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Next Steps for U.S.-South Korea Civil Nuclear Cooperation

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James E. Platte, Visiting Fellow at the East-West Center in Washington, explains that "the new 123 Agreement is a step forward for U.S.-South Korea civil nuclear cooperation [but] developments, such as spent fuel storage problems or more reactor export deals for South Korea, may also spur new talks over enrichment and reprocessing."

On June 15, U.S. Secretary of Energy Ernest Moniz and South Korean Foreign Minister Yun Byung-se signed a new agreement on civil nuclear cooperation (a so-called "123 Agreement") between the two countries, and U.S. President Barack Obama submitted the proposed 123 Agreement to the U.S. Congress the next day. The Senate Foreign Relations Committee and the House Foreign Affairs Committee will have 30 days to review the agreement, and then the whole Congress will have 60 days for review. The proposed 123 Agreement will enter into force unless Congress enacts a joint resolution opposing the agreement, and the South Korean Ministry of Government Legislation also will review the proposed agreement. The new 123 Agreement comes after several years of difficult negotiations and represents a step forward for bilateral nuclear cooperation, but this does not mark the end of negotiations and debates between Washington and Seoul in the civil nuclear energy field.

South Korea and the United States have a long, robust history of civil nuclear cooperation, going back to the Atoms for Peace program and the initial 123 Agreement in 1956. Since then, the United States has played an integral role in the development of South Korea's civil nuclear industry, which now comprises 24 operational reactors that generate about 30 percent of South Korea's electricity. South Korea has become virtually self-sufficient in nuclear reactor design, construction, and operation but still relies on U.S. firms for some nuclear fuel and engineering services. In addition, South Korea and the United States cooperate on numerous bilateral and multilateral nuclear research and development projects.

All of this cooperation is facilitated by the 123 Agreement. The Atomic Energy Act of 1954 requires that a 123 Agreement be in place for the United States to cooperate with international partners on peaceful uses of nuclear energy. Given the importance of nuclear power to the South Korean economy, maintaining civil nuclear cooperation with the United States is vital for Seoul. Yet, negotiations on the new agreement were difficult and lasted nearly five years. In 2013, the two sides even approved a two-year extension of the previous 123 Agreement, which was set to expire in 2014, in order to give them more time to work out a deal. The major sticking point in the negotiations was over uranium enrichment and reprocessing technologies, which have the ability to produce fissile materials either for civilian nuclear fuel or for nuclear weapons.

The previous 123 Agreement was signed in 1974 and prohibited South Korea from enriching or reprocessing. Two other developments around that same time entrenched U.S. nuclear cooperation policy toward South Korea. First, the Indian nuclear test in 1974 changed U.S. nonproliferation policy in general, shifting from promoting reprocessing abroad to staunchly opposing the spread of enrichment and reprocessing

technologies. Second, Washington found out about then-South Korean President Park Chung-hee's clandestine nuclear weapons program in the mid-1970s and applied significant diplomatic pressure to stop that program. The U.S. government has consistently opposed granting South Korea consent to enrich or reprocess ever since.

Seoul pushed hard to gain that consent from Washington in the new 123 Agreement for several reasons. First, South Korea wants reprocessing technology in order to manage the country's growing stocks of spent nuclear fuel. All spent fuel currently is kept on-site at reactors in temporary storage facilities, but some of these facilities may soon reach capacity, as early as 2016 according to one estimate, which would cause reactors to shut down. An interim solution is needed to alleviate this situation, but South Korea sees a type of reprocessing called pyroprocessing as a long-term solution to spent fuel management. Siting radioactive waste storage facilities has been difficult in densely populated South Korea, but Seoul believes that pyroprocessing could significantly reduce the volume of waste and necessary storage time. Second, Seoul wants enrichment technology to support its nuclear reactor export business. South Korea won a $20 billion contract in 2009 to build four reactors in the United Arab Emirates and is looking to secure contracts in other countries, too. Because South Korea has no enrichment capability, the UAE contracted with North American and European companies to source natural uranium and supply enriched uranium for Korean companies to fabricate into fuel. Third, Seoul desires to be viewed on an equal footing as the other major nuclear technology suppliers, especially Japan, to which the United States granted consent for enrichment and reprocessing in 1987.

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Despite a strong diplomatic push by Seoul, the new 123 Agreement does not give South Korea advanced consent for enrichment or reprocessing, at least not yet. The new 123 Agreement facilitates the continuation of a ten-year Joint Fuel Cycle Study (JFCS) between South Korea and the United States that was launched in 2011. The stated purpose of the JFCS is to assess the "…technical and economic feasibility and nonproliferation acceptability…" of technologies related to reprocessing and spent fuel management. A separate Nuclear Technology Transfer Agreement governs the transfer of technologies during the course of the JFCS, and the new 123 Agreement establishes a High-Level Bilateral Commission (HLBC) to enhance cooperation and address issues related to spent fuel management, fuel supply, and nuclear security.

Taken together, these agreements and mechanisms formed since 2011 significantly upgrade U.S.-South Korea civil nuclear cooperation, and they provide South Korea with formal channels to conduct research on reprocessing technologies and request consent for using these technologies in their civilian nuclear industry. They also set up times in the future that likely will see U.S. and South Korean negotiators once again discussing enrichment and reprocessing. In 2018, the U.S.-Japan 123 Agreement, with advanced consent for Japan's reprocessing program, is set to automatically renew unless either party calls for renegotiation, which appears unlikely, and this could be a time when Seoul asks, through the HLBC, why they also do not have advanced consent. Three years later at the scheduled conclusion of the JFCS in 2021, Seoul may request permission to use the reprocessing technologies developed during the course of the study. The next foreseeable milestone is in 2032, when the new 123 Agreement requires the two parties to consult on whether to pursue an extension. Other developments, such as particularly acute spent fuel storage problems or more reactor export deals for South Korea, may also spur new talks over enrichment and reprocessing. Thus, the new 123 Agreement is a step forward for U.S.-South Korea civil nuclear cooperation, but the bigger steps regarding enrichment and reprocessing for South Korea remain yet to be taken.

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