



Southeast Asia's Nuclear Future

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By Julius Cesar Trajano

SYNOPSIS

As COP30 concluded in Brazil, nuclear power received renewed global attention as countries seek reliable, low-carbon solutions to growing energy demand – including the surge driven by artificial intelligence. A few Southeast Asian states are now taking preparatory steps toward nuclear deployment or building up local capacity, requiring long-term public trust, strong capacity-building and workforce development, and deeper regional and international cooperation on nuclear safety, security, and governance.

COMMENTARY

COP30 in Brazil featured extensive discussions and commitments on nuclear power. A central focus at the 2025 climate change conference was the global ambition to at least triple nuclear energy capacity by 2050. The [International Atomic Energy Agency](#) (IAEA) convened panel-side events to identify pathways to accelerate the deployment of nuclear power alongside renewables and to explore future financing, regulatory, and policy approaches to small modular reactors (SMRs).

With growing energy demands and the urgent need to reduce carbon emissions and address the escalating climate crisis, nuclear energy is being reconsidered as a reliable, low-carbon complement to renewable sources such as solar and wind. For many countries, including emerging economies, nuclear power offers a pathway to energy security while supporting net-zero commitments.

The discussions at COP30 vividly reflected how nuclear energy fits within the broader framework of sustainable and just energy transitions – balancing climate ambition, technological innovation, and public trust.

Regarding technological innovation, as artificial intelligence (AI) rapidly transforms our way of life, its rapid growth is driving unprecedented energy demand. Data centres and computational infrastructure require vast, reliable power supplies. To meet this surge sustainably, nuclear energy has been seen as a reliable, 24/7 baseload power source. For instance, the US government recently inked a [US\\$80 billion agreement](#) with Westinghouse Electric Co to build large-scale nuclear reactors, the latest push to meet rising demand for electricity from AI.

Southeast Asia is a region where various countries are seriously considering nuclear power as their main clean energy source, and at the same time, where electricity demand from AI data centres is expected to more than [double by 2030](#). Renewable energy [will not be enough to support](#) the region's AI boom.

Nuclear Energy Plans in Southeast Asia

In Southeast Asia, several countries, particularly the [Philippines](#), [Vietnam](#), and [Indonesia](#), are now taking preparatory steps to build their first operable nuclear power plants. [The Philippine government](#), in particular, is taking decisive steps to develop nuclear energy, having recently passed a nuclear energy regulatory law and begun exploring funding options for potential nuclear reactors, which are targeted for operation by 2032. Indonesia and Vietnam have also announced plans to build nuclear plants by the 2030s. They are all considering both large-scale conventional nuclear reactors and SMRs.

While the [Singapore](#) government has not decided whether to deploy nuclear energy, it will build the capabilities to objectively and scientifically assess whether the latest nuclear technologies, particularly SMRs and Generation IV nuclear reactors, could be suitable for deployment in the country.

The evolving energy landscape has driven growing interest in next-generation nuclear technologies in the Asia-Pacific, including SMRs, micro modular reactors (MMRs), and floating nuclear power plants (FNPPs). Advocates highlight their potential uses across diverse sectors such as heavy industry, maritime transport, data centres, and remote communities.

Capacity Building and Public Acceptance Issues

To make nuclear energy in Southeast Asia a sustainable energy source in the future, whether countries choose to build large nuclear power plants or procure SMRs, social acceptance, public education, and capacity building need to be broadened at both the regional and national levels.

Achieving public trust is critical, especially in countries preparing for nuclear power. A long-term commitment to nuclear power requires sustained social acceptance, which can evolve over time. Governments must engage all stakeholders to build strong buy-in, foster public trust, and address related societal concerns. Building public trust in nuclear energy requires early investment in education and awareness campaigns, coupled with meaningful opportunities for public participation in decision-making. At the same time, it is essential to systematically address public concerns,

particularly about the risks involved, to ensure confidence and credibility in the development of nuclear energy.

Workforce technical training, as well as nuclear safety and security education, are critical for countries currently assessing whether to deploy nuclear power. National nuclear energy institutions are recalibrating their capacity-building strategies to expand their pool of local nuclear professionals and strengthen their ability to assess emerging nuclear reactor technologies, including SMRs.

It was announced recently that [Singapore will partner](#) with two US nuclear energy organisations to strengthen its local expertise in nuclear energy. Indonesia's [National Research and Innovation Agency](#) (BRIN) is working to enhance human resource capacity in nuclear technology to meet future national workforce requirements. This includes the goal of training 4,900 nuclear specialists by 2040 to support the operation of nuclear power plants.

The Nuclear Energy Programme – Inter-Agency Committee of the Philippines has been offering [Nuclear Energy Awareness Training](#) for Filipino scientists, engineers, and energy professionals to enhance understanding and build a pool of qualified professionals essential to the implementation of the Philippine Nuclear Energy Programme. Furthermore, it has been collaborating closely with educational institutions across the country to train teachers and students, establish academic courses, training programmes, scholarships, and partnerships, all aimed at strengthening national capacities for the safe and effective utilisation of nuclear energy.

A key challenge lies in motivating students and young professionals to pursue these educational and capacity-building opportunities despite the uncertainty about the future of domestic nuclear energy programmes. Sustaining interest and investment in nuclear education will require clear policy direction, long-term planning, and assurance of viable career pathways in the sector.

Regional and Global Partnerships

In this regard, continued assistance and support from the IAEA, the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM), and dialogue partners – particularly in the area of capacity building, advanced training, technical guidance, and shared best practices – will ensure that nuclear energy applications will be safe and secure.

Capacity building is a crucial element in developing nuclear energy infrastructure across Southeast Asia. Training exercises and lessons learned from nuclear safety and security initiatives help governments to strengthen institutional readiness, enhance regulatory and technical expertise, and ensure robust governance systems.

Conclusion

Looking ahead, nuclear energy development in the Asia-Pacific is set on an upward path. While challenges persist in governance, regulatory capacity, and workforce

development, the region is increasingly supported by a strengthening web of international and regional cooperation. National decisions on nuclear energy, including which technology to use, must go beyond purely technical and financial considerations. Any sustainable approach must account for governance frameworks, social acceptance, careful consideration of benefits and risks, and meaningful community engagement.

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