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NUCLEUS

Energy Transition + Infrastructure

JUNE 2026
Edition 1

WELCOME

Welcome to the first edition of **Nucleus**

We are pleased to launch this new publication from Stephenson Harwood's nuclear team, designed to keep our clients and contacts informed of key regulatory and commercial developments shaping the global nuclear industry.

The nuclear sector is entering a new and exciting era, driven by the global emphasis on low-carbon energy, energy security and rising energy demand. Our team is dedicated to helping clients navigate the challenges and opportunities of the global nuclear industry with confidence and clarity, and this briefing is part of that commitment.

In this inaugural edition, our four articles cover developments spanning the UK, the US and ASEAN:

- + [Redesigning nuclear regulation: How US and UK frameworks are evolving to support advanced nuclear technologies](#)
- + [Unlocking the Golden Age of UK nuclear: What the Advanced Nuclear Framework means for private AMR developers](#)
- + [Breaking ground: The freehold vs leasehold question in nuclear developments](#)
- + [Spotlight on ASEAN nuclear power: A mid-year assessment for 2026](#)

Our market-leading 360 nuclear practice combines a core specialist team in London with a network of nuclear hubs across key markets, including Paris, Dubai, Singapore, Hong Kong and Seoul. This integrated approach enables us to deliver seamless, end-to-end legal insight at every stage of the nuclear project lifecycle.

We hope you find this briefing interesting. If you would like to discuss any of the topics covered, or if there are any areas you would like us to address in future editions, please do not hesitate to contact any of the authors of this briefing, any other member of our wider nuclear team, or your usual Stephenson Harwood contact.



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REDESIGNING NUCLEAR REGULATION: HOW US AND UK FRAMEWORKS ARE EVOLVING TO SUPPORT ADVANCED NUCLEAR TECHNOLOGIES

Part 53 to Title 10 of the Code of Federal Regulations, *Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors*, is a new rule issued by the US Nuclear Regulatory Commission (NRC), representing a significant shift towards modern, flexible regulation for advanced nuclear reactors. It became effective on 29 April 2026.

It establishes a risk-informed, performance-based licensing framework that aims to modernise and streamline the regulatory process, making it more flexible and efficient for next-generation technologies. The framework provides an additional option for advanced reactors, without replacing existing licensing rules and pathways.

The UK is pursuing its own regulatory evolution to support the acceleration of new nuclear deployment. In late May, the nuclear regulators for Great Britain, the Office for Nuclear Regulation (ONR), the Environment Agency (EA) and Natural Resources Wales (NRW), jointly issued a position statement on design assessment and a new joint policy on leveraging international judgements and assessments.

This briefing explores the key features of US Part 53 and the UK's evolving design assessment and licensing frameworks, highlighting how regulators on both sides of the Atlantic are reshaping their approaches to support and accelerate the deployment of advanced nuclear technologies.

Risk-informed, performance-based approach

Part 53 represents a move away from prescriptive, technology-specific requirements, focusing instead on outcomes and safety goals rather than detailed design rules and specifications. As a result, applicants have the flexibility to demonstrate safety through risk assessments and performance metrics, potentially simplifying the application documentation that needs to be submitted. This approach is similar in some respects to the outcomes-based (long-standing) approach to regulation adopted by the ONR, the UK nuclear regulator.

Technology neutrality

The new US framework applies to a wide range of advanced reactors (e.g. small modular reactors, microreactors, non-light water reactors) so applicants are not required to tailor submissions to outdated or irrelevant requirements. Part 53 is drafted with the broader term “commercial nuclear plant” rather than “advanced nuclear reactor” and the new framework is available for any reactor technology, size, and end use.

This technology neutral approach will keep the field open to multiple technologies, avoiding a narrowing down of the technology options and supporting further future development. The fact that Part 53 is technology-inclusive and does not favour any specific technology or design aims to ensure that the market remains open and competitive, which in turn should help drive technology improvements and efficiencies.

Streamlined licensing process

Under Part 53, application and review procedures are simplified with applicants offered flexibility as to how they meet the safety requirements. This approach is expected to encourage innovation and reduce the regulatory burden on new applicants. It should be particularly helpful in the context of new advanced reactors which currently have a limited operating history.

Safety and security integration

Part 53 nevertheless continues to set high standards for safety and security, with an approach that encourages the integration of safety and security requirements into the design itself. Applicants can, however, organise their safety case and supporting documentation in a way that best demonstrates compliance with performance objectives. Interestingly, Part 53 permits the use of generally accepted codes and standards, which, where appropriate, could potentially enable the use of non-nuclear codes and standards for non-safety-related aspects of advanced nuclear reactor designs, to potentially reduce costs.

Applicants can also use probabilistic risk assessments, modelling and simulation to support their safety case, reducing the need for extensive deterministic analysis. This again may prove helpful in the context of new technologies with limited operational history. Part 53 omits the requirement to conduct a standalone aircraft impact assessment on the reactor design, a major change that could potentially result in meaningful cost reductions for some advanced reactor developers going forward.

Stakeholder engagement

Transparency and public involvement are central to the Part 53 licensing process. Application documents, safety cases, and NRC review materials are made available to the public through the NRC's online platforms. Stakeholders can track the progress of applications and NRC decisions as they unfold.

During licensing reviews, the NRC will provide formal opportunities for public comment on applications. NRC decisions, including licensing approvals, denials, and safety findings, will be documented and published for public review. The rationale for decisions will be clearly explained, including how public input was considered.

Parallel developments in the UK

In parallel, the UK is reshaping its design assessment framework to facilitate the faster rollout of advanced nuclear projects. [On 22 May 2026](#), Great Britain's regulators, the ONR, EA and NRW, published a joint position statement on design assessment, alongside a new joint policy setting out how they draw on international regulatory judgements and assessments. Taking a different approach to the US, this adapts the existing principles-based framework to accommodate advanced reactors, without creating a new dedicated licensing regime for them.

The evolving framework for design assessments in Great Britain: Joint position statement

[The joint position statement](#) sets out the measures being implemented to improve the design assessment processes and meet the target of completing pre-design certification reactor design

assessments within two years. This includes immediate updates to the Generic Design Assessment (GDA), and planned future updates to develop a single integrated reactor assessment framework with updated guidance (bringing together the existing GDA and Early Engagement processes) by Spring 2027, and to review public and stakeholder engagement approaches. This will eventually result in the transition to a single regulatory output, describing the regulators' joint decision on design acceptability. It should be noted that existing safety, security, safeguards and environment (SSSE) standards will not change.

Immediate updates to the Generic Design Assessment

The UK's reactor design assessment framework has shifted to a more flexible model, moving away from the sequential three-step model of Initiation, Fundamental Assessment and Detailed Assessment. The old model (which was also voluntary) assumed developers would typically complete all three steps before formally applying for licences and permits (the site-specific route), and guidance was drafted on that basis.

Under the updated approach, set out in the May position statement, applicants can choose from a range of routes through the regulatory process - full or partial GDA, applying directly through the site-specific licensing route, or a number of hybrid and parallel paths; for example, proceeding to GDA Step 2-level assessment alongside licence preparation, stopping at Step 2 before moving into direct licensing etc. As GDA is voluntary and not a formal requirement of the licensing regime, it can be skipped provided the applicant can demonstrate an equivalent level of design maturity - regulators will require Step 2-level confidence in the design to grant a site licence and Step 3-level detail before nuclear construction and operation.

+ **GDA Step 1:** Now a distinct preparatory phase that can run alongside Early Engagement. As it involves no design assessment, it sits outside the regulators' two-year assessment target;

- + **GDA Step 2:** Design is suitable for deployment, even if not fully detailed. Considered an equivalent standard to that required to grant the nuclear site licence. Applicants must pass a readiness review to enter Step 2, when the two-year assessment target starts to run;
- + **GDA Step 3:** Fully detailed design stage, also gated by a readiness review. Applicants on either route will need to demonstrate Step 3 equivalence for nuclear construction consent and operational permits.

The framework places greater emphasis on readiness, including stable designs and complete, high-quality documentation at the outset of Steps 2 and 3. It allows continued regulator engagement and ongoing development of the SSSE case between stages rather than strictly sequential progression. This is intended to improve efficiency, reduce duplication and ensure projects are better prepared before formal assessment begins.

The regulators are applying a common standard across GDA and site-specific routes, and plan to publish a single integrated regulatory framework and guidance, bringing together Early Engagement and GDA, by Spring 2027.

New operational policy on leveraging international regulators' assessments

[A new operational policy](#) sets out the principles the UK regulators will follow when drawing on the work of international counterparts, reducing duplication and making better use of assessments already carried out by trusted nuclear regulatory regimes – including under the Atlantic Partnership and with a broader range of national regulators in established nuclear countries. The policy is particularly relevant to new reactor technologies already reviewed by international regulators. A clear message from the policy is that UK regulators retain regulatory sovereignty and will assess all international material against UK legal and regulatory requirements. Key features are:

- + **A more proactive regulator role:** UK regulators will engage directly with international counterparts to understand and validate their reviews, rather than relying on the applicant to show how that material meets UK expectations.

- + **Repeated use cases:** For generic design issues, this could reduce the need for UK-specific SSSE demonstrations where equivalent material has already been accepted by regulators in established regimes.
- + **Legal duties unchanged:** A site-specific UK SSSE case is still required, and responsibility for demonstrating compliance remains with the applicant.
- + **Five guiding principles:** Regulatory sovereignty, benchmarking, confidence and accountability, transparency, and information security – are all key.
- + **Three-test method:** The regulators will apply tests on regulatory information, regulatory equivalence and assessment significance – to decide, on a risk-informed basis, how far another regulator's work can be used and what due diligence is needed.

This approach is already being applied in practice, and ONR illustrates this in two GDA Step 2 case studies: Holtec SMR-300's fuel and control rod assemblies, where confirmatory due diligence was sufficient; and the GE Vernova BWRX-300's diaphragm plate – steel composite modular construction, which ultimately required more extensive due diligence with targeted sampling alongside the other regulators' work.



KEY FEATURES AT A GLANCE

US PART 53 AND UK'S UPDATED GDA FRAMEWORK

Feature	US Part 53	UK updated GDA framework
Basis of framework	New 10 CFR Part 53 rule. Codified and dedicated licensing route for advanced reactors (n.b. commercial nuclear plants). Offered as an additional, flexible option alongside existing pathways.	Routes apply to all reactors. Adapting approach to support advanced reactors without creating a specific licensing regime or new rules. Voluntary full or partial GDA or formal site-specific licensing and consents, or hybrid and parallel paths. Integrated framework expected Spring 2027.
Approach	<p>Risk-informed, performance-based approach, with focus on outcomes and safety goals. Rule based but flexible on methods to meet criteria.</p> <p>Allows use of PRA (probabilistic risk assessment), other systematic risk evaluations or a combination of them to demonstrate compliance.</p>	Risk-informed, principles-based approach, non-prescriptive, goal-setting regulatory regime, with focus on outcomes.
Technology neutrality	Technology inclusive - any reactor technology, any size reactor, and any commercial end-use.	Technology-agnostic in application.
Timescale targets	<p>Expectation for NRC to approve reactor designs in 18 months or less.</p> <p>A two-year target was agreed under The Atlantic Partnership for Advanced Nuclear Energy between the US and the UK, signed in September 2025.</p>	Two-year target for reactor design assessments.
Safety and standards	<p>Performance-based safety criteria: applicants may propose design features to meet safety objectives, rather than follow a prescribed method.</p> <p>Alternative siting criteria allows siting in higher-population-density areas (including more than about 25,000 residents) where societal risk is justified by benefit. Standalone aircraft impact assessment on the reactor design no longer required (broader hazard assessment).</p> <p>Generally accepted codes and standards permitted.</p>	<p>SSSE standards unchanged. Site-specific UK SSSE case still required; compliance responsibility stays with the applicant.</p> <p>The ONR has been reviewing its Technical Assessment Guides (TAGs), and a new consolidated TAG-001 (Safety Cases) was published on 25 June 2026 replacing the previous TAG-050 and TAG-051. Updates to ONR's Safety Assessment Principles (SAPs) are planned for later in 2026.</p>
Manufacturing licence pathway and operational flexibilities	<p>Express manufacturing licence for factory fabrication of reactors. Permits manufacturing site fuel loading before transport (also need licence to install and operate on site).</p> <p>Allows reduced staffing levels and operations from remote facilities.</p>	<p>Not specifically addressed in the UK.</p> <p>No GB equivalent to the US manufacturing licence, to date.</p>

Redesigning frameworks for the future

Although the US and the UK have different nuclear regulatory traditions, they are working towards the same objective: accelerating the deployment of advanced nuclear reactors through early engagement, technology-inclusive assessment, and flexible, proportionate regulation, while maintaining existing high standards of safety and security. That both regulators are moving in this direction at the same time is to be welcomed, and a strong signal of support for the anticipated growth of nuclear. It will be important to follow the practical application of Part 53 and its use by developers and the transition of the UK regime towards a more integrated, streamlined and internationally informed reactor assessment framework. Closer international regulatory alignment and co-ordination will be critical to the future of advanced nuclear.



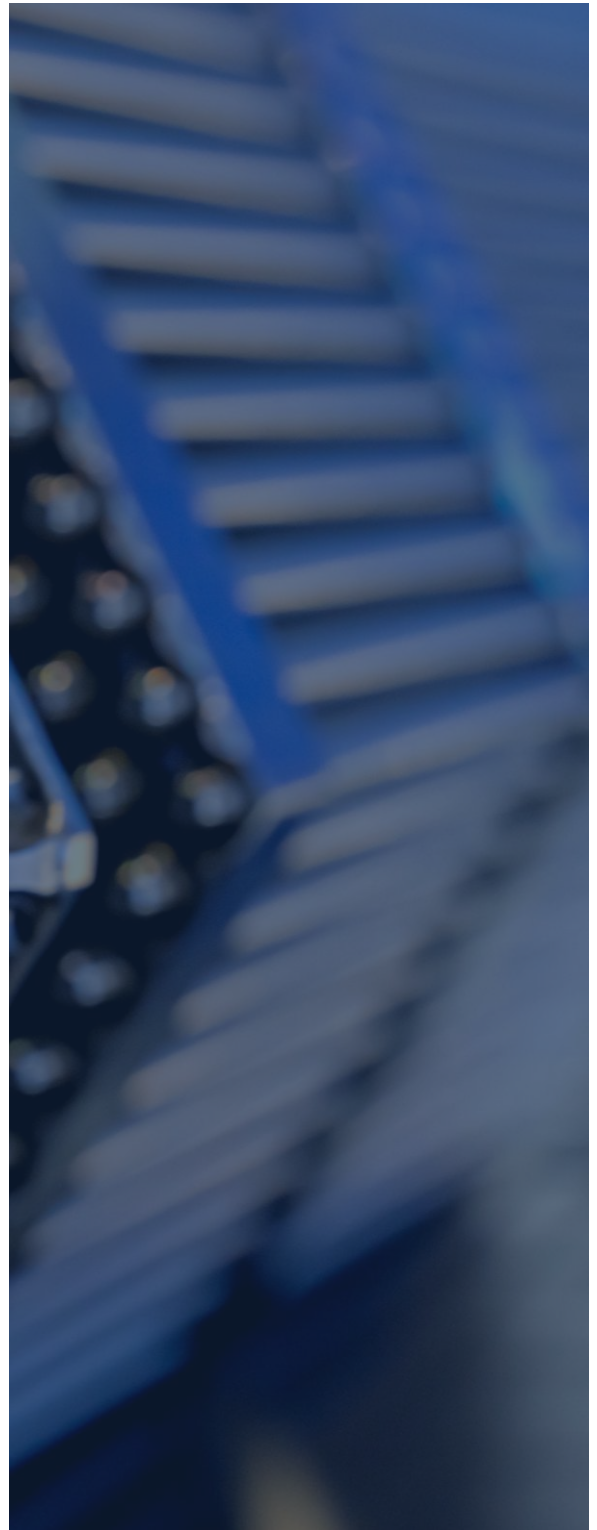
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UNLOCKING THE GOLDEN AGE OF UK NUCLEAR: WHAT THE ADVANCED NUCLEAR FRAMEWORK MEANS FOR PRIVATE AMR DEVELOPERS

The UK has entered a new phase for its civil nuclear sector. Driven by legally binding climate targets and an urgent need for energy sovereignty, the Department for Energy Security and Net Zero (DESNZ) published its Advanced Nuclear Framework earlier this year.

The framework marks a decisive shift away from the traditional model of state-backed, large-scale nuclear plants, towards enabling smaller, factory-fabricated, private sector-led advanced nuclear projects. It outlines government commitments to provide targeted support, including revenue stabilisation mechanisms and risk protections, and to reforms of the planning and regulatory systems, intended to reduce barriers and delays. Through closer collaboration between industry, government, and regulators, DESNZ aims to make the UK one of the most attractive destinations for nuclear innovation, supporting economic growth, job creation, and the transition to a clean, secure energy future.

The framework also introduces the UK Advanced Nuclear Pipeline, a structured process for evaluating and supporting privately led advanced nuclear projects. The framework aims to give developers and investors a clear and predictable operating environment, by streamlining the planning, regulatory and financing pathways.

Understanding the pipeline architecture

The pipeline will function as an official registry of credible, privately led Advanced Modular Reactor (AMR) projects. AMRs plan to use novel (accident-tolerant) fuels, neutron spectrums, and/or coolants to provide high-temperature heat and low-carbon electricity. These features unlock specialised non-grid markets, including industrial process heat, hydrogen generation and dedicated sovereign power for AI data centres.

To capture this market, interested developers can demonstrate project maturity by applying to enter the Advanced Nuclear Pipeline. Applications then move through a three-stage process, jointly managed by DESNZ and Great British Energy – Nuclear:

- 1. Preliminary eligibility check:** Verifies strict threshold criteria, including a requirement that land-based, non-mobile fission technologies be fuelled by uranium-235 enriched to less than 20%. Developers must be UK-registered companies targeting construction within ten years of entry.
- 2. Project readiness assessment (PRA):** A phased "Claims, Arguments, Evidence" evaluation, split into a rapid project triage and an intensive deep dive. Projects are assessed across five core pillars: technology/supply chain, developer capability, finance, siting, and operator/end-user arrangements.
- 3. Ministerial invitation:** Eligible projects meeting the threshold may then be invited to sign terms of participation and formally enter the process.

Commercial benefits for AMR proposers

The pipeline does not offer government-grant funding and is not a public procurement of new nuclear capacity. Even so, entry to the pipeline gives developers an opportunity to build momentum, de-risk projects, clear market barriers, and protect their intellectual property. It offers a number of commercial benefits to developers:

+ Unlocking global institutional capital

Admission to the pipeline confers a formal "statement of limited, in-principle, endorsement". While not a formal regulatory approval or investment advice, the statement

signals to relevant institutional equity and debt partners that the UK government considers the project a credible delivery prospect. This in turn, could help to unlock private investment for early-stage development and master planning.

+ Access to targeted revenue support and HILP protections

Crucially, membership allows developers to potentially negotiate bespoke revenue-stabilisation models directly with DESNZ, including customised contracts for difference. It additionally enables negotiations on high-impact, low-probability (HILP) protections, and state-backed insurances; designed to shield decades-long private capital investments from regulatory shifts, political change, or uninsurable systemic risks.

+ Engaging the National Wealth Fund

The National Wealth Fund (NWF) manages over £27 billion in strategic capital and has a dedicated nuclear investment team. It is positioned to act as a catalytic co-investor alongside private funds, deploying debt, equity, and hybrid structured instruments to bridge capital-intensive deployment phases. The framework treats the pipeline as a key funnel for NWF project reviews.

+ Clearing siting and property hurdles

A historic roadblock for nuclear developers has been a commercial catch-22: landowners refuse to grant options on premium nuclear licensed land without proof of project viability, yet developers cannot demonstrate viability without a site. The pipeline process, and particularly the PRA, offers an objective benchmark capable of breaking that deadlock. It supports land acquisition negotiations with public land managers, such as the Nuclear Decommissioning Authority, which is actively repurposing hubs like Pioneer Park and Trawsfynydd for advanced civil deployment.

+ Government-backed concierge navigation

Successful projects gain access to the newly established Advanced Nuclear Business Engagement Unit inside DESNZ. Operating as a concierge service, the unit aims to act as a dedicated intermediary, to guide developers through Office for Nuclear Regulation licensing procedures, the planning requirements under the updated National Policy Statement (EN-7), and if appropriate, the grid connection pipeline managed by the National Energy System Operator.

Navigating compliance and the path forward

With these opportunities come compliance challenges. AMR models must account for domestic fuel limitations - with a stated preference for the uranium fuel cycle and noting the UK Government's HALEU Future Fuels Programme. Developers must also build robust safety cases and engage with the Export Control Joint Unit, to protect dual-use technology and IP transfers.

The application window is open as a continuous, rolling process. Given resource limitations, DESNZ retains the right to prioritise projects most closely aligned with the UK national interest, for example those with an increased UK content. Therefore, proactive structuring of commercial, engineering, and financial documentation will be key to securing early-mover advantage. Our Nuclear Team can support applicants with any submissions, as well as being available to help negotiate agreements, and guide AMR projects through the pipeline.



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BREAKING GROUND: THE FREEHOLD VS LEASEHOLD QUESTION IN NUCLEAR DEVELOPMENTS

In new nuclear development, the choice between freehold and long leasehold is often framed as a tension between investment appeal and operational control.

The presentational advantages of freehold

Freehold carries obvious presentational advantages, particularly when seeking international investment, and is the form of ownership most readily recognised by nations and their financial institutions. It looks like absolute ownership, gives an indefinite right to use and occupy the land, and is often presented as the optimal position for attracting investment. But there is a trade-off. Where neighbouring land uses, such as existing nuclear plants or data centres, create operational and regulatory sensitivity, it can be critical to retain control over compliance with restrictive and positive covenants.

That is the real issue. In nuclear projects, the land structure is less about what sounds most complete in theory and more about what remains enforceable through construction, operation, defuelling and decommissioning.

Leasehold as a governance tool

A long lease, also known as a virtual freehold, can be underestimated in this debate. In a new nuclear context, it is not merely a right to occupy land for a very long period - it is a governance tool. Controls on alienation, occupation, use, repair, access and compliance sit in the primary instrument tied directly to the leasehold estate itself. That matters where one site must remain a safe and predictable neighbour to another, or where a legacy or adjoining station still has licensing, revenue or decommissioning sensitivities of its own. The lease structure also better preserves the concept of a single accountable neighbour, even if there are occupational interests beneath it.

Replicating protections through freehold

A freehold route can, with robust drafting, replicate many of those protections, but usually only by spreading them across a more elaborate suite of documents: the transfer, deeds of covenant, title

restrictions, indemnities, options, guarantees, financing interfaces and, in some cases, priority and intercreditor arrangements.

More moving parts create more points of weakness. Future dealings with the land become harder to police. Restrictive covenants can lose their enforceability. Multiple documents must be read together; some are not registrable and are prone to being lost. Record-keeping becomes critical. Some protections depend on the creation of contractual chains rather than proprietary rights; positive covenants do not run with land in English law, meaning they do not automatically bind successors. Deeds of covenant giving rise to enforceable contractual relations must be used to preserve the original intent.

Insolvency: the clearest dividing line

Insolvency emerges as the clearest dividing line between the two tenures. The freehold structure can be more problematic in insolvency than a leasehold transaction from the perspective of those seeking to protect the rights and obligations enshrined in the title. A lease can be disclaimed by a liquidator but in a nuclear context that is unlikely once the plant has gone critical. The path to resolution likely drives the insolvency practitioner down the special administration route, preserving the leasehold instrument. A freehold can also be disclaimed but the consequences for a nuclear plant are deeply uncertain and unprecedented. Such issues go to the heart of how a nuclear land deal behaves under stress.

Deeds of covenant and indemnities may be exposed to disclaimer as onerous contracts. A call option to recover land for decommissioning may be vulnerable to insolvency or to enforcement of security. Funders may resist restrictions that limit their disposal options, although security is likely to be taken higher up the corporate stack. A single-asset project vehicle can intensify those concerns, particularly where regulated support, however robust, may not answer every question for the full life of the asset, through to ultimate land clearance and de-licensing for the next non-nuclear use.

The decommissioning long tail

The decommissioning point is especially important because nuclear land planning is unusually durationally long-tailed, particularly if there has been some unexpected contamination event. Under a leasehold model, the parties can manage that uncertainty more cleanly because the tenant's rights and the landlord's reversion sit in one structure. Under a freehold model, the answer may depend on a future right to call land back, perhaps for nominal consideration, at a time when tax, valuation, security enforcement and the precise footprint required may all be contested. That is workable in principle, but harder to make resilient in practice. Equally, depending on the wider context, a landowner may not in fact want the land back!

Licensed vs offsite land

The distinction between licensed and offsite land also deserves attention. Site licence controls and Office for Nuclear Regulation (**ONR**) consent requirements provide meaningful protection for licensed land. But not every strategically important parcel will necessarily be licensed. Offsite land may still matter for access, coastal protection, shared infrastructure or the operational integrity of an adjoining operation. In that setting, private law controls do more of the heavy lifting. A freehold structure can impose restrictive covenants and transfer controls, but these are unusual in a freehold context, making them potentially unattractive to funders and more cumbersome to administer than lease-based controls.

Where freehold remains workable

None of this means freehold should be dismissed. Many issues are broadly neutral or largely drafting-dependent between the two alternatives. Positive covenants can be supported by deeds of covenant and title restrictions. Restrictive covenants are orthodox in principle, even if later challenge to their enforceability can never be ignored entirely. They endure for so long as they protect an interest in the land with the benefit of that restriction, and isn't that what matters?

Nuclear liability and contamination migration are not points of real divergence between the two structures, given the tight statutory regulation of those issues and the fact they are not ultimately determined by reference to the proprietary interests of the polluter.

Project-specific risk analysis

For any new nuclear project, a project-specific residual risk analysis is essential. It should be prepared against the background of the adjoining-site relationship, the specific stakeholder arrangements, the financing model (RAB or other incentive-based instruments), and typically the unknown identity and risk appetite of future investors. The fair, market-facing conclusion is not that freehold is unsuitable for new nuclear, but that it demands more from the document architecture and leaves less margin for error if the project or its stakeholders run into difficulty. Correcting project inception assumptions, such as land boundaries, is harder under a freehold structure.

Control over ownership

For many new nuclear developments with adjoining sensitive land use, long leasehold has the stronger claim as the more resilient approach. Freehold may look simpler from the outside. In reality however, nuclear projects test land structures over decades, not at signing. The better structure is the one that keeps the protection package whole when ownership changes, financing is enforced, licences evolve and decommissioning finally arrives. On that test, control often matters more than the rhetoric or vanity of ownership.



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SPOTLIGHT ON ASEAN NUCLEAR POWER: A MID-YEAR ASSESSMENT FOR 2026

In November last year, we published [an article](#) surveying the state of nuclear power across ASEAN. Since then, several significant developments have emerged against a backdrop of heightened energy security concerns, looming decarbonisation deadlines and surging electricity demand. In this article, we track those developments and assess where the region now stands.

Singapore

Last month, Singapore announced that it will, in early 2027, undergo the Phase 1 Mission of the Integrated Nuclear Infrastructure Review (INIR) – an assessment by the UN atomic watchdog, the International Atomic Energy Agency (IAEA), to determine whether the country is ready to make an informed decision on nuclear deployment.

In parallel, Singapore has intensified international cooperation to build its technical and operational capabilities, particularly in small nuclear reactors (SMRs). In March this year, the Government signed a memorandum of understanding with Korea's state-owned Korea Hydro & Nuclear Power Co Ltd (KHNP) to cooperate on nuclear energy development with a focus on SMRs. In June, it entered into a memorandum of understanding with the UK Office for Nuclear Regulation to exchange safety-related regulatory information across the full nuclear lifecycle, including regulatory considerations around new reactor technologies like SMRs, and to train scientific and technical personnel.

Singapore's methodological, regulator-first approach to nuclear is consistent with how it has historically moved on other complex infrastructure and power market reforms. While it has not yet committed to deployment, once Singapore reaches an "informed decision", we expect international nuclear vendors to take a close interest as the Government has shown that it can move quickly on project execution once policy alignment is achieved.

Vietnam

Vietnam has been the most active mover in the region since the start of 2026. In our previous

article, we highlighted Vietnam's plans – unveiled in April 2025 – to build two nuclear power plants, Ninh Thuan 1 and 2, targeting commercial operation between 2030 and 2035 and providing 4,000–6,400 MW of baseload capacity. To facilitate this, Vietnam passed the Law on Atomic Energy in June 2025, which took effect in January this year.

Vietnam has since pressed ahead with concrete project agreements. In March this year, Vietnam and Russia signed an intergovernmental agreement for the construction of Ninh Thuan 1, laying the legal foundation for Vietnam's first nuclear power plant. The plant is planned around two Russian-designed pressurised water reactors built by Russian state-owned Rosatom. Deputy Prime Minister Bui Thanh Son attended the launch of the population relocation, resettlement, and site-clearance project for the plant in Khanh Hoa Province, underscoring that implementation is already underway on the ground, not just on paper.

The following month, Vietnam signed a four-party memorandum of understanding to explore Korean financing for Ninh Thuan 2, bringing together three Korean state-owned entities – Export-Import Bank of Korea (Korea Eximbank), the Korea Trade Insurance Corporation (K-Sure) and Korea Electric Power Corporation (KEPCO) – alongside Vietnam's state-owned PetroVietnam. The plant had been left without a partner after Japan formally withdrew in December 2025, citing the tight construction timeline, but the speed with which Vietnam moved to engage a new partner suggests a clear determination to keep both projects on track and to diversify its strategic partnerships beyond a single nuclear supplier.

Vietnam is currently the only ASEAN country to have undergone an INIR Phase 2 Mission. In December 2025, the IAEA conducted the Phase 2 Mission of Vietnam's nuclear programme and a report was delivered to the Government in April 2026. Under IAEA policy, INIR mission reports are published on the agency's website 90 days after delivery to the member state, unless that member state requests otherwise in writing. Vietnam's report is not currently publicly available.

Philippines

The Philippines remains in the institution-building phase of its nuclear programme and the Government continues to actively create the regulatory conditions and licensing architecture to attract investors, including from the private sector. The Government in February this year finalised a “harmonised, whole-of-government licensing and permitting flowchart” covering nuclear power plant projects end-to-end, with sequential and parallel approvals designed so that developers, vendors and financiers can plan around predictable timelines. This follows the enactment of the PhilATOM Law in September 2025, which established PhilATOM as the country's first independent, quasi-judicial nuclear regulator; and the Department of Energy's Circular in October 2025, which sets the policy foundations for the country's first commercially developed and operated nuclear power plant. This matters because procedural ambiguity has bogged down discussions in the region. It also sets the stage for the Philippines to begin formally accepting nuclear power plant licence applications by the end of 2026.

The Philippines also continues to attract interest from major nuclear powers. In February this year, the US Trade and Development Agency committed USD 2.7 million to help Meralco PowerGen, a subsidiary of Manila Electric Company (Meralco), the Philippines' largest private electric distribution utility, evaluate US SMR designs and develop an implementation roadmap. The following month, during a state visit by South Korean President Lee Jae-myung to Manila, KHNP, Korea Eximbank, and Meralco signed a tripartite memorandum of understanding to cooperate on nuclear power plant development in the Philippines, covering technology cooperation, human resources development, site selection, and financial support.

The Philippines is also leveraging its broader regional influence. It takes the ASEAN chairmanship in 2026 and hosted the World Nuclear Supply Chain Conference in Manila last month, positioning itself as a regional convening point for the sector. The Philippines has also secured a seat on the IAEA Board of Governors for 2025–2027, strengthening its role in shaping global nuclear safety and security policy.

The emergence of a clear, bankability-focused framework for nuclear, combined with strong US and Korean engagement, is likely to draw increasing attention from SMR vendors and investors. Whether targets can be met will turn on how efficiently it can translate this institutional groundwork into site selection, permitting and long-lead procurement over the next few years.

Indonesia

Indonesia is intensifying bilateral discussions with Russia, the US, Japan, Korea and others while it lays the institutional and legislative groundwork for nuclear development. In our previous article, we highlighted US company ThorCon's proposal to build a nuclear plant through private investment, and the site evaluation approval granted by the Government in August 2025. No new material developments have been publicly disclosed but there are reports that the project is facing scrutiny: ThorCon's molten-salt reactor technology remains at the prototype stage, and so its timeline to commercial operation carries execution risk.

Once Indonesia clarifies its institutional model and its legislative and regulatory framework, its status as Southeast Asia's largest power market and electricity consumer is likely to make it one of the most attractive jurisdictions for international nuclear companies.

Malaysia

Malaysia is one of four ASEAN countries, alongside Vietnam, the Philippines, and Indonesia, that have formally announced plans to pursue nuclear energy. It has been steadily strengthening its legislative framework for nuclear development. On 1 December 2025, Malaysia amended its nuclear regulatory framework to require permits for all atomic energy activities, including the import, export and transshipment of radioactive materials. The amendments also introduced mandatory decommissioning plans as a precondition for building facilities, alongside new requirements for nuclear material accounting and control systems, IAEA inspections, and reporting obligations.

Thailand

Thailand remains the most measured of the ASEAN core movers. Nuclear power has been included in its national power development plan, but the plan remains in draft form and no finalisation date has been announced. No material developments have been publicly disclosed since November last year.

Other regional players

In August 2025, Laos and Russia signed a nuclear energy cooperation roadmap that could lead to plans for the country's first nuclear power plant. Myanmar inked a similar cooperation agreement with Russia in March 2025 to build a 110 MW SMR (as covered in our previous article) with no institutional and regulatory infrastructure, though no material developments have been publicly disclosed since. Cambodia's latest national energy strategy signalled an openness to nuclear, and Brunei has told the IAEA it is "carefully exploring" the option.

Beyond ASEAN

The region's nuclear turn is part of a larger wave across Asia. Last month, Russia agreed to build Kazakhstan's first nuclear power plant in a US\$16.5 billion deal, with Moscow financing roughly 85% through a state export loan. The model mirrors Vietnam's: the same VVER-1200 reactor technology

bundled with the credit to build it. Russia's traction in Kazakhstan, Vietnam, Myanmar and Laos illustrates how its ability to offer turnkey, heavily financed packages that shift cost-overrun and delivery risk away from host governments gives it a clear early advantage. This is especially true in countries that lack deep nuclear experience and have limited fiscal space for a first-of-a-kind national asset. Russia has also shown a willingness to move quickly from political agreement to binding project documentation where strategic relationships are already strong. For governments facing acute capacity shortfalls or energy security pressures, this ability to compress timelines can be decisive. For other ASEAN states, while these features are compelling, they also embed long-term strategic and dependency considerations, which host governments will need to weigh against purely economic benefits. It is also notable that, like Vietnam, Kazakhstan is seeking to diversify its strategic partnerships by turning to a different supplier (China, in Kazakhstan's case) for its second nuclear power plant.

While Russia's influence is most visible through its export-finance model, China remains by far the world's most active builder. According to the World Nuclear Association, around 39 reactors with a combined 41,074 MW of nuclear capacity are under construction – more than any other country.

On the technology front, in April, India's prototype 500 MW fast breeder reactor, a type of advanced nuclear reactor that uses less uranium to generate electricity, reached "first criticality", achieving a self-sustaining nuclear chain reaction. Once the reactor becomes operational, India will be the second country after Russia with a commercial fast breeder reactor. India has also moved decisively on the policy front. December 2025 brought the landmark SHANTI Act, opening the sector to private and foreign investment for the first time, in service of a 100 GW target by 2047.

Japan, by contrast, is reviving an existing fleet. In February this year, Tokyo Electric Power Company (TEPCO) restarted Unit 6 (1,356 MW) of the Kashiwazaki-Kariwa plant, the world's largest nuclear plant by potential capacity, and the utility's first reactor back in service since the 2011 Fukushima accident, with the unit reaching commercial operation in April. The restart brought Japan's operating fleet to 15 reactors with another 18 operable but not yet restarted. New Prime Minister Sanae Takaichi has signalled a faster nuclear revival to reduce reliance on imported fuel, in line with a national target for nuclear to supply around 20% of electricity by 2040.

Conclusion

As shown above, several significant developments have emerged across ASEAN since late 2025 against the wider Asian build-out. Vietnam has gone furthest, with a signed intergovernmental agreement for Ninh Thuan 1 that gives its programme tangible momentum. The Philippines leads on institutional and regulatory maturity, with an independent nuclear regulator to support a commercial nuclear programme and a formal investment incentive framework in place. Whether the 2032 target for the first plant holds will depend heavily on how quickly site selection and licensing proceed from here. Indonesia, Malaysia, Singapore, and Thailand sit further back, focused on policy frameworks, feasibility work, and capability-building, though any of them could move quickly once a decision is made.

The other defining feature of nuclear power across ASEAN is that its nuclear future is being shaped as much in Moscow, Seoul, Washington, and Tokyo as in Hanoi or Manila, which makes vendor choice a geopolitical decision as much as an energy one.



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UPCOMING EVENTS

CHARTING A COURSE: NUCLEAR PROPULSION IN CIVIL MARITIME

Wednesday 8th July 2026, London | 4:45 – 6:30pm (followed by drinks and networking)

The maritime industry is at a critical juncture in its decarbonisation journey. With the emergence of high-energy density fuels and advanced reactor technology, nuclear power is emerging as a potentially transformative solution in the civil maritime world. Transitioning to maritime nuclear propulsion offers a radical shift towards greater energy sovereignty and the potential to decouple international trade from the volatile geopolitics of hydrocarbon supply chains.

This session brings together key participants in maritime nuclear – including **Lloyd's Register, Nuclear Risk Insurers, Maritime & Coastguard Agency** and **Stephenson Harwood** – to discuss the nuclear maritime regulatory, legal, and insurance roadmap required to make nuclear-powered shipping a commercial reality.

The panel of consortium experts will explore the work of the Maritime Nuclear Consortium, focusing on the potential insurance solutions, liability frameworks and operating models needed for nuclear propulsion in civil maritime.

If you would like to attend this event, please contact: gemma.kay@stephensonharwood.com
Please note that places are limited.

For more information on our membership of the Maritime Nuclear Consortium refer to our [news announcement here](#).

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