COUNCIL on FOREIGN RELATIONS

POLICY INNOVATION MEMORANDUM NO. 49

Date: September 22, 2014

From: Scott A. Snyder

Re: Breaking the Stalemate in U.S.-ROK Nuclear Cooperation Negotiations

A dispute over whether South Korea (ROK) should have the right to enrich and reprocess U.S.-origin nuclear fuels has led to a deadlock in talks on a new bilateral nuclear cooperation agreement. Failure to break that impasse would threaten mutually beneficial nuclear cooperation and could disrupt a critical bilateral relationship at a time when regional tensions are rising and North Korea's nuclear program continues to develop. To avoid disruption, Washington should extend the current agreement and pledge to make a follow-on agreement contingent on the results of an ongoing study that will determine the feasibility and proliferation risks of South Korea's proposed solution to the stalemate. These steps would give Washington time to address Seoul's main objective: that it be held to the same nuclear cooperation standards as other states with advanced civilian nuclear energy sectors, most notably Japan.

U.S. LAW AND SOUTH KOREA'S NUCLEAR INDUSTRY

The United States and South Korea have a long history of nuclear cooperation. Under the countries' first nuclear agreement signed in the 1950s, U.S. specialists supplied South Korea with an experimental reactor. A U.S. company subsequently built the first full-scale nuclear power plant in South Korea and trained ROK nuclear specialists to operate it under a renewal agreement that came into force in 1974. Four years later, the U.S. Congress passed the Nuclear Nonproliferation Act as an amendment to the Atomic Energy Act, which among other things further restricted the use of U.S. nuclear material or technology by foreign governments or entities in enrichment and reprocessing without U.S. "advanced consent." Accordingly, such agreements as the U.S.-ROK Nuclear Cooperation Agreement made prior to the 1978 amendment need to be renegotiated before expiration and upgraded to meet 1978 standards.

South Korea now wants such advanced consent to enrich and reprocess U.S.-origin nuclear fuel. South Korean firms have emerged as major participants in the global nuclear energy industry. They now operate twenty-three nuclear plants that generate almost one-third of the country's electricity, and they began exporting nuclear plants in 2010. The 1974 agreement, however, bars South Korean companies from enriching and reprocessing U.S.-origin fuel. As a result, the ROK

government argues that its firms operate at a competitive disadvantage in the global market against foreign plant operators that can provide fuel enrichment and reprocessing services through company affiliates Urenco and Tenex. Despite fuel supply assurances and assessments that the uranium supplies available to operate power plants will keep fuel prices low, the ROK government worries that fuel-enrichment service providers might someday become a cartel or charge South Korean firms a premium for services. Moreover, South Korea is seeking U.S. permission to reprocess nuclear fuel through an experimental method called pyroprocessing, which was originally developed at national laboratories in the United States. Many South Korean policymakers and scientists believe this process would shrink South Korea's growing volume of nuclear waste and avoid the proliferation concerns of existing reprocessing methods, with the added benefit of creating fuel usable in next-generation nuclear reactors. A further complication arises from South Korean public sensitivity to the fact that the United States has granted Japan advanced consent for U.S.-origin fuel enrichment and reprocessing that it is denying to South Korea.

STALEMATE AT THE NEGOTIATING TABLE

The United States and South Korea began negotiations to renew the existing U.S.-ROK nuclear cooperation agreement in 2010. They quickly came to understanding on most elements of a renewal agreement, but the negotiation process also revealed fundamental differences over granting South Korea advanced consent to conduct enrichment and reprocessing.

In a bid to address South Korean concerns about spent fuel management, the two sides agreed in 2011 to launch a ten-year U.S.-ROK joint study involving specialists from the Korea Atomic Energy Research Institute at Idaho's Argonne National Laboratory-West. The study is examining methods such as pyroprocessing for safely managing spent nuclear fuel. South Korea is expected to reach its spent-fuel storage capacity in 2024, creating domestic demand for an alternative waste-management method to accompany—if not substitute—the politically sensitive expansion of storage facilities. The Obama administration is likely to resist providing advanced consent unless the study satisfactorily shows that pyroprocessing will be proliferation resistant and commercially viable. One alternative to pyroprocessing would be to remove the waste from pools to store in dry casks, also enabling South Korea to extend its storage capacity, though only for up to fifty years.

An additional U.S. concern is that the ROK pursuit of fuel enrichment and pyroprocessing capabilities sends the wrong signals to North Korea. Pyongyang and Seoul pledged in the February 1992 Joint Denuclearization Agreement to not pursue enrichment and reprocessing. North Korea has abandoned its denuclearization pledges and it looks to be pursuing a uranium-enrichment program for weapons purposes outside the Nuclear Nonproliferation Treaty (NPT). South Korea has made efforts to learn lessons from its own recent procurement scandals and to foster nuclear safety and nonproliferation in third countries, along with exporting nuclear equipment and know-how. Given that South Korea's continued adherance to the NPT and to responsible development of nuclear power stands in stark contrast to North Korea's violation of its nuclear commitments, Seoul argues that it should not be required to adhere to obligations that Pyongyang has cast off or have its development as a producer of nuclear power in compliance with International Atomic Energy Agency safeguards be restricted due to North Korea's behavior.

In April 2013, the United States and South Korea decided to pursue a two-year extension of the existing U.S.-ROK nuclear cooperation agreement until March 2016, but this extension still may not buy enough time to solve the impasse in negotiations. The alternatives to an extension—discontinuing cooperation or forcing a new deal—would be economically and politically costly for both the United States and Korea. In partnership with the U.S. company Westinghouse, the Korea Electric Power Corporation (KEPCO) signed a $20 billion contract in 2009 to build four nuclear plants in the United Arab Emirates (UAE). Given the integrated nature of the U.S. and ROK nuclear industries, the U.S. Ex-Im Bank claims that South Korea's deal with the UAE will bring approximately $2 billion and five thousand jobs to the United States. Based on these figures and South Korea's plans, the Heritage Foundation reports that continued cooperation, which requires a valid agreement, could amount to $80 billion in U.S. exports.

RECOMMENDATIONS

The impasse over a new U.S.-South Korean nuclear cooperation agreement is straining Washington's relations with Seoul just as rising regional tensions make close cooperation between the two capitals essential. The Obama administration should address the deadlock by proposing to South Korea another extension of the current U.S.-ROK nuclear cooperation agreement until the conclusion of the joint study in 2021. Congress should pass such an extension. That would give the United States time to develop what South Korea is looking for: a consistent framework for nuclear cooperation with states that have advanced nuclear power industries and are committed to nonproliferation. To that end, the United States should take the following steps:

Make the results of the U.S.-ROK joint study on spent fuel methods, including the viability of pyroprocessing, the basis for determining whether or not the United States will provide advanced consent to alter U.S.-origin nuclear fuel in a new agreement. U.S. willingness to offer advanced consent to South Korea should be based on whether the joint study is able to address existing concerns about proliferation, scalability, and the establishment of adequate safeguards for pyroprocessing.

Make negotiations on the renewal of the U.S.-Japan nuclear cooperation agreement in 2018 the benchmark for cooperation between the United States and countries with advanced nuclear power industries. Negotiations to renew the current U.S.-Japan nuclear cooperation agreement should be held with the understanding that the provisions of this deal will also be granted to South Korea if Seoul can adequately address proliferation and safeguards issues as part of the U.S.-ROK joint research study. This approach would give Washington additional leverage to strengthen nonproliferation safeguards with Tokyo, demonstrate U.S. sensitivity to South Korea's concerns about fairness, and bring consistency to U.S. policy.

Encourage South Korea to purchase an investment stake in a fuel-enrichment service provider, such as the new Urenco enrichment plant currently being built in the United States. A South Korean ownership stake in enrichment services would still require U.S. approval for export of fuel to South Korea, but it might alleviate Seoul's concerns that its inability to independently manufacture nuclear fuel or offer fuel-enrichment services would leave South Korean–made reactors vulnerable to price fluctuations in the event that there is a limited supply of uranium on the international market.

These recommendations would forestall a potential disruption of the alliance over nuclear cooperation and buy time for a less politically volatile approach by establishing a common standard for cooperation with both South Korea and Japan. But they do not immediately address Seoul's spent fuel problem. South Korea would have to place its nuclear waste in dry-cask storage, which could spark public protest in the local communities of these storage sites. However, the ROK government could provide tax and subsidy incentives to the local governments that host these facilities. The costs for these subsidies may be covered by reduced costs of dry-cask storage, which are only 5 percent of the estimated cost of reprocessing. Furthermore, despite recent nuclear-safety oversight scandals in South Korea, the energy shortages of summer 2013 are likely to help the government garner public support for nuclear energy and expansion of nuclear waste storage facilities. The feasibility of revising the provisions granted to Japan, cost overruns and technical failures in developing a plutonium reprocessing plant at Rokkasho, and heightened domestic scrutiny of nuclear energy following the Fukushima disaster all suggest that the United States and Japan should agree to stricter conditions on nuclear enrichment and reprocessing.

CONCLUSION

The current U.S.-ROK nuclear cooperation agreement has enabled South Korea to produce a significant portion of its energy needs with nuclear power while also creating a highly successful commercial industry that benefits both South Korean and U.S. companies. The two countries should sustain this cooperation by extending the agreement in the short term and continuing to work on a new framework designed to harness the full potential of the relationship while undergirding their commitments to nonproliferation. The United States will also benefit from developing a consistent standard for cooperation with advanced nuclear countries.

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