The Gyeongju Deal: South Korea's Nuclear Submarine Gamble

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US-ROK Submarine "Deal"

During the 2025 Asia-Pacific Economic Cooperation (APEC) summit in Gyeongju, South Korea scored a major diplomatic victory. After years of negotiations, Seoul finally received Washington's approval for building its first nuclear-powered conventionally armed submarine.

Following a summit between the presidents of South Korea and the US, Trump announced via *Truth Social* that he had given South Korea "approval" to build an ship submersible nuclear (SSN), which would replace its "old-fashioned, and far less nimble, diesel powered submarines." He also mentioned that the submarines would be built at the US Philly Shipyard, now owned by Hanwa Ocean, a major Korean defense company. Also, on November 4, US Defense Secretary Pete Hegseth visited South Korea and backed President Trump's approval, stating that

“Washington will coordinate…to move the plan forward.”

This grants South Korea access to one of the most sensitive forms of military technology of naval nuclear propulsion. While this marks a significant technological and strategic milestone and has been welcomed domestically, Seoul must also be prepared to navigate complex challenges and risks of instability in Northeast Asia.

Seoul has long been uncomfortable with the “requirement” to seek Washington’s approval for its security-related decisions. Over the years, it has sought to expand its strategic autonomy through efforts such as the proposed transfer of wartime operational control (OPCON) and covert attempts to develop an indigenous nuclear weapons program. While these efforts have yet to materialize fully, the pursuit of nuclear-powered submarines represents a significant step toward enhancing South Korea’s defense self-reliance and reducing its dependence on the US.

Seoul argues that nuclear-power submarines would enhance military “burden-sharing” with the US, as they can remain underwater for extended periods and effectively track Chinese ships. Moreover, the capability to operate SSNs would provide Seoul with greater strategic flexibility in countering North Korea’s growing submarine-launched ballistic Missiles (SLBMs) threat and strengthen its overall deterrence posture.

Fulfills South Korea’s decades-long efforts to acquire nuclear-powered submarines

South Korea’s interest in developing nuclear-powered submarines is not a new development. This has been on their agenda for more than two decades, particularly under the liberal administrations of Roh Moo-hyun, Moon Jae-in, and now Lee Jae Myung. Nuclear-powered submarines bring Seoul one step closer to achieving autonomy in defense and security, especially since SSNs can remain submerged for significantly

longer periods than diesel-electric conventional submarines.

After North Korea withdrew from the Non-Proliferation Treaty (NPT) in 2003, former President Roh Moo-hyun approveda nuclear submarine program, with the goal of deploying them by 2020. The project was named the "362 project" after the date of its approval, which was June 2, 2003. The Roh administration intended to develop a secret program to build 4,000-ton submarines. However, the project was paused in 2004 after media leaks drew the attention of the International Atomic Energy Agency (IAEA) and triggered concerns about proliferation from the United States.

In 2017, former President Moon Jae-in (also a chief of staff to Roh Moo-hyun) advocated for the development of nuclear-powered submarines. After taking office, Moon pledged to build nine new submarines to counter North Korea's advancing submarine-launched ballistic missiles. However, his efforts were subsided due to the "détente" period that the two Koreas faced in 2018 and continuing US opposition to South Korean SSNs.

Secures against the US Security Commitment issues

The US-South Korea alliance, formalized in 1953 by the Mutual Defense Treaty, anchors America's 28,500 troops on the peninsula as a part of its extended deterrence commitment.

However, many South Koreans question the reliability of US security guarantees. For instance, former US President Richard Nixon's Guam Doctrine declared that the US would not commit ground troops to help its allies in Asia. Similarly, Nixon's signing of the Shanghai Communique in 1972 signaled the potential abandonment of Taiwan. Such developments alarmed Seoul and prompted President Park Chung Hee to lead the government to pursue a covert nuclear program.

Domestically, there have been debates that South Korea may pursue nuclear armament. According to a 2024 survey by the

Brookings Institution, “35% of South Koreans view the US as an unreliable ally.” Concerns about a potential downsizing of American military presence in Korea, coupled with President Trump’s comments that “South Korea should be paying more for the US forces,” have prompted many in Seoul to consider how the country can strengthen its defense capabilities without overreliance on Washington.

Nuclear Hedging

Analysts have argued that acquiring nuclear-powered submarines may help Seoul pursue nuclear hedging by “maintaining, or at least appearing to maintain, a viable option for the relatively rapid acquisition of nuclear weapons.” Lami Kim writes that it involves “nuclear fuel-cycle facilities capable of producing fissionable material (through uranium enrichment/plutonium separation).” Also, Mason Rickey has argued that nuclear-powered submarines could potentially act as a pathway to “acquire nuclear fuel processing capabilities,” creating the possibility of future uranium enrichment.

Importantly, there are intermediary steps before reaching the threshold of nuclear weapons capability. For instance, South Korea could develop nuclear-powered submarines (SSNs) capable of launching conventionally armed SLBMs, leveraging its existing technological know-how. This would position South Korea as one of the few countries with such a platform, even without deploying nuclear warheads or full-scale Sub-surface Ballistic Nuclear (SSBNs). In reality, whether or not they incorporate SLBM launchers with their SSNs is irrelevant. What remains clear is that they will be one step closer to building an SSBN, the most potent class of submarines.

Some analysts contend that Seoul already has nuclear latency (the technological capability to build nuclear weapons). However, since this poses both significant security and economic risks, Seoul prefers the more rational choice of

hedging. Nuclear hedging is a deliberate strategy that combines technical capabilities (latency) with a political calculation to avoid immediate weaponization. It preserves the option for deterrence or bargaining leverage.

South Korea's advanced civilian nuclear program further strengthens its latent capacity, though it remains constrained by the US-ROK alliance and NPT. Significantly, South Korea has accumulated substantial experience in two core domains required for developing SSNs, namely, nuclear reactor technology and shipbuilding expertise. The country's existing technical foundation is reflected in its *Dosan Ahn Changho*-class submarines, which feature SLBM launchers and utilize air-independent propulsion (AIP)-enabled diesel-electric engines. The *Dosan* submarines are fitted with vertical launch systems (VLS), which can carry conventionally armed SLBMs for land attack. While AIP systems marginally extend submerged endurance (to weeks), nuclear-powered designs could offer months underwater, placing South Korea's capabilities closer to those of established nuclear navies.

Additionally, the transition to nuclear-powered submarines is likely to enhance Seoul's expertise further and narrow the technical gap between the civilian and military nuclear domains. Since SSNs and SSBNs are the only two kinds of submarines South Korea has yet to master, acquiring either would allow Seoul entry into a prestigious and exclusive club of advanced submarine operators.

Challenges

South Korea now appears ready to move forward with its SSN plans, with the intention of launching a domestically built nuclear-powered submarine by the mid-to-late 2030s. At the summit, President Lee requested fuel for the SSN's reactor rather than the submarine itself, as Seoul prefers to build submarines domestically. However, President Trump's announcement that construction would take place in the US

complicates matters. It poses hurdles as the Philly Shipyard lacks submarine construction facilities and has no nuclear-related infrastructure. Also, the US's shipbuilding infrastructure has collapsed, and skilled labor is almost nonexistent. This can erode Seoul's strategic and technological autonomy and delay deterrence capability.

Moreover, the US and South Korea have different interpretations about the location and scope of construction. South Korean officials are insisting that the submarines will be built in South Korea, including both the hull and the reactor. They are also emphasizing that enriched uranium for the reactor will be sourced from the US, but the design and construction will be developed domestically to meet its security needs. Whereas, President Trump announced that submarines will be built in the US. Such a discrepancy stems from the lack of a finalized joint agreement, which is still awaited.

Additionally, Seoul has to integrate its industrial base with that of the United States. It usually follows the "security with the US and economy with China" framework. However, now Seoul must pay the price of a $350 billion investment in the United States, in return for a partial reduction in tariffs on its auto exports and a green light to acquire SSNs. In an effort to "Make American Shipbuilding Great Again (MASGA)," South Korea's Hanwha Group is committing $5 billion to revitalize its US shipyard in Philadelphia.

Despite giving a "green" signal to South Korea, there are no concrete details about the size or cost of the project. Seoul is still determining the number of submarines it needs, calculating the cost of building them, setting a realistic timeline, and assessing their value in countering North Korea, among other factors. There is also uncertainty, as it requires numerous modifications to the legal procedures governing nuclear security.

Moreover, the US and South Korea have agreed on civil nuclear cooperation under the 123 Agreement, which prohibits South Korea from enriching uranium or reprocessing spent nuclear fuel without US consent. Since the naval nuclear reactor requires nuclear fuel, this treaty needs to be amended. However, it is essential to note that the 1975 IAEASafeguards Agreement outlines procedures for safeguarding non-peaceful uses. Crucially, operating an SSN alone is not treated as a nuclear proliferation or weaponization risk, since SSNs use nuclear propulsion technology rather than armament. The 123 Agreement's main restriction concerns the enrichment level of reactor fuel, capping it at approximately 20%. Thus, the US consent on the transfer and use of appropriately enriched nuclear fuel for a naval reactor is a key legal and diplomatic hurdle.

What lies ahead?

With this naval achievement, Seoul has managed to "negotiate its cash investment into the US (capped at $20 billion annually for ten years), get automobile tariffs at the same rate as Japan and Europe (15 percent), and reduce chip tariffs to the same level as Taiwan."

However, the announcement has already sent shockwaves of strategic significance across the Indo-Pacific. Reflecting strategic concern, China immediately responded that it "hopes South Korea and the US will earnestly fulfill their nuclear non-proliferation obligations" to promote regional stability. Earlier in 2017, China economically "punished" South Korea for acquiring the US Air Defense Systems. Analysts have also predicted that China will now fast-track its own nuclear submarine program.

The announcement of a nuclear-powered submarine is also unlikely to sit well with Japan. Tokyo, under Prime Minister Sanae Takaichi, has agreed to consider the recommendations of an expert panel to develop submarines

equipped with long-range missiles. Similarly, North Korea, with Russia, can use this development as justification for its own escalatory actions.

Moreover, Australia's reaction is measured but cautious. Their concerns are related to the fact that this move could overburden the US submarine supply chain, potentially slowing AUKUS timelines. A few analysts have also expresseduneasiness over losing "AUKUS exclusivity," coupled with concerns about proliferation in the Indo-Pacific.

Despite its challenges, the "deal" marks a historic leap in Seoul's pursuit of strategic autonomy and defense modernization. However, Seoul must now balance technological progress with diplomatic prudence as it navigates the impending turbulence of regional instability in Northeast Asia.