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Toward a Mutually Complementary Revision of the ROK-US Nuclear Cooperation Agreement

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The current ROK-US Nuclear Cooperation Agreement, revised in 2015, is outdated and restricts South Korea's sovereign rights to the peaceful use of nuclear energy. Specifically, it prohibits uranium enrichment and spent nuclear fuel reprocessing without explicit, case-by-case U.S. consent, which hinders the ROK's energy security and ability to manage nuclear waste.

Suddenly, a "window of opportunity" has opened under the Trump and Lee Jae Myung administrations. The United States needs to rapidly expand its nuclear power capacity, but its domestic industry is weakened, suffering from massive cost overruns and delays. In the meantime, South Korea possesses world-leading expertise in on-time, on-budget nuclear construction that the United States lacks.

Taking advantage of the United States' urgent need to quickly modernize its nuclear industry, the ROK should leverage this industrial strength as a bargaining chip. This leverage should be used to:

1. Secure favorable terms in ongoing bilateral trade and tariff negotiations.
2. Achieve a meaningful revision of the ROK-US Nuclear Cooperation Agreement to gain comprehensive, pre-approved "blanket" rights for enrichment and reprocessing, similar to those granted to Japan.

Key Arguments

1. A Strategic "Win-Win" Opportunity

This brief identifies a perfect alignment of complementary needs:

- **U.S. Need (and Weakness):** The Trump administration has mandated a massive expansion of nuclear power (e.g., the four May 2025 executive orders) to meet rising electricity demand from AI data centers. However, the U.S. industrial base is atrophied. Projects like the Vogtle plant ran 2.5 times over budget (totaling $35 billion) and experienced years of delays. The United States also faces a critical uranium supply gap, as it imports 95% of its uranium and will ban Russian imports (a major supplier) starting in 2028. Without help from outside, the Trump administration's plan to quadruple the United States' generation capacity by 2050 will very likely be a nonstarter.
- **ROK Strength:** South Korea's "Team Korea" consortium is a global leader in low-cost, high-efficiency nuclear construction. Its construction cost per kW is significantly lower than that of the United States (approx. $3,571/kW for ROK vs. $5,833/kW for the United States). The ROK also has a proven track record of on-time, on-budget projects and a complete supply chain.

Seen in this context, the ROK can provide the solution to the U.S. domestic bottleneck. Here, a "Make American Nuclear Industry Great Again" (MANIGA) partnership is proposed, which would serve as leverage in tariff talks. This cooperation is already underway, as evidenced by several MOUs signed during President Lee's August 2025 visit to the United States, including ROK investment in a U.S.-based Centrus Energy enrichment facility.

2. South Korea's Urgent Domestic Imperatives

Revision is not just an opportunity but a necessity for the ROK's own sustainability:

- **Energy Security:** South Korea is 100% reliant on imported enriched uranium. It has no domestic capacity to produce fuel, especially the High-Assay Low-Enriched Uranium (HALEU) needed for the next generation of SMRs—a market currently monopolized by Russia.
- **Waste Management Crisis**: On-site spent nuclear fuel storage pools at the ROK's nuclear plants are reaching saturation. The Gori plant, for example, is expected to be full by 2026. Reprocessing is arguably the only realistic solution to dramatically reduce the volume of high-level nuclear waste.

3. The Current Agreement's Failures

The 2015 agreement actively blocks solutions to these problems. Article 11 requires the U.S.'s written consent for any reprocessing and mandates that enrichment can only be

discussed through a "High-Level Committee." This committee has not met since 2018, leaving the ROK in a diplomatic stalemate.

Policy Recommendations

While the ROK's National Security Advisor Wi Sung-lac has signaled "meaningful progress" on the issue, Seoul must aggressively push for a meaningful revision, not just minor concessions.

The core recommendation is to revise Article 11 of the agreement, using the U.S.-Japan Nuclear Cooperation Agreement as the precedent. The goal should be to secure:

1. Comprehensive Enrichment Rights: Pre-approved, blanket authority for South Korea to enrich uranium up to 20% on its own soil, removing the High-Level Committee as a prerequisite.
2. Comprehensive Reprocessing Rights: Pre-approved, blanket authority to conduct spent nuclear fuel reprocessing, particularly pyroprocessing (a kind of dry reprocessing). Since pyroprocessing is a technology that the United States has also co-studied, it is aligned with the Trump administration's own executive orders on fuel recycling.

The brief concludes that this revision is a "matter of sovereignty" and a "touchstone" for elevating the ROK-US alliance to a true, reciprocal technology partnership.

About the Author

Dr. Shim Sangmin is senior research fellow at the Asan Institute for Policy Studies. Prior to his current position he worked as professor (non-tenured) at the Graduate School of Green Growth and Sustainability at KAIST from 2023 to 2025, as research fellow at the Asan Institute for Policy Studies from 2022 to 2023, as visiting research fellow at the Sejong Institute from 2021 to 2022 and as assistant professor of international law at the Korea National Diplomatic Academy (KNDA) from 2016 to 2021. He also served as visiting scholar at the Environmental Law Institute (ELI), a private think-tank that conducts research on issues of international environmental law, from 2015 to 2016. Dr. Shim's legal educational background includes a J.S.D. degree at Stanford University, which was awarded in 2015 with his dissertation entitled, "Structuring Climate Policy in the Korean Electricity Sector: Politics, Institutions and Mitigative Capacity-Building." He also holds a J.S.M degree at the same university, and is a graduate of Seoul National University. (B.A. & M.A. in law) An expert on international environmental law and policy, Dr. Shim is especially interested in climate change law and policy. His academic interests extend to conventional international legal issues as well, such as peace and security in the United Nations system, law of the sea, nuclear non-proliferation, human rights in North Korea and state responsibility. He also covers a variety of non-traditional security issues – energy, environmental, economic and human security.

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