



First Summit between Biden and Moon: Bilateral Civil Nuclear Energy Cooperation Deserves More Attention

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When American presidents meet their South Korean counterparts, media reports tend to focus overwhelmingly on North Korea’s nuclear and missile programs as well as its provocative foreign policy. This is understandable because Pyongyang’s conduct poses serious threats and challenges to South Korea’s national security and to U.S. interests in northeast Asia. Policy concerning North Korea is thus appropriately a high priority for both Washington and Seoul. Nevertheless, the media’s sometimes singular focus on North Korea can often obscure important developments in U.S.-South Korean relations. Possible new cooperation in global nuclear power markets—announced following the May summit meeting between U.S. President Joe Biden and Republic of Korea President Moon Jae-in—deserves more attention than it has received.

In their joint statement following the summit, the two leaders stated, “We commit to develop cooperation in overseas nuclear markets, including joint participation in nuclear power plant projects, while ensuring the highest standards of international nuclear safety, security and nonproliferation are maintained.”^[1] The White House fact sheet following the meeting further elaborated that the two countries would promote “coordination in the supply chain,” that South Korea would “adopt a common policy with the United States to require recipient countries have an IAEA safeguard agreement Additional Protocol in place as a condition of supply of nuclear power plants,” and that they would hold a new meeting of their High Level Bilateral Commission on civil nuclear matters.^[2] These are important steps.

The formal U.S.-South Korea nuclear relationship began in 1973 with the signing of a bilateral civil nuclear cooperation agreement known as a “123 agreement” after Section 123 of the Atomic Energy Act of 1954. By 1978, South Korea’s first nuclear power plant—built by the U.S. firm Westinghouse—started commercial operations. Over the last 40 years, South Korea has become one of the U.S. Department of Energy’s (DOE) most frequent partners, as measured by the number of DOE commitments.^[3] Much of this interaction has occurred in the nuclear field.

In no small part due to the importance of the U.S.-South Korea alliance to America’s regional security interests, this nuclear collaboration has grown despite a complex and challenging geopolitical environment. Non-proliferation concerns and North Korea’s military threat to South Korea have been among the most consistent and influential factors shaping the U.S.-South Korea nuclear collaboration—especially in limiting Washington’s support for South Korea developing the capacity to reprocess nuclear fuel, a pathway that could create weapons-grade nuclear material. Renewed in 2015, the U.S.-South Korea 123 Agreement blocks South Korea from developing, reprocessing, or enriching nuclear material.

As U.S. concerns have grown surrounding Russia's dominance and China's potential expansion in the global nuclear market, Washington is considering how to restore its competitive position and thereby to win greater influence over international non-proliferation norms and standards. Congress has already taken important steps by passing legislation such as the Nuclear Energy Innovation and Modernization Act (2019) that requires the Nuclear Regulatory Commission (NRC) to develop new processes for licensing nuclear reactors. During the Trump administration, the Department of Energy released a new strategy document, *Restoring America's Competitive Nuclear Energy Advantage*, aimed at strengthening America's nuclear fuel cycle capabilities, investing in research, development, and demonstration, and competing with Russian and Chinese nuclear enterprises.

More recently, climate change has emerged as another driver of U.S. interest in nuclear energy and in civil nuclear collaboration. The Biden administration has announced an initiative to assist other nations with nuclear sector capacity-building as a component of its wider effort to address climate change.^[4] Likewise, President Biden's ambitious jobs and infrastructure plan includes substantial proposed investments in clean energy technology including advanced nuclear. The White House talking points on the summit place the U.S.-South Korea civil nuclear cooperation firmly in this context.

Deeper and broader U.S.-South Korea civil nuclear cooperation can contribute to several important American goals. First are the overarching U.S. aims to reduce greenhouse gas emissions domestically and internationally, key administration objectives. Nuclear power is essential in this effort not only as a source of clean electricity, but also as a source of industrial heat—critical to slashing emissions from heavy industries—that neither solar photovoltaic systems nor wind turbines can provide. The levelized cost of energy of concentrating solar power (with storage), which does produce heat, remains roughly four times that of solar PV.^[5] On top of this, nuclear energy is firm power, unlike solar and wind, which vary daily and seasonally. Seasonal variation is especially problematic due to storage limitations.

Second, South Korea can complement U.S. nuclear manufacturing capacity including both human capital and supply chains. Despite having the world's largest fleet of operating commercial reactors, American firms have built only a few nuclear power plants in recent years. The United States will need time to restore this capacity, and South Korean companies can fill important gaps. A recent Atlantic Council report highlights the potential synergies between American and South Korean nuclear supply chains.^[6]

Third, closer coordination and cooperation can support U.S. efforts to compete more effectively with Russia and China in international nuclear markets. With its success in developing the Barakah Nuclear Energy Plant in the United Arab Emirates (UAE), South Korea has emerged as an important supplier of nuclear reactors. Joint participation in projects and other cooperation in third countries, as well as some of the other commitments the White House announced, can help both nations advance their strategic, non-proliferation, and commercial interests.

Looking ahead, Washington and Seoul could consider two specific areas for new collaboration: standards and financing. In the United States, quite a few companies are developing small modular reactors (SMRs) and advanced nuclear technologies. These include NuScale, which expects its first plant to begin operations by 2030, as well as TerraPower and X-energy, which won \$80 million each from the Department of Energy to build demonstration reactors that will begin operations by 2027.^[7] Russia and China are also actively developing SMRs and other new designs. Working together to develop and promote common standards will be important for both U.S. and South Korean firms in international markets. Financing is another key consideration in ensuring competitiveness. Russian and Chinese state-owned enterprises—in all sectors—often benefit from long-term, low-cost government financing. The U.S. and other private firms face greater challenges competing with state companies, especially in capital-intensive sectors like the nuclear sector. Others have proposed broad strategies for cooperation to improve joint financing; aligning approaches with allies like South Korea is one important step that Washington could take.

As the United States and South Korea each navigate a complex global energy transition driven by innovation, changing market dynamics, and efforts to combat climate change,

nuclear energy seems likely to become more important to each country in achieving their domestic and international goals. While perhaps underappreciated relative to other dimensions of the U.S.-South Korea alliance, civil nuclear cooperation can be a powerful tool for meeting other common global challenges.

[1] U.S.-ROK Leaders' Joint Statement; <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/21/u-s-rok-leaders-joint-statement/>

[2] FACT SHEET: United States – Republic of Korea Partnership; <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/21/fact-sheet-united-states-republic-of-korea-partnership/>

[3] Energy Technology in an Era of Great Power Competition: Challenges and Opportunities in U.S.-Japan and U.S.–South Korea Cooperation <https://www.innovationreform.org/wp-content/uploads/2021/04/Energy-Technology-in-an-Era-of-Great-Power-Competition.pdf>

[4] Program To Create Pathways to Safe and Secure Nuclear Energy Included in Biden-Harris Administration's Bold Plans To Address the Climate Crisis; www.state.gov/program-to-create-pathways-to-safe-and-secure-nuclear-energy-included-in-biden-harris-administrations-bold-plans-to-address-the-climate-crisis/

[5] LAZARD'S LEVELIZED COST OF ENERGY ANALYSIS—VERSION 14.0; <https://www.lazard.com/media/451419/lazards-levelized-cost-of-energy-version-140.pdf>

[6] Advancing US-ROK Cooperation on Nuclear Energy; https://www.atlanticcouncil.org/wp-content/uploads/2021/02/AC_GEC_US-ROKNUCLEAR_0225_FINAL.pdf

[7] U.S. Department of Energy Announces \$160 Million in First Awards under Advanced Reactor Demonstration Program; <https://www.energy.gov/ne/articles/us-department-energy-announces-160-million-first-awards-under-advanced-reactor>

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