June 2022

Expanding Engagement among South Korea and the Quad Countries in the Indo-Pacific

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Summary

Since its revival in 2017, the quadrilateral dialogue among Australia, India, Japan, and the United States known as the “Quad” has become a stronger, more institutionalized grouping with a broad and growing agenda. As a leading economy, a vibrant democracy, and a key US strategic ally, South Korea stands out as one of the most promising potential partners for the Quad. With a new administration in office in Seoul, the time is ripe for South Korea to expand its engagement with the Quad countries in the Indo-Pacific.

Even without formally expanding the membership of the Quad, which is currently not under consideration by its members, there are pragmatic and effective ways for these five countries to pursue their shared interests and values through a flexible set of mechanisms across a wide variety of crucial issues.

After a brief review of the debates about the Quad in South Korea, this paper presents a framework for the country to consult, coordinate, and cooperate with Quad members through distinct institutional pathways: bilateral mechanisms, sub-Quad minilateral mechanisms, issue-specific engagement to achieve a specific functional goal, and more formal Quad Plus engagement on a broad strategic level.

The paper offers the following recommendations for South Korea and the Quad countries to deepen their engagement in eight areas that correspond with Quad working groups and activities: critical and emerging technologies, infrastructure, health, climate change, education and people-to-people exchange, maritime safety and security, cybersecurity, and outer space.

South Korea and the Quad countries should:

- Work together to facilitate the Indo-Pacific’s digital integration through the development, diversification, and deployment of open, transparent, and efficient 5G and 6G network architectures
- Use South Korea’s 2021 Memorandum of Understanding on Cooperation in Critical Mineral Supply Chains with Australia as a template for bilateral agreements to align its policies in this field with those of India, Japan, and the United States
- Build on South Korea’s Semiconductor Partnership Dialogue with the United States as a basis for broader engagement on a sub-Quad minilateral basis or with the Quad working groups
- Cooperate to establish a shared set of rules and norms for digital governance to deal with the issues that arise from the interconnections between technology and national security
- Pool resources toward high-standards regional infrastructure investment efforts
- Link the Quad Vaccine Partnership with the Global Vaccine Partnership between South Korea and the United States, and link the Quad Vaccine Partnership Experts Group with the KORUS Global Vaccine Partnership Experts Group
- Contribute to the construction of a post-corona-virus health-security architecture to help prevent and respond to future pandemics
- Coordinate green-shipping initiatives and add Busan to the list of leading ports such as Los Angeles, Mumbai Port Trust, Sydney (Botany), and Yokohama that have been invited to form a network dedicated to greening and decarbonizing the shipping value chain
- Find ways for the Quad’s Clean-Hydrogen Partnership to complement and support South Korea’s goal to expand its hydrogen production and consumption
- Improve critical climate information sharing and prediction capabilities to increase regional resilience to the effects of climate change
- Consider forming voluntary carbon market mechanisms under Article 6 of the Paris Agreement to support implementation of the five countries’ Nationally Determined Contributions and to share mitigation outcomes and other technological and financial resources
• Facilitate educational and exchange opportunities to build collaboration in science, technology, engineering, and mathematics among rising experts

• Combat illegal, unreported, and unregulated fishing by supporting the capacity-building efforts of regional navies and coast guards, promoting effective legal frameworks to improve regulation and maritime safety, and enhancing maritime domain awareness through information sharing

• Build and maintain regional resilience against disasters through aid and capacity-building initiatives and engage South Korea in maritime disaster relief efforts through the Quad Humanitarian and Disaster Relief Mechanism or through bilateral exchanges with the Quad countries

• Consider South Korea’s participation in additional maritime security activities such as the annual Malabar exercise with the Quad countries as an observer or as a participant

• Deepen bilateral and trilateral maritime security cooperation with the Quad countries, which can be a stepping-stone for greater coordination with the Quad, and consider maritime security cooperation with India, particularly with its Information Fusion Center–Indian Ocean Region or by supporting pillars of its Indo-Pacific Oceans Initiative

• Deepen bilateral discussions on cyber capacity-building initiatives in the Indo-Pacific and integrate South Korea into broader efforts to strengthen resilience through the Quad Cybersecurity Partnership and to build capacity to implement the UN Voluntary Framework for Responsible State Behavior in Cyberspace

• Share satellite data to monitor and adapt to climate change risks and work together to enhance space situational awareness by detecting, identifying, tracking, and characterizing space objects to support shared goals of safety, security, and sustainability
Introduction
The quadrilateral dialogue known as the “Quad” has gained remarkable momentum over the past five years. Its members—Australia, India, Japan, and the United States—originally came together to respond to the 2004 Indian Ocean tsunami, but they held only one senior official-level meeting in 2007 before ceasing activities. Since 2017, however, the grouping has been reinvigorated by a shared interest in securing a free and open Indo-Pacific. Meetings between senior foreign ministry officials and intelligence chiefs have occurred regularly since then, and there have also been four leaders’ summits since the beginning of US President Joe Biden’s administration in January 2021.

During this time, the Quad has become a stronger, more institutionalized grouping with a broad and growing agenda. It is now a major pillar of the emerging Indo-Pacific architecture. Shedding the Quad's previous reputation as a tool for Chinese containment, its members have identified the common goal to “strive for a region that is free, open, inclusive, healthy, anchored by democratic values, and unconstrained by coercion.”1 To provide a more positive agenda for the grouping, they have expanded to non-military issues such as vaccines, climate change, critical and emerging technologies, and infrastructure. By creating working groups and meeting annually at the leaders' level, they have imbued the Quad with a flexible yet coordinated structure that seeks to deliver tangible benefits to the Indo-Pacific.

Although the Quad is presently focused on solidifying ties among its members, they recognize that achieving their ambitious goals will require cooperation and coordination with additional partners inside and outside the Indo-Pacific. Externally, there has been considerable interest among like-minded countries in finding ways to cooperate more closely with the grouping. As a leading economy, a vibrant democracy, and a key US strategic ally, South Korea stands out as one of the most promising potential partners for the Quad. President Yoon Suk-yeol has called for the country to step up and become a “global pivotal state” that “advances freedom, peace, and prosperity through liberal democratic values and substantial cooperation.”2 South Korea shares many of the same concerns as the Quad countries about addressing threats related to health and climate change, preventing economic coercion, establishing a rules-based order, and establishing high standards for investment. Moreover, it has the capacity and the political will to meaningfully contribute to the region and beyond.

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With a new administration in office in Seoul, the time is ripe for South Korea to expand its engagement with the Quad countries in the Indo-Pacific. Even without formally expanding the membership of the Quad, which is currently not under consideration by its members, there are pragmatic and effective ways for these five countries to pursue their shared interests and values through a flexible set of mechanisms across a wide variety of crucial issues. After a brief review of the debates about the Quad in South Korea, this paper presents a framework for South Korea to consult, coordinate, and cooperate with the Quad countries in adaptable configurations that serve their mutual needs and goals. It then provides policy recommendations for South Korea and the Quad countries to deepen their engagement in eight areas that correspond with the working group structure of the Quad: critical and emerging technologies, infrastructure, health, climate change, education and people-to-people exchange, maritime safety and security, cybersecurity, and outer

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1  Quad Leaders’ Joint Statement, March 12, 2021.
space. The paper concludes with a summary of the findings and a consolidated list of recommendations.

**South Korea and the Quad**

South Korea’s position on the Quad has been strongly influenced by its need to balance its security relationship with the United States and its economic reliance on China. While Seoul’s military alliance with the United States is the cornerstone of its diplomatic and security policy, China became its largest trading partner in 2003, accounting for 25 percent of exports and imports in 2020. Over time, South Korea has become increasingly concerned about China’s assertive behavior, particularly after being targeted by Beijing’s economic coercion in the aftermath of Seoul’s decision in 2016 to deploy a US Terminal High Altitude Area Defense (THAAD) anti-ballistic missile defense system. The incident heightened South Korea’s awareness of the risks of heavy dependence on China and the need to diversify its economic ties. Still, during the Moon Jae-in administration, Seoul resisted explicitly siding with the United States and others against Beijing, lest it find itself “on the front line of a new Cold War era.”

As a result of this delicate balancing act, although South Korea shares many interests and values with the Quad countries, it has maintained a degree of separation from the Quad as a grouping and from broader discussions of a Free and Open Indo-Pacific. It remained largely silent when the Quad first emerged as a grouping in the 2000s, and the Moon administration continued this trend for the first few years after the Quad’s revival in 2017. South Korea also eschewed the development of an Indo-Pacific policy, choosing instead to launch a New Southern Policy (NSP) in 2017 that focuses on diversifying its economic and strategic partnerships with the countries of South and Southeast Asia. Since that time, Seoul has deepened its partnership with India as part of the NSP, and it has also worked with Washington to find synergies between the NSP and the US Indo-Pacific strategy. However, the Moon administration simultaneously tried to maintain a neutral stance by emphasizing that it was also willing to find common ground with alternative China-led regional arrangements such as the Belt and Road Initiative.

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However, the Quad’s decision in March 2021 to explicitly embrace non-military issues such as technology, infrastructure, health, and climate change, and its pursuit of a positive, solutions-oriented agenda for the Indo-Pacific instead of an overtly anti-China orientation, created an opening for the Moon administration to slowly shift its position. In April 2021, a Ministry of Foreign Affairs official said that it was willing to cooperate with the Quad countries on an issue-by-issue basis. A few weeks later, South Korea’s ambassador to the United States, Lee Soo-hyuck, told reporters that “the government was carefully reviewing cooperating with the Quad’s working groups on vaccine access, critical and emerging technologies, and climate change.” Significantly, the US-South Korea Leaders’ Joint Statement on May 22, 2021 explicitly mentioned “the importance of open, transparent, and inclusive regional multilateralism

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3 Observatory of Economic Complexity, South Korea, 2022.
including the Quad.” More broadly, the joint statement contained many ideas that were similar to the two joint statements released by the Quad leaders in 2021. South Korea also stepped up its bilateral cooperation with Australia and India during this period. However, despite these small signs of change, the Moon administration continued to emphasize that the Quad was just one of multiple regional fora in which South Korea was willing to engage.

In contrast to his predecessor, President Yoon Seok-youl has already displayed much greater willingness to engage with the Quad. In an article published a month prior to his election, he stated that “South Korea should actively promote a free, open, and inclusive order in the Indo-Pacific…[and] willingly participate in Quadrilateral Security Dialogue working groups.” In the first eight days after his election, Yoon made phone calls to the leaders of Australia, India, Japan, and the United States, which was widely seen as a signal of his intent to build closer ties to the Quad. He also said he would “positively review” joining the Quad if invited.

These moves toward engagement with the Quad are complemented by Yoon’s aims to deepen the South Korea-United States alliance, to participate in trilateral security coordination with Japan, and to align more closely with the US Indo-Pacific strategy, including the Indo-Pacific Economic Framework.

There are several reasons why it makes sense for South Korea to pursue engagement with the Quad countries now. First, this move is a natural expansion of South Korea’s growing role in the Indo-Pacific. It will widen South Korea’s strategic space by enabling it to respond to regional challenges in cooperation with Australia, India, Japan, and the United States. Networking with other US allies and partners across the region will serve mutual goals and broaden Seoul’s focus beyond the Korean peninsula.

Second, since the Quad agenda has shifted to focus on a broad range of non-military issues affecting the Indo-Pacific, there is no longer a barrier to South Korea’s engagement with its members. By cooperating with them, South Korea would gain the network power to positively impact crucial issues such as economic security, emerging technologies, vaccines, and climate change. This engagement could also facilitate broader minilateral or multilateral cooperation in other international fora, enhancing South Korea’s ability to positively influence the regional and global agenda.

Third, strengthened coordination between South Korea and the Quad countries now will enable faster response to future contingencies and serve as a deterrent to threats such as economic coercion. Enhanced ties among these five countries will be a resource that can be called upon in a variety of contexts to help address the increasingly complex challenges that they will face moving forward.

**Multiple Pathways to Engagement**

Conversations about the Quad and South Korea are often derailed by focusing immediately on the question of whether South Korea should join the grouping, but considerable mutual benefits can be achieved through less formal engagement among these five countries. As its members have repeatedly emphasized, the Quad is not a formal institution, and many of its benefits come from its ability to flexibly bring together like-minded countries for common purposes and to catalyze action at the leaders’ level. Therefore, this kind of adaptive engagement with partners is ideally suited to the existing Quad structure. Countries such as South Korea may select the appropriate level and pathway for engagement depending on the specific goals that they have in mind. Each pathway described below can be used to pursue engagement...
on the specific issues that are discussed in subsequent section of this paper. Table 1 illustrates the wide variety of options available for engagement among South Korea and the Quad countries.

First, there are different depths of engagement ranging from shallow to deep: consultation, coordination, and cooperation. Over time, engagement may progressively deepen from consultation to coordination to cooperation, but this is not necessarily required: consultation may be sufficient to accomplish some goals, while other goals may demand more concerted cooperation.

Second, there are different breadths of engagement involving distinct institutional pathways ranging from narrow to broad: bilateral mechanisms, sub-Quad minilateral mechanisms, issue-specific engagement with the Quad to achieve a particular functional goal, and more formal Quad Plus engagement on a broad strategic level.

Table 1. Diverse Pathways to Engagement with the Quad Countries

<table>
<thead>
<tr>
<th>Shallow</th>
<th>Bilateral Consultation</th>
<th>Sub-Quad Minilateral Consultation</th>
<th>Issue-Specific Consultation with the Quad</th>
<th>Broad Strategic Consultation with the Quad</th>
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<tr>
<td>Coordination</td>
<td>Bilateral Coordination</td>
<td>Sub-Quad Minilateral Coordination</td>
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**Bilateral engagement** is often the most accessible option for engagement with the Quad countries, and it can serve as an important tool for aligning the interests of two countries in preparation for broader engagement with a larger number of partners. Bilateral engagement is already robust between South Korea and the United States on many issues, and South Korea has also strengthened its bilateral ties with Australia and India in recent years. Strategic bilateral engagement can ease the process of negotiating broader agreements and efforts that may follow. Bilateral cooperation among the Quad partners was the first step that paved the way for the group’s revival in 2017, and the Quad countries continue to pursue bilateral engagement among themselves as a way to bolster the strength of the overall grouping.

**Sub-Quad minilateral engagement** is a natural next stage in broadening engagement with the Quad by engaging with only some of its members. For example, South Korea’s bilateral engagement with the United States may serve as a starting point from which to trilateralize engagement by incorporating an additional Quad country with shared interests. This could be further broadened to include additional...
Quad countries without reaching the threshold of engagement with the Quad as a whole. The diversity of national goals and capabilities means that there is not always alignment or agreement among all four Quad partners, so sub-Quad minilateral engagement will often make sense and may be sufficient to achieve some specific goals.

**Functional Quad engagement** is characterized by South Korea or other countries plugging into Quad working groups to achieve specific functional goals by working with Australia, India, Japan, and the United States within the established structure of the grouping. The time span of this engagement may be delimited by specifying a concrete goal, or it may be more open-ended. The flexible working-group structure of the Quad lends itself to this type of engagement and incorporating additional partners will help to magnify the impact of the group’s efforts.

**Formal Quad Plus engagement** moves beyond issue-specific functional cooperation to broader strategic engagement with the group, without expanding its membership. The term Quad Plus does not necessarily have a clear meaning. One option would be for such engagement to resemble the ASEAN Plus X model, with the Quad countries bringing in an additional partner or multiple partners on an ad hoc basis. Another option would be for Quad Plus engagement to take the form of a more persistent standing grouping. In either case, the central idea is that the “Plus” countries are engaging with the Quad as a whole on a broad strategic basis, rather than with smaller subsets of the Quad countries or on a limited functional basis. An example of Quad Plus engagement took place in 2020 when representatives from New Zealand, South Korea, and Vietnam were invited to join the Quad meeting addressing the coronavirus pandemic.

Finally, **joining the Quad** is the most direct and comprehensive form of engagement with the grouping. Membership expansion is a complex issue that involves the interests of each of the four Quad members as well as the domestic politics and foreign policy of any additional member. It also requires alignment on shared threat perceptions and on the risks that countries are willing to take when it comes to actors such as China. At this moment, the Quad countries are intensely focused on solidifying their own ties and making progress on their ambitious goals, so there is little appetite for formal expansion. However, it is a possibility that may be considered in the future.

These different depths and breadths of engagement offer a wide variety of options for the Quad countries and partners such as South Korea, even without considering formal expansion. Engagement should not be conceptualized as linear since it does not need to become progressively deeper and broader over time. These pathways can be used simultaneously across different issue sets, and in some cases narrow or shallow engagement may be sufficient to accomplish specific goals. Australia, India, Japan, and the United States also use a variety of engagement strategies among themselves and do not always act as the Quad. Making use of these different pathways flexibly and strategically offers considerable benefits to the Quad countries and their partners.

**Issue-Specific Policy Recommendations**

This section reviews issue areas where the options described above can be applied to address the pressing challenges facing the Indo-Pacific. It provides recommendations in eight areas that correspond with the working groups and activities of the Quad: critical and emerging technologies, infrastructure, health, climate change, education and people-to-people exchange, maritime safety and security, cybersecurity, and outer space.

On many of these issues, engagement between South Korea and the Quad countries is currently nascent or bilateral, and there is room to further deepen...
it from consultation and coordination to more formalized cooperation. In some cases, existing bilateral agreements between South Korea and a single Quad country may be used as models for similar agreements with other countries. On other issues, there is potential to broaden existing engagement from bilateral to sub-Quad minilateral mechanisms or to even broader engagement with all four Quad countries. These steps can serve as building blocks for meaningful and effective cooperation in the future.

Critical and Emerging Technologies

The Quad countries are committed to the idea that the development and use of critical and emerging technologies should be governed by shared democratic values, respect for human rights, and free and fair market competition. In March 2021, the Quad leaders established a Critical and Emerging Technology Working Group, which has since organized its efforts around technical standards, 5G diversification and deployment, horizon-scanning, and technology supply chains. As a global technology leader, South Korea has a great deal to contribute and to gain from engagement with the Quad countries in this area. In parallel with the developments among the Quad countries, South Korea and the United States have committed to bilateral technology initiatives that can serve as building blocks for Seoul’s broader engagement with the Quad. President Yoon recognizes the potential in this area; during his campaign, he declared that the international environment is in an “era of economic security,” and he has emphasized bilateral technology cooperation with the United States and trilateral economic security cooperation with it and Japan. Specifically, South Korea and the Quad countries would mutually benefit from working together in four areas: 5G diversification and deployment, critical minerals, semiconductor supply chains, and digital governance.

5G Diversification and Deployment

Concerns about protecting 5G networks from threats related to espionage and sabotage have led to a movement toward diversification of this technology to include a network of trusted suppliers. The Quad governments aim to promote a diverse, resilient, and secure telecommunications ecosystem in the Indo-Pacific, and South Korea should play a major role in this effort by aiding in the development of the region’s digital integration. These efforts have already begun with the May 2021 agreement between South Korea and the United States to work together to develop open, transparent, and efficient 5G and 6G network architectures using Open-Radio Access network (Open RAN) technology. This complements the Quad’s launch of a Track 1.5 industry dialogue on Open RAN deployment and adoption.

Critical Minerals

Critical minerals such as lithium, cobalt, and rare earths are essential to economic and national security due to their use in high-technology devices, national defense applications, and clean energy technologies. Their supply can be affected by scarcity and geopolitical tensions, particularly because China controls several chokepoints in their supply chains. Australia, India, Japan, and the United States have individually and collectively taken the lead in developing new critical minerals industries. The bilateral agreement

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that South Korea signed with Australia on critical minerals cooperation in December 2021 should serve as a template for moving forward with other bilateral agreements to align Seoul’s policies with those of India, Japan, and the United States.19 By engaging with the Quad countries, South Korea will benefit from increased supply security for critical minerals, particularly in its electric-vehicle sector, and the Quad countries will benefit from its technical capabilities as well as its investors and consumers.

**Semiconductor Supply Chains**
Semiconductors are foundational for a host of commercial and defense technologies, including auto-mobiles, electronics, 5G networks, and military equipment. Shortages due to the coronavirus pandemic and geopolitical tensions have already revealed the importance of diversifying suppliers and enhancing supply-chain resilience. Semiconductors are South Korea’s top export, making it a natural partner for coordination with the Quad’s Semiconductor Supply Chain Initiative. South Korea and the United States have already launched a Semiconductor Partnership Dialogue to deepen ties in technology development, personnel exchange, and investment in the sector and a regular ministerial-level Supply Chain and Commercial Dialogue that includes semiconductors, both of which should serve as a starting point for broader engagement on a sub-Quad minilateral basis or with the Quad working groups.20 For example, representatives from the Yoon campaign suggested that it is possible to take steps toward creating a new semiconductor supply chain between the Japan, South Korea, Taiwan, and United States.21

**Digital Governance**
Establishing a shared set of rules and norms for the digital economy and technology is necessary to provide a coherent framework to deal with the issues that arise from the interconnections between technology and national security. The current digital governance of the Indo-Pacific is fragmented, and its norms and rules remain in flux, so South Korea and the Quad countries should seize the opportunity to establish a new regime. Models already exist, including the Comprehensive and Progressive Trans-Pacific Partnership, the US-Mexico-Canada Agreement, the US-Japan Digital Trade Agreement, and the Digital Economy Partnership Agreement (DEPA). Digital governance is also expected to be an important component of the US Indo-Pacific Economic Framework announced in May 2022. South Korea is already taking steps toward shaping regional digital governance: it concluded the Korea-Singapore Digital Partnership Agreement in December 2021, and it held talks with Chile, New Zealand, and Singapore, about joining DEPA in January 2022. These efforts can serve as a starting point for digital governance discussions among South Korea and the Quad countries.

**Infrastructure**
The Indo-Pacific has a pressing need for infrastructure investment. The Asian Development Bank estimates that an annual investment of $1.7 trillion is required to maintain growth momentum in Asia, tackle poverty, and meet the Sustainable Development Goals, including the costs of climate mitigation and adaptation.22 Addressing the resulting infrastructure financing gap is a priority of the Quad, which announced that it would build on the G7’s announcement of the Build Back Better World initiative to strengthen ongoing infrastructure initiatives and identify new opportunities. Supporting infrastructure in rural and urban areas is also a key initiative of South Korea’s New Southern

Policy. Consequently, Seoul and the Quad countries have great potential to coordinate their efforts on high-standards infrastructure investment.

High-Standards Infrastructure

The significant infrastructure demand in the Indo-Pacific must be met with transparent, high-standards infrastructure that ensures effective governance, economic efficiency, sustainability, and resilience while also addressing job creation, capacity-building, social and environmental safeguards, and effective resource mobilization.\(^\text{23}\) The Quad countries have significant strengths in infrastructure investment, providing the region with over $48 billion in official finance between 2015 and 2021.\(^\text{24}\) In 2019, Australia, Japan, and the United States, launched the Blue Dot Network to promote quality infrastructure by certifying projects against robust criteria and standards, though the initiative has been slow to bear fruit. South Korea and the Quad countries should engage to generate additional momentum for these initiatives and pool their resources toward regional infrastructure investment efforts. Bilaterally, South Korea is already discussing with the United States ways to strengthen their economic cooperation in the Indo-Pacific region. The 2019 Memorandum of Understanding between its Ministry of Economy and Finance and the US Department of Treasury was designed to support market-oriented, private-sector infrastructure investment in the Indo-Pacific, and its Export-Import Bank and the US International Development Finance Corporation regularly engage on potential joint financing opportunities, particularly in the Mekong subregion. These bilateral dialogues may help to facilitate South Korean participation in the Blue Dot Network or in other broader initiatives such as the Quad Infrastructure Coordination Group.

Health

The coronavirus pandemic poses an immediate threat to the health, prosperity, and security of the region, and it has demonstrated the broader importance of regional health cooperation to prevent and respond to such pandemics in the future. Addressing the pandemic is a top priority South Korea shares with the Quad countries. The Quad Vaccine Partnership was launched in March 2021, and the four countries had delivered 257 million vaccine doses to the Indo-Pacific by May 2022.\(^\text{25}\) South Korea has also supported the region through humanitarian assistance and health-care capacity-building, and it has donated over 2.1 billion vaccine doses to the Philippines, Thailand, and Vietnam.\(^\text{26}\) The combined efforts of these five countries have the potential to make a meaningful contribution to the fight against the pandemic through vaccine manufacturing and expertise, health-workforce development, and the development of the post-pandemic health-security architecture.

Vaccine Manufacturing and Expertise

Coronavirus vaccine manufacturing continues to be a pressing need for the immediate future. The Quad Vaccine Partnership has focused on expanding manufacturing at India’s Biological E Ltd. to enable it to produce at least 1 billion doses by the end of 2022. South Korea and the United States should link their bilateral Global Vaccine Partnership established in May 2021 to these efforts. This partnership seeks to increase production capacity in South Korean manufacturing facilities and expand the US supply of raw materials needed for vaccine production globally.\(^\text{27}\) In August 2021, South Korea also announced its plans to become a global vaccine hub by creating a robust ecosystem in which domestic and international pharmaceutical companies can develop, manufacture, and

\(^{23}\) G7, Ise-Shima Principles for Promoting Quality Infrastructure Investment, June 2016.

\(^{24}\) The White House, Fact Sheet: Quad Leaders’ Summit, September 2, 2021.


supply vaccines for the world. The government plans to invest $2 million over the next five years, which will further enable South Korea to contribute to meeting regional and global vaccine demand. The KORUS Global Vaccine Partnership Experts Group should also be linked with the Quad Vaccine Experts Group to further pool intellectual resources.

Health Workforce Development
Lack of training for healthcare workers has limited the ability of countries to respond to the coronavirus pandemic, revealing the necessity of building a trained healthcare workforce to address other pandemics more effectively in the future. South Korea and the Quad countries are already engaged in health-care capacity-building efforts including supporting healthcare systems in the Indo-Pacific, and there is room to further coordinate these efforts. In terms of cooperation, they should consider building on the Korea-National Institute for Bioprocessing Research and Training (K-NIBRT) program launched in 2021 to develop a highly skilled regional biopharmaceutical workforce. The Asian Development Bank (ADB) has agreed to launch a joint Bio-Workforce Training Program with South Korea wherein K-NIBRT provides facilities for trainees from low-to-middle-income countries (LMICs) who are recruited by the ADB, with both sides sharing training costs. Sixty trainees from LMICs in Southeast Asia, recommended by the ADB, are expected to participate in 2022, and this project could be expanded to include trainees from LMICs in the Indo-Pacific recommended by the Quad.

Post-Pandemic Health-Security Architecture
South Korea and the Quad countries should contribute to the construction of a post-pandemic health-security architecture to help prevent and respond to future pandemics. South Korea has already committed to comprehensive public health cooperation in the post-coronavirus era as part of its New Southern Policy Plus. As the world moves past the pandemic, the five countries should work together to support existing regional and global health institutions and to supplement existing efforts with new ones where necessary. Regionally, it is important to have strong and streamlined support for ASEAN, as in the case of the ASEAN Center for Public Health and Emerging Diseases. Information sharing and preventative measures should be further developed regionally. Globally, the five countries should coordinate their positions on the evolving discussions at the World Health Organization and the United Nations on proposals for new governance structures such as a pandemic treaty and a Global Health Threats Council. By coordinating on these global initiatives, the Quad countries and South Korea can help to strengthen and support this emerging health-security architecture.

Climate Change
South Korea and the Quad countries share serious concerns about climate change. Although this issue fundamentally requires global action and is governed by the United Nations Framework Convention on Climate Change and the Paris Agreement, regional groupings such as the Quad can play an important role in climate-change mitigation, adaptation, and resilience.

The Quad countries have committed to improving information sharing and disaster-resilient infrastructure, forming a green-shipping network, and establishing a clean-hydrogen partnership. These activities were incorporated into the Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP) in May 2022, along with new cooperation in areas such as carbon markets. South Korea has also been active in international climate-change efforts since launching its Low Carbon Green Growth Policy in 2008, and it has increasingly integrated climate considerations into its domestic policies, such as the announcement of its Green New Deal in July 2020. Together, South Korea

and the Quad countries can contribute to the fight against climate change through initiatives relate to green shipping, clean hydrogen, climate information sharing and prediction, and carbon market cooperation.

**Green-Shipping Network**
The global shipping sector accounts for nearly 3 percent of greenhouse-gas emissions, which could increase by up to 50 percent by 2050, making it an important target for global climate mitigation. As major maritime nations that are home to some of the largest ports in the world, South Korea and the Quad countries are well positioned to initiate change in global shipping practices. The Quad has launched a Shipping Task Force and invited leading ports such as Los Angeles, Mumbai Port Trust, Sydney (Botany), and Yokohama to form a network dedicated to greening and decarbonizing the shipping value chain. As the fifth-busiest container port in the world, South Korea’s Port of Busan should be added to this network to help amplify the effects of the Quad's efforts. Seoul has already taken steps in this direction through its 2030 Greenship-K Promotion Strategy, which aims to convert 15 percent of South Korean-flagged ships into “green ships” by 2030.

**Clean Hydrogen**
The Quad’s Clean-Hydrogen Partnership is intended to strengthen and reduce costs across all elements of the clean-hydrogen value chain, including developing technology, scaling up production, developing delivery infrastructure, and stimulating market demand. The Quad countries and South Korea should work together to find ways for this partnership to complement and support Seoul’s goal to expand hydrogen production and consumption to make it the country’s number-one energy source by 2050. This partnership can also support South Korea’s plans to boost cooperation with hydrogen-producing countries to secure supply. The five countries should also coordinate to extend their clean-hydrogen efforts across other broader minilateral and multilateral fora.

**Climate Information Sharing and Prediction**
As climate change rapidly increases the risks of natural disasters, it poses difficult challenges for civilian and military planners. Developing and applying more accurate climate and hazard information is necessary for more effective regional development planning and risk assessment. The Quad countries should engage South Korea to further their goal of increasing the Indo-Pacific’s resilience to climate change by improving critical climate information sharing. South Korea has already supported the Republic of Korea-Pacific Islands Climate Prediction Services Project to help provide nationally tailored seasonal climate prediction information and to build the prediction capacity of Pacific islands. It also has projects with Laos and the Philippines to develop and upgrade flood forecast and early-warning systems. Climate-change information sharing also relates to potential outer space cooperation among South Korea and the Quad countries, which is discussed below.

**Carbon Market Cooperation**
Article 6 of the Paris Agreement allows countries to be more ambitious in their efforts to curb greenhouse-gas emissions and to build resilience to climate change. The Quad countries and South Korea should consider forming voluntary mechanisms under Article 6 to support implementation of their Nationally Determined Contributions as well as to share mitigation outcomes and other technological and financial resources. By doing so, they can strengthen ties among themselves while also working within the framework of the Paris Agreement.

**Education and People-to-People Exchange**
The Quad countries and South Korea share a commitment to education and recognize the essential role of people-to-people connections in building a pros-
perous future. In addition to the many educational and exchange opportunities that already exist among them, there are opportunities to engage further. The development of human resources is a key pillar of South Korea’s New Southern Policy, and it can be fruitfully linked to the Quad Fellowship program that was launched in May 2022.

**STEM Education**
The Quad Fellowship program was designed to develop a network of science and technology experts committed to advancing innovation and collaboration. It will sponsor 100 master's and doctoral students in science, technology, engineering, and mathematics (STEM) fields from the four countries to study in the United States. South Korea should build on its discussions with the United States about promoting greater interaction among STEM experts and work with the Quad countries to find ways to further expand STEM collaboration among all five countries. This initiative will support the development of human capital and shape the future of innovation in the region.

**Maritime Safety and Security**
Cooperation in the maritime domain, particularly on maritime security and safety, is a key component of the Quad’s agenda, which the four countries highlighted with their May 2022 announcement of an Indo-Pacific Partnership for Maritime Domain Awareness. The Quad countries and South Korea share a commitment to the maritime rules-based order, including the UN Convention on the Law of the Sea. They also share an interest in maintaining a safe and prosperous maritime economy. The Quad countries and South Korea would particularly benefit from engaging to combat illegal, unreported, and unregulated (IUU) fishing, address regional needs related to humanitarian assistance and disaster relief, expand joint exercises, and deepen bilateral and trilateral security cooperation.

**Illegal, Unreported, and Unregulated Fishing**
The Quad countries and South Korea share mutual concerns about IUU fishing, which threatens the ecosystem, undermines sustainable fisheries management, and depletes fish stocks. IUU fishing is pervasive in areas such as the South China Sea and the Yellow Sea, and it has also been linked to gray-zone conflicts in the Indo-Pacific. The five countries should help to combat IUU fishing by supporting the capacity-building efforts of regional navies and coastguards, promoting effective legal frameworks to improve regulation and maritime safety, and improving maritime domain awareness (MDA) through information sharing. Conversations on combating IUU fishing and improving MDA can take place at the bilateral and trilateral levels between South Korea and other countries as well as through the Indo-Pacific Partnership for Maritime Domain Awareness.

**Humanitarian Assistance and Disaster Relief**
The Quad began with collaboration in response to the 2004 Indian Ocean tsunami, and its members have remained committed to responding to natural disasters in the Indo-Pacific such as the 2022 volcano eruption and tsunami in Tonga, individually and as a group. South Korea also has experience participating in international humanitarian assistance and disaster relief missions, and it has supported disaster-relief efforts in cases such as the Philippines after the 2013 Haiyan typhoon disaster. South Korea and the Quad countries should work together to build regional resilience against disasters through aid and capacity-building initiatives, bilaterally and through engagement with the Quad Humanitarian and Disaster Relief Mechanism established in May 2022. South Korea’s navy has the potential to contribute to Quad maritime disaster-relief efforts in the future.

**Joint Maritime Exercises**
Joint maritime exercises help to improve coordination and build trust among countries. South Korea already actively takes part in several multilateral mari-
time exercises in the Indo-Pacific such as RIMPAC, Cobra Cold, and Pacific Vanguard. Seoul can also be invited to join in additional maritime security activities with the Quad countries as an observer or as a participant. There is already a precedent for this type of engagement between the Quad and other partners. For example, the four countries joined France for its La Perouse maritime exercise in 2019 and 2021, and Canada joined their Sea Dragon anti-submarine warfare exercise in 2021. If South Korea were interested in such engagement, the Quad countries could consider inviting it as an observer to the annual Malabar exercise.

Bilateral and Trilateral Security Cooperation

While what the Quad does collectively gets the most attention, equally important has been the bolstering of its members’ bilateral and trilateral linkages. Trilateral cooperation has often included countries outside the Quad. One example is the India-Australia-France partnership, which was elevated to the foreign ministers’ level before being suspended after the announcement of the Australia-United Kingdom-United States (AUKUS) partnership. The India-Australia-France partnership advanced cooperation between the three countries substantially, particularly on maritime issues. A Track 2 India-Japan-South Korea trilateral established in 2012 but that has not convened since could be revived. Security and defense cooperation between India and South Korea have increased substantially in recent years, with civilian and military exchanges, a logistics sharing agreement, defense industry collaboration, and a strategic dialogue at the deputy national security advisors’ level. They have also conducted a coast guard exercise and a naval exercise in the East China Sea.

These mechanisms can be used to further deepen security cooperation with India and could include sending a South Korean representative to India’s Information Fusion Center-Indian Ocean Region, which also has liaison representatives from the Quad countries, France, and the United Kingdom.

Cybersecurity

Cybersecurity is an essential concern in an increasingly digital world facing sophisticated cyber threats. The Quad has discussed this at the ministerial level, and it launched a Quad Senior Cyber Group in September 2021 to advance work between government and industry in areas such as adoption and implementation of shared cyber standards, development of secure software, building workforce and talent, and promoting trustworthy digital infrastructure. South Korea has expressed willingness to cooperate with the Quad on cyber issues, and it has discussed cybersecurity in its bilateral talks with Australia, India, and the United States, including shared cyber norms and standards, capacity-building, and potential for future development of technology and infrastructure. South Korea and the Quad countries should deepen these bilateral discussions into agreements and work toward broader cooperation in areas such as digital governance (as described above) and cyber capacity-building.

Cyber Capacity-Building

Regional cyber capacity-building is a critical part of ensuring the security and prosperity of the Indo-Pacific. South Korea has already worked with the United States to identify common areas for cyber capacity-building cooperation, including facilitating Seoul’s participation in the US Transnational and High-Tech Crime Global Law Enforcement Network, continued coordination on the Joint US-ROK Symposium on countering cyberattacks on financial institutions, and sharing best practices to assist South Korea’s Supreme Prosecutors’ Office to establish the Asia-Pacific Cybercrime Hub. In May 2021, South Korea and the United States also agreed to establish a cyber working group focused on enhancing cooperation among law-en-

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forcement and homeland security agencies to learn from past cybercrime events and combat ransomware attacks. South Korea also signed a memorandum of understanding with Australia on a digital cooperation initiative in Southeast Asia. Similar efforts should be pursued with other Quad countries, and South Korea should be integrated into broader efforts to ensure resilient regional cybersecurity through the Quad Cybersecurity Partnership and to build the capacity of Indo-Pacific countries to implement the UN Voluntary Framework for Responsible State Behavior in Cyberspace.

**Outer Space**

In September 2021, the Quad broadened its agenda to include a working group on outer space, which has crosscutting implications for other issues related to cyber, climate, maritime, and defense. The four countries have considerable expertise in space, as well as a long history of collaborating bilaterally and within other regional and international space fora. As an emerging space power, South Korea has important contributions to make. It has increased its space capabilities in recent years and deepened its bilateral space engagement with Australia, India, and the United States, as well as its multilateral engagement. By pursuing outer space engagement with the Quad countries, South Korea has the potential to demonstrate its ability to be a responsible international player in this increasingly important domain. It should deepen its bilateral engagement with each Quad country and consult on broader regional and international efforts to establish norms, guidelines, principles, and rules for ensuring the sustainability of outer space. In particular, South Korea and the Quad countries should cooperate to share satellite data related to climate change and engage in bilateral discussions on space situational awareness.

**Satellite Data on Climate Change**

Cooperation on outer space is essential to monitor and adapt to climate change. The Quad countries have begun to discuss exchanging Earth observation satellite data and analysis on climate-change risks and sustainable use of oceans and marine resources. As its recent initiatives in this area complement the Quad’s activities, South Korea should be included in these discussions on a bilateral or minilateral basis. In February 2020, South Korea launched the Geostationary Environment Monitoring Spectrometer, which can improve early warnings for dangerous pollution events and monitor long-term climate change by measuring atmospheric concentrations of climate forcers and air pollutants. It plans to launch a new geostationary air-quality mission that is also able to monitor greenhouse-gas emissions. New areas of cooperation among South Korea and the Quad countries on climate information sharing can also be identified, and they can be used to coordinate efforts in multilateral space cooperation.

**Space Situational Awareness**

As the proliferation of satellites and orbital debris have led to increasing congestion in outer space, space situational awareness has become critically important for civilian and military purposes. The Quad countries and South Korea should work together to detect, identify, track, and characterize space objects in support of their shared goals of safety, security, and sustainability. South Korea has already discussed cooperation on space situational awareness with Australia and the United States, and it should explore holding such discussions with India and Japan as well, since these efforts benefit from the participation of


32 Climate and Clean Air Coalition Secretariat, *South Korea launches first satellite in a global constellation to monitor air quality*, February 21, 2022.

33 *Statement by the Representative of the Republic of Korea at the 64th session of the Scientific and Technical Subcommittee of UN COPUOS*, August 31, 2021.
as many countries as possible. Bilateral agreements between South Korea and the Quad countries can help to align interests in preparation for broader sub-Quad minilateral engagement and to coordinate efforts in broader multilateral space fora to build out international space agreements.

Conclusion
By expanding its engagement with the Quad countries, South Korea can make a meaningful contribution to the peace and prosperity of the Indo-Pacific while enhancing its strategic options. Closer coordination with other key actors in the Indo-Pacific like South Korea is also in the interest of the Quad countries, to ensure that efforts in the region are not duplicated and the Quad is not perceived as an exclusive grouping.

By expanding its engagement with the Quad countries, South Korea can make a meaningful contribution to the peace and prosperity of the Indo-Pacific while enhancing its strategic options.

This paper has outlined a large menu of mechanisms for South Korea to consult, coordinate, and cooperate with the Quad countries in different configurations, and it has provided concrete ways in which this engagement might address pressing issues related to critical and emerging technologies, infrastructure, health, climate change, education, maritime security, cybersecurity, and outer space. South Korea and the Quad countries should:

- Work together to facilitate the Indo-Pacific's digital integration through the development, diversification, and deployment of open, transparent, and efficient 5G and 6G network architectures
- Use South Korea's 2021 Memorandum of Understanding on Cooperation in Critical Mineral Supply Chains with Australia as a template for bilateral agreements to align its policies in this field with those of India, Japan, and the United States
- Build on South Korea's Semiconductor Partnership Dialogue with the United States as a basis for broader engagement on a sub-Quad minilateral basis or with the Quad working groups
- Cooperate to establish a shared set of rules and norms for digital governance to deal with the issues that arise from the interconnections between technology and national security
- Pool resources toward high-standards regional infrastructure investment efforts
- Link the Quad Vaccine Partnership with the Global Vaccine Partnership between South Korea and the United States, and link the Quad Vaccine Partnership Experts Group with the KORUS Global Vaccine Partnership Experts Group
- Contribute to the construction of a post-coronavirus health-security architecture to help prevent and respond to future pandemics
- Coordinate green-shipping initiatives and add Busan to the list of leading ports such as Los Angeles, Mumbai Port Trust, Sydney (Botany), and Yokohama that have been invited to form a network dedicated to greening and decarbonizing the shipping value chain
- Find ways for the Quad’s Clean-Hydrogen Partnership to complement and support South Korea's goal to expand its hydrogen production and consumption
- Improve critical climate information sharing and prediction capabilities to increase regional resilience to the effects of climate change
- Consider forming voluntary carbon market mechanisms under Article 6 of the Paris Agree-

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ment to support implementation of the five countries’ Nationally Determined Contributions and to share mitigation outcomes and other technological and financial resources

- Facilitate educational and exchange opportunities to build STEM collaboration among rising experts
- Combat IUU fishing by supporting the capacity-building efforts of regional navies and coast guards, promoting effective legal frameworks to improve regulation and maritime safety, and enhancing maritime domain awareness through information sharing
- Build and maintain regional resilience against disasters through aid and capacity-building initiatives, and engage South Korea in maritime disaster relief efforts through the Quad Humanitarian and Disaster Relief Mechanism or through bilateral exchanges with the Quad countries
- Consider South Korea’s participation in additional maritime security activities such as the annual Malabar exercise with the Quad countries as an observer or as a participant
- Deepen bilateral and trilateral maritime security cooperation with the Quad countries, which can be a stepping-stone for greater coordination with the group, and consider maritime security cooperation with India, particularly collaboration with its Information Fusion Center–Indian Ocean Region or by supporting pillars of its Indo-Pacific Oceans Initiative
- Deepen bilateral discussions on cyber capacity-building initiatives in the Indo-Pacific and integrate South Korea into broader efforts to build resilience through the Quad Cybersecurity Partnership and to build capacity to implement the UN Voluntary Framework for Responsible State Behavior in Cyberspace
- Share satellite data to monitor and adapt to climate change risks and work together to enhance space situational awareness by detecting, identifying, tracking, and characterizing space objects to support shared goals of safety, security, and sustainability

There will be challenges ahead. Even among Quad members, differences in interests, political will, and capacity remain difficult to navigate. Incorporating countries such as South Korea will introduce another layer of complexity. Moreover, its chilly relationship with Japan means that much work must be done to repair and strengthen those ties as South Korea tries to effectively engage with the Quad as a group. However, these challenges do not need to be a barrier to engagement. The Quad countries and South Korea can choose the level and breadth of engagement that best suits their mutual interests without being stymied by these challenges. The start of the Yoon administration marks the beginning of an important opportunity for South Korea to explore the possibilities for this engagement, for its own benefit and for that of the broader regional and international community.
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**Acknowledgments**
This paper was made possible by a generous grant from the Korea Foundation. Research assistance was provided by Dustin Hinkley, Ki Suh Jung, Mimi MacKilligan, Lyndi Tsering, and Gregory Wood.

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