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CURRENT STATE OF NUCLEAR POWER IN ASEAN

The potential role of nuclear power in ASEAN's energy mix is reshaped by the region's decarbonisation targets, energy security concerns and demand-side drivers.

This article provides a brief overview of the current state of nuclear energy in the region – with a particular focus on developments within the past year.

ELECTRICITY DEMAND DRIVERS IN ASEAN

Robust economic growth in ASEAN is driving increased electricity demand across all sectors, especially in industry and commerce. The rapid expansion of the digital economy— fuelled by cloud computing and AI— is accelerating data centre construction, with electricity demand from data centres in the region expected to nearly double by 2030[i]. The electrification of transport, particularly through the adoption of electric vehicles, is also emerging as a significant source of power demand.

Urbanisation, alongside rising incomes, is further increasing the demand for electricity in the residential and commercial sectors. Climate change is also fuelling a boom in air-conditioning usage.

Nuclear energy is a low-carbon supply that offers the potential to meet this growing electricity demand at scale.

MANY ASEAN COUNTRIES ARE ACTIVELY EXPLORING NUCLEAR POWER AND HAVE ACCELERATED CAPACITY BUILDING.

Singapore

On 27 October 2025, to mark the start of Singapore International Energy Week (SIEW), Singapore released a digital booklet covering the nation's journey in nuclear energy capability-building. The booklet outlines the key factors that the Government is considering in domestic nuclear energy deployment, including the safety, reliability, affordability and environmental sustainability of nuclear technology in Singapore's context. The booklet can also be seen as an educational piece for the public.

On the same day, Singapore announced that it will sign new cooperation agreements with two United States (**US**) organisations – the Idaho National Laboratory and Battelle Memorial Institute – to strengthen its expertise in nuclear power.[ii]

In September 2025, the US approved Singapore's (as well as the Philippines') addition to the US' Part 810 list of Generally Authorised Destinations for

exports of controlled nuclear technology and assistance, providing Singapore with access to critical information on US nuclear energy technologies.[iii] Within ASEAN, Indonesia and Vietnam were already on the list.

This follows off the back of a civil nuclear cooperation agreement known as the "123 Agreement" which Singapore and the US inked in July 2024[iv] (and which entered into force in December 2024[v]) to enable deeper collaboration between the two countries. Notably, this agreement requires partners to adhere to US non-proliferation requirements. Within ASEAN, Indonesia, Philippines, Vietnam, Thailand have all entered into 123 Agreements with the US.[vi] Malaysia has recently launched negotiations on a 123 Agreement.[vii]

A similar cooperation agreement relating to civil nuclear energy was signed between Singapore and France – a global leader in nuclear energy with over 50 reactors providing 70% of its electricity – in May 2025, alongside other agreements covering defence and security, AI, transport and education. Singapore also announced that it would elevate its bilateral relationship with France to a "Comprehensive Strategic Partnership", marking its first such partnership with a European country.[viii]

It was also reported in October 2025 that dedicated nuclear teams have been formed within key Singapore agencies, the Energy Market Authority and the National Environmental Agency.[ix]

As demonstrated above, Singapore has made great strides in nuclear capability-building within the last year. That said, guidance from the Government remains that Singapore has not committed to deployment.

Philippines

Within ASEAN, the Philippines, Vietnam and Myanmar have made public their decision to deploy nuclear power within the next decade or so.

On 2 October 2025, the Philippines' Department of Energy (**DOE**) issued a landmark framework for the integration of nuclear energy into the country's power generation mix under Department Circular (DC) No. 2005-10-0019.

The circular does not appear to be publicly available, but according to the Philippine Information Agency (the official public information arm of the Philippines Government)[x]:

+ Under such framework, Philippines' first new proposed nuclear power plant – designated as "Pioneer NPP" – will be treated as a baseload facility and will be granted priority dispatch in coordination with the Independent Market Operator (IMO), and the System Operator (SO) regardless of the nuclear technology deployed.

+ Within 90 days upon the circular's issuance, the DOE will explore government participation models and financing options in collaboration with other key governmental agencies such as the Department of Finance and the Department of Economy, Planning, and Development, and the country's sovereign wealth fund, the Maharlika Investment Corporation.

+ To support long-term financial viability, flexible contracting mechanisms such as auctions, direct contracting, or aggregation for industrial and economic zone use will be introduced.

+ The Energy Regulatory Commission, in consultation with stakeholders, will implement a Regulatory Asset Base-type model or a similar capital recovery mechanism, anchored on minimum contract terms of 25 years, extendable for another 25 years.

+ Pioneer NPP will be automatically certified as an "Energy Project of National Significance" which gives it access to incentives and fast-track processing of the relevant governmental approvals.

+ The circular is more than just a policy document, but an investment signal.

Following the issuance of the circular, experts from the International Atomic Energy Agency (**IAEA**), private sector leaders, and government officials gathered in Manila from 20 to 24 October 2025, for a financing workshop - the National Workshop on Nuclear Power Infrastructure and Financing – organised by the Philippines' Nuclear Energy Program-Inter Agency Committee (**NEP-**

IAC), the coordinating body for the nation's nuclear energy programme, chaired by the DOE. [xi]

Comprising 24 member-agencies, the NEP-IAC earlier formed six subcommittees to "divide and conquer" the 19 nuclear infrastructure issues, identified by the IAEA, that a country needs to address to establish a nuclear power programme: (i) subcommittee 1 oversees the national position, management, funding and financing, electrical grid, and procurement; (ii) subcommittee 2 oversees nuclear safety, radiation protection, nuclear security, and nuclear safeguards; (iii) subcommittee 3 oversees legal and regulatory matters; (iv) subcommittee 4 oversees human resource, industrial involvement, and stakeholders' involvement; (v) subcommittee 5 overseas siting, environmental protection, and emergency response; and (vi) subcommittee 6 overseas nuclear fuel management, and radioactive waste management.[xii]

The circular also follows the enactment of the Philippine National Nuclear Energy Safety Act – known as the PhilAtom Law – in September this year. Notably, PhilAtom Law provides for the establishment of a domestic regulatory body (the Philippine Atomic Energy Regulatory Authority) with exclusive jurisdiction over nuclear energy regulation in the Philippines.[xiii]

The efforts above align with the Philippines Energy Plan 2023-2050 (issued in 2024), which **targets a nuclear capacity of at least 1,200 MW by 2032, 2,400 MW by 2035 and 4,800 MW by 2050**.[xiv] A few potential sites for a nuclear reactor have also been identified.

Vietnam

After shelving its nuclear energy ambitions in 2016[xv], Vietnam is now giving nuclear power another chance.

On 15 April 2025, Vietnam unveiled its revised National Power Development Plan 8 (PDP8) for the 2021-2030 period, with a vision to 2050. Notably, the revised plan reintroduces nuclear power with **the Ninh Thuan 1&2 plants expected to commence operations between 2030 and 2035, providing 4,000-6,400 MW of baseload capacity**.[xvi]

Vietnam Electricity (EVN), Vietnam's state-owned power utility, was announced as the investor for Nuclear Power Plant Project No. 1, while the Vietnam National Industry and Energy Group (Petrovietnam), Vietnam's state-owned national oil and gas company, was announced as the investor for Nuclear Power Plant Project No. 2.[xvii]

Vietnam released a joint statement with Russia in May 2025 that both countries have agreed to negotiate agreements on the construction of nuclear power plants in Vietnam.[xviii]

In terms of nuclear governance, on 27 June 2025, Vietnam's National Assembly enacted the Law on Atomic Energy No. 94/2025/QH15, which will take effect on 1 January 2026. The new law aims to facilitate the development of nuclear projects in the country.

Indonesia

Based on the 2025-2034 Electricity Supply Business Plan (**RUPTL**) issued in May 2025, ASEAN's largest economy (and largest electricity consumer[xix]) **targets having 500MW of nuclear capacity by 2032**. Sumatra and Kalimantan are each expected to host a 250 MW facility. Nuclear energy was not included in Indonesia's previous plans for electricity generation.

The RUTL also highlights that West Kalimantan contains more than 24,000 tons of uranium – the key fuel for nuclear reactors. As it stands, approximately 80% of uranium output is concentrated in a small group of countries, led by Kazakhstan and Canada.

ThorCon, a US-based company, announced on its website, that: (i) in March 2025, it applied to build Indonesia's first nuclear power plant, involving molten salt reactors, on Kelasa Island in Bankga Belitung province, situated off the southeastern coast of Sumatra, and (ii) in August 2025, the Indonesian Government approved ThorCon's site evaluation plan.

Myanmar

In March 2025, Myanmar entered into a cooperation agreement with Russia on the **development of a 110MW small modular reactor**. The construction timeline or details of the location of the proposed nuclear facility have not been publicly disclosed. [xx]

Thailand

The draft power development plan (PDP) for the 2024-2037 period (released in June 2024) indicates that Thailand will have **600 MW of installed nuclear power capacity by 2037**. That said the PDP is in draft form only and it is unclear when a finalised plan will be released.

Global Power Synergy Plc (**GPSC**), the power generation arm of national oil and gas conglomerate PTT Plc, announced in July 2025 that it was conducting a feasibility study of small modular reactors.[xxi] It was also reported in October 2025 that GPSC is planning to co-invest in a small modular reactor overseas to prepare the company for a similar project.[xxii]

Otherwise, there does not appear to have been many publicly announced nuclear-related developments within the country in the past few months.

Malaysia

In November 2024, Malaysia re-considered its stance on nuclear power, reversing its decision from 2018.

In July 2025, Malaysia completed a pre-feasibility study on nuclear power. Malaysia's Science, Technology and Innovation Minister said in Parliament that the study's initial findings indicated that nuclear energy has strong potential to serve as a stable, clean and reliable power source for the country. He also mentioned that Malaysia is working to revise its Atomic Energy Act to enable the country to ratify important international treaties and conventions under the IAEA.[xxiii]

That said, no decision has been made on the implementation, type of technology or capacity of the nuclear reactor to be developed.[xxiv]

NEWER TECHNOLOGIES SUCH AS SMALL MODULAR REACTORS (SMRS) ARE LIKELY TO PLAY A SIGNIFICANT ROLE IN NUCLEAR POWER IN ASEAN. ASEAN COUNTRIES ARE WATCHING THE DEVELOPMENT OF SMR TECHNOLOGIES WITH INTEREST.

An SMR is a fraction of the size of a conventional nuclear power reactor. Components are manufactured in controlled factory environments and shipped as standardised modules for assembly and installation on-site, making them more affordable to build than large power reactors. It is also faster to construct an SMR than a large power reactor and licensing timelines are likely shorter. Additionally, given its modular nature, subsequent SMR units can be added on when the grid capacity expands.

All these offer clearer financing pathways. Having said that, this technology is not yet available on a commercial scale. To displace coal at scale, speed to market is critical.

Most of the ASEAN countries that are exploring or actively pursuing nuclear initiatives have expressed a keen interest in SMRs. In Singapore, for example, land constraints strengthen the case for compact, modular designs and co-located, 24/7 clean power.

Several ASEAN countries have also joined the US Department of State's Foundational Infrastructure for the Responsible Use of Small Modular Reactor Technology (FIRST) programme, a capacity building programme for countries interested in US SMR technology.

CONCLUSION

As shown above, many ASEAN countries have announced bold, ambitious plans to deploy nuclear power. However, as we have seen previously, the real challenge lies in turning these plans to reality. Achieving these plans will require a concerted effort amongst policymakers, regulators and investors. Nonetheless, several favourable conditions (including technology innovation (SMRs) and supportive government policies) now exist to encourage greater investment in nuclear infrastructure.

OUR NUCLEAR TEAM

Our nuclear practice is recognised for its depth of expertise which, when combined with the international reach and experience of our lawyers, enables us to support clients on complex nuclear projects around the world.

Get the latest updates from our nuclear team here.

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