

What's stopping Southeast Asia from going nuclear-powered?

Blog post by Iman Reda, 05 May 2022

While the “greenness” of nuclear energy continues to be debated across Southeast Asian nations, energy security concerns are driving countries in the region to revisit their nuclear energy programmes.

In March, the Philippines announced an Executive Order to include nuclear power into the energy mix. Singapore also revealed in March that it has identified nuclear energy as a potential power source by 2050. In November last year, Indonesia unveiled a roadmap to become net zero which included ambitions to start nuclear power plant operations by 2060. In 2020 and 2021, the Vietnamese government showed interest in including nuclear power in the country's new 2021-2030 Power Development Plan.

Although public support for nuclear energy programmes across Southeast Asia is low, policymakers' renewed interest in nuclear programmes is driven by a pressing need to secure future energy supplies. Southeast Asia, as an economic bloc, is projected to grow by over 5% per year to become the world's fourth largest economy by 2030. Energy demand in the region is predicted to increase by 60% by 2040.

Today, Southeast Asia remains a net importer of energy products, with more than 40% imports to meet its total energy requirements. Incidences of shortages have increased—in March, the Vietnamese government called for energy saving as it faced energy shortages due to low coal supplies and the country is expected to continue to face power shortages until 2030 should they continue to rely on coal. Singapore, Indonesia, and Thailand have faced rising energy prices as they remain dependent on imported fossil fuels, while renewable energy capacity is constrained by intermittency issues. The need for domestic energy supply is more pressing than ever.

Singapore, Indonesia, Philippines, and Malaysia have been proactive in educating the public on the safety, stability, and benefits of nuclear power. This signals concerted efforts at popularising the use of nuclear energy for the first time. For example, the Nuclear Safety Research and Education Programme (NSREP) in Singapore and Indonesia's National Atomic Energy Agency aim to inspire trust of the population in the safety of nuclear reactors by building expanding aptitude and expertise of each country in nuclear energy infrastructure and technology. The initial S\$63m investment into NSREP was bolstered by another S\$30m tranche of funding after a mid-term review showed the programme's strong performance. Similarly successful, Indonesia was able to pass regulations to spur private investment in the nuclear power sector through its “Omnibus Law”.

Another signal that governments in the region are finally taking nuclear energy seriously has been intra-regional cooperation mechanisms, most notably via the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM), whose main objective is to strengthen nuclear safety and safeguards within the ASEAN community. ASEANTOM has formulated a 5-year work plan from 2018-

2023 aimed at achieving compliance with international standards through enhanced mechanisms towards capacity building, exchange of information and implementation of regional projects - all with the aim of building greater public trust.

Advancements in nuclear technology have also enabled governments previously constrained by space restraints or public safety concerns to re-assess the feasibility of nuclear programmes. Singapore has traditionally excluded the possibility of going nuclear-powered because of its limited land space that might inhibit safe nuclear waste disposal and evacuation in the event of a crisis. New designs like Small Modular Reactors (SMRs) and Generation IV nuclear technologies should enhance safety systems in a way that was not possible for older generation technology. For instance, there are SMRs designed to cool safely and passively without requiring external systems or operation actions—this should limit the risk in an emergency scenario. Advancements such as nuclear fusion also mean radioactive waste is kept minimal. These new systems absolve earlier concerns over the safety of atomic energy production.

An increasing uncertain geopolitical outlook has also lent fresh urgency to the case for nuclear power. Fuel prices across Southeast Asia have risen to record levels in 2022 and if the war in Ukraine is a prolonged one, Southeast Asia's energy-importing nations may see nuclear power as increasingly attractive.

A final tailwind for nuclear energy adoption comes from ambitious national commitments to carbon neutrality across the region. Indonesia aims to be net-zero by 2060, and Singapore signalled aspirations to attain carbon neutrality by mid-century in their Budget 2022. Vietnam, Malaysia, and Philippines have also shown intent to become net-zero over the next thirty to forty years, at the same time aspiring to completely phase out coal from their energy mix. As Southeast Asia searches for strategies to wean itself off carbon-based power to continue to fuel its growth, nuclear energy is an attractive option for policymakers.

As it stands, Philippines is the closest ASEAN country to seeing an operational nuclear power industry, having initially built the Bataan nuclear plant with the help of the US in 1973. The country is once again working with the US through a memorandum that would allow the Filipino Department of Energy to gain knowledge and technical assistance in support of the recently announced executive order introducing nuclear power into the power mix. This agreement might pave the way for other Southeast Asian countries to seek similar agreements with nuclear power experts like USA, China, and Japan. Vietnam, Thailand, Indonesia, and Malaysia have all had a historical interest in developing domestic nuclear programmes. It is only a matter of time before we witness the first nuclear power plant link up to a grid in Southeast Asia.