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Building a Quad-South Korea Partnership for Climate Action

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Introduction

Kristi Govella

Climate change is a pressing global problem that requires action at the local, national, and international levels. While most policy has logically focused on creating international pacts to address and mitigate climate change, interest in regional or minilateral cooperation among smaller groups of countries has also grown in recent years. When the Quadrilateral Security Dialogue—more commonly known as the Quad—convened its first leader-level summit in March 2021, its member countries Australia, India, Japan, and the United States identified climate change as a priority for the grouping and for the Indo-Pacific. They established a Quad Climate Working Group to strengthen implementation of the Paris Agreement and to cooperate on climate mitigation, adaptation, resilience, technology, capacity building, and finance.¹ Since then, the Quad has continued to expand its climate activities. In September 2021, the grouping added the formation of a green-shipping network and the establishment of a clean-hydrogen partnership to its goals.² In May 2022, the four partners took the additional step of launching the Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP).³

Why have the Quad countries decided to include climate change on their agenda? They share serious concerns about climate change, which poses a significant threat to themselves and to the Indo-Pacific as a whole. In recent years, climate change has risen in prominence on the domestic political agendas of the

four Quad partners, and there are gains to be achieved through coordination and cooperation of their separate national efforts. At a time when many countries feel that international institutions simply are not working quickly or effectively enough, minilateral initiatives such as the Quad have gained appeal as a more flexible way to facilitate joint action.

Including climate change on the Quad agenda was part of a broader effort by its members to refocus the grouping's mission on providing public goods for the Indo-Pacific as well as for the international community.

In addition, including climate change on the Quad agenda was part of a broader effort by its members to refocus the grouping's mission on providing public goods for the Indo-Pacific as well as for the international community. In the early days of its existence, the Quad was more strongly focused on security issues, which led some to brand it an anti-China coalition. In addition, there were concerns among the smaller countries of the Indo-Pacific that they might be excluded from important regional decisions made within the Quad or forced to choose between the Quad and China. By reframing the Quad's focus to include non-traditional security issues such as climate change and health, the four countries hope to demonstrate their ability to cooperate as like-minded partners and to deliver tangible benefits.⁴

1 The White House, [Fact Sheet: Quad Summit](#), March 12, 2021.

2 The White House, [Fact Sheet: Quad Leaders' Summit](#), September 24, 2021.

3 Ministry of Foreign Affairs of Japan, [Quad Cooperation in Climate Change and Launch of the Quad Climate Change Adaptation and Mitigation Package \(Q-CHAMP\)](#), May 24, 2022.

4 Garima Mohan and Kristi Govella, [The Future of the Quad and Emerging Security Architecture in the Indo-Pacific](#), The German Marshall Fund of the United States, June 2022.

The Quad's focus on climate change prompts several important questions. What can a small number of like-minded countries hope to achieve when tackling massive global problems? How can they build larger coalitions with others to facilitate more comprehensive international solutions? What issue areas offer the most fruitful avenues for collaboration? This volume tackles these questions by looking at the potential for consultation, coordination, and cooperation on climate change between the Quad countries and South Korea. South Korea is a promising partner for the Quad on climate change because it shares common concerns and possesses relevant capacity and knowledge.⁵ The country has been active in international climate efforts since launching its Low Carbon Green Growth Policy in 2008 and it has increasingly integrated climate-change efforts into domestic policies such as its 2020 Green New Deal. Together, Australia, India, Japan, South Korea, and the United States represent some of the world's top greenhouse-gas-emitting countries; they therefore have a great deal of responsibility for climate change, and they also have the potential to play a positive role in addressing climate change through their domestic and foreign policies.

South Korea is a promising partner for the Quad on climate change because it shares common concerns and possesses relevant capacity and knowledge.

The seven contributions to this volume explore the gains that could be achieved from integrating South Korea into Quad climate initiatives, and in doing so they offer lessons for how minilateral initiatives can be

expanded into broader coalitions of partners. Drawing on expert perspectives from Australia, India, Japan, South Korea, and the United States, the volume offers the following four overarching findings.

First, minilateral cooperation has the potential to serve as the building block for broader regional and global initiatives. Although climate change cannot be solved by the efforts of five countries acting in isolation, minilateral efforts can be helpful in aligning national interests and policies in preparation for pursuing expanded initiatives with additional countries. The clearest example of this is the potential for the Quad countries and South Korea to form a "climate cooperation club" by creating a voluntary carbon market mechanism under Article 6 of the Paris Agreement. In this way, these five countries could enable each other to meet or even exceed their national goals for carbon reduction in a manner that fully supports their international commitments.⁶ Once positions are aligned among a small group of countries, this creates opportunities to coordinate their positions within other regional or international organizations to amplify and support parallel efforts to address climate change.

Second, sharing knowledge and best practices can promote policy effectiveness, innovation, and harmonization. There are no easy answers to the problems posed by climate change. On a fundamental level, regional and global climate information sharing about disasters and hazards needs to be improved to enable effective climate-change mitigation and adaptation. In terms of domestic policy, the governments, companies, and citizenry of these five countries have sought ways to pursue decarbonization and to integrate climate action into their broader economic and social activities. For example, the Quad countries may be able to learn from South Korea's experience with its Green New Deal and its domestic implemen-

5 For an analysis of how the Quad countries and South Korea can engage on issues such as critical and emerging technologies, infrastructure, health, climate change, education and people-to-people exchange, maritime safety and security, cybersecurity, and outer space, see Kristi Govella, Garima Mohan, and Bonnie Glaser, [Expanding Engagement among South Korea and the Quad Countries in the Indo-Pacific](#), The German Marshall Fund of the United States, July 2022.

6 See Taedong Lee, "Carbon Market Integration among South Korea and the Quad Countries" and Suh-Yong Chung, "South Korea's Climate Change Policy and Potential Cooperation with the Quad" in this volume.

tation of green growth principles.⁷ The industries of these countries could benefit from knowledge transfer in relevant industries such as electric vehicles and renewables.⁸ Their local governments could also usefully consult with one another on bottom-up policies to promote decarbonization.⁹ By sharing knowledge, practices, and lessons learned, successful models can be emulated elsewhere and common pitfalls can be avoided.

Third, climate change is closely interconnected with other economic and security issues, so climate must be considered at a broad strategic level in order to effectively address problems. Climate change cannot be solved in isolation from other issues. It is already causing major cascading consequences around the globe.¹⁰ The contributions to this volume demonstrate the broad relevance and impact of climate change for a wide range of policies related to sustainable economic development, low-carbon marine and road transportation, green hydrogen and ammonia, forestry and land use, infrastructure, investment, finance, energy efficiency and conservation, renewable energy, climate information, humanitarian assistance, disaster relief, food security, population displacement, and regional and global institutions. Addressing climate change effectively will require a holistic strategic view of climate as it relates to other substantive issues and a whole-of-society approach to finding solutions. Governments such as the Biden administration in the United States have already begun to embed climate change in their broader regional strategies in reflection of this realization.¹¹

Fourth, it is not necessary for South Korea or other potential partners to join the Quad to achieve gains from cooperation. None of the initiatives or proposals discussed in this volume require South Korea to join the Quad; nor would other potential partner countries need to do so in order to engage in joint climate action. Instead, flexible consultation, coordination, and cooperation between these countries can be used to achieve meaningful progress in addressing issues related to climate change. Moreover, non-member countries around the world will benefit from the gains realized from climate cooperation within groupings such as the Quad since their initiatives will generate non-excludable positive externalities such as reduced carbon generation.

At a time when the international system is shifting away from global multilateral institutions and entering an era of minilateralism, countries are placing their hopes in groupings like the Quad to play a role in addressing pressing problems such as climate change. The true test of these small-scale initiatives, however, will be their ability to build coalitions with external partners to achieve their ambitious goals. This volume offers some insights into the complexity of this process, as well as concrete recommendations for moving forward.

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7 See James Bowen, “Green Building Blocks: Quad-South Korea Cooperation on Climate Infrastructure” in this volume.

8 See Aparna Roy, “Forging and India-South Korea Partnership for the Global Climate Agenda” in this volume.

9 See Kazuo Matsushita, “Mainstreaming Renewables for Energy Security after the War in Ukraine” in this volume.

10 See Robert Glasser, “Addressing Climate Change Consequences through Quad-South Korea Cooperation” in this volume.

11 See Pete Ogden, “How Yoon’s Presidency Can Help Catalyze South Korea-Quad Climate Cooperation” in this volume.

How Yoon's Presidency Can Help Catalyze South Korea-Quad Climate Cooperation

Pete Ogden

The election of Yoon Suk-yeol as president of South Korea could open a new phase of collaboration between Seoul and the Quad countries on climate change—if he decides to seize the opportunity. Under President Moon Jae-in, South Korea was circumspect in its approach to the Quad, ever mindful of the risk of economic reprisal from China, should it become too involved in the arrangement that Beijing had criticized as “100 percent outdated” and representative of a “Cold War mentality.” But President Yoon and his People Power Party have sent clear signals that they are open to a different approach, one that prioritizes deepening cooperation with the United States and improving relations with Japan, including potentially through Quad or Quad Plus arrangements.¹ Moreover, his Presidential Transition Committee set out climate and energy priorities that include bolstering international cooperation in a manner consistent with such engagement.

The United States, India, Japan, Australia, and South Korea all have critical roles to play in tackling climate change.

This is important because, as major Indo-Pacific economies, the United States, India, Japan, Australia, and South Korea all have critical roles to play in tackling climate change, but historically these five countries have not built significant climate initiatives as a group. In fact, in the context of the broader negoti-

ations and activities under the Paris Climate Agreement, they are often not aligned among themselves. The Quad and South Korea may be able to foster more climate cooperation among the five nations that could, in turn, drive progress and attract new partners in other fora in which they collectively participate, such as the Major Economies Forum on Climate and Energy and the G20.

An Auspicious Time for Engagement

The timing for strengthened engagement on climate issues with the Quad is particularly auspicious. First, with the election of Joe Biden, climate change became a core tenet of the US political agenda, domestically and internationally. This can be seen in the appointment of former secretary of state John Kerry as the first special presidential envoy for climate with the level of cabinet secretary and a seat on the National Security Council, as well as in the way that the Biden administration has worked to embed climate change in regional strategies, including the Indo-Pacific Economic Framework² and the Indo-Pacific Strategy.³ While far from a climate-centered arrangement, the Quad reflects the Biden administration's interest in integrating and embedding climate change in its foreign policy broadly.

Second, engaging on climate cooperation of this variety—as opposed to more traditional security initiatives of the Quad—should be less inherently antagonistic to China, and it could even ultimately contribute to accelerating China's decarbonization

1 Min Joo Kim, “[Interview with South Korea's next president, Yoon Suk-yeol](#),” Washington Post, April 14, 2022.

2 Matthew P. Goodman and Aidan Arasasingham, [Regional Perspectives on the Indo-Pacific Economic Framework](#), Center for Strategic and International Studies, April 11, 2022.

3 The White House, [Indo-Pacific Strategy of the United States](#), April 2022.

efforts. Climate change has been the only major area in which the Biden administration has actively pursued a policy of diplomatic engagement and cooperation with China at a high level. The two countries announced a new agreement at the climate summit in Glasgow in November 2021 with the aim of better aligning and deepening their cooperation on climate change over the course of a decade, including through the establishment of a range of cooperative bilateral working groups. With less cause for fear of retaliation from China over regional climate cooperation, South Korea may be able to seize the opportunity to engage in the suite of Quad-initiated climate initiatives.

What might this cooperation look like? The Quad has initially prioritized the formation of a Clean-Hydrogen Partnership and a Green-Shipping Network, both of which South Korea would be well suited to join.

Clean Hydrogen

The Clean-Hydrogen Partnership can harness the surging interest in the potential for clean hydrogen to play an important role in the transformation to a global clean-energy economy. Clean hydrogen is produced without releasing greenhouse gas emissions into the atmosphere. A key reason for its appeal is its potential use in those very sectors that are the toughest to decarbonize, such as steel and chemicals, and, given the rapidly declining costs of renewable energy, the emerging prospect of producing hydrogen at scale without greenhouse gas emissions. Policymakers are starting to focus on what would be required in terms of investment, innovation, and regulatory frameworks to scale clean hydrogen and make it a clean alternative to traditional fossil fuels. In the United States, the Biden administration will be directing \$9.5 billion of investment provided by the Bipartisan Infrastructure Law into clean-hydrogen initiatives, including by establishing a series of regional hydrogen hubs across the country.

South Korea fully recognizes that clean hydrogen could play an important role in achieving its latest national climate targets. In October 2021, it

committed under the Paris Agreement to cut greenhouse gas emissions 40 percent below 2018 levels by 2030, including reductions from land sequestration and international offset credits. In 2020, South Korea committed to being carbon-neutral by 2050. The Quad's Clean-Hydrogen Partnership is specifically designed to leverage a wide range of other bilateral and multilateral efforts and fora, leaving the door open for South Korea to participate in and benefit from these efforts.

Green Shipping

Joining the Green-Shipping Network launched by the Quad should interest South Korea, as it is one of the world's leading shipbuilding nations and the Port of Busan is the world's fifth-busiest container port. The global shipping sector has lagged in investment and innovation, however, and alone accounts for as much greenhouse gas pollution as all but the six most polluting countries. It is increasingly becoming a focus of global decarbonization efforts, and it is not surprising that the Quad would likewise look to the shipping sector by launching a taskforce of leading ports—including Los Angeles, Mumbai Port Trust, Sydney (Botany), and Yokohama—to form a network dedicated to greening and decarbonizing the shipping sector and establishing green-shipping corridors between them. This will require that countries build the necessary infrastructure—from ships that can run on clean fuels to ports that can service them—and establish aligned and complementary regulatory policies. Given that shipping could be a major market for clean-hydrogen-based fuels, this would also be a natural complement to South Korea's potential participation in the Quad's Clean-Hydrogen Partnership.

Conclusion

As a substantive matter, there are clear opportunities and advantages for South Korea to participate in clean-hydrogen and green-shipping efforts, both to achieve its own climate objectives and to demon-

strate its ability to cooperate with the United States, Japan, India, and Australia as they take on climate change in the context of the Quad. This is particularly important as the Quad evolves and becomes a central framework of the United States' approach to a range of objectives in the Indo-Pacific, such as in Southeast Asia, where climate issues intersect with other economic, development, and security priorities. Under President Yoon, South Korea appears well positioned to join these efforts.

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South Korea's Climate Change Policy and Cooperation with the Quad

Suh-Yong Chung

Climate change is a global problem. Every effort at the national and international levels must be orchestrated to yield a global impact. Through more interactions with the global process such as the United Nations Framework Convention on Climate Change (UNFCCC), more direct impact can be made by the Quad. In this regard, the Quad must seek ways to enhance effective implementation of the nationally determined contributions (NDCs) of its members and their potential partners such as South Korea. In addition to mitigation and adaptation, the three means of implementation of the Paris Climate Agreement—technology, finance, and capacity building—must be core elements of cooperation. Furthermore, cooperative approaches under Article 6 of the Paris Agreement can be an important policy measure to promote cooperation among the Quad members and their partners.

South Korea has been active in addressing climate change at the international level since the Lee Myung-Bak administration launched the Low Carbon Green Growth Policy in 2008.

South Korea has been active in addressing climate change at the international level since the Lee Myung-Bak administration launched the Low Carbon Green Growth Policy in 2008. Under the Moon Jae-in administration, South Korea focused on hydrogen, low-carbon transportation, renewables, and forestry among others in the context of its implementation of Carbon Neutrality Policy, Green New Deal Policy, and New Southern Policy. South Korea has also

committed to significantly rely on Internationally Transferred Mitigation Outcomes under Article 6 of the Paris Agreement to implement its NDC target by 2030. Notably, it emphasized its cooperation with two international climate change organizations, the Global Green Growth Institute and the Green Climate Fund, which are headquartered in South Korea.

On May 10, 2022, a new administration took office in Seoul. According to the Presidential Transition Committee's climate-energy team, Yoon's government is likely to focus on several climate change issues including strengthening the climate-energy alliance with major partners such as the United States. This means both bilateral and minilateral cooperation with the United States will be significantly strengthened. In this context, there is a good opportunity for South Korea and Quad countries to collaborate on tackling climate change, which is a prominent part of the Quad agenda.

One significant feature of the Paris Agreement is its focus on the aspects of implementation. Collective efforts of the Quad members and their potential partners such as South Korea, therefore, must be made by developing viable implementation activities and plans of their NDCs and beyond. This chapter discusses the potential for engagement among South Korea and Quad countries in five areas: low-carbon and clean energy, forestry and land use, low-carbon marine and road transportation, climate-resilient infrastructure and monitoring, and developing an institutional framework of cooperation under the Paris Agreement.

Promoting Low-Carbon and Clean Energy

Energy demand is growing quickly in the Indo-Pacific, especially in Southeast Asia and the Pacific. However,

global efforts to phase down coal power plants will continue to push the region, which still relies on fossil fuel significantly, to seek alternative low-carbon and clean energy sources. The Yoon administration is continuing to commit to an ambitious energy mix by using cutting-edge, low-carbon technologies. As a clean energy source, nuclear, especially small nuclear reactors, will receive attention for both domestic energy use and overseas cooperation. South Korea also considers hydrogen to be an attractive option and will continuously seek partner countries on hydrogen cooperation. In this context, South Korea, which has cutting-edge hydrogen and nuclear energy technologies, is likely to be interested in working with the Quad to bring more low-carbon and clean energy to the region.

Forestry and Land Use as a Nature-based Solution

As observed at the 2021 United Nations Climate Change Conference, forestry and land use has become one of the most cost-effective sources of mitigation. In the case of South Korea, its NDC target stipulates that the forestry sector will contribute to reducing greenhouse gas (GHG) emissions domestically and internationally. As a country with a successful track record on reforestation, South Korea has expanded its forestry cooperation with developing countries. For example, the Korea Forest Service has recently strengthened its cooperative ties with several Southeast Asian countries, including Indonesia, Myanmar, Cambodia, and Vietnam.

REDD+ is a framework created by the UNFCCC Conference of the Parties to guide activities in the forest sector to reduce emissions from deforestation and forest degradation, as well as through sustainable management of forests and the conservation and enhancement of forest carbon stocks in developing countries. Based on its experiences in implementing pilot REDD+ activities in these countries, South Korea sees further potential opportunities for scaling up the REDD+ activities by developing bilateral cooperative

mechanisms in these countries. It is certain that the Quad can mobilize more financial and technological resources in Southeast Asia and other forest areas through close cooperation with South Korea.

Low-Carbon Marine and Road Transportation

Marine transportation is an important sector for GHG emission reduction by building low-carbon port infrastructure and greening shipping industries. South Korea also plans to decarbonize its major ports, and it will start to support research and development on carbon capture and storage shipping.

In the case of road transportation, South Korea is trying to be a global leader in the electric vehicles market. In addition to its vehicle makers such as Hyundai and Kia, South Korean battery companies have also invested billions of dollars in the United States. The Yoon administration will be committed to supporting efforts by South Korean companies to expand their overseas market, thereby contributing not only to reducing GHG emissions but also to creating jobs. In this regard, South Korea can be a good partner for the Quad, considering its leading role in shipping and low-carbon automobile industries in the global market.

Climate-Resilient Infrastructure and Monitoring

Catastrophic natural disasters such as frequent floods, forest fires, rising sea levels, and typhoons occur frequently in the Indo-Pacific. Through its official development assistance, South Korea has instituted successful practices in developing climate-resilient infrastructure, and early-warning and data-sharing systems with its partner countries in Southeast Asia and the Pacific. For example, through the Asia-Pacific Economic Cooperation (APEC) Climate Center located in Busan, South Korea has collaborated with APEC member countries to enhance capacities of climate resilience in the small island countries in the Pacific by the implementation of the recently launched \$55 million project. Close cooperation with the Quad

is possible to reduce risks of climate change by sharing experiences and resources to develop climate-resilient infrastructure and enhance capacity related to monitoring and assessment in the region.

An Institutional Framework of Cooperation under the Paris Agreement

Article 6 of the Paris Agreement provides an opportunity for countries to form voluntary mechanisms to strengthen cooperation among themselves not only to implement NDCs but also to share mitigation outcomes and other technological and financial resources. South Korea has committed to developing and implementing bilateral and unilateral cooperation to contribute to reducing GHG emissions in the host countries by developing unique cooperative mechanisms under Article 6.2 of the Paris Agreement. These cooperative mechanisms will allow South Korea to share the mitigation outcomes for its NDC implementation as well as include climate-related development finance and private investments in the mitigation actions of the host countries. By estab-

lishing a climate change cooperation club, the Quad can strengthen cooperation not only among its four members, but also with other potential partners such as South Korea.

Conclusion

South Korea has actively addressed climate change by building international cooperation. With its cutting-edge clean technologies and experiences of cooperation with countries in Southeast Asia and the Pacific, South Korea can be an excellent partner with the Quad to realize a climate-resilient region.

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Green Building Blocks: Quad-South Korea Cooperation on Climate Infrastructure

James Bowen

Climate change and infrastructure demand are two of the most pressing, and highly interrelated, global challenges. Advanced economies continue to edge toward meeting a modest goal of donating \$100 billion per year to meet developing-country climate needs.¹ Most of this funding, and any rising quantum, must go toward developing new physical assets for decarbonizing economies and protecting against natural disasters. A 2021 United Nations report estimated infrastructure was responsible for generating 79 percent of global greenhouse gas emissions.² It also accounted for 88 percent of necessary adaptation costs. Indo-Pacific countries face some of the most acute needs. Climate-responsive assets add \$200 billion to the \$1.5 trillion in annual infrastructure spending that the Asian Development Bank estimates the region needs to maintain growth and eradicate poverty.³

South Korea should be integrated into existing Quad initiatives on green shipping, hydrogen infrastructure development, and adaptation infrastructure.

Infrastructure provision and climate change action are key priorities of the Quad and its members' future Indo-Pacific engagement. These complementary endeavors align well with existing South Korean inter-

ests and abilities. The Quad governments and Seoul could cooperate more closely on meeting vast regional needs in this area, and there are promising opportunities for the Quad and Korea to grow both financial and technical aid. Big wins are possible from better leveraging well-established commitments and institutions. Specifically, South Korea should be integrated into existing Quad initiatives on green shipping, hydrogen infrastructure development, and adaptation infrastructure. The Quad countries also have the opportunity to learn from Seoul's implementation of green growth principles and to engage with the Global Green Growth Institute and the Green Climate Fund, which are both based in South Korea.

Quad Commitments on Climate and Infrastructure

The first in-person Quad leaders' summit in September 2021 confirmed the group's commitments to both infrastructure provision and climate action.⁴ Several pledges recognized the bridges between these two outcomes. One of two big mitigation-focused initiatives was the development of an Indo-Pacific "green shipping network" that would deploy clean fueling facilities and other decarbonized port infrastructure. The other was the creation of new regional hydrogen supply chains. Both these efforts focus on exploiting intra-Quad interests and abilities. Yet they might still open doorways to external engagement by proving the viability of new industrial pathways and helping bring down costs.

1 Jocelyn Timperley, "[The broken \\$100-billion promise of climate finance—and how to fix it](#)," *Nature*, October 20, 2021.

2 Scott Thacker et al, [Infrastructure for climate action](#), United Nations Office for Project Services, October 12, 2021.

3 Asian Development Bank, "[Meeting Asia's Infrastructure Needs](#)," February 2017.

4 The White House, [Fact Sheet: Quad Leaders' Summit](#)," September 24, 2021.

By necessity, adaptation-focused infrastructure commitments at the 2021 summit focused more on third-party countries. The most notable of these would equip the Delhi-based Coalition for Disaster Resilient Infrastructure (CDRI)—which includes all Quad members—with a new technical assistance facility for aiding small island developing states.

Generic Quad infrastructure commitments will also have climate-centric implications. These include efforts to align future work streams with the G7's Build Back Better World (B3W) infrastructure drive. There are also plans for a new Quad infrastructure coordination group that would conduct regular assessments of Indo-Pacific infrastructure needs and promote transparent and high-standards responses to them.

Coordinated Quad efforts in turn make up only a small part of the total contributions which individual members—largely the advanced economies of Australia, Japan, and the United States—make to climate infrastructure. Much financial assistance from these countries continues to be channeled through multilateral development banks (MDBs). Yet more prominent flows also feature in bilateral mechanisms formed in response to China's Belt and Road Initiative.

For example, the Australian Infrastructure Financing Facility for the Pacific is supporting solar power projects in Papua New Guinea and Palau, hydropower in the Solomon Islands, and flood alleviation in Fiji.⁵ Tokyo's Partnership for Quality Infrastructure platform has been more active in Southeast Asia. Japanese-funded projects in Indonesia alone cover geothermal power, mass transit, and countering land subsidence.⁶ Washington's most prominent recent commitment is a \$500 million International Development Finance Corporation loan, which will support a

US solar company building a factory in fellow Quad member India.⁷

Importantly, President Joe Biden has sought to make climate-centric investment an organizing principle of future US infrastructure investment. Guidance issued to US international finance agencies in 2021 called for ending support to carbon-intensive projects and prioritizing climate mitigation and adaptation investments.⁸ If consistently implemented, this could have important flow-on effects to future Quad-aligned activity.

Integrating South Korea into Quad Climate Initiatives

There is considerable potential for South Korea to cooperate more closely with the Quad and its members on climate-focused infrastructure facilitation. This could exploit strong complementarities and existing channels of engagement in this space. It could support the priorities of South Korea's New Southern Policy (NSP), reify Seoul's longstanding support for "green growth," and engender greater support for key climate-related institutions already based in the country.

South Korea has direct interests in the Quad's two major mitigation-focused infrastructure efforts. It has a strong established presence in global shipping, and in 2020, the Ministry of Oceans and Fisheries supported the pursuit of a bigger green shipping foothold.⁹ South Korea is also a strong advocate of hydrogen as a fuel for decarbonizing sectors including transport, power, and heavy industry. It shares this ambition with Japan and is already working to secure supply from emerging

5 Australian Infrastructure Financing Facility for the Pacific, [Investments](#).

6 Japan International Cooperation Agency, [Cooperation on Climate Change](#), October 2021.

7 US International Development Finance Corporation, [DFC Announces Approval to Provide up to \\$500 Million of Debt Financing for First Solar's Vertically-Integrated Thin Film Solar Manufacturing Facility in India](#), December 7, 2021.

8 The White House, [US International Climate Finance Plan](#), April 21, 2021.

9 Ministry of Oceans and Fisheries, [2030 Greenship-K Promotion Strategy to Dominate the Global Green Ship Market](#), December 23, 2020.

exporter Australia.¹⁰ Incorporating South Korea in Quad conversations on green shipping and hydrogen infrastructure development should thus be a priority.

South Korea and the Quad should also look to cooperate more on providing adaptation infrastructure. Assets in this space are sorely needed in highly vulnerable states such as the Indo-Pacific's many low-lying island nations. Yet spending in the area currently accounts for only about 25 percent of climate-related financial transfers from advanced to emerging economies.¹¹ The most obvious channel of South Korea-Quad convergence here would be Seoul joining the CDRI, which would provide an important avenue of cooperation with third-party countries.

South Korea and the Quad should also look to cooperate more on providing adaptation infrastructure.

Joining the CDRI would also signal South Korea's support for India's growing regional leadership. This would align with Seoul's NSP priorities of diversifying economic and strategic relations. South Korea could also work with Quad partners on climate infrastructure in the NSP's other focus area of Southeast Asia. Direct alignment with the most active partner in this region, Japan, may face strong political headwinds due to recent disputes over trade and historical issues between the two countries. Enhanced South Korea-Quad support for MDB activity could overcome this. The Asian Development Bank's new \$25 million Climate Innovation and Development Fund is indicative of strong prospects in this regard.¹²

Leveraging and Learning from South Korean Strengths

The Quad countries should simultaneously be aware of and seek to support what South Korea can offer on climate infrastructure. Seoul has long been a leading proponent of marrying improved environmental and economic outcomes, particularly in the wake of major crises. The blueprint for South Korea's post-coronavirus Green New Deal was established with its promotion of "green growth" as a means of recovery from the 2008 financial crisis.¹³

These green growth principles could help inform Quad climate infrastructure activity. They would particularly benefit commitments that overlap with the B3W program, which was itself a response to the coronavirus pandemic. US policymakers implementing new guidance on climate-centric infrastructure could also benefit. Dialogue with South Korean partners could help them develop pathways that improve both development and climate outcomes in third countries.

The most beneficial product of South Korea's green growth push is in the institutional space. Seoul formed the Global Green Growth Institute (GGGI) in 2010 to provide policy and investment assistance to developing countries. It established the Green Climate Fund (GCF) in the same year under the aegis of the United Nations Framework Convention on Climate Change. This is the central agency for mobilizing and distributing climate finance to developing countries.

Quad members could better leverage these assets in several ways. One obvious suggestion is for Japan and the United States to join Australia as advanced-economy members of the GGGI, which already works with India as an aid recipient. Another valuable outcome would be the Quad Infrastructure Coordination Group working with GCF officials to create climate-centric mechanisms for monitoring and responding to Indo-Pacific infrastructure needs.

10 James Bowen and Kyle Springer, [Strategic Energy: The Emerging Australia-Korea Hydrogen Partnership](#), Perth USAsia Center, March 25, 2022.

11 Julie Bos, Lorena Gonzalez, and Joe Thwaites, [Are Countries Providing Enough to the \\$100 Billion Climate Finance Goal?](#) World Resources Institute, October 7, 2021.

12 Asian Development Bank, [Establishment of the Climate Innovation and Development Fund](#), March 2022.

13 Hyoeun Jenny Kim, [OECD and Korea, Champions of Green Growth](#), The Organization for Economic Cooperation and Development Forum Network, October 19, 2021.

Conclusion

The pervasive need for new climate-responsive infrastructure is a huge liability for the Indo-Pacific. Left unaddressed, it will exacerbate harmful warming and leave many countries exposed to grave economic and political insecurity. But massive needs create attendant opportunities for engagement by countries with significant capacity. The Quad countries and South Korea have well-aligned national infrastructure interests in areas such as green shipping and hydrogen. They have even more meaningful abilities to collaborate on providing third countries with the assets they need to both mitigate and adapt to climate change.

Seizing this opportunity can begin with relatively simple recalibrations of the membership and priorities of existing partnerships and institutions. The vast scale of the climate infrastructure challenge is conducive to creating stronger and more sustainable relationships between South Korea, the Quad countries, and the broader Indo-Pacific.

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Carbon Market Integration among South Korea and the Quad Countries

Taedong Lee

An emission trading system (ETS) is a mechanism through which a government sets and allocates carbon allowances, and participants in the system manage their allowance by trading in the market. This mechanism is purposely designed to reduce carbon emissions in a cost-efficient way by incentivizing participants to adjust their emissions. South Korea launched its own mandatory ETS in 2015, becoming the third to do so after the European Union and New Zealand. South Korea has the second-largest carbon market in the world after the European Union Emission Trading Scheme.

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In accordance with its pledge in the Copenhagen Accord of 2009, South Korea's government set a national greenhouse gas reduction target of 30 percent from its business-as-usual scenario by 2020, and it created a legal basis by enacting the Framework Act on Low Carbon, Green Growth in 2010. In January 2012, South Korea implemented the Greenhouse Gas and Energy Target Management System as a cap-and-trade preparatory stage, and this functioned as a pilot phase of its ETS by performing emission-statistics management and providing preliminary information on greenhouse gas reduction execution.

Additional acts and executive laws were enacted in 2012, and in 2015 the carbon trading scheme became effective. Twenty-three industries in five sectors were selected to be subjects of the cap-and-trade

system.¹ This ETS can serve as the basis for cooperation between South Korea and the Quad countries, through which they can promote their shared goal of decreasing greenhouse gas emissions.

Paris Agreement Article 6 and COP26

Article 6 of the Paris Climate Agreement tackles the concept of an international carbon market mechanism, which could be used to facilitate engagement between South Korea and the Quad countries. Article 6 tasks countries to “pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity.”² In particular, Article 6.2 discusses cooperative approaches through which parties can voluntarily forge bilateral and multilateral cooperative systems and integrate internationally transferred mitigation outcomes produced by such activities to reach their nationally determined contributions (NDCs). After its adoption, the Paris Agreement determined to later reach agreement to complete Article 6.2 execution guidelines and details related to the other mechanisms discussed in Article 6 as a follow-up.³ In January 2021, the United Nations Climate Change Conference (COP26) completed the Paris Rulebook, setting the transparent and uniform

1 Cheon-kee Lee, Study on Market Mechanism under Article 6 of the Paris Agreement, Korea Legislation Research Institute, 2018. (In Korean)

2 United Nations Framework Convention on Climate Change, [Paris Agreement, Article 6.1](#), p. 7, 2015.

3 United Nations Framework Convention on Climate Change, [Report of the Conference of Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015](#), paragraphs 37–39, 2015.

international standard of emission trading. Parties also reached a consensus regarding resource adaptation produced by carbon reduction, a transition from clean development mechanism to sustainable development mechanism, and the most salient issue, corresponding international reduction adjustment procedures.⁴

The time is ripe for South Korea to move forward with carbon market integration under Article 6 of the Paris Agreement.

South Korea has been attentive to the cooperative approaches dictated in Article 6.2. In 2015, it submitted an NDC indicating a 40 percent reduction target against business-as-usual, and it integrated an international carbon market procedure as a means to reach this goal. The COP21 report mainly discusses the bilateral procedure in Article 6.2 and the sustainable development mechanism in Article 6.4.⁵ In short, South Korea has already positively scrutinized and considered the construction of a carbon market mechanism based on cooperative approaches of Article 6.2 to reach the NDC target flexibly by utilizing bilateral cooperation with developing countries.

The time is ripe for South Korea to move forward with carbon market integration under Article 6 of the Paris Agreement. Reinforcement of climate change targets and carbon reduction by the parties at COP26 will invigorate the international carbon market. The foreign ETS market is on the way to expanding since the EU built up its Emission Trading System in 2005. The EU and New Zealand are implementing ETS at the national level. Japan operates an ETS in the Tokyo

metropolitan area and plans to set up a national carbon credit market in 2022–2023. China set up pilot ETS at the province level and began a national ETS in 2021. The United States, Japan, and China are practicing emissions trading at the regional level.

ETS Integration among Korea and the Quad Countries

Although ETS have been implemented at both the national and regional levels, international coordination is poorly facilitated. An international link can improve emission costs and cost volatility by enhancing the flexibility and strategic transactions via market controlling power. Therefore, it conforms to the UNFCCC's principle of common but differentiated responsibilities but does not increase the costs needed to reach the emission target. However, it also has some negative aspects, such as the issue of additionality, loss of parties' autonomy over their own ETS, and the distributive matter. A current example of a carbon market link at the international level is the link between the EU ETS with the ETS of Australia and with New Zealand. Emission trading is possible through exchange at the international cap-and-trade market. The internationally coordinated carbon-emission trading market system is currently being discussed, but it is still many steps away from actualization.

South Korea now operates its own national emission trading market, and it is a hub of carbon trading in Asia, so it can help to forge an international carbon market. This market will serve the transactions of not only derivative products and emission but also of other stocks and commodities similar to the international financial exchange market. By doing so, it can achieve effective greenhouse gas emission reduction and catalyze future growth. As the emergence of China's carbon-emission trading market indicates, carbon trading systems are quickly expanding worldwide. It seems likely that consensus on the carbon market reached by parties at COP26 and increasing concern will accelerate the inflow of resources to vitalize the carbon trading market.

4 C. Oh and S. Park, Research on current discussion and our negotiation position on corresponding agreement to cooperative approaches under Article 6.2 of the Paris Agreement, *Journal of Climate Change Research*, Vol. 10, no. 2, 2019. (In Korean)

5 Republic of Korea, Intended nationally determined contribution, 2015.

Even after completing the Paris Rulebook, additional steps should be taken to monitor the progress of follow-up, and further discussion on system construction and stabilization is still needed. As the internationally applicable standards become operative in bilateral transactions within the market, the carbon-trading transaction management system will likely be strengthened. Stabilization of the international carbon-trading market system will take time, so further dialogue on cooperative approaches among nations will be necessary.

Conclusion

Before applying to the international carbon-trading market, South Korea can delve into forming a carbon-trading market with the Quad countries. The United States, Japan, and Australia already have such a market at the regional level, which provides a logical starting point for these discussions. A carbon-trading market link among South Korea and Quad nations can be a means for responding to climate change, and it can be an important stepping-stone to broader global coop-

eration. To systematically construct cap-and-trade cooperative approaches through an international link between South Korea and the Quad members, countries must discuss and reach consensus on issues such as the amount of allocation to each government, price policy (fixed or volatile), price stabilization policy, and the measurement, report, and verification process. It would be better to set up each country's national-level ETS, considering international links. Otherwise, it will be challenging to link existing ETS systems with new ones. International coordination is imperative for all participants to facilitate effective and efficient climate change collaboration.

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Mainstreaming Renewables for Energy Security after the War in Ukraine

Kazuo Matsushita

War yields the worst destruction of the environment and of human rights. The Gulf War (1991) and the Iraq War (2003) were fought over oil in the Middle East. And Russia's invasion of Ukraine is a powerful reminder of the importance and urgency of ending dependence on fossil fuels, as the weaponization of Russian oil and gas resources against Ukraine's supporters brought to light a violent conflict over fossil fuel resources.¹ On April 4, 2022, while the conflict in Ukraine continued, the Intergovernmental Panel on Climate Change released its latest report, sounding the alarm that humanity's remaining opportunities to avert catastrophic and irreversible climate disruption are dwindling.²

Russia's war in Ukraine provides an important opportunity to rethink clean energy.

Russia's war in Ukraine provides an important opportunity to rethink clean energy. Policymakers must consider how to make consumers resilient and crisis-proof when it comes to energy. A straightforward strategy for transitioning to a decarbonized society and strengthening energy security is to reduce fossil fuel consumption as much as and as soon as possible. The most promising means to achieve this is to promote energy efficiency and conservation on the demand side and to expand renewable energy on

the supply side. The Quad countries and South Korea have the potential to lead the way in these efforts.

Promoting Energy Efficiency and Conservation

Promoting energy efficiency and conservation is key for transitioning to a decarbonized society. Globally, there is an overwhelming lack of capital investment in energy efficiency in the residential, business, and transportation sectors. How can the best and most up-to-date technologies be deployed to reduce the cost burden on consumers? Curbing energy demand is the surest way to protect consumers from fuel price spikes in the short term.

The impact of Russia's invasion of Ukraine differs in the short and long terms. Fuel supplies must be managed to limit further damage to the energy-poor and the economy in the immediate future. The long-term response should draw on the lessons of economic measures taken in response to the coronavirus pandemic. Countries have over-invested, mainly in the direction of increased dependence on fossil fuels. They cannot continue to rely on unstable fuel supplies. Instead, they should take the opportunity to build efficient, well-insulated, and well-ventilated infrastructure and strengthen their power systems with distributed renewable energy. Furthermore, it is important to strengthen power systems by investing in power grids to counter energy-price volatility, including storage batteries and power grids.

Expanding Renewables

To promote decarbonization and enhance energy security, renewable energy must be expanded. Once an initial investment is made, renewable energy has

¹ For more information on the environmental impact of Russia's invasion of Ukraine, see Kazuo Matsushita, [Grave Concern for Environmental and Climate Damage Caused by Russian Invasion of Ukraine](#), Toda Peace Institute, April 22, 2022.

² Working Group III, [Climate Change 2022: Mitigation of Climate Change](#), Intergovernmental Panel on Climate Change, 2022.

zero fuel costs (zero marginal cost), will never run out, and is unlikely to cause price hikes or supply instability. Since renewable energy is based on small-scale, decentralized use in a variety of regions, it is highly responsive in times of disaster and contributes to regional economic cycles. Also, unlike fossil fuels, renewable energy sources such as sunlight, wind, and water are ubiquitous throughout the world—after all, there are no wars over the sun.

Although this seems obvious, relying on renewable energy has been difficult in the past from the standpoint of economic efficiency. This is because, except for hydroelectric power, the cost of generating renewable energy has been too high. But since the 1990s European countries have been promoting renewable energy as a matter of policy, and since the 2010s the cost of wind turbines and solar panels has been rapidly decreasing, leading to the mass introduction of renewable energy worldwide.

This trend will only increase in the future. According to the International Energy Agency's future projection of the global power mix, renewable energy will account for 87.6 percent of the global power mix in 2050, up from 26.6 percent in 2019.³ Nuclear, by contrast, will decline from 10.4 percent in 2019 to 7.7 percent in 2050. Hydrogen-fired power and thermal power with carbon capture and storage, candidates for future decarbonized power sources, will stop at 2.4 percent and 1.9 percent respectively.

This has driven the recent decarbonization of renewable energy, which has become a realistic means of combating climate change. In December 2019, the EU announced 2050 carbon neutrality in its Green New Deal, and in the fall of 2020, then US presidential candidate Joe Biden and China's President Xi Jinping each declared carbon neutrality, making decarbonization an international trend.⁴ As a means to achieve this, zero-emission renewable energy is a high priority

in each country's energy policy, with 2030 power mix targets of 80 percent in Germany, 74 percent in Spain, 65 percent in the European Union, and 60 percent in the US state of California. In contrast, the target in Japan is 36–38 percent, 20 percent in South Korea, 50 percent in Australia, and 40 percent in India. Decarbonization, mainly through renewable energy, is a way to kill two birds with one stone, contributing to energy security and climate change action.

The Quad Countries and South Korea Can Lead the Way

Soaring fossil fuel prices and supply instability are risks that inevitably arise from the use of fossil fuels, and the only way to escape these risks is through decarbonization centered on renewable energy. Japan, South Korea, India, and Australia all remain significantly dependent on coal-fired power. With the United States included, there is a high potential for cooperation among the five countries to develop a realistic strategy and roadmap for phasing out coal-fired power generation.

Under these circumstances, the emphasis in the future should be on the transition to a decarbonized society centered on the expansion of renewable energy from local areas, or the promotion of a Local Green Deal. In June 2021, the Government of Japan decided on a Local Decarbonization Roadmap.⁵ This roadmap outlines a path and concrete measures for regional decarbonization that will serve as a regional growth strategy, focusing on national initiatives and focused measures for decarbonization that contribute to local development to solve regional problems and improve the attractiveness and quality of local communities. The goal is to create at least 100 regions that lead efforts in decarbonization by 2030, and to implement priority measures such as on-site solar power generation and energy-efficient housing throughout the country, thereby spreading the regional decarbon-

3 International Energy Agency, [Net-Zero by 2050: A Roadmap for the Global Energy Section](#), May 2021.

4 European Commission, [A European Green Deal](#).

5 Nippon, "[Japan Adopts Regional Decarbonization Road Map](#)," June 9, 2021.

ization model throughout the country and achieving decarbonization by 2050.

In these welcome and ambitious moves toward decarbonization from the local level, the national government and local communities work together to mobilize a diverse range of policies and tailor them to local conditions. It is hoped that more ambitious greenhouse gas reduction targets will be set, supported by specific policies to promote energy conservation and renewable energy, and that progress will be made in building a decarbonized, nature-harmonious, recycling-oriented, self-reliant, and humane society from the local level. To promote local decarbonization (the Local Green Deal), cooperation among local governments in Japan, the United States, Australia, India, and South Korea, including sharing of best practices and technological cooperation, is desirable.

For the sake of energy security and decarbonization, the mainstreaming of renewable energy should be accelerated as a top priority for all five countries. Japan, which is poor in fossil fuels but rich in renewable energy potentials, might be expected to be the first country to introduce renewable energy for the sake of energy security. However, until now, renewable energy has remained a low priority in its energy policy.⁶ Against this backdrop, Prime Minister Yoshihide Suga declared in October 2020 that Japan would decarbonize by 2050. One year later, the cabinet approved the Sixth Basic Energy Plan. In this plan, the government set the mix of renewable energy sources for 2030 at 36 to 38 percent. This is 1.5 times higher than the previous plan but not as ambitious as the abovementioned targets of other countries, so much work remains. South Korea and India have similar challenges.

Finally, the use of green hydrogen and green ammonia should also be considered. They are produced using renewable energy, so they do not

generate carbon dioxide during their production and use, contributing to decarbonization. As there is still no distribution infrastructure for these products, cooperation among Japan, Australia, India, the United States, and South Korea is desirable for the establishment of a green hydrogen market, while giving due consideration to environmental sustainability. These five countries complement each other in terms of the availability of resources, demand, and level of technological development related to green hydrogen and green ammonia, and constructive cooperation is desirable.

Conclusion

The United States, Japan, India, Australia, and South Korea are all among the world's top greenhouse gas emitting countries.⁷ As such, they have a great deal of responsibility and influence on global climate change policy. Each has its own distinctive climate change policies and accumulated technologies and experiences. They also have diverse resource endowments and energy supply-and-demand situations. Therefore, complementary cooperation on climate policy among these five countries has the potential to yield significant results.

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⁶ For more information on Japan's climate change policy challenges, see Kazuo Matsushita, [Japan's Response to the Issue of Climate Change: An Innovative Transition Towards a Zero-Carbon and Resilient Society](#), Sasakawa Peace Foundation USA, May 28, 2020.

⁷ The United States is second in the world, India is fourth, Japan is fifth, South Korea is 11th, and Australia is 14th. See Johannes Friedrich, Mengpin Ge, and Andrew Pickens, [This Interactive Chart Shows Changes in the World's Top 10 Emitters](#), World Resources Institute, December 10, 2020. In this analysis, the 27 EU member countries are counted as one entity.

Forging an India-South Korea Partnership for the Global Climate Agenda

Aparna Roy

The world is facing unprecedented challenges in the form of climate change and its impacts on the socio-economic and ecological world order. Nations are amending their development strategies accordingly to promote sustainable development and climate action as intrinsic to their developmental strategy going forward. Consequently, forging bilateral and multilateral partnerships among nations is paramount in the global combat against climate change. This is in line with the 17th Sustainable Development Goal (SDG 17) of the United Nations, which talks about revitalizing global partnerships for sustainable development.¹

Now is an opportune moment for India and South Korea to forge a partnership for the global climate agenda.

In this context, India and South Korea present a pressing case for strengthening bilateral cooperation in the domain of climate action. Climate-based vulnerabilities, and hence the need for expedited and collaborative efforts to tackle climate change, rank high on both nations' list of priorities. Climate change is expected to wipe out anywhere between 3 to 12 percent of India's GDP annually, while for South Korea, the economic impacts of climate change are estimated at 0.4 percent of GDP each year until 2050.² In addition to economic loss, climate change is a looming threat on both the nation's society and

ecology as extreme weather conditions like flooding and droughts are expected to substantially intensify in the case of climate inaction. Now is an opportune moment for India and South Korea to forge a partnership for the global climate agenda to facilitate just transition and carbon neutrality, promote principles that conform with a climate-action strategy, share information, and facilitate climate finance.

Drivers of India-South Korea Cooperation

There are several reasons why India and South Korea can become leading examples of actualizing SDG 17 for effective climate action and furthering the global fight against climate change through cooperative and collaborative efforts.

First, the historical nature of diplomatic ties and the current developments pertaining to foreign policy are conducive for realizing effective cooperation between the two nations. Both the countries have adopted congruent positions, which catalyzes the opportunity of enhancing bilateral ties on mutually significant issues. In a landmark foreign policy initiative, India's Prime Minister Narendra Modi promulgated the Act East Policy in 2014, which aims to deepen India's ties to East Asia. In a symbiotic manner, South Korea also adopted a New Southern Policy in 2017, which seeks to enhance and expand ties with countries like India under the three pillars of people, peace, and prosperity.³ Climate action has been time and again touted as a key ingredient of bilateral ties between the two nations. This is evident from a plea in 2021 by India's foreign secretary in Seoul where he expressed India's

1 Department of Economic and Social Affairs, [Strengthen the means of implementation and revitalize the global partnership for sustainable development](#), United Nations.

2 Swati Joshi, "[India may lose 3-10% of its GDP annually by 2100 due to climate change: Study](#)," Carbon Copy, June 11, 2021. In KyooBaek and Ok Su Lee, [South Korea's turning point](#), Deloitte, August 2021.

3 Sungil Kwak, [Korea's New Southern Policy: Vision and Challenges](#), Korea Institute for International Economic Policy, November 2018.

desire to have South Korea join New Delhi-initiated global climate bodies including the Coalition for Disaster Resilient Infrastructure (CDRI) and International Solar Alliance (ISA).⁴

Second, both countries have similar challenges and needs toward accelerating the climate-action agenda. India and South Korea are embracing the need for rapid, sustainable economic growth and have ambitious targets to realize their respective national climate visions. Additionally, both countries have high dependence on fossil fuels for their energy demand and needs. This is reflected in the fact that with over 41 percent and 70 percent of dependence on coal, respectively, the South Korean and Indian power sectors are two of the most coal-dependent in the world.⁵ To counter the global calls for a clean energy scenario, India has adopted the renewable energy target of 500 gigawatts of capacity by 2050 and a net-zero economy by 2070.⁶ With similar intent, South Korea has committed to becoming carbon-neutral by 2050 by reducing national carbon emissions by 40 percent of the 2018 levels.⁷ Both these targets are hailed as extremely ambitious by experts across the globe, which marks a commonality of having official commitments that are forward-looking and surpass the benchmarks in global announcements by other nations.

Third, the coronavirus pandemic has been a defining moment in the sustainable development paradigm of both nations. South Korea unveiled a Green New Deal in the wake of the pandemic to create new jobs and help the economy recover. Furthermore, it also recalibrated its New Southern Policy as the New

Southern Policy Plus to expand the agenda within the policy to include additional items such as resilient recovery.⁸ In a parallel response to the coronavirus pandemic, India pounced on the ideology of Atmanirbharta and “build back better” to marry the needs of economic growth and climate change. The prime minister advocated for building back India’s economy in a way which shields it from future external shocks by making the agriculture, manufacturing, and service sectors more resilient from unforeseen challenges in global value-chains. These ideas have been often cited as the reason why India’s economy has returned to pre-pandemic levels this year.⁹ At the same time, there are significant developments that can serve as a lesson for the other country. India’s aggressive stance on renewable energy and disaster-resilience is something that Seoul can borrow, and South Korea’s clear policy regarding coal-usage reduction and ample carbon-budget allocation can be adopted by India.

Facilitating Bilateral Cooperation on Sustainability and Climate

In order to enhance mutual collaboration on the sustainability agenda and climate action, the two countries can adopt a four-pronged approach. First, they can utilize the existing framework of their Special Strategic Partnership to collaborate in domestically relevant areas such as a “just transition” approach and “achieving carbon neutrality.” This would involve institutionalizing diplomatic ties and mechanisms to facilitate official bilateral convenings at the ministerial level and among policymakers, regulatory agencies, academia, and other relevant stakeholders. Such cooperation can also be channeled via climate-based bodies including CDRI and ISA. The focus of this should be to elevate the levels of diplomatic discussions in the domain of climate action as a means to achieve climate goals.

4 Song Sang-ho, “India’s foreign secretary voices hope for S. Korea to join New Delhi-initiated bodies to fight climate change,” Yonhap News Agency, February 17, 2021.

5 Sangmi Cha, “S. Korea commits to ‘challenging goal’ of cutting emissions to 40% of 2018 levels by 2030,” Reuters, October 18, 2021; International Energy Agency, [India Energy Outlook 2021](#), February 2021.

6 Down To Earth, “CoP26: Modi offers ‘Panchamrita’ concoction for climate conundrum at Glasgow,” November 2, 2021.

7 Cha, “S. Korea commits to ‘challenging goal’ of cutting emissions to 40% of 2018 levels by 2030.”

8 Moe Thuzar, “The New Southern Policy Plus: What’s New and What’s Next?,” World Economy Brief, April 8, 2021.

9 Animesh Singh, “Economy Grew at 8.7% in 2021-22, above Pre-Pandemic Level,” NDTV Profit, May 31, 2022.

Second, a critical element of such a strategy should be to adopt, reaffirm, and institutionalize principles which conform with an effective climate-action strategy. For instance, one such principle could be that of common but differentiated responsibilities, as declared in the United Nations Framework Convention on Climate Change. Given that both these nations are fossil-fuel-dominated economies, the cost of carbon inequality for them would be huge. Hence, a scientific, evidence-based planning process that takes into account principles of fair-share, carbon equality, and socioeconomic vulnerabilities is required. Most of these are part of the Paris Climate Agreement and the nationally determined contributions.

Third, knowledge transfer and sharing of experiences from domestic policy developments and implementation should be prioritized. For instance, technology and knowledge transfer within the electric vehicle (EV) industry can be low-hanging fruit with South Korean auto giant Hyundai venturing into EVs and Indian policymakers designing lucrative incentive structures to attract investment in this space. This should incorporate thorough assessments of what works in which context, so that the countries can mutually benefit while adopting each other's plans and policies. A consortium of industry leaders, think tanks, and public policy professionals from both countries can be leveraged to actualize an effective knowledge-transfer vision. Again, these can be implemented under the umbrella of existing partnership strategies or global climate bodies. Additionally, industry-level summits to showcase leading climate-action technologies can be envisaged and pursued under this strategy.

Fourth, institutional and governance-level collaboration is required to jointly voice the concerns of the

developing world, particularly pertaining to availability of climate finance. For this, India and South Korea should start collaborating actively on the key outcome pillars of Glasgow Climate Pact Finance for Climate Adaptation, Transparency, and Reporting and Market and Non-Market Approaches.¹⁰ This will serve the twin purpose of enabling global adoption of practices that seek to actualize goals related to these pillars as well as push developed countries toward realizing their unparalleled role in supporting developing countries to deal with challenges of climate change and economic growth.

Conclusion

It is through such coherent efforts that both these countries can formalize a model partnership and a template to combat climate change that can be adopted by other nations and regions across the globe. This also provides an avenue to enhance the share of trade among these nations, particularly in green technology, low-carbon solutions, and climate-dependent sectors like agriculture, food processing, and others.

To truly realize the goals of sustainability, the adoption of SDG 17, in letter and spirit, is indispensable. India and South Korea can set an example for the global order to adopt collaborative strategies in dealing with a systemic problem of global proportions, such as climate change.

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10 United Nations, [The Glasgow Climate Pact – Key Outcomes from COP26](#), December 13, 2021.

Addressing Climate Change Consequences through Quad-South Korea Cooperation

Robert Glasser

The Indo-Pacific is exceptionally affected by the hazards that climate change is amplifying. The rapid emergence of these hazards will have major cascading consequences for regional countries, undermining the coping capacity of communities and governments. Countries will not only experience more severe extreme weather events but also more frequent swings from extreme heat and drought to severe floods. Climate hazards will exacerbate existing regional security threats and generate new ones on an unprecedented scale. There are major opportunities for the Quad partners to engage with their South Korean counterparts to develop and apply accurate climate information, reduce the vulnerability of critical infrastructure, provide humanitarian assistance and disaster relief, mitigate food insecurity, and prepare for population displacement.

Developing and Applying Accurate Climate Information

Climate information is the foundation of climate change mitigation and adaptation. It is essential for ensuring that civilian and military planners can make investments in infrastructure and military systems—and social and economic investments more broadly—that accurately take account of the way climate change is amplifying disaster risk. In most places today, disaster risk is estimated primarily by the historical record of disasters but this is no longer sufficient as climate change is rapidly altering these risks significantly. Hazards such as extreme floods and bushfires are increasingly occurring in places that have never been affected before. Over half of the homes destroyed in the devastating floods caused by Hurricane Harvey in the United States, for example,

were outside of the 1-in-500-year flood plain. The Quad countries and South Korea should develop and apply more accurate climate and hazard information to facilitate climate-informed regional development and to enable reliable risk assessments and effective investments.

Reducing the Vulnerability of Critical Infrastructure

Climate change will have system-wide impacts that threaten critical infrastructure systems. It will increase the frequency and severity of both slow-onset and rapid-onset hazards. It will also magnify the interactions between hazards, such as drought and extreme heat contributing to fires. In addition, climate change will alter the spatial and temporal patterns of hazards, as in the case of lengthening fire seasons and changing cyclone paths. Due to these factors, climate change will generate cascading disruptions of critical infrastructure, including in transport, water, energy, health, food, and the financial sector.

Policymakers must understand the interdependencies of critical infrastructure systems. For example, owners and operators of water infrastructure rely on electricity for pumping and telecommunications for monitoring operations. Policymakers must also consider how these critical infrastructure systems will respond to the evolving hazards and threats caused by climate change. The Quad partners are already engaged in a regional infrastructure initiative, which should focus more specifically on reducing the vulnerability of critical regional infrastructure to climate-related hazards. South Korean counterparts could join this collaboration.

Providing Humanitarian Assistance and Disaster Relief

Civilian and military forces will increasingly be called upon to respond to humanitarian disasters, both foreign and domestic. The pace of these demands is already accelerating rapidly in many countries, including Australia, due to climate change. This has serious consequences for national security preparedness and capabilities. South Korea has the potential to engage with the Quad Humanitarian and Disaster Relief Mechanism to increase the effectiveness of regional responses. Military cooperation among the Quad countries and South Korea will also be necessary to fully address humanitarian challenges.

Mitigating Food Insecurity

Scientists have determined that by 2040, at 2° C of warming, Southeast Asia's per capita crop production may decline by one-third. Climate impacts occurring simultaneously elsewhere in the region and beyond will further diminish the options available to countries to offset the domestic effects, such as by importing additional food. Fish species are moving toward the poles to escape warming waters, and the region's coral reefs—the “nursery” for roughly 10 percent of the world's fish supply—are degrading rapidly.

Food insecurity has historically been closely associated with political instability in many countries in the region. It is likely to increase, including suddenly because of simultaneous and consecutive hazards, with profound humanitarian consequences. Food insecurity is not currently a focus of the Quad agenda but it is an area where South Korea and the Quad countries could make a meaningful contribution to regional well-being.

Preparing for Population Displacement

In 2021, over 30 million people were displaced by climate-related disasters, the vast majority in the Indo-Pacific—particularly in East Asia and the Pacific. Although most of these individuals were internally displaced, there are also clear links between

climate disasters and migration. Climate was a factor, for example, in the Syrian civil war that resulted in the huge influx of Syrian refugees to Europe. More recently, it was the primary factor in a wave of migration from Central America to the United States. The migration of tens of millions of people, exacerbated by climate change, is likely to become one of the major trends of the 21st century. Maritime Southeast Asia, where hundreds of millions of people reside in low-lying island states, is among the most exposed regions in the world to the hazards that climate change is amplifying.

It is likely that the combination of slow-onset and sudden-onset disasters will displace very large concentrations of populations in the region, with significant consequences for immigration, refugee, and border protection policies and operations. This concern is reflected in US President Joe Biden's recent decision to issue an executive order on the international security implications of climate-related migration. The Quad countries and South Korea should engage in dialogue with each other and with regional partners likely to be affected by population displacement to consider potential preparations for the future.

Conclusion

There are major opportunities for South Korea, the Quad countries, and other regional partners to pool their capacities to anticipate, mitigate, and respond to this multidimensional challenge. The Quad has already incorporated some of these issues onto its growing agenda, but there is room to expand its activities still further to address the impacts of climate change more effectively.

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