Team Nuclear KORUS: A Path to Allied Nuclear Leadership

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Introduction

The global nuclear energy market is experiencing a transformation, with Russia leading nuclear exports and China dominating new nuclear builds. Russia's state-backed Rosatom has become the dominant supplier of nuclear reactors, leveraging financing and long-term fuel supply agreements to expand its influence. Simultaneously, China is aggressively developing its domestic nuclear capabilities while exporting its reactor technology to emerging markets. These developments pose a challenge to global energy security, as they consolidate nuclear leadership in the hands of nations that do not align with US and South Korean strategic interests.

In this context, the United States and South Korea have a unique opportunity to collaborate and regain leadership in the nuclear energy sector. By deepening their cooperation, the two allies can challenge the growing dominance of Russian and Chinese nuclear programs. This partnership, "Team Nuclear KORUS," seeks to enhance bilateral cooperation in nuclear exports, supply chains, domestic builds, and research and development (R&D) initiatives. By pooling their technological strengths, financial resources, and geopolitical influence, the US and South Korea can create a competitive alternative to the state-backed nuclear expansion efforts of Russia and China. Moreover, this partnership can reinforce democratic values in energy infrastructure, ensuring the highest standards of safety, security, and environmental responsibility.

Pathways for US-Korea Cooperation

Export Cooperation for Overseas Projects

The US and South Korea can strengthen their collaboration in exporting nuclear technology to third-party markets, building on successful joint projects such as the Bulgaria nuclear deal, where Westinghouse and Hyundai Engineering & Construction are working together to develop Bulgaria’s nuclear infrastructure, demonstrating the potential for US-Korea collaboration in expanding global nuclear energy capabilities. These examples highlight how a balanced approach—leveraging joint ventures, complementary bidding strategies, and co-financing mechanisms—can improve competitiveness against Russian and Chinese offerings.

Additionally, establishing a cooperative supply chain strategy for overseas projects

can enhance efficiency. By leveraging South Korea's expertise in cost-effective reactor construction and the US's advanced nuclear fuel and safety technologies, the partnership can offer a compelling alternative to state-backed Russian and Chinese deals. Potential markets for collaboration include Eastern Europe, Southeast Asia, Africa, and the Middle East, where demand for safe and reliable nuclear power is rising. Beyond construction, long-term maintenance and fuel supply agreements can further solidify the influence of Team Nuclear KORUS in emerging nuclear markets. Furthermore, this cooperation could lead to the creation of regional training hubs for nuclear professionals, ensuring that workforce development aligns with global safety and efficiency standards.

Cooperation for US Domestic Builds

Domestically, the US is witnessing a renewed interest in nuclear power, driven by the energy needs of major technology firms. Companies like Google and Amazon have announced plans to invest in nuclear energy to power their data centers and AI operations. However, the US nuclear industry faces challenges related to project delays, cost overruns, and supply chain limitations. Additionally, policy uncertainty and regulatory hurdles have slowed down the development of new nuclear plants, creating an opportunity for South Korean firms to bring their expertise to the US market.

South Korea's experience in delivering nuclear projects on time and within budget could be instrumental in accelerating the US domestic nuclear buildout. By engaging South Korean firms in reactor construction and component manufacturing, the US can ensure a more reliable and cost-effective expansion of its nuclear fleet. This partnership would not only support the deployment of traditional nuclear plants but also facilitate the development of advanced reactor technologies tailored for data centers and industrial applications.

Moreover, strengthening collaboration in workforce development and training programs can help address the declining number of skilled nuclear engineers in the US. By leveraging South Korea's experience in the capacity building efforts in Barakah, there may be opportunities for the US to revitalize its own nuclear construction talent pipeline, ensuring a sustainable expansion of its nuclear capabilities for decades to come. In addition, technology transfer initiatives between US and Korean firms can enhance innovation and streamline the regulatory approval process for next-generation nuclear reactors, further accelerating deployment timelines.

R&D Cooperation

Collaboration in nuclear R&D has historically been a strength of the US-Korea alliance. The two countries have worked together on various initiatives, including fuel cycle research. Expanding these efforts to next-generation nuclear technologies could enhance global competitiveness. Joint R&D initiatives can focus on new fuel technologies, improved reactor efficiency, and the safe decommissioning of aging nuclear plants. The integration of digital technologies and AI into nuclear plant operations could also be a promising avenue for collaboration.

Furthermore, nonproliferation presents another avenue for cooperation. As nuclear power spreads to new markets, ensuring adherence to stringent safety and security standards is critical. The US and South Korea can lead efforts in establishing robust international safeguards, training programs, and nuclear security frameworks to counter potential proliferation risks. One key institution in this effort is the newly created International Nuclear Non-proliferation and Cooperation Centre (INC) within KEPCO International Nuclear Graduate School (KINGS). This center can serve as a platform for joint initiatives in nuclear security training, regulatory development, and capacity-building programs aimed at preventing nuclear proliferation globally. As the global demand for nuclear energy surges and new nuclear projects expand rapidly, prioritizing nuclear nonproliferation is crucial to preventing the spread of nuclear weapons, ensuring international security, and maintaining strict safeguards over nuclear materials and technology.

Additionally, expanding nuclear safety and waste management cooperation can reinforce the credibility of the US-Korea nuclear partnership. With the increasing deployment of nuclear energy worldwide, proper handling of nuclear waste and decommissioning old plants will become critical challenges. By jointly developing sustainable nuclear waste solutions and disposal techniques, the US and South Korea can provide leadership in an area often overlooked in nuclear expansion plans. Long-term disposal and recycling strategies for spent nuclear fuel could also serve as a competitive advantage for Team Nuclear KORUS, positioning the partnership as a leader in sustainable nuclear energy solutions.

Conclusion

Failure to act will leave the global nuclear market increasingly dominated by Russia and China, with significant geopolitical and economic consequences. Without strong US-Korea collaboration, adversarial nations will set standards for nuclear safety, security, and nonproliferation. The growing reliance of emerging economies on Russian and Chinese nuclear technology will also expand the geopolitical influence of those nations, limiting opportunities for democratic allies to shape global energy policy.

By forming Team Nuclear KORUS, the US and South Korea can provide a competitive and secure alternative to Russian and Chinese nuclear expansion. Strengthened cooperation in nuclear exports, supply chains, domestic builds, and R&D will not only bolster allied nuclear leadership but also ensure a safer and more stable global energy landscape. Through continued collaboration, the US and South Korea can play a decisive role in defining the future of nuclear energy, reinforcing energy security, and advancing nonproliferation goals on the global stage. Moreover, by expanding their cooperation into areas such as digital innovation, advanced manufacturing, and sustainable fuel cycles, the alliance can continue to shape the nuclear energy landscape for decades to come. As nuclear power remains a cornerstone of global energy policy, the US-Korea partnership has the potential to lead the world toward a safer, more sustainable, and technologically advanced nuclear future.

Ambassador Thomas Graham, Jr. was Executive Chairman of the Board of Directors of Lightbridge Corporation from 2006 to 2022 and Chairman from 2022 to 2024. In 2024 he became Chairman Emeritus of the company. Lightbridge is a company which develops new and improved types of nuclear power fuel. He served for nearly three decades at the U.S. Arms Control and Disarmament Agency, including a decade and a half as general counsel as well as Acting Director of the agency for most of 1993. In 1993, he led the effort to establish a long-term moratorium on the conduct of nuclear weapons tests. From 1994 to 1996, he was a principal figure in the worldwide effort to successfully support the conclusion of the Comprehensive Test Ban Treaty negotiations. In 1994, President Clinton appointed Thomas Graham as his special representative for arms control, non-proliferation and disarmament, with the rank of Ambassador. From 1993 to 1995, Ambassador Graham led the successful U.S. government effort to indefinitely extend the Nuclear Non-Proliferation Treaty. He served as a senior U.S. diplomat involved in every major international arms control and non-proliferation negotiation in which the United States took part during the period 1970-1997. In December 2009, Ambassador Graham was appointed to the United Arab Emirates' International Advisory Board, helping to guide that country's nuclear energy program and hold it to the highest standards of safety, security, nonproliferation, transparency and sustainability. He has taught at, among others, Stanford University, University of Virginia, Georgetown University, University of Washington and Oregon State University.
