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KEY TAKEAWAYS

- Japan, Australia and South Korea have in recent weeks taken political steps towards the development of nuclear-powered submarines.
- Japan and South Korea had focused their force design on high-end diesel submarines but are reassessing their approach in this new strategic environment.
- Nuclear-powered submarines would be a costly investment for either nation, but South Korea has a clearer political path.

COMMENTARY

High-level political and diplomatic developments of the last two weeks have nudged three US Indo-Pacific allies towards joining the small group of nations operating nuclear-powered submarines. First, on 20 October, Japan's dominant Liberal Democratic Party (LDP) formed a coalition with the Japan Innovation Party (Nippon Ishin). The [new coalition's platform document](#) includes, among its policy priorities, the introduction of submarines powered by "next-generation propulsion systems". Nippon Ishin reportedly desired to specifically refer to nuclear power, something that many LDP legislators have long favoured. The next day, US President Donald Trump [stated his renewed commitment](#) to the 2021 AUKUS pact during a White House meeting with Australian Prime Minister Anthony Albanese. This statement put to bed, at least for the moment, concerns that [the United States had grown cold](#) on its side of the deal to provide nuclear submarines to Australia as a step towards indigenous production. Then, on 29 October, President Trump blessed technology transfers to Seoul that would enable it to produce its own nuclear-powered submarines.

Hundreds of commentaries and more [than a few books](#) have explored the path ahead for AUKUS and Australia's nuclear submarine programme. However, the questions of *why* and *how* have different implications for the United States' Northeast Asian allies.

Why? The Rationale for Japanese and South Korean Nuclear-Powered Submarines

The answer to this question may seem simple: nuclear-powered submarines are the most advanced underwater weapon systems. Thus, it is expected that the world's fourth- and tenth-largest economies, which already have world-class navies, would want to take this step. Furthermore, as states surrounded by the sea and an increasingly dangerous neighbourhood, Japan and South Korea must maximise their naval strength.

Tactically, nuclear-powered submarines can achieve faster speeds to pursue their prey or flee from enemy units, and they can generate more electricity to power advanced systems. Operationally, submerged time is limited only by factors such as food supplies, and high-speed transits can be sustained. These are desirable attributes for "blue water" navies that undergo long voyages. They also give fleets more manoeuvre options – re-positioning, hiding, waiting, creating doubt in adversary calculus – which, when combined with cruise missile launchers, bring new options to deter aggression.

Despite these advantages, both Japan and South Korea have previously stuck with diesel submarines. Expense is an obvious factor. In addition to the investments for the boats themselves, nuclear engineering standards are more rigorous, thus maintenance requires a more highly trained workforce and more sophisticated shore-side support. Manpower requirements are a particularly critical consideration for the ageing societies of Northeast Asia.

Diesel submarines such as Japan's *Taigei*-class can run quieter than many of their nuclear counterparts, which is an important factor in avoiding detection. South Korea [just launched the first of its KSS-III Batch 2 submarines](#). These can launch cruise missiles, and, like Japan's newest subs, use lithium-ion batteries to remain submerged quieter and longer than legacy diesel-electrics.

Diesel submarines made sense in the constrained, shallow waters where these navies were most likely to fight: their national littorals and the East China Sea. Diesel submarines tactically excel in these environments. Whereas the logic for Australian nuclear submarines is to operate at long range and create strategic depth, Japan and South Korea's most likely threats, North Korea and China, are already at their doorstep.

Because of its high costs, nuclear propulsion necessitates trade-offs in force design, even in the undersea domain. For example, drawing on lessons learned from naval combat in the Black and Red Seas, [Japan announced the SHIELD programme](#) of coastal defence using rapidly deployable uncrewed assets, including an anti-submarine component. As the US Navy has found ([and Australia is rediscovering](#)), expensive nuclear propulsion projects can crowd out other forms of innovation.

There is also a paradox of time and necessity. Nuclear submarines cannot be a solution to near-term problems because they cannot be quickly procured. Australia is currently the furthest down the path but is not expected to begin receiving US-built submarines until at least the early 2030s. The ultimate objective, which is for Australia to build its own nuclear-powered submarines, is not set to happen until the 2040s.

Despite the drawbacks to nuclear propulsion, two considerations are changing the calculus. First, increasing pressure from threat states, including their growing nuclear arsenals, expanding missile forces, and improving submarine capabilities, is encouraging Japan and South Korea to more tightly embrace deterrence options like those offered by submarines that can disappear from competitors' sensors for long periods of time. Second, these countries have long understood that, given their limited domestic resources and food production, their far-flung sea lanes are a "[matter of life or death](#)". But, in today's more complex security environment, their strategists sense an increased need to be ready to defend sea lanes deep into the Indo-Pacific [without exclusively relying on the United States](#), a role for which nuclear-powered submarines surpass conventional ones.



Faced with an increasingly complex security environment, Japan and South Korea's interests in nuclear-powered submarines suggest they may see a growing need to protect sea lanes across the Indo-Pacific without depending entirely on the United States.

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How? Resources, Technology and Political Will

Japan and South Korea have the industrial and technological fundamentals needed to move forward with nuclear propulsion. Both already construct high-end submarines and maintain civilian nuclear programmes and thus may be able to move more quickly than Australia, especially if they receive similar help from the United States. South Korea has a political head start in that there is little domestic opposition to procuring nuclear-powered submarines, and the ROK Navy has already talked [publicly about its ambition](#). The [barrier preventing its progress](#) has been the 2015 Korea-US Nuclear Cooperation Agreement, which prohibits South Korea from enriching uranium beyond 20% or reprocessing spent nuclear fuel for military purposes without US approval. On the other hand, Japan will need to first achieve domestic consensus.

If President Trump's assertions are correct, South Korea will take on the responsibility for building its nuclear-powered submarines in the United States. South Korea will have to allocate budget and resources, identify American industrial partners, negotiate technology-sharing agreements, and settle construction locations, quality assurance

standards, and delivery dates across a bilateral coalition of government and industry stakeholders. The process from now to delivery would, in the words of ROK Chief of Naval Operations Kang Dong-gil, take “[more than 10 years](#)”, and ROK insiders are already raising concerns about the capabilities of the presumed construction site, the Philly Shipyard acquired by Hanwha Ocean in 2024. The top leaders of South Korea and the United States appear ready to move quickly, but South Korean defence acquisition programmes can be greatly influenced by political shifts, as evidenced by the on-and-off commitments to [aircraft carriers](#) and [F-35B fighters](#).

Japan will wrestle with a legacy of domestic opposition to maritime nuclear propulsion. While its vessels would not be nuclear-armed, there is still a perception that the application of nuclear-anything to defence assets would be antithetical to Japan’s constitution and popular self-identity as a “[Peace State](#)” with a “[nuclear allergy](#)”. While the LDP-Nippon Ishin coalition might try to amend the Atomic Energy Basic Act, which limits the use of nuclear energy to peaceful purposes, it does not hold a simple majority in either house of the Diet, and the Constitutional Democratic Party and Komeito opposition parties are likely to maintain their resistance to the programme. In this political environment, a cabinet-issued decision by fiat that Maritime Self-Defense Force submarines are, regardless of propulsion, defensive in nature and, therefore, serve a legal peaceful purpose would be too controversial. Furthermore, it is unclear whether Japan’s navy would want to divert its budget away from existing plans towards nuclear propulsion.

However, AUKUS has brought broader political understanding of the distinction between nuclear-powered and nuclear-armed vessels, while Japan’s desire for “[diplomacy that flourishes on the world's centre stage](#)” suggests a requirement for expanded capabilities. There is mounting support in the Diet for advancing maritime security capability. Unlike the ROK, Japan generally has shown consistency in sustaining major procurement programmes even across administrations. If Japan does reach a consensus on nuclear-powered submarines, progress can be expected to be politically smooth.

Conclusion

Through AUKUS, Australia has an amplified voice in the security future of the Indo-Pacific region. Canberra’s bold action has spurred re-thinking of assumptions in Seoul and Tokyo. Politicians and planners have many *whys* and *hows* left to consider, but regardless of whether or how South Korea and Japan decide to field nuclear-powered submarines, 2025 will be a critical year for the development of maritime force design in the Indo-Pacific region.

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