global supply chain disruptions on the economy—for example, inflated car prices—by bolstering both manufacturing and research capabilities at home. This is the *prima facie* strategic thinking of most leaders seeking to reshore their semiconductor manufacturing.

Second, Yoon's policies would minimize supply chain vulnerabilities in key technologies in both the defense and medical sectors. According to a May 2022 report on semiconductor supply chain resilience by the South Korean think tank Institute for National Security Strategy, semiconductor supply chain disruptions pose an outsized security threat to South Korean national defense by directly undermining military readiness.³⁶ Due to South Korea's reliance on AI and other unmanned defense systems, the ubiquity of semiconductors in a range

31 Kate Park, “Samsung to invest \$205B in semiconductor, biopharma and telco units by 2023, creating 40,000 jobs,” Tech Crunch, Aug. 24, 2021, <https://techcrunch.com/2021/08/24/samsung-to-invest-205b-in-semiconductor-biopharma-and-telco-units-by-2023-creating-40000-jobs/?guccounter=1>; Kim Byungwook, “Samsung to invest \$356 billion over five years in strategic sectors,” Reuters, May 24, 2022, <https://www.reuters.com/markets/europe/samsung-invest-356-bln-over-five-years-strategic-sectors-2022-05-24/>; Samsung Newsroom “Samsung Electronics Announces New Advanced Semiconductor Fab Site in Taylor, Texas,” Nov. 24, 2021 <https://news.samsung.com/global/samsung-electronics-announces-new-advanced-semiconductor-fab-site-in-taylor-texas>.

32 Yoon Suk-yeol, “South Korea Needs to Step Up,” *Foreign Affairs*, Feb. 8, 2022, <https://www.foreignaffairs.com/articles/south-korea/2022-02-08/south-korea-needs-step>.

33 *Yonhap News Agency*, “Yoon says S. Korea's participation in IPEF is only natural,” May 23, 2022, <https://en.yna.co.kr/view/AEN20220523004200315>.

34 White House, *United States-Republic of Korea Leaders' Joint Statement*, May 21, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/21/united-states-republic-of-korea-leaders-joint-statement/>.

35 Ryu Hyun-joo, “윤석열 당선인 “국가경제와 안보 핵심엔 반도체가 있다 [President-elect Yoon Seok-yeol, “Semiconductors are at the core of the national economy and security”],” *Newsis*, April 29, 2022, https://newsis.com/view?id=NISX20220429_0001853476.

36 Institute for National Security Strategy, “반도체 공급망 경쟁에 따른 디지털 진영화와 우리의 대응 [In response to competition in the semiconductor supply chain. Digital evolution and our response],” *INSS*, 162 (2022): 1-7, 21-23. <https://www.inss.re.kr/common/download.do?atchFileId=F20220502165519484&fileSn=0>.

of advanced defense and medical technologies could compromise national security and societal functions. These insights are analogous to those made in a 2022 report by the US Department of Defense (DoD) on supply chain resilience, which concludes vulnerabilities in manufacturing endanger ongoing and future production of advanced weapon systems and auxiliary parts that utilize chips such as drones.³⁷ While the US still leads in semiconductor R&D, it has fallen off in manufacturing capabilities, exposing the country to the above vulnerabilities, namely the ongoing global supply chain crisis.

Third, an aggressive semiconductor strategy mitigates the risks of supply chain poisoning. Supply chain poisoning refers to the direct or indirect sabotage of either hardware or software during the manufacturing, assembly, and distribution stages.³⁸ The integrity of South Korea's semiconductor supply chain is especially important because of the ubiquity of semiconductors in high-tech products critical to national defense and medicine. A vivid case study of prophylactic actions taken against supply chain poisoning is the US ban on Huawei goods.³⁹ The ban was executed to minimize off-the-shelf chip manufacturing, with the goal of protecting privacy and intellectual property (IP). The same security considerations exist in South Korea, where the use of Huawei 5G equipment caused backlash from consumers. This public criticism, labeled "Huawei risk," centered around negative perceptions of possible supply chain poisoning and fears that South Korean networks would be compromised.⁴⁰ Reshoring the production cycle, dividing manufacturing amongst like-minded nations, and constructing a long-term R&D initiative greatly diminishes the threat of supply chain poisoning and maximizes internal capabilities.

Fourth, South Korean semiconductor leadership would avoid a scenario of obsolescence. Yoon and Lee broached the problem of South Korea lagging at the frontier of chip design and diversification research. This is one of the primary issues the Yoon administration seeks to tackle by expanding cooperation with academia and attracting younger talent to the semiconductor industry. The US has also diagnosed the risk of obsolescence via the opposite symptom: though the country leads in R&D, its manufacturing is in trouble. As referenced in a 2021 White House report on semiconductors, the US Department of Commerce warns that "...volume drives both innovation and operational learning; in the absence of the commercial volume, the United States will not be able to keep up... with the technology, in terms of quality, cost, or workforce."⁴¹ These conclusions are repeated in a Department of Commerce-led March 2022 roundtable with lawmakers.⁴² 12% of global manufacturing is not sufficient to maintain US dominance in military communication, navigation, and weaponry technology in the long-term. According to the 2022 DoD semiconductor report, a lack of manufacturing capabilities risks obsolescence every five or six years.⁴³ In this regard, Biden's visit and the prospects of IPEF are welcome news, as the US and South Korea are now in a better position to help each other. At the very least, preventing the atrophy of their semiconductor manufacturing and research capabilities respectively is one less concern.

The fifth security concern, a corollary of supply chain vulnerabilities, is the geopolitical risk of reliance on global supply chains. In the face of geographic realities, Yoon's strategy to pursue semiconductor leadership is an attempt to cement self-sufficiency in multiple economic and military domains during unforeseen global events—namely concerning China. Most of the world's semiconductor manufacturing is concentrated in Northeast Asia (South Korea and Taiwan) making the elephant in the room a Chinese attack on Taiwan. In deference to the risk of a takeover of the semiconductor production supply chain, South Korea is seeking to diversify its foundries by investing in the US. Both Samsung Electronics and SK Hynix still maintain foundries in China and the reverberations of

³⁷ US Department of Defense, *Securing Defense-Critical Supply Chains*, Feb. 2022, 30-37.

³⁸ Angel Reuben, "Approach to Handling Cyber Security Risks in Supply Chain," *Industrial Engineering Journal*, 12, 7 (2019).

³⁹ US Department of State, *The United States Further Restricts Huawei Access to U.S. Technology*, Aug. 17 2020, <https://2017-2021.state.gov/the-united-states-further-restricts-huawei-access-to-u-s-technology/index.html>.

⁴⁰ Jeong Doo-young, "벼랑 끝 화웨이 LG유플러스, 화웨이 '협업 관계' 강조에 다시 구설수 [Huawei at the edge of the cliff: LG U+, Huawei's 'collaborative relationship' emphasized again]," *Maeil Ilbo*, March 8, 2021, <https://www.m-i.kr/news/articleView.html?idx-no=804431>.

⁴¹ White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-based Growth*, June 2021, 7, <https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf>.

⁴² US Department of Commerce, *Bipartisan National Security Experts Urge Congress to Pass Competitiveness Legislation to Boost Semiconductor Production and Domestic Manufacturing*, March 21, 2022, <https://www.commerce.gov/news/press-releases/2022/03/bipartisan-national-security-experts-urge-congress-pass-competitiveness>.

⁴³ US DoD, *Securing Defense-Critical Supply Chains*, 2022.

COVID-19 on the South Korean economy linger. Diversifying South Korea's semiconductor supply chain in the US and pursuing deeper, future-oriented R&D partnerships overseas protects the country against constrictive actions. Though the prospect of world-bending, militant Chinese behavior is unrealistic, the highest levels of government still have the onus of seriously considering it. This is also the security consideration that has likely prompted TSMC to expand manufacturing into the US.

The memories of Chinese economic retaliation against THAAD in 2016 also remain fresh. The actions are cited in the 2018 Ministry of National Defense White Paper as an instance in which China's asymmetrical response undermined South Korean national security interests.⁴⁴ Diversifying semiconductor manufacturing and seeking cooperative R&D arrangements secure leeway to protect South Korea from being overtly hampered by Chinese policy. Creating this buffer is a mainstay of Yoon's future-looking policies and serves as the crux of his vision for a South Korea that establishes non-negligible competitive independence. This leadership affords the country regional economic hegemony in multiple domains while simultaneously establishing robust staying power and supply chain security. This is perhaps the most vivid reason technological self-sufficiency is attractive to Yoon, checking off several economic and geopolitical objectives and putting his country in an enviable position many others such as the US, China, and even North Korea, are clawing towards.

RECOMMENDATIONS

In the coming years, international relations will be more substantially shaped by technology. The transformations wrought by the 4th Industrial Revolution mean demand for semiconductors will only grow. As most countries look inward to reshore their semiconductor manufacturing, South Korea is in a unique position to solidify its technological leadership by not only bolstering its domestic production but also diversifying its manufacturing and investing in chip R&D and related talent. President Yoon has picked a team capable of crafting and executing policy conducive to his country's long-term technological self-sufficiency. An aggressive, overarching approach that involves multilateral initiatives will allow Yoon to achieve five critical national security aims: (1) maintaining economic competitiveness, (2) minimizing supply chain vulnerabilities, (3) preventing supply chain poisoning, (4) staving off technological obsolescence, and (5) maximizing policy options during unforeseen geopolitical events. However, this strategy must be conducted with steadfast international cooperation. While President Biden's visit was symbolically successful in heralding a future vested in semiconductor cooperation, there are several actions that should be considered by the Yoon administration to better actualize South Korean semiconductor leadership. In the Biden administration's 2022 document on Indo-Pacific Strategy, the US committed to refueling regional architectural commitments on technological standards and supply chain resilience.⁴⁵ Though South Korea joined IPEF to much fanfare, the next few months are key. Yoon's team must begin drafting concrete proposals that accentuate semiconductor supply chain resilience. These should include suggested standards to be shared with like-minded countries in the manufacturing process, such as coating and etching, to mitigate supply chain poisoning. South Korea can also give the "connected economy" and "resilient economy" pillars teeth by drafting backup manufacturing plans in case of global disruptions and creating research outlines for open-collaboration chip designs. Quantity over quality may be optimal when it comes to norms on semiconductor standards. Off the momentum of IPEF, the Yoon administration should also angle towards membership in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, which would open up cooperative agreements on resilient semiconductor supply chain standards on a country-by-country basis. The Yoon administration should also revisit Moon's plan to join the Digital Economy Partnership Agreement (DEPA), which would give South Korea a say on the R&D and use of semiconductors in the Indo-Pacific.

Second, Yoon should use the momentum of the US Indo-Pacific strategy to smooth bilateral ties between South Korea and Japan. Both Yoon and Japanese Prime Minister Fumio Kishida expressed willingness to mend ties, recognizing the importance of technological cooperation. The current climate is perhaps the most conducive for

⁴⁴ Republic of Korea Ministry of National Defense, *2018 Biannual Defense White Paper*, 2018, 136-139, mnd.go.kr.

⁴⁵ White House, *Indo-Pacific Strategy of the United States*, February 2022.

rapprochement since Kim Dae-jung and Keizo Obuchi in 1998. Yoon has made clear that closer ties with Japan are necessary for regional security, with Kishida reciprocating during visits by both the South Korean delegation and Biden. Kishida was also a key architect of the 2015 Comfort Women Agreement, which the Yoon administration has officially recognized.⁴⁶ Following its landslide victory of the June local elections, the Yoon administration certainly has the breathing room to pursue amelioration.⁴⁷ As South Korea continues to hedge against China, Yoon must avoid a repeat of 2019 in which historical disputes led to a pause on Japanese exports of chemicals used for semiconductor production.⁴⁸ The two countries should create new programs that expand people-to-people exchange in 4IT sectors, emphasizing cooperative private and academic partnerships. Yoon should also propose science and technology agreements on semiconductor R&D and manufacturing processes, as Japan is greatly interested in reshoring. These arrangements may also undergird South Korea's bid for greater support activities in the Quadrilateral Security Dialogue (Quad) Plus.

Third, the Yoon administration must keep a watchful eye on US legislation and create proactive initiatives to immediately react to passage of key bills. Biden's visit to Samsung Electronics' foundry was as symbolic for the US as it was for South Korea. USICA (which passed the Senate in 2021), the CHIPS Act, and the Bipartisan Investment Act have all been branded essential to reshoring foundry manufacturing and bolstering US technological leadership. However, the US is wrestling with domestic policy issues and the looming midterms, creating struggles for negotiators in both chambers. Nevertheless, passage of this bipartisan legislation is more a matter of when than if. In anticipation of increasing joint economic output, South Korean policymakers should prepare proposals that standardize foreign direct product rules for South Korean produced semiconductors, which previously caused a scuffle between Samsung and the US Department of Commerce.⁴⁹

In future ministerial-level dialogue on supply chains, which Biden and Yoon agreed to establish in May, South Korean policymakers should propose streamlining exchanges between US and South Korean universities involved in semiconductor design and manufacturing, such as the University of Texas Austin and Seoul National University. Policymakers should also propose designation of a committee for cooperative semiconductor R&D via extant US-South Korea science and technology agreements that would commit the highest levels of talent from corporate manufacturing. These initiatives become substantially more plausible and enticing when the aforementioned US bills pass. They would also open the US for further foreign investment from South Korean conglomerates aside from Samsung and SK. The Yoon administration should prepare an incentive package and a shortlist of companies that could partake in US initiatives such as the Texas Institute for Electronics. This University of Texas System public-private partnership could increase domestic semiconductor R&D and manufacturing which is currently stalled due to supply chain challenges.⁵⁰ Such cooperation would set a precedent for states to seek sister relationships with other corporations, in turn creating a feedback loop that could result in more manufacturing plants and joint-research centers.

Lastly, the Yoon administration must not overtly distance itself from China. That is to say, although it is economically and geographically impossible to do so, Chinese perceptions of South Korea's strategy matter. TSMC's market domination and alignment with the US likely played no small part in China's outsized investment into reshoring semiconductor manufacturing in its 14th 5-Year Plan. Yoon must remain cognizant of the reality that China can asymmetrically impact South Korean behavior as it did during THAAD deployment. If China perceives that South

⁴⁶ *Nikkei Asia*, "South Korea's next top diplomat calls 2015 'comfort women' pact official," April 20, 2022, <https://asia.nikkei.com/Politics/International-relations/South-Korea-s-next-top-diplomat-calls-2015-comfort-women-pact-official>.

⁴⁷ Jeong-ho Lee, "South Korea's New President Gets Boost in Big Election Win," *Bloomberg*, May 3, 2022, <https://www.bloomberg.com/news/articles/2022-05-31/south-korea-s-new-president-set-for-boost-in-elections#x-j4y7vzkg>.

⁴⁸ Lindsay Maizland, "The Japan-South Korea Trade Dispute: What to Know," Council on Foreign Relations, Aug. 5, 2019, <https://www.cfr.org/in-brief/japan-south-korea-trade-dispute-what-know>.

⁴⁹ Mihai Matei, "Samsung agrees to share confidential semiconductor data with the USA," *SamMobile*, Nov. 5, 2021, <https://www.sammobile.com/news/samsung-agrees-share-confidential-semiconductor-data-with-usa/>.

⁵⁰ Conner Board and Mike Marut, "U.S. Sen. Cornyn, Rep. McCaul, UT leaders unveil new semiconductor research, workforce development plans," *KVUE ABC*, April 18, 2022, <https://www.kvue.com/article/news/education/university-of-texas/ut-austin-roundtable-semiconductor-manufacturing-cornyn-mccaul/269-b69e6001-a66b-436a-8de2-8a955226b3ea>.

Korea is cozying up too much with the US on semiconductor cooperation, Beijing has the power to create salient disruptions in South Korea's operations and revenue. With the war in Ukraine, regional alignments are ossifying instead of dissolving into a post-COVID renaissance. This is most ostensibly demonstrated by the Chinese and Russian UN veto on North Korea sanctions for the first time in 15 years.⁵¹ This is a painful reminder that China still holds the destiny of South Korea's key strategic interests. Even as the US advertises IPEF, Chinese Foreign Minister Wang Yi embarked on a campaign to woo Pacific countries for a regional five-year action plan that, while unsuccessful, is reminiscent of the tit-for-tat during the period of competition between the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP).⁵²

However, in a highly important and clarifying speech at George Washington University, US Secretary of State Antony Blinken outlined the new US strategy towards China as “invest, align, and compete,” which aims to shape the environment surrounding China.⁵³ This is good news for Yoon, where decoupling from China is an untenable notion. Both this new US strategy and South Korea joining RCEP in January 2022 give the Yoon administration an opportunity to set the agenda for cooperative projects and standards of semiconductor production. For example, if the Chinese request South Korean expertise, Yoon can propose sending experts to China's Semiconductor Manufacturing International Corporation to share South Korean norms and outline plans for foundry expansion in Shanghai. South Korea's outsized market share actually affords the country influence when it comes to the semiconductor industry. This is both Yoon's simplest and most important mission. In a post-COVID world, he has the leeway to pursue semiconductor leadership—very much a long-term project—without angering China. In the short-term, Yoon, like many other like-minded leaders, is simply preoccupied with protecting his country's economic competitiveness. It just so happens that pursuing said leadership is a fruitful way of achieving technological self-sufficiency while accomplishing a variety of strategic interests.

⁵¹ Samantha Beech, “China and Russia veto new UN sanctions on North Korea for first time since 2006,” *CNN*, May 27, 2022, <https://www.cnn.com/2022/05/26/asia/us-north-korea-united-nations-intl-hnk/index.html>.

⁵² Christian Shepherd, “China fails on Pacific pact, but still seeks to boost regional influence,” *The Washington Post*, June 1, 2022, <https://www.washingtonpost.com/world/2022/06/01/china-influence-pacific-deal-wang/>.

⁵³ US Secretary of State Antony J. Blinken, “The Administration's Approach to the People's Republic of China,” Speech delivered at George Washington University, May 26, 2022, <https://www.state.gov/the-administrations-approach-to-the-peoples-republic-of-china/>.

5. Exploring the opportunities for comprehensive response to disinformation in the Indo-Pacific: Cases of the Republic of Korea and the United States

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ABSTRACT

The use of disinformation has been upscaled beyond national regulations and the impact of these tools, which have been used since the Cold War, has evolved. Recent cases reveal how the spillover effects of disinformation can influence nations and alliances and also hint at the need for preventive measures over the pursuit of reciprocity. Based on the cases of the Republic of Korea and the United States, this paper explores how the threat of disinformation can be reduced through the use of regulatory measures. Upon review of current trends, including in the European Union, an integrated system of policy tools is recommended for responding to disinformation activities against the comprehensive alliance.

INTRODUCTION

Disinformation in the digital age is a strategic enabler and useful policy tool for the pursuit of national interests. Unlike during the Cold War, when information operations were strictly tools of the military, today, disinformation is extensively used by state and non-state actors alike. In fact, state actors often employ hybrid warfare and delegate disinformation activities to non-state actors to avoid accountability. These digital activities remain unregulated and can be used to alter the public opinion of a nation and its people, threatening democratic political processes and regional stability. This can also spill over into nations regardless of geographical proximity, underscoring the global dangers of disinformation. These campaigns of deceit can imbalance power dynamics, stimulate targeted violence against groups based on religion, political ideology, and ethnicity, diverge strategic alignment efforts, and eventually dismantle alliances.

So far, the derivations of “a free and open Indo-Pacific” have been well-preserved through the traditional “hub-and-spokes,” coercive diplomacy, alignment strategies, and unilateral efforts such as the Quadrilateral Security Dialogue (Quad). However, with the rise of diplomatic and economic tensions, it is valuable in the digital age to explore policy areas relating to the strategic information environment and public opinion. This could be supplemental to achieving the diplomatic objectives of the new president of the Republic of Korea (ROK) and strengthening the comprehensive and sustainable relationship between the ROK and the United States.

Recent cases of disinformation—including the use of social media in campaigns focused on deterring alignments and partnerships between competing powers—only leads to organizing assets and strategizing in response to the threats of targeted deception.¹ This paper views disinformation through a policy scope to examine the executive and legislative actions taken against disinformation and recommends collaborative measures to counter future impacts on the ROK-US alliance.

DISINFORMATION FOR POWER

The origin of disinformation dates back to the Cold War, when diplomatic and intelligence assets of the Soviet Union used “active measures” to influence the public opinion of competing powers.² While it had been widely used to turn local attitudes against competing governments, indecision and uncertainty steered powers to operationalize disinformation as a hybrid tactic beyond traditional propaganda efforts. Known as “information warfare,” “influence operations,” and “psychological warfare,” the US exploited similar military tactics and public diplomacy to spread the ideas of liberal democracy in pursuit of its national priorities.

Today, policy research on disinformation is still novel and requires collaborative work between governments for strategic alignment.³ Indeed, there is no centralized effort to conduct policy studies on disinformation beyond the

¹ Raphael S. Cohen et al, *Combating Foreign Disinformation on Social Media: Study Overview and Conclusions*. (RAND Corporation, 2021).

² Thomas Rid, *Active Measures: The Secret History of Disinformation and Political Warfare*. (Farrar, Straus and Giroux, 2020).

³ W. Lance Bennett and Steven Livingston, “A Brief History of the Disinformation Age: Information Wars and the Decline of Institutional Authority,” in *The Disinformation Age: Politics, Technology, and Disruptive Communication in the United States*, ed. W. Lance Bennett and Steven Livingston (Cambridge University Press, 2020).

national level,⁴ and while the media openly talks about “fake news,” the international community still debates the very definition of misinformation and disinformation. In the midst of this uncertainty, the “unwilling” actors, including states and non-state groups, threaten the idea of liberal democracy by misinforming the populations of competing powers. Therefore, it is vital for security studies to focus on smart power elements, such as disinformation, which could lead to instability in a region.

State behaviors can be explained by the elements of power—hard, soft, and smart. Some research points out the ineffectiveness of soft power while others argue that the diverging use of soft power tactics, such as disinformation, is an effective way to influence foreign public opinion.⁵ However, disinformation as a tactic of smart power will certainly be applicable if the “asymmetries of perception” can be disregarded.⁶ Then, the success criterion for disinformation would be to tailor the perceptions of the target public. To ensure the exercise of smart power, disinformation would require thorough planning to overcome the misperceptions of state intentions and relative capabilities in a grand strategic manner. Thus, the calculated misuse of information in the digital world would entail having a cohesive strategic environment.

Some scholars argue that disinformation cannot be easily investigated through a theoretical framework of international relations.⁷ Disinformation as a whole cannot be operationalized as there exists uncertainty over any information produced by adversaries, peoples’ existing biases and preconceptions, and available responses in political dynamics.⁸ However, with recent developments in theory and practice, disinformation can be set apart from other information disorder, such as misinformation and malinformation. Misinformation refers to false information without the intention to harm and can often be found in false connections and misleading content.⁹ Malinformation concerns true information with the intention to mislead, manipulate, or harm, and can be found in leaks, harassment and hate speech. The definition of disinformation can be agreed upon as false information with the intention to mislead, manipulate, or harm. Some examples of disinformation are false context, imposter content, manipulated content, and fabricated content.

REGULATING INFORMATION IN KOREA

As the working definitions and terms related to information disorder, such as misinformation, malinformation, and disinformation, are not agreed upon, policy actors commonly refer to various forms of information disorder as “fake news.” Korea has installed nongovernmental and governing bodies such as the Korea Internet Self-governance Organization (KISO) and the Korea Communications Commission (KCC) to promote safer information access.

The KCC serves as a governmental body formulating and implementing broadcasting policies, imposing sanctions against violations by broadcasters, ensuring the protection of user information, preventing the spread of harmful information, and developing policies for media diversification.¹⁰ Moreover, it serves to resolve policy and regulatory issues regarding broadcasting and media diversity and restrict inappropriate content based on consensus. Having emphasized the role of media in responding to “fake news,” the KCC identified the development of a sustainable online platform as a priority for 2022. As a governing body responsible for various forms of communications, the

⁴ United Nations, “UN’s rights council adopts ‘fake news’ resolution, States urged to tackle hate speech,” United Nations News, April 1, 2022, <https://news.un.org/en/story/2022/04/1115412>.

⁵ Christopher Walker, “What is Sharp Power?” *Journal of Democracy*, 29, 3 (2018): 9-23, <https://www.journalofdemocracy.org/articles/what-is-sharp-power/>.

⁶ Joseph Nye, “Get Smart: Combining Hard and Soft Power,” *Foreign Affairs*, 88, 4 (2009): 160-163, <https://www.foreignaffairs.com/articles/2009-07-01/get-smart>.

⁷ Christina la Cour, “Theorising digital disinformation in international relations,” *International Politics*, 57 (2020): 704-723, <https://link.springer.com/article/10.1057/s41311-020-00215-x>.

⁸ Alexander Lanoszka, “Disinformation in international politics,” *European Journal of International Security*, 4 (2019): 227-248, <https://www.cambridge.org/core/journals/european-journal-of-international-security/article/abs/disinformation-in-international-politics/49121D-3134C4079BF51E5012E6BE247A>.

⁹ Hossein Derakhshan and Claire Wardle, “Information Disorder: Toward an interdisciplinary framework for research and policy making,” *Council of Europe Report DGI*, 9 (2017), <https://edoc.coe.int/en/media/7495-information-disorder-toward-an-interdisciplinary-framework-for-research-and-policy-making.html>.

¹⁰ Republic of Korea, *The Act on the Establishment and Operation of Korea Communications Commission*, 2008.

KCC oversees and implements the decisions of the Korea Communication Standards Commission (KCSC) regarding broadcast ratings and online content censorship.

Unlike the KCC, the KCSC operates as a public agency and reviews communication activities under the policies of the KCC and enforces a television broadcasting rating system of five age categories (all; seven and older; 12 and older; 15 and older; 19 and older) and exemptions (game, lifestyle and documentary shows; news and current affairs shows; education/culture shows; non-violent sports). In collaboration with the Korea National Police Agency, the KCSC also manages online censorship regarding illegal lotteries and gambling, sexual and violent content, copyright violations, national security violations, and hate speech.¹¹ With the increasing use of online platforms, the KCSC has also sought opportunities to regulate inappropriate social media content. However, despite its attempts to regulate social media through access denial, the KCSC's decision to block access to a Twitter account for hate language was overturned by the Constitutional Court based on freedom of expression.¹²

The KISO was established in 2009 as a self-regulating body of online platform services to promote freedom of expression and responsible use, with membership open to online platform companies as a non-binding and participatory organization. The KISO develops codes of conduct and guidelines, verifies online information at the request of members, and publishes a periodic journal based on transparency, impartiality, consistency, and professionalism. To ensure responsible use of online platforms, it maintains databases of abusive and sexual content and protects users based on age and content by prohibiting access. In the past 10 years, the KISO has also made decisions related to temporary access denial, autocomplete search, suicide prevention, and elections, however, it can only enforce the correction or removal of false information on the websites of member platforms.¹³

At the request of Naver, a well-visited online search platform with a 60% digital market share, the KISO operated the Naver Search Verification Committee to serve Naver's artificial intelligence (AI) system by verifying the relevance of related and autocomplete search keywords and top searched keywords. Since 2013, it has produced annual reports on the exclusion of related and autocomplete keywords used in Naver's search engine. Moderation of content against the public interest—that deemed criminal or abusive in nature, as well as sexual content, typos, insults, defamation, invasion of privacy, and copyright violations—have been widely welcomed by online actors in Korea. These reports validate Naver's content moderation activities and authenticate its AI's capacity to moderate accessible online content through the search engine.

Along with the work of the KISO, the KCC, and the KCSC, the Act on Promotion of Information and Communications Network Utilization and Data Protection was launched in 2001 to “build a safe and sound environment for the information and communications networks.” The penal provisions of this legislation impose imprisonment for no more than five years or fines of no more than 50 million Korean won (KRW) for the following violations: collection of private information without consent; infringement of the rights, interests, and privacy of individuals; sale of private information to third-parties; receipt of private information for profit or unjust purposes; collection of private information from a minor under the age of 14 without the consent of a legal guardian; theft and release of private information.¹⁴ In addition, any defamation using false information through the networks warrants a fine of no more than 30 million KRW or imprisonment for no more than three years.¹⁵

The National Assembly introduced various ideas to enhance the government's capacity to combat disinformation but no new amendments to existing legislations were made. In 2020, 43 pieces of legislation on disinformation in the areas of journalism, broadcasting, online media, elections, sexual violence, national intelligence, and education were introduced to the National Assembly; only two have been passed. Freedom of expression, oversight and gov-

¹¹ Korea Communications Standards Commission and Korean National Police Agency, “Warning,” Accessed 2022, www.warning.or.kr.

¹² 2011헌마655 방송통신위원회 설치 및 운영에 관한 법률 제21조 제4호 위헌확인 등.

¹³ Korea Internet Self-governance Organization, *Regulation Policy: Article 5*.

¹⁴ Republic of Korea, *Act on Promotion of Information and Communication Network Utilization and Data Protection: Article 71*, 2020.

¹⁵ *Ibid.*

ernance, the accountability of information communication and technology service providers, and digital literacy education received overwhelming attention in heated debates surrounding disinformation.

Along with these executive and legislative efforts of the government, civil society also embarked to act on information disorder by developing fact checking systems. For instance, “Fact Check Net” was co-created to operate a system of independent and verified “fact checkers” and AI/machine-learning (ML) algorithms to inform the public on the accuracy of information related to political, social, economic, and cultural affairs.¹⁶ Notwithstanding such initiatives, ensuring the accuracy of human and automated processes requires further developments. While fact checkers can be verified, they may not possess the expertise to provide balanced and accurate assessments *vis-à-vis* alleged false information. Likewise, automated fact checking may not have sufficient data to support ML and conduct data analysis on alleged false information. These processes alone cannot accurately verify information and remain dependent on context.¹⁷

A fact checking system will need a combination of both human and automated processes to validate the accuracy of information and identify specific occurrences of false information. This integrated system would require transparency of its step-by-step processes in both policy and technical aspects and accountability for any validation error. Safeguarding the transparency of fact checking and ensuring accountability of online content moderation for information disorder necessitates institutionalization through legislation, policy support from the cabinet ministries—including the military and national intelligence service—and sharing lessons learned and expertise from academia, civil society, and technology companies.¹⁸

Either existing legislation must be amended or new legislation enacted to regulate broadcasting and online content through publicly acceptable and legitimate governance. Even with appropriate legislation to combat disinformation, party politics and insufficient capacity building will exacerbate the impact of disinformation activities and hybrid warfare. Enhancing public awareness on information disorder and media literacy would complement other efforts to counter false information. Civil society can play a critical role in this regard by building on existing legislation and supporting the government and experts in institutionalizing a system for awareness and literacy alongside fact checking. The *terra incognita* of information disorder must be explored so that discoveries can be transformed into policy tools for consensus-based use through domestic and strategic partnerships.

COMBATting DISINFORMATION IN THE UNITED STATES

The United States has made numerous efforts to deter and respond to disinformation campaigns against its government, people, and the ideals of liberal democracy. While the Central Intelligence Agency had previously monitored Soviet disinformation activities, in 1981 the Active Measures Working Group was formed as an inter-agency effort to coordinate information operations between various government actors.¹⁹ In response to the recent transformation of disinformation threats, the Global Engagement Center (GEC) was established to support government-wide counterterrorism communications.²⁰ It has also been mandated to “lead, synchronize, and coordinate efforts in countering foreign state and non-state propaganda and disinformation efforts.”²¹

¹⁶ The Fact Check Net, <https://factchecker.or.kr>.

¹⁷ Lucas Graves, “Understanding the Promise and Limits of Automated Fact-Checking,” Reuters Institute for the Study of Journalism, University of Oxford, Feb. 2018; Michelle A. Amazeen, “Revisiting the Epistemology of Fact-Checking,” *Critical Review*, 27 (2015); Joseph E. Uscinski, “The Epistemology of Fact Checking (Is Still Naïve): Rejoinder to Amazeen,” *Critical Review*, 27 (2015).

¹⁸ Andrew Puddephat, “Letting the sun shine in: transparency and accountability in the digital age,” in *World Trends in Freedom of Expression and Media Development*, (UNESCO, 2021), <https://unesdoc.unesco.org/ark:/48223/pf0000377231>.

¹⁹ Christopher J. Lamb and Fletcher Schoen, “Deception, Disinformation, and Strategic Communications: How On Interagency Group Made a Major Difference,” *Strategic Perspective*, 11 (Institute for National Strategic Studies, 2012), <https://inss.ndu.edu/Media/News/Article/693590/deception-disinformation-and-strategic-communications-how-one-interagency-group/>.

²⁰ White House, *Executive Order 13721: Developing an Integrated Global Engagement Center to Support Government-Wide Counterterrorism Communications Activities Directed Abroad and Revoking Executive Order 13458*, March 14, 2016.

²¹ United States Senate, *Executing the Global Engagement Center’s Mission: Statement of Lea Gabrielle, Special Envoy & Coordinator for the Global Engagement Center, U.S. Department of State, Before the Subcommittee on State Department and USAID Management, International Operations, and Bilateral International Development*, March 5, 2020.

In April 2022, the White House stated its intention to establish the Disinformation Governance Board, an internal working group of the Department of Homeland Security (DHS) to protect freedom of speech, civil rights and liberties, and privacy across disinformation-related work.²² In response to the news, Republican Party leadership called for Congress to shut down the Disinformation Governance Board on the possibility of exploiting the office and manipulating information.²³ In response to media attention, DHS released a fact sheet explaining that the Board would be chaired by the Office of Policy and the Office of the General Counsel, along with representatives from the Cybersecurity and Infrastructure Security Agency, Federal Emergency Management Agency, Customs and Border Protection, the Office for Civil Rights and Civil Liberties, Office of Intelligence Analysis, Science and Technology Directorate, and the Privacy Office. It clarified the confusion by ensuring to “proactively release comprehensive quarterly reports” to Congress, request the Homeland Security Advisory Council make recommendations on how to “effectively and appropriately address disinformation,” and to explore ways to build public trust.²⁴

In a recent meeting at the Subcommittee on Intelligence and Special Operations, the challenges of securitized and non-securitized disinformation were discussed as threats to the United States, its allies, and partners.²⁵ The meeting also highlighted how Russia wages its disinformation campaigns through “information-technical effects,” whereas China targets “domestic, foreign, and multilateral political establishments” to sustain the communist regime.²⁶ The Department of Defense (DoD) noted that allies and partners can bring unique and reinforcing capabilities to counter adversaries’ malign efforts and that these capabilities will be integrated into strategy planning.

The DoD supports the GEC and organizes efforts to combat disinformation by countering propaganda, providing force protection, countering disinformation abroad through military information support operations, and deterring and disrupting malign influence capabilities. While the DoD supports the GEC’s work, finding the capacity to enhance strategic coordination against disinformation within the Joint Staff, combat commands, geographic commands, and functional commands is an ongoing assignment for the joint force of the military.²⁷

Beyond the work of the White House and its cabinet, Congress has been in a debate to reassess Section 230 of the Communications Decency Act and consider social media platforms as interactive computer services.²⁸ President Trump’s executive order for federal agencies led the National Telecommunication and Information Administration to petition for clarification on the scope of interactive computer services in order to regulate content moderation on social media.²⁹ Congress had introduced several amendments to Section 230 to clarify liability protections for interactive computer services when hosting or removing content. Other legislation presented on the floors of Congress would have called for the accountability of social media companies for not removing content.³⁰

Besides the proposal to amend Section 230, Congress considered legislation to either increase or reduce content moderation and ensure accountability. It has also sought ways to regulate the digital world through antitrust actions to break up social media companies and fund a federal entity to play either a regulatory or advisory role on disinformation and social media. In 2017, the Honest Ads Act was introduced to the Senate to require online platforms to retain advertisement copies and publicly release financial information related to advertisements.

²² Taylor Lorenz, “How the Biden administration let right-wing attacks derail its disinformation efforts,” *Washington Post*, May 18, 2022, <https://www.washingtonpost.com/technology/2022/05/18/disinformation-board-dhs-nina-jankowicz/>.

²³ Rebecca Shabad, “Republican lawmakers push bill to dismantle new DHS disinformation board,” *NBC News*, May 11, 2022, <https://www.nbcnews.com/politics/congress/republican-lawmakers-push-bill-dismantle-new-dhs-disinformation-board-rcna28354>.

²⁴ US Department of Homeland Security, *Fact Sheet: DHS Internal Working Group Protects Free Speech and Other Fundamental Rights When Addressing Disinformation That Threatens the Security of the United States*, released May 2, 2022, <https://www.dhs.gov/news/2022/05/02/fact-sheet-dhs-internal-working-group-protects-free-speech-other-fundamental-rights>.

²⁵ Barry Buzan, Ole Waever, and Jaap De Wilde, *Security: A New Framework for Analysis*. (Lynne Rienner Publishers, 1997).

²⁶ US House Armed Services Committee, *HASC No. 117-8: Disinformation in the Gray Zone: Opportunities, Limitations and Challenges*, March 15, 2021, <https://www.congress.gov/event/117th-congress/house-event/LC67589/text?s=1&r=74>.

²⁷ Raphael S. Cohen et al, “Combating Foreign Disinformation,” (2021).

²⁸ US Office of the Federal Register of the National Archives and Records Administration, *Executive Order (13925) on Preventing Online Censorship*, May 28, 2020.

²⁹ US National Telecommunication and Information Administration, *Petition for Rulemaking of the National Telecommunications and Information Administration*, July 27, 2020.

³⁰ Valerie C. Brannon, Nina M. Hart, Eric N. Holmes, Chris D. Linebaugh, “Update: Section 230 and the Executive Order on Preventing Online Censorship,” Congressional Research Service, Oct. 16, 2020, <https://crsreports.congress.gov/product/details?prodcode=LSB10484>.

The Digital Services Oversight and Safety Act, which was introduced to the House in 2022, will establish the Bureau of Digital Services Oversight and Safety in the Federal Trade Commission to investigate systemic risks on online platforms and to issue transparency requirements and guidance on content neutrality.³¹ This legislation has been referred to the Committee on Energy and Commerce, the Committees on Education and Labor, as well as the Judiciary and Subcommittee on Consumer Protection and Commerce, and aims:

1. To provide regulators, research institutions, civil society, and the public at large the ability to gain a deeper understanding of online platforms.
2. To create an accountability framework that incentivizes processes and design features that mitigate systemic risks of online platforms.
3. To ensure companies provide accurate information and follow rules.³²

The United States' initiatives against disinformation have been primarily pushed forward by members of the Democrat Party. The executive and legislative efforts have yet to convince House Republican leaders to take action on transparency, accountability, and the consequences of disinformation. Similar to the ROK's KISO, social media such as Meta have adopted measures against misinformation and operate content moderation based on a fact checking system. Unlike Korea, however, the United States views the coordinated acts of disinformation as threats to national security.

LESSONS FROM EUROPE'S FIGHT AGAINST DISINFORMATION

Having recognized the threat of online disinformation in 2015, the European Commission adopted the *Action Plan against Disinformation* and tasked the European External Action Service (EEAS) with providing strategic communication to address disinformation, which requires political coherence and an integrated approach to strategic communication, data protection, electoral processes, law enforcement, and media. In close cooperation with institutions, member states, the private sector and civil society, Europe implements its coordinated response to disinformation in four pillars:

1. Improving the capabilities of European Union (EU) institutions to detect, analyze and expose disinformation.
2. Strengthening coordinated and joint responses to disinformation.
3. Mobilizing the private sector to tackle disinformation.
4. Raising awareness and improving societal resilience.³³

This action plan is implemented by strengthening the capacity of the Intelligence and Situation Center to analyze disinformation campaigns, setting up a rapid alert system to provide real-time warnings, ensuring private sector accountability to implement the Code of Practice, and raising public awareness to improve societal resilience while ensuring media independence.

Beyond these efforts, the EU has enacted the General Data Protection Regulation (GDPR) to strengthen its capacity to fight disinformation and set a deadline for companies to comply with data protection and privacy measures. Any failure to comply by 2018 would have resulted in fines up to 4% of global annual revenue for companies in violation.³⁴ Despite the struggle to monitor the digital space, online media and platforms have grown complicated enough for Europe to regulate based on the limits of GDPR. The Digital Services Act (DSA) was adopted to obligate users, businesses, and member states to better protect individual rights and to ensure transparency and accountability.

³¹ US Congress, House of Representatives, *HR. 6796*, 2022.

³² Congresswoman Lori Trahan, *Fact Sheet: The Digital Services Oversight and Safety Act*, 2022, https://trahan.house.gov/uploadedfiles/dsosa_fact_sheet_final.pdf.

³³ European Commission, *Joint Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: Action Plan against Disinformation*, May 12, 2018.

³⁴ European Union, *General Data Protection Regulation: Article 83(5)*, 2016.

The implementation of the DSA would set a rule across Europe, assure universal compliance for all European citizens, and cultivate an accountable digital environment for platforms to be transparent about content moderation decisions. The new law imposes fines of up to 6% of global annual revenue and restriction of access to platforms as a means to mitigate disinformation as well as protect digital rights.³⁵ Regarding the “supply of incorrect, incomplete or misleading information,” member states would be required to impose a fine of 1% of annual income.

Europe’s regulation of the digital space has evolved from the Commission’s executive approach through the EEAS (2015) to Union-wide legislation through the GDPR (2016) and new DSA (2022). While the GDPR had provided legal basis for the protection of individual rights and privacy, the new legislation introduced by the Parliament and Council attempts to apply concrete measures for all stakeholders, including users, businesses, and member states, across the whole of Europe. This could be compared to the United States’ introductions of legislation in Congress to protect digital rights and address disinformation.

POLICY IMPLICATIONS FOR THE ROK-US ALLIANCE

Global and regional cases have shown that disinformation is no longer restricted to the military domain, nor does it belong strictly to the intelligence realm. Still, the idea of disinformation began with military and intelligence operations in an effort to tarnish the image of opposing regimes. In fact, the two Koreas have painted different pictures of one another through disinformation since the demarcation of the peninsula into northern and southern halves. Today’s foreign affairs, defense, and intelligence agencies most often experience disinformation activities as foreign efforts to influence public opinion.

The comprehensive alliance between the ROK and the US has endured a series of tests by competing powers. The US-China strategic rivalry has burdened the ROK with the possibility of uncoupling from China should it choose to bolster its ties with the US. The technological decoupling between the two great powers would no longer just involve import and export controls but also regulation on cross-border data transfer.³⁶ This demonstrates the value of sensitive information and data and their potential as elements of smart power.

The relations between South Korea and the United States have also been put to the test when policy changes have taken effect. In 2008, the Munhwa Broadcasting Corporation aired a current affairs show on the dangers of beef imports from the US.³⁷ Following the program, disinformation manipulated the public and led to protests against US beef and a drop in then-President Lee Myung-bak’s approval rating to 20%.³⁸ North Korea used disinformation tactics after sinking the *Cheonan*, a ROK corvette, in 2010. Its intelligence operatives used ROK’s resident registration numbers to create online accounts and post messages which had denied the involvement and, instead, stated that ROK was disguising North Korea as a scapegoat.³⁹ In 2017, disinformation about the effects of radar on human fertility and agricultural crops concerning a Terminal High Altitude Air Defense (THAAD) battery and its deployment in Seongju, some 220-kilometers from Seoul, eroded public opinion of the Park Geun-hye administration and public trust in the US Forces Korea. Despite the disinformation, Moon Jae-in’s administration resumed and completed the deployment in October.⁴⁰

³⁵ Secretary-General of the European Commission, *Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC*: Article 42: Penalties, Dec. 16, 2020, https://www.europa-nu.nl/id/vlft6j4zmezfl/proposal_for_a_regulation_of_the.

³⁶ Yan Luo et al, “Mapping U.S.-China Technology Decoupling: How disparate policies are unraveling a complex ecosystem,” *DigiChina*. (Stanford University, 2020).

³⁷ *Chosun Ilbo*, “MBC Manipulated Mad Cow Disease Report: Prosecutors,” July 30, 2008.

³⁸ Jon Herskovitz and Rhee So-eui, “South Korean Internet catches mad cow madness,” *Reuters*, June 13, 2008, <https://www.reuters.com/article/us-korea-politics-internet-idUSSEO30506420080613>.

³⁹ “북, 남한 주민번호 도용 네티즌 조직적 선동,” *문화일보*, 2010년 06월 10일. “북, 주민번호 도용 ‘천안함 날조’ 유포,” *경향신문*, 2010년 06월 01일.

⁴⁰ *Yonhap News*, “USFK officially completes THAAD battery unit setup in S. Korea,” Oct. 22, 2017.

A year after his incumbency of the Blue House, Moon Jae-in and his political party established the Special Committee on Disinformation and reviewed the prosecution of 280 cases of disinformation related to COVID-19.⁴¹ His “War on Fake News” also aimed to remove content and accounts criticizing the administration for having a liberal approach towards North Korea.⁴² In 2019, a newspaper claimed that the prosecutor’s office buried evidence of the Kim Hak-eui scandal and linked it to Yoon Suk Yeol, who was then the prosecutor general. This disinformation steered positive support for then Justice Minister Cho Kuk, who had been under investigation for corruption, and led the public to call for Yoon’s resignation.⁴³

Domestic forces have utilized disinformation for power to drive a wedge in public solidarity and accelerate disapproval of the incumbent administration or against the competing political party. Foreign forces have used disinformation as a tool to undermine legitimacy of the government, instigate political polarization, and incubate cultures of information disorder. Both domestic and foreign disinformation influenced the ROK government and US presence, reversing the maturity of the ROK-US alliance.

Both allies face disinformation against the ideals of liberal democracy and *tout-à-coup* disinformation at critical points of their domestic political processes. ROK, for instance, survived a North Korean attack on the *Cheonan* and endured the disinformation that followed, while the US faced Russian online disinformation in its 2016 elections. Considering similar historical patterns of disinformation, the Republic of Korea and the United States should form a combined response to halt any structural conditions which may allow the exploitation of disinformation and deter common bad actors through regulatory measures.⁴⁴

Before establishing any combined response, the ROK and US should learn from the best practices of the European Union on having taken both executive and legislative approaches to bolster a structural response towards disinformation. Recalling the United States’ disagreement over the role of the Disinformation Governance Board, it is suggested that the two nations establish national governance mechanisms that would be founded on accountability, transparency, and partnership. A comprehensive plan should be devised on a phased approach where capacity building of the executive branch will parallel legislation to support funding for: theory and policy research on misinformation, malinformation, and disinformation; technical and civil society capacity for fact checking; education programs for raising awareness on information disorder and literacy on media and fact checking; an ad hoc group to guide the development of governance mechanisms for disinformation that would be based on public consensus.

This comprehensive and combined response can also be organized in parallel with national capacity building to combat common disinformation. Recognizing the principle of partnerships, allies should hold a dialogue to share lessons learned and best practices in preventing, regulating, and educating about information disorder. This dialogue will not only strengthen the comprehensive alliance, but it will also enhance national capacities through exchanges among government officials, academia, civil society, and technology companies. Furthermore, it will have a deterrent effect against disinformation actors, and provide an opportunity to exemplify the principles of a “free and open Indo-Pacific.” Looking beyond the immediate future, the ROK and US can take the first steps to gradually expand the dialogue to a forum, transition from a minilateral to multilateral approach through confidence building measures, share best practices and find a consensus on the challenges of disinformation based on partnerships.

⁴¹ “민주당 허위조작정보대책특위, ‘차이나게이트’ 등 코로나19 허위정보 경찰고발,” KBS News, 2020년 03월 11일.

⁴² Casey Corcoran et al, “The Disinformation Landscape in East Asia and Implications for US Policy,” *Disinformation Threat Watch*. (Belfer Center for Science and International Affairs, Harvard Kennedy School, 2019).

⁴³ “한겨레 ‘윤석열도 ‘윤중천 별장’ 접대’ 보도… 검찰 ‘완전한 허위 음해,’” 서울신문, 2019년 10월 11일.

⁴⁴ Heidi Tworek, “Policy Lessons from Five Historical Patterns in Information Manipulation” in *The Disinformation Age: Politics, Technology, and Disruptive Communication in the United States*, ed. W. Lance Bennett and Steven Livingston (Cambridge University Press, 2020).

6. The politics of multilateral energy cooperation in Northeast Asia: The implications for South Korea, Japan, and China

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ABSTRACT

The three major energy consumers in Northeast Asia—China, South Korea, and Japan—have been engaged in a number of political initiatives for regional energy security cooperation not only in the fossil fuel sector, but also in other sectors including nuclear and renewable energy. However, the effectiveness of these political initiatives for multilateral energy cooperation has remained limited, as countries instead continue to address their energy security challenges by strengthening bilateral relations with overseas energy-producing nations. The persistent lack of implementation of these initiatives has resulted in solidifying the existing seller-centered energy market system rather than realizing the long-held desires for establishing an effective buyer's market in Northeast Asia. The purpose of this paper is to explore the politics of this contradictory relationship between energy securitization and multilateral energy cooperation in Northeast Asia and provide policy recommendations for future opportunities for regional energy cooperation. In this respect, this paper argues that the persistent lack of multilateral energy cooperation in Northeast Asia is the product of the interplay between the changing global energy market and the concomitant reshaping of energy geopolitics in the region.

INTRODUCTION

Energy security has long been one of the key agendas for multilateral cooperation in Northeast Asia, particularly among the three largest economies in the region—China, South Korea, and Japan.¹ Despite their advantageous position as one of the largest energy markets, they have failed to exercise effective bargaining power collectively and remain at a huge disadvantage in terms of prices. Their common thirst for overseas oil and gas supplies, shared concerns over unfavorable prices, and interest in decarbonization policies constitute an integral part of their move toward regional energy cooperation. Accordingly, there have been a number of relevant political initiatives to map out ways for joint action not only in the traditional fossil fuel sector, but also in other energy sectors including nuclear and renewable energy.

However, many such initiatives have resulted only in hollow promises and empty rhetoric without visible outcomes and enduring success. In the asymmetrical supply and demand relationship of the global energy market—with a large number of consumers beholden to a small number of producers—the three countries have instead continued to address energy security challenges by seeking and consolidating their own bilateral relations with overseas energy-producing countries, primarily in the Middle East.

ENERGY LANDSCAPES IN NORTHEAST ASIA

Common recognition of the need for multilateral energy cooperation by the three Northeast Asian countries is built upon similarities in their energy landscapes. To begin with, China, South Korea, and Japan have all shown similar energy-consumption patterns in recent decades.² Based on their manufacturing and export-oriented industrial economies, primary energy demand from these countries has significantly increased in line with their economic development and rapid industrialization.³ Although traditional fossil fuels—particularly coal and oil—still account for a significant amount of each country's energy mix, they are gradually transitioning toward green energy by reducing the share of fossil fuels and expanding the role of relatively low-carbon sources of electricity, such as nuclear and renewable energy.

¹ When we refer to “Northeast Asia,” the region largely covers six countries, China, Mongolia, Siberia and the Far East of Russia, South Korea, North Korea, and Japan. This means that the region includes both major energy-producing countries, including Russia, as well as major energy-consuming countries. This paper particularly focuses on the multilateral relationships between the three largest energy-consuming countries—China, South Korea, and Japan—in Northeast Asia.

² Meng Xiangchengzhen and Serafettin Yilmaz, “Renewable Energy Cooperation in Northeast Asia: Incentives, Mechanisms and Challenges,” *Energy Security Reviews*, 29 (2020): 1, <https://www.sciencedirect.com/science/article/pii/S2211467X20300225>.

³ Mike Fulwood, et al., “Emerging Asia LNG Demand,” *OIES Paper*, NG 162 (The Oxford Institute for Energy Studies, September 2020), <https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2020/09/Emerging-Asia-LNG-demand-NG-162.pdf>.

According to the 2021 British Petroleum (BP) Statistical Review of World Energy,⁴ China's overall coal demand rose 0.3% in 2020 due to the rising needs of domestic industrial sectors including power, steel, construction, manufacturing, and chemical production. However, coal's share in China's total energy mix decreased to 57% in 2020, compared to 58% in 2019. Although South Korea generated two-thirds of its electricity from coal-fired power plants and nuclear reactors until recently, the departed Moon Jae-in administration made a commitment to stop the construction of new coal and nuclear plants.⁵ In 2020, the Japanese government also announced its commitment to curtail its domestic reliance on coal as well as its exports of coal-fired power-generation technology abroad.⁶ Due to its wide recognition as a transitional fuel that can fill the void created by the decreasing use of coal, the share of natural gas in each country's energy mix is expected by many academics and practitioners to hold steady or expand from 2030 to 2035.⁷

The three countries have also proceeded with the development of nuclear power plants as part of their strategies to meet net-zero greenhouse emissions goals. While China has been very proactive in developing nuclear plants, South Korea⁸ and Japan⁹—which previously reduced the share of nuclear power in their energy plans—announced that they will restart nuclear power plants in the process of transitioning toward green energy. Overall, the proportion of fossil fuel power-generation is still high in the three countries, but their common shift away from coal and oil toward natural gas and clean energy demonstrates that they are on their way toward a green energy transition. Another important factor that has facilitated the need for regional energy cooperation lies in the deep-rooted asymmetric producer-consumer relationship in the global oil and gas market. Despite their position as a major consumer market, the three Northeast Asian countries have paid the so-called “Asian Premium,” as Middle Eastern producers, such as the Organization of the Petroleum Exporting Countries (OPEC), sell oil and gas to them at a much higher price than to Europe.¹⁰ In recent years, the increasing demand for the elimination of the Asian Premium on natural gas prices has constituted an integral part of their move toward energy security cooperation on a regional scale.¹¹ The three countries have expressed their willingness and aspirations for energy security cooperation, particularly in the traditional energy sector, to transform the existing seller-centered energy market into a buyer-driven landscape.

ENERGY COOPERATION INITIATIVES IN NORTHEAST ASIA: MORE TALK THAN ACTION

The three countries have often addressed their energy cooperation issues within existing multilateral platforms at the wider regional level, such as Asia-Pacific Economic Cooperation (APEC), ASEAN+3, and the East Asia Summit (EAS). Each regime provides energy security-related dialogue channels, such as the APEC Energy Working Group, ASEAN+3 Senior Officials Meeting on Energy, Energy Policy Governing Group, and the East Asia Summit Ministers Meeting. These energy cooperation schemes have served as meaningful platforms to foster and broaden the pattern of regional cooperation not only in the traditional energy sector, but also in the growing low-carbon sector. As some of the member countries in these regimes, such as Indonesia and Malaysia, are among the major oil and gas producers in the region, these cooperation schemes have had some notable limitations in providing a proper platform for China, South Korea, and Japan to address energy security challenges from the demand side. Thus, the three countries have also sought to foster energy cooperation within the framework of the Korea-China-Japan trilateral

⁴ BP PLC, *Statistical Review of World Energy 2021*, 70. (BP PLC, 2021), <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pdf>.

⁵ Christine Kim, “South Korea's President Says Will Continue Phasing Out Nuclear Power,” *Reuters*, Oct. 22, 2017, <https://www.reuters.com/article/us-southkorea-nuclear-moon-idUSKBN1CR04U>; See also: Ko Jun-tae, “Moon Vows to Shut Down 30 More Coal Plants to Bring Cleaner Air and Battle Climate Change,” *The Korea Herald*, Sept. 8, 2020, <http://www.koreaherald.com/view.php?ud=20200908000676>.

⁶ Aaron Sheldrick and Yuka Obayashi, “Japan Tightens Rules on Support for Overseas Coal-fired Plants,” *Reuters*, July 9, 2020, <https://www.reuters.com/article/us-coal-japan-finance/japan-tightens-rules-on-support-for-overseas-coal-fired-plants-idUSKBN24A0CH>.

⁷ International Energy Agency (IEA), *The Role of Gas in Today's Energy Transitions*, (2019), <https://iea.blob.core.windows.net/assets/cc35f20f-7a94-44dc-a750-41c117517e93/TheRoleofGas.pdf>.

⁸ Kotaro Hosokawa, “Small Is Beautiful in South Korea's Pivot Back to Nuclear Power,” *Nikkei Asia*, Sept. 2, 2021, <https://asia.nikkei.com/Business/Energy/Small-is-beautiful-in-South-Korea-s-pivot-back-to-nuclear-power>.

⁹ Kantaro Komiya and Jacqueline Wong, “Japan to Restart Idled Nuclear Power Plants, No Plans to Replace, Says PM,” *Reuters*, May 27, 2022, <https://www.reuters.com/world/asia-pacific/japan-restart-idled-nuclear-power-plants-no-plans-replace-says-pm-2022-05-27/>.

¹⁰ Kiran Sharma, “India Leads Regional Charge to End OPEC's ‘Asian Premium,’” *Nikkei Asia*, Oct. 25, 2018, <https://asia.nikkei.com/Politics/International-relations/India-leads-regional-charge-to-end-OPEC-s-Asian-premium>.

¹¹ Reuters, “Japan's Jera Seeks LNG Alliance with Korea Gas, China's CNOOC,” Feb. 26, 2016, <https://www.reuters.com/article/lng-jera-idAFL3N1653KD>.

summit, first held in 1999 following the ASEAN+3 Summit. Since the trilateral meeting was institutionalized in December 2008 as separate from the existing ASEAN+3 Summit framework,¹² the three countries began to develop their own political initiatives and dialogues on energy security cooperation at multiple levels, including ministerial conferences, senior official meetings, and entrepreneurs' conferences. The Trilateral Cooperation Secretariat (TCS) was subsequently established in 2011 as part of their attempts to promote multilateral cooperation in the region.¹³ To be specific, the political initiatives for multilateral energy cooperation in Northeast Asia have largely fallen into three broad categories based on type of energy source. In the fossil fuels sector, recent energy cooperation initiatives have tended to focus on natural gas, specifically the liquefied natural gas (LNG) sector. This is partly related to the fact that natural gas is considered a relatively clean bridge fuel in each country's transition to clean energy, but also to the rigid nature of the natural gas market. Indeed, compared to the oil market that provides few incentives for cooperation between importers, the natural gas market provides more motivation for cooperation thanks to long-term contracts indexed to oil prices that pass price risk onto consumers.¹⁴

Amid the rapid increase of LNG imports across the region, the three countries have reached a consensus that joint action is needed to reduce the financial burden of these imports. Accordingly, these three major gas buyers in Northeast Asia, which have long been passive recipients of traditional LNG supplies, began to take greater initiative to pursue competitively priced LNG based on multilateral cooperation. In 2015, South Korea's Ministry of Trade, Industry and Energy (MOTIE) took the first initiative to crystalize trilateral LNG cooperation in the region.¹⁵ This initiative was subsequently embodied in Clause 19 of the joint declaration adopted at the sixth trilateral summit held in Seoul in November 2015: "We reaffirmed the necessity of trilateral energy cooperation in achieving sustainable growth and co-prosperity of Northeast Asia. In this regard, we will strengthen our cooperation on LNG to enhance the liquidity and efficiency of the LNG market in Northeast Asia."¹⁶

Following this declaration, a series of initiatives for energy cooperation in the region have been developed. Most notably, the 2017 Memorandum of Understanding (MoU) on LNG Business Cooperation between China's national oil company (China National Offshore Oil Corporation, CNOOC), Japan's largest power generation company (JERA) and Korea's public gas company (Korea Gas Corporation, KOGAS), pursued joint procurement of LNG, joint participation in upstream projects, and cooperation relating to LNG shipping and storage. Adding to the cooperation scheme at the business level, aspirations to lower international prices for LNG imports were clearly expressed in the MoU on LNG cooperation at the 2018 trilateral summit in Tokyo.¹⁷

While the three Northeast Asian countries were successful in launching political initiatives for multilateral cooperation in the LNG sector, the effectiveness of these initiatives has remained limited to promoting diplomatic dialogue rather than actual implementation. Despite the professed consensus for trilateral coordination, LNG cooperation has tended to take place as an extension of economic and diplomatic bilateral relations in the region.

For example, both the 13th and 14th Plans for Long-term Natural Gas Supply and Demand (hereafter "gas plan") that were announced by the South Korean government in April 2018 and April 2021, consistently emphasized the importance of strengthening joint LNG supply and demand management systems through volume swaps, joint use of LNG facilities and information exchange. As the 13th "gas plan" specifically noted, a total of 71 LNG swap deals took place between 2013 and 2018, of which 64 were made between South Korea and Japan and seven were made

¹² For more information, see: Trilateral Cooperation Secretariat, *Annual Report FY2015* (2016), https://tcs-asia.org/data/etcData/PUB_kr_1567757589.pdf.

¹³ See: Trilateral Cooperation Secretariat, *Overview*, accessed 2022, <https://www.tcs-asia.org/en/about/overview.php>.

¹⁴ Jonathan Stern and Adi Imsirovic, "A Comparative History of Oil and Gas Markets and Prices: Is 2020 Just an Extreme Cyclical Event or an Acceleration of the Energy Transition?" *Energy Insights*, 68, (The Oxford Institute for Energy Studies, 2020), <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/04/Insight-68-A-Comparative-History-of-Oil-and-Gas-Markets-and-Prices.pdf>.

¹⁵ Keun Wook Paik, "South Korea's Energy Policy Change and the Implications for Its LNG Imports," *OIES Paper*, NG 132 (The Oxford Institute for Energy Studies, 2018), <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2018/06/South-Koreas-Energy-Policy-Change-and-the-Implications-for-its-LNG-Imports-NG132.pdf>.

¹⁶ Ministry of Foreign Affairs Japan, *Joint Declaration for Peace and Cooperation in Northeast Asia*, Nov. 1, 2015, https://www.mofa.go.jp/a_o/rp/page1e_000058.html.

¹⁷ Cho Kye-wan, "South Korea, Japan and China Sign Agreement in Move Toward Cooperation on LNG Imports," *Hankyoreh*, May 10, 2018, https://english.hani.co.kr/arti/english_edition/e_international/844103.html.

through bilateral relations between South Korea and China. Various areas related to LNG cooperation, ranging from core issues such as the abolition of the Asian Premium to other issues such as joint use of LNG facilities, have also been discussed within the context of the bilateral relationship in the region. A concrete example illustrating this phenomenon can be found in the relationship between South Korea and China: LNG cooperation has recently entered the bilateral relationship agenda through the development of a series of mechanisms, including energy conferences at the government and business levels and a joint gas-development agreement.¹⁸

Multilateral cooperation in the nuclear sector has also been relatively active in Northeast Asia, with all three countries participating in the three existing regional cooperation schemes for nuclear governance. First, the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) was established in 1972 under the auspices of the International Atomic Energy Agency (IAEA) with the aim of intensifying the collaboration among Asian member states in research, development and training projects.¹⁹ Second, a Japan-led cooperation framework—the Forum for Nuclear Cooperation in Asia (FNCA)—was established in 2000 to promote the peaceful and safe use of nuclear technology in the region. Finally, the Top Regulators’ Meeting on Nuclear Safety (TRM) was created in 2008 for trilateral cooperation on nuclear safety regulation between China, South Korea, and Japan. Regulatory officials from the three countries gather on a regular basis to discuss the establishment of an emergency information exchange system by conducting joint disaster prevention projects.

Though engaged in each of these frameworks, the three countries have competed for a leadership role in the field of nuclear safety and regulation. While South Korea has been an active member in the RCA framework, Japan has led another cooperation framework, FNCA. It also should be noted, however, that these regional mechanisms have limitations in moving beyond the level of sharing information on current nuclear-related status among the member countries.

Conversely, there have been relatively few cooperative initiatives in Northeast Asia in the field of renewable energy. However, as addressed in China’s Belt and Road Power Grids, or the Global Energy Interconnection Project,²⁰ and South Korea’s proposed Northeast Asia Super Grid concept,²¹ the three countries have supported the idea of building a renewable-based grid network across the region as a means of satisfying the growing electricity demand as well as achieving their own net carbon neutrality targets. Given that the use of clean energy significantly depends on natural conditions and that supply may be unstable and intermittent if developed within a single country, the nations have recognized the importance of multilateral cooperation for storing, transmitting and distributing electricity via an interconnected supply chain across the region. The Northeast Asia Power System Integration (NAPSI) project proposed by the Asian Development Bank (ADB) is one notable initiative that seeks to create a regional renewable energy market by linking the grids of China, South Korea, Japan, Mongolia, and possibly Russia into an interconnected power system.²²

Overall, despite the widely held recognition of the importance of regional energy cooperation, these multilateral initiatives aimed at creating a consumer-centered market system have not succeeded in producing concrete results. There has been a great deal of debate over why multilateral energy cooperation in Northeast Asia has failed. An-

¹⁸ Lee Song-hoon, “KOGAS to Cooperate with CNPC for Natural Gas Business,” *Business Korea*, Dec. 19, 2017, <http://www.businesskorea.co.kr/news/articleView.html?idxno=20116>; Sanja Pekic, “SK E&S and Beijing Gas to Cooperate on LNG and Hydrogen,” *Offshore Energy*, May 27, 2022, <https://www.offshore-energy.biz/sk-es-and-beijing-gas-to-cooperate-on-lng-and-hydrogen/>.

¹⁹ International Atomic Energy Agency, *Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA)*, accessed 2022, <https://www.iaea.org/about/partnerships/regional/cooperative-agreements/regional-cooperative-agreement-for-research-development-and-training-related-to-nuclear-science-and-technology-for-asia-and-the-pacific-rca>.

²⁰ Qili Huang, “Insights for Global Energy Interconnection from China Renewable Energy Development,” *Global Energy Interconnection*, 3, 1 (2020): 1-11, <https://www.sciencedirect.com/science/article/pii/S2096511720300281>.

²¹ Jung Min-hee, “KEPCO President: ‘Northeast Asian Super Grid Project Involving Russia Is Feasible,’” *Business Korea*, Nov. 3, 2017, <http://www.businesskorea.co.kr/news/articleView.html?idxno=19704>.

²² Kaoru Ogino, “A Review of the Strategy for the Northeast Asia Power System Interconnection,” *ADB East Asia Working Paper Series*, 30 (Asian Development Bank, 2020), <https://www.adb.org/sites/default/files/publication/664331/eawp-030-neasia-power-system-interconnection.pdf>.

swers to this puzzle have centered around the region's structural conditions related to political complexity, historical disputes, and institutional constraints inherent in the region, as well as different levels of energy market liberalization across the region.²³ It could be assumed that the momentum to implement these initiatives has been lost due to deteriorated relations between the three countries over political and historical issues, but it is difficult to find a publicly accepted reason why these multilateral initiatives have floundered. This paper focuses on the complex nature of the global energy market and the concomitant changes in energy geopolitics in Northeast Asia to provide a more plausible answer to this persistent lack of multilateral energy cooperation in the region.

BETWEEN ENERGY SECURITY AND THE SECURITIZATION OF ENERGY

The current energy landscape in Northeast Asia lies somewhere between the rise of energy security cooperation initiatives and the securitization of energy. Today's global energy market, particularly the oil and gas market, continues to experience a variety of changes. On one side, the development and investment in traditional energy resources is expected to gradually decrease in line with decarbonization trends, while the other side emphasizes the persistence of fossil fuels. Such unpredictable dynamics in the global oil and gas market, and the resultant price volatility, have led the major energy consumers in Northeast Asia to seek their own energy security strategies in a relatively stable and predictable manner.

For the three largest energy-importing countries, which have long sought to address energy security challenges through bilateral relations with powerful energy exporters, shifting oil and gas market dynamics have provided little incentive to form a collective regional bargaining power in solidarity against overseas exporters. Instead of pursuing such a bold approach that could affect existing bilateral relationships, the three countries have further strengthened bilateral relations with these overseas producers while continuing to lightly engage in low-level regional energy cooperation initiatives.²⁴ As each country's approach to energy security has become further fragmented and securitized within this context, the opportunities for multilateral cooperation in the traditional fossil fuel sector continue to shrink.

As Figure 1 illustrates below, Northeast Asia's landscape in the traditional energy sector, in which regional players from both producer and consumer sides are intricately intertwined, has also made it more difficult for the three countries to reach convergence in their approaches to energy cooperation. As the United States and Russia recently emerged as new oil and gas exporters to the region, their attempts to occupy the Northeast Asian market have affected the energy security strategies of the three countries. It has become more difficult for China, which is in conflict with the US, to pursue a cooperative relationship with such key US allies as South Korea and Japan. While South Korea and Japan are under implicit pressure to increase imports of oil and gas from the US, China has strengthened its bilateral energy cooperation with Russia as part of its attempt to put the brakes on the new US-led energy order in Northeast Asia.

For instance, Russia and China signed the Power of Siberia gas pipeline deal in May 2014 and Russia's state-owned oil company, Gazprom, is supplying natural gas to China via the Power of Siberia 1 pipeline.²⁵ The Yamal LNG and Arctic LNG 2 projects have also emerged as notable examples of Sino-Russian energy cooperation in Northeast Asia. Most recently, China's President Xi Jinping and Russia's President Vladimir Putin met in Beijing in February 2022, confirming a series of business deals with new contracts for Russian oil and gas exports to China between Rosneft, Gazprom and CNPC.²⁶

²³ For more information, see the articles that discussed energy security cooperation problems in Northeast Asia: Jae-Seung Lee, "Energy Security and Cooperation in Northeast Asia," *Korea Journal of Defense Analysis*, 22, 2 (2010): 217-233; Yen-Chiang Chang and Shuo Li, "Legal Issues Regarding Energy Market Integration in Northeast Asia," *Energy Strategy Reviews*, 38 (2021): 1-11.

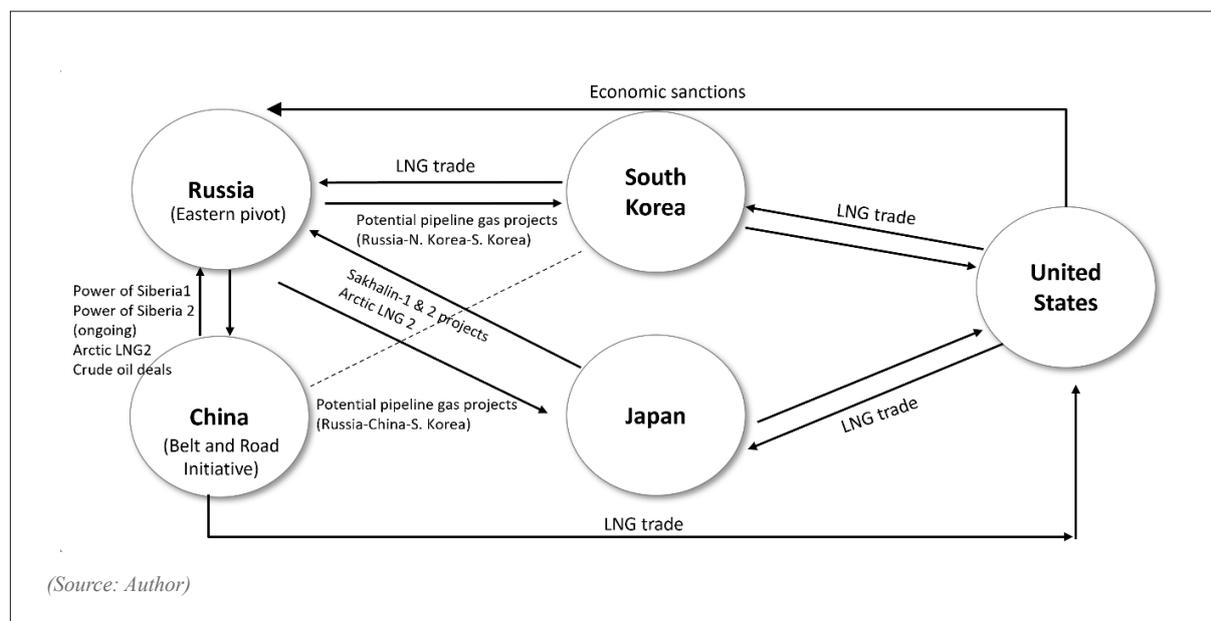
²⁴ The three countries have established bilateral energy relations with a number of oil and gas producing countries such as the US, Russia, and Australia, as well as with the countries in the Middle East, Sub-Saharan Africa, Southeast Asia, and Latin America.

²⁵ Henry Foy, "Russia's \$55bn Pipeline Gamble on China's Demand for Gas," *Financial Times*, April 3, 2018, <https://ig.ft.com/gaz-prom-pipeline-power-of-siberia/>.

²⁶ Vladimir Soldatkin and Chen Aizhu, "Update 3- Putin Hails \$117.5 bln of China Deals as Russia Squares off with West," *Reuters*, Feb. 4, 2022, <https://www.reuters.com/article/olympics-2022-putin-gas-idCNL1N2UF0G2>.

Within this context, Russia has become the third-largest natural gas supplier (including both pipeline gas and LNG) and the second-largest crude oil supplier to China in 2021.²⁷ That does not necessarily mean that China has had no energy relationship with the US. Although LNG trade between the US and China was suspended for a short period of intensifying political and economic confrontation during the Trump administration, China’s need for LNG brought the country back to the US market. The US became China’s second largest LNG supplier in 2021, even at a time when trade tensions remain high.²⁸

Figure 1. Energy Relations Landscape in Northeast Asia



As bilateral cooperation between China and Russia intensifies in the traditional energy sector, the dilemma of South Korea and Japan—US security allies and the largest importers of US LNG—has also grown. While seeking to expand the proportion of US LNG in their energy options, they have also taken relatively independent and pragmatic approaches to energy security issues. In line with this, both countries have diversified their fuel supplies by expanding bilateral relations with Russia. On one hand, Japan currently participates in Russia’s oil and gas projects, including Arctic LNG-2 and the Sakhalin 1 and 2 projects.²⁹ South Korea, on the other hand, has sought to expand energy cooperation with Russia by purchasing Sakhalin-2’s LNG under long-term contracts and envisioning a natural gas pipeline (PNG) project on the Korean Peninsula connecting Russia and North Korea.³⁰ In the region’s energy market, where conflicts between the US and China and between the US and Russia have long been entangled, the relatively pragmatic energy security policies of both Japan and South Korea are constantly put to the test. This phenomenon has become further intensified since Russia’s invasion of Ukraine in February 2022.

While China further strengthens its already strong energy ties with Russia,³¹ Japan and South Korea have been under mounting pressure to review business connections with Russian oil and LNG projects. Both Japan and South Korea, which currently have few alternatives to Russian imports, have justified their purchase of Russian oil and gas. Japan recently announced it would not voluntarily withdraw its investment in the Sakhalin-2 project, and South Korea

²⁷ Reuters, “Factbox: Asian Buyers of Russian Oil, Gas and Coal,” April 6, 2022, <https://www.reuters.com/business/energy/asian-buyers-russian-oil-gas-coal-2022-02-22/#:~:text=Russia%20is%20also%20China's%20No,roughly%205%25%20of%20China's%20demand>.

²⁸ Derek Brower and Justin Jacobs, “US-China Gas Deals Defy Tensions between World Powers,” *Financial Times*, Dec. 21, 2021, <https://www.ft.com/content/c267b3ea-a874-4bea-9105-860ae1847176>.

²⁹ Isabel Reynolds, “Japan Won’t Exit Joint Oil Project with Russia, PM Kishida Says,” *Bloomberg*, April 1, 2022, <https://www.bloomberg.com/news/articles/2022-04-01/kishida-says-japan-won-t-exit-sakhalin-1-oil-project-in-russia>.

³⁰ Jane Chung, “Trans-Korea Gas Pipeline Project Reappears, but Challenges Remain,” *Reuters*, June 29, 2018, <https://www.reuters.com/article/us-northkorea-southkorea-gas-russia-expl-idUSKBN1JP0UN>.

³¹ Misa Hama and Kazuya Hiruta, “China and India Buy More Russian Oil, Blunting Western Sanctions,” *Nikkei Asia*, June 8, 2022, <https://asia.nikkei.com/Business/Energy/China-and-India-buy-more-Russian-oil-blunting-Western-sanctions>.

has also shown reluctance to ban imports of Russian oil and gas.³² Such dilemmas arising from their precarious energy relations with both the US and Russia have further destabilized and obfuscated their political and market positions. While China has successfully obtained a better bargaining position *vis-à-vis* Russia by taking advantage of Moscow's desperation after its loss of the European LNG market, the current energy geopolitics in the region are becoming bifurcated. Forming two different blocs—China-Russia versus the US-South Korea-Japan—this division is further complicating the energy security situation in Japan and South Korea.

This reshaping of energy geopolitics in Northeast Asia and the changing global energy market holds a number of implications for the region. Overall, multilateral energy cooperation between China, South Korea, and Japan in traditional fossil fuel sectors is becoming less likely, especially where strong bilateral relations with major producers such as the US, Russia and the Middle East have already been established. Within the changing global energy market that is gradually moving away from fossil fuels, the three countries' energy security strategies related to fossil fuels are prone to be implemented in a stable and less risky manner through the strengthening of bilateral energy relations with existing overseas producers. Arguably, it is because there is no need to place short and medium-term energy policies in the direction of pursuing joint actions that risk established relationships with overseas producers. The current geopolitical landscape in the traditional energy sector, which has become further securitized in this context, has thus made it more difficult for the three countries to achieve connectivity in their energy policies.

WHAT NEEDS TO BE DONE

The market-driven and geopolitical-based aspects of energy relations are expected to determine the prospect of energy security cooperation in Northeast Asia. However, the question is how to set up a proper cooperation mechanism between China, South Korea, and Japan in a more sustainable and durable format that is less prone to stalemate and inaction. The challenge is to balance different short and long-term energy security interests in a way that advances each nation's distinctive national interests and the wider interests of the region, without simultaneously disturbing carbon neutrality goals.

Thus, what is currently needed for future multilateral energy cooperation in the region is to prioritize issues and areas that are more consistent with broader trends and dynamics in the global energy market and that have relatively few geopolitical implications. This paper proposes strengthening cooperation in specific sectors—LNG, nuclear, and renewable energy—that are currently deemed priority resources within the global energy transition and to seek out relevant projects that have little geopolitical implications for the three countries.³³

First, regional cooperation in the LNG sector, despite the consensus on the need for multilateral collaboration between China, South Korea, and Japan to reduce the so-called Asian Premium, has often been implemented in the form of bilateral relations between importers and exporters. Given that it is widely expected that fossil fuels, particularly LNG, will continue to occupy a significant portion of energy mixes in the three countries at least for the next few decades, opportunities for multilateral cooperation in the sector still exist. However, multilateral energy cooperation targeting established LNG producers that already have strong bilateral relations with the three countries—namely the Gulf States, the US, and Russia—is unlikely to succeed, as it could generate geopolitical and security risks for energy importing countries in Northeast Asia.

³² Dipanjan Roy Chaudhury, "Japan Not to Withdraw from Sakhalin-2 LNG Project Even If Asked To: Minister," *The Economic Times*, June 1, 2022, <https://economictimes.indiatimes.com/industry/energy/oil-gas/japan-not-to-withdraw-form-sakhalin-2-lng-project-even-if-asked-to-minister/articleshow/91935330.cms?from=mdr>.

³³ For example, the European Commission recently announced its plan to categorize investment into natural gas and nuclear energy projects as "green" and "low-carbon" along with other renewable energy investments. Although huge concerns remain among many environmentalists and some investors over the risk of undermining the EU's target of carbon neutrality by 2050, this approach is gradually recognized as a realistic alternative not only in Europe, but also other countries within the current incomplete global energy transition process. For more information, see: John Ainger and Ewa Krukowska, "EU Unveils Controversial Green Label for Gas and Nuclear," *Bloomberg*, Feb. 2, 2022, <https://www.bloomberg.com/news/articles/2022-02-02/eu-to-unveil-controversial-green-label-plan-for-gas-and-nuclear>.

One option that policymakers can consider is the establishment of multilateral cooperation practices by participating in LNG projects taking place in regions with relatively little direct geopolitical implications for Northeast Asia. Taking part in oil and gas projects with emerging producers in Sub-Saharan Africa, Southeast Asia, and the Pacific islands could provide a more effective locus for the three Northeast Asian countries to implement joint ventures and strategic alliances. For example, Mozambique's LNG industry, in which five Asian energy companies from China, India, South Korea, Japan, and Thailand are simultaneously engaged as key shareholders, could be an important testing ground for joint action as major LNG buyers. To this end, the three countries should maintain and consolidate existing dialogues and cooperation schemes at both governmental and business levels to develop future opportunities for joint ventures in overseas gas projects in emerging energy-producing countries.

Second, multilateral cooperation in the nuclear sector should be implemented in a way that further strengthens existing regional cooperation schemes dealing with nuclear safety and regulation. Nuclear power, which is time consuming and costly to develop, is an area in which public intervention is unavoidable. Indeed, many countries that have adopted nuclear power have invested large-scale public resources for a long period of time to develop relevant technology and infrastructure. Given that nuclear power is basically a political energy sector that requires large-scale state intervention, the three countries have treated nuclear energy as an object of national interest, despite their acknowledgement of the need for a joint response to nuclear safety issues after the Fukushima accident. Seen in this way, multilateral cooperation in Northeast Asia regarding nuclear energy should be implemented in a way that reduces potential geopolitical risks that may be caused by the highly political nature of nuclear power. A realistic solution is to make the best use of existing nuclear-related multilateral cooperation architectures in the region, so key players can jointly deal with specific action items such as safety regulations, environment, and information sharing. Starting with these low-level but important issues would potentially lead to more ambitious, higher-level cooperation on issues such as non-proliferation.

Finally, cooperation in the field of renewable energy, which is not yet mature, can provide a longer-term window of opportunity for multilateral energy cooperation in the era of global energy transition. In particular, the development of a renewable-based grid network across the region has great potential for future multilateral cooperation given the three countries' common recognition of the importance of building a network for electricity, similar levels of renewable energy technology, and the region's promising clean energy potential. While energy security for finite oil and gas resources is often considered a zero-sum game based around "who gets how much energy resources, how and why," it is widely known that the democratic characteristics and global distribution of renewable energy can help mitigate geopolitical concerns related to energy security.

In the context of Northeast Asia renewable cooperation policy, decision makers must first address geopolitical rivalries between the potential participants in the projects presented so far—Russia, China, South Korea, and Japan. The geopolitical tensions, lack of mutual trust, and long-standing disputes over historical interpretations have been central in the relational dynamics in Northeast Asia. For example, if a country that has previously weaponized energy resources to deal with political issues launched future grid network projects based on their own plans and strategies, it could bring a higher degree of reluctance by other countries to commit to cross-border energy cooperation. One option that policymakers in the region should consider to overcome such potential risk is to actively participate in projects led by regional organizations, such as the ADB, rather than in projects led by specific countries. These higher governance systems can better address politically and economically sensitive issues that may arise in the process of developing network projects, such as the establishment of a power grid passing through North Korea, as well as geopolitical risks related to critical materials and cyber security.

To this end, the following two aspects should be considered to begin and sustain fresh dialogue for multilateral cooperation on renewable energy. First, it is necessary for all players, including political elites and the financial community, to continuously reaffirm that the end goal of developing an interconnected power system in Northeast Asia is not only to satisfy domestic energy needs, but also to meet the region-wide goal of decarbonization. Any type of multilateral cooperation may be easily affected by regional dynamics, so having a broad-based consensus and coalition that agrees upon the need for a regional renewable energy market and global climate targets is essential.

Therefore, official and semi-official communication channels should be kept open and supported as an initial step to help ease energy security-related concerns and motivate cross-border cooperation in technology, finance, and infrastructure. Under the governance of regional organizations, participating countries should continue to discuss grid development-related details, such as how to incorporate other relevant multilateral initiatives and form a governance structure for the project. Such incremental but continuous movement towards a regional renewable energy market would potentially open the door for the Northeast Asian countries, who have long been vulnerable in terms of supply-side availability, to become future exporters of clean energy-based electricity.

CONCLUSION

The gap between the proliferation of political initiatives for multilateral energy cooperation and their persistent lack of implementation in Northeast Asia has often been understood as a regional cooperation problem caused by political, historic, and institutional constraints inherent in the region. What this paper has sought to reveal, however, is that this widely known regional cooperation problem is rather the product of the interplay between the changing global energy market and the concomitant reshaping of energy geopolitics in Northeast Asia.

Within the changing global energy market, which is gradually shifting from fossil fuels to clean energy, the three countries have addressed their energy security challenges in a relatively stable and predictable way. Namely, by strengthening bilateral relations with overseas energy producers, rather than pursuing multilateral cooperation that may affect already established energy relations in the fossil fuels sector. The current geopolitical landscape in Northeast Asia's traditional energy sector, which has become further securitized and fragmented within this context, has made it more difficult for the three countries to actively engage in multilateral cooperation.

Despite this gloomy outlook for Northeast Asia, opportunities still exist. As discussed, the recommended policies for future multilateral energy cooperation in the region are to implement cooperation practices in specific energy sectors—LNG, nuclear, and renewable energy—that are deemed consistent with the dynamics of global energy transition and in areas that have relatively little direct geopolitical implications for the three countries. There is no doubt that bilateral energy relations will continue to prevail in Northeast Asia's energy landscape. However, multilateralism can also prove successful if countries implement cooperation practices based on strategic consideration of the geopolitical implications and dynamics of the international energy market.

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