



Photo Credit: Julius Cesar Trajano

Nuclear Power and Sustainable Development in Southeast Asia

Julius Cesar Trajano

Growing energy needs, the escalating climate crisis, and the global sustainable development agenda have fuelled renewed interest in and adoption of nuclear energy. Southeast Asia is a region where nuclear power is now being seriously considered by various countries as their main clean energy source. A pivotal moment came in 2015 with the adoption of the Paris Agreement and the Sustainable Development Goals (SDGs), which accelerated shifts across the global economy—particularly in the energy sector.

How Nuclear Power Supports SDG 7

Nuclear power has proven to be a reliable, zero-carbon energy source which many countries are now considering or adopting as part of their energy mix, and as part of their efforts to meet SDG 7. Addressing *Affordable and Clean Energy*, nuclear power helps attain both decarbonisation and energy security.

In Southeast Asia, several countries—particularly the [Philippines](#), [Vietnam](#) and [Indonesia](#)—are now involved in preparatory steps to build their first operable nuclear power plants. The evolving energy landscape has powered growing interest in the Asia-Pacific in next-generation nuclear technologies, including small modular reactors (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.

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In reality, Southeast Asia's initial venture into commercial nuclear power is more likely to emerge from a large conventional reactor rather than an untested technology. The Philippines is exploring the possible revival of the long-suspended Westinghouse-constructed nuclear power plant in Bataan, while Vietnam has renewed its collaboration with Rosatom to develop new pressurised water reactors, aiming for an ambitious completion goal of 2030.

Indonesia is also aiming to introduce commercial nuclear power by the late 2030s to address its rapidly growing electricity demand. The country is engaging a wide range of suppliers, from established reactor vendors to developers of floating nuclear power plants (FNPPs). However, the trajectory of its programme largely depends on whether technology indigenisation is pursued through joint ventures with foreign partners or not.

Key Capacity Building and Public Acceptance Issues

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

Achieving public trust is critical especially for 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 respond to public concerns, particularly around the risks involved, to ensure confidence and credibility in the development of nuclear energy.

Workforce training remains a major priority for countries preparing to launch local nuclear power programmes. National nuclear energy institutions are recalibrating their capacity building strategies to expand their pool of local nuclear professionals as well as raise their ability to assess emerging nuclear reactor technologies, including SMRs.

For example, in July 2025, the [Singapore Nuclear Research and Safety Institute](#) (SNRSI) was launched with an expanded research scope, additional funding and an aim to train 100 nuclear experts by 2030, mainly to help Singapore better assess the suitability of deploying nuclear reactors. Indonesia's [National Research and Innovation Agency](#) (BRIN) is working to strengthen 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.

Regional and Global Partnerships

In this regard, continued assistance and support from the International Atomic Energy Agency (IAEA), the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM), and dialogue partners is vital. Particularly within areas of capacity building, advanced training, technical guidance, and shared best practices, this will further enhance national capabilities in ensuring that nuclear energy applications in the region will be safe and secure while contributing to realising SDG 7.

Looking forward, 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.

SUGGESTED READINGS

Julius Cesar Trajano. 2025. "Deploying Small Modular Reactors in East Asia." *International Journal of Nuclear Security*, Vol. 9, No. 1.

Matt Bowen, et al. 2025. "Nuclear Energy at the World Bank." *Roundtable Report*, Columbia University.

International Energy Agency. (2025). *The Path to a New Era for Nuclear Energy*. Paris: IEA. September 2, 2025.

CLIMATE CHANGE



Photo Credit: Freepik.com

NEWS & COMMENTARIES

Climate change made damage from Super Typhoon Ragasa significantly worse, study warns

Climate change may have been responsible for more than a third of the direct damage to homes and property caused by the super typhoon that struck southern China last month. A warming Earth also made Ragasa – the strongest storm recorded this year – more powerful when it made landfall in Guangdong province.

Victoria Bela

South China Morning Post | 3 October 2025

Hong Kong seeks innovative green solutions to tackle climate change, extreme weather

One start-up in Hong Kong is offering a promising alternative to curb carbon emissions. Biotechnology firm Alcarbo Technologies has developed algae photobioreactors, or “algae walls”, that can capture carbon dioxide at rates far exceeding those of trees.

May Wong and Calvin Yang

Channel News Asia | 3 October 2025

Antarctica sees similar climate change effects as Greenland: Study

The planet's warming climate is having effects in Antarctica that increasingly resemble those observed in the Arctic, meaning global sea levels could rise faster than previously predicted. Antarctica has long been considered more stable than Arctic.

AFP/lec

Channel News Asia | 3 October 2025

Forest clearing in South-east Asia causes more heat-related deaths than in other tropical places

Every year in South-east Asia, around 15,680 rural residents die of heat-related complications worsened by deforestation, compared with 9,890 for the tropical regions of Africa and 2,520 for the Americas.

Shabana Begum

The Straits Times | 5 October 2025

SELECTED PUBLICATIONS

Europe's environment 2025 - Main report

Europeans face turbulent times. Multiple economic, social, geopolitical and environmental crises are converging to pose systemic risks to Europeans' way of life. Europe is warming twice as fast as the global average, with extreme weather events driven by climate change impacting people's lives across Europe today. At the same time, political realities across the world have undergone a seismic shift, and Russia's war of aggression against Ukraine and other armed conflicts have focused minds and investments on defence and security.

European Environment Agency

2025

Tropical deforestation is associated with considerable heat-related mortality

Tropical deforestation induces local warming and is a potential human health risk, having been linked to elevated human heat stress and reduced safe outdoor working hours. Deforestation-induced local warming is associated with 28,000 heat-related deaths per year using a pan-tropical assessment.

C. L. Reddington, et al.

Nature Climate Change, 15, pp. 992-999 | 2025

EVENT & ANNOUNCEMENT

UN Climate Change Conference COP 30

The Conference of the Parties (COP) is the largest global United Nations event for discussions and negotiations on climate change. As the host country of this year's COP, Brazil is committed to strengthening multilateralism and the implementation of the Paris Agreement.

Belém, Brazil

10-21 November 2025

ENERGY SECURITY



Photo Credit: Adobe Firefly Generated Images

NEWS & COMMENTARIES

Southeast Asia can harness vast renewable resources to meet fast-growing electricity demand

Southeast Asia is particularly well placed to benefit from its renewable energy resources, the report finds. With an estimated 20 terawatts of untapped solar and wind potential – equivalent to around 55 times the region's current total power capacity.

International Energy Agency

22 September 2025

The role of international cooperation in advancing US nuclear energy

A comprehensive strategy should include international collaboration across supply chains, workforce development, financing, project development, and regulatory alignment.

Ashley Finan

National Interest | 30 September 2025

Why Asean's coal promises keep colliding with reality

While international finance remains vital, especially given the climate debt owed by developed nations, Asean must also develop innovative domestic financing strategies to support coal transition.

Pramesti, Lintang Ambar and Suwanto

Eco-Business | 10 October 2025

Vietnam, Singapore step up cooperation on energy, trade, technology

Vietnamese Minister of Industry and Trade Nguyễn Hồng Diên and Singaporean Minister-in-Charge of Energy, and Science and Technology in the Ministry of Trade and Industry Tan See Leng have agreed to continue close coordination in implementing key areas of cooperation, particularly in energy.

VNA

Asia News Network | 13 October 2025

SELECTED PUBLICATIONS

The paradox in Southeast Asia's decarbonization agenda

This article examines how Southeast Asia's pursuit of clean energy infrastructure—driven by development dreams and national climate commitments—is unfolding in areas rich in both ecological and cultural value.

Deborah Goh

Carnegie Endowment for International Peace | 2025

The role of renewable hydrogen in the power sector

This policy brief examines the outlook for hydrogen-based power generation in Southeast Asia – covering both co-firing and 100% hydrogen- or ammonia-firing – and assesses its potential role alongside the associated risks.

New Climate Institute

2025

EVENT & ANNOUNCEMENT

Renewables 2025 Launch Report

Renewables 2025 is the IEA's main annual report on the sector. It presents the latest forecasts and analysis based on recent policy and market developments, while also exploring key challenges and opportunities facing the sector.

Recorded Webinar

7 October 2025

FOOD SECURITY



Photo Credit: Adobe Firefly Generated Images

NEWS & COMMENTARIES

China prepares for long US soybean stand-off with huge Brazilian imports

Amid the tariff war, China is exploring food and feed alternative sourcing strategies to hedge against potential supply uncertainty. Monthly imports in August 2025 reflected more than 85% drawn from Brazil as an alternative source.

Mandy Zuo and Mia Nurmamat

South China Morning Post | 22 September 2025

Indonesia's ambitious free meals programme under fire after food poisoning outbreaks

Since the inception of Indonesia's free meals programme in January, more than 9,000 food poisoning cases have been reported nationwide. It is now facing scrutiny, along with logistical challenges and budget constraints which have threatened to derail the programme. President Prabowo has insisted that the programme will carry on and the shortcomings will be addressed.

Chandni Vatvani and Calvin Yang

Channel News Asia | 1 October 2025

China is refusing to buy US soybeans. What does it mean for American farmers?

China is using soybeans as leverage to counter US tariffs and restrictions, a product used for cooking oils, feeds, biofuels and industrial products. This is negatively impacting US farmers, and US jobs along the supply chain as well.

Skylar Woodhouse and Michael Hirtzer

Bloomberg News | 3 October 2025

Swedes stock up on food as fears of war deepen

Swedes are rushing to stockpile food, as the threat of war within Europe is starting to feel imminent. Authorities, including Sweden's Civil Contingencies Agency, are urging people to keep long-lasting provisions high in fat and protein to bolster national readiness.

AFP

The Straits Times | 4 October 2025

SELECTED PUBLICATIONS

The impact of modern agricultural technology promotion and adoption on agri-food system resilience

This study examines how promoting and adopting modern agricultural technologies affects the resilience of agri-food systems, using China's National Modern Agricultural Demonstration Zone (NMADZ) policy. Based on panel data from 2,312 counties over 2006–2023, the authors find that technology diffusion strengthens resilience by boosting innovation, increasing governmental focus on agriculture, stimulating agricultural finance, and improving urban–rural coordination.

Yuting Zhang, et al.

Frontiers in Nutrition | 2025

Resilient food security information systems in the age of disruption: An ecosystem approach

Food security information systems (FSIS) face unprecedented threats from abrupt shifts in political and funding priorities, misinformation, and manipulation. This policy comment examines FSIS' fragility from political, digital, and institutional disruptions and calls for reevaluating FSIS' purpose, principles, and framing amid disruption.

Nathan Morrow, et al.

Food Policy | 2025

EVENT & ANNOUNCEMENT

An Introduction to FAO's Environmental Externalities Accounting Tool (EX-ACT)

This webinar hosted by the Food and Agriculture Organisation provided a guided overview of the newly released online version of the EX-ACT tool. It went through the key features of the app, including how to assess greenhouse gas emissions and climate outcomes of agrifood interventions. The webinar included live demonstrations, interactive polls, and a discussion on practical applications, offering valuable insights for users interested in climate-smart planning.

Recorded Webinar

2 October 2025



Photo Credit: Adobe Firefly Generated Images

NEWS & COMMENTARIES

Scientists win Nobel Prize for discovering why immune system does not destroy the body

Scientists Sakaguchi, Brunkow, and Ramsdell won the 2025 Nobel Prize in Medicine for discovering regulatory T-cells that prevent the immune system from attacking the body, aiding treatments for autoimmune diseases and cancer.

James Gallagher

BBC News | 6 October 2025

Views from the couch: Tackling the hidden stigma around mental health in Singapore

Singapore must move beyond awareness to empowerment, including addressing self- and structural stigma through lived experiences, family support, policy reform, and accessible mental health resources in order to achieve societal acceptance.

Daniel Fung

The Straits Times | 10 October 2025

New NUS Medicine research facility looks to slow down ageing

National University of Singapore (NUS) Medicine launched a new clinical trial centre to advance healthy longevity research, focusing on diagnosing biological ageing and testing interventions such as personalised exercise, supplements, and lifestyle changes to extend healthspan.

Joyce Teo

The Straits Times | 10 October 2025

Global life expectancy is back to pre-pandemic levels, but deaths among teens and young adults are rising

Global life expectancy has rebounded to pre-pandemic levels, but rising deaths among teens and young adults due to suicide, overdoses, and injuries, signal an emerging crisis amid persistent health inequities.

Deidre McPhillips

CNN | 12 October 2025

SELECTED PUBLICATION

Income inequality modified adolescent substance use trajectories from 2018-19 to 2020-21: Findings from the COMPASS study

A Canadian study found adolescent substance use during the pandemic varied by income inequality, with higher cannabis use in unequal areas and differing trajectories for alcohol, e-cigarettes, and cigarettes, partially influenced by gender.

Stephen Hunter et al.

Social Science and Medicine, Vol. 386, 118635 | 2025

Arthropod-borne disease challenges from planetary warming, urbanisation, and migration

Climate change, urbanisation, and migration are expanding arbovirus transmission zones, straining surveillance and control systems globally. Urgent transdisciplinary collaboration, sustained funding, and investment in research, vaccines, and next-generation scientists are needed to address this growing planetary health threat.

Maggie L. Bartlett, et al.

BMC Virology Journal, Vol. 22, 325 | 2025

EVENT & ANNOUNCEMENT

The Economist Future of Health Asia, 5th Edition

The summit brings together leaders from healthcare, science, government, and patient advocacy to address the Asia-Pacific's complex healthcare challenges. The event will focus on topics of technological disruption, chronic diseases, ageing populations, and building sustainable, patient-centred systems amidst shifting economic and geopolitical climates.

Singapore

16 October 2025

BIOSECURITY



Photo Credit: Adobe Firefly Generated Images

NEWS & COMMENTARIES

The Trump administration misses key deadlines for imposing restrictions on gain-of-function research

Biosafety advocates worry the administration is backtracking on its promise to implement meaningful restrictions on the type of research that likely caused the COVID-19 pandemic.

Christian Britschgi

Reason | 18 September 2025

UK-US experts discuss next generation of biosecurity infrastructure

The meeting highlights the importance of unified response framework for monitoring biological threats and building sophisticated detection systems. It emphasised establishing shared regulatory frameworks across industry, academia, and government, noting that current stakeholders lack a unified vision for addressing natural and synthetic security threats.

Emily Head

Imperial News | 26 September 2025

Made to order bioweapon? AI-designed toxins slip through safety checks used by companies selling genes

Researchers expose flaws in safeguards intended to block rogue actors from making bioweapons. The researchers report that the software failed to catch many of their Artificial Intelligence (AI)-designed genes—one tool missed more than 75% of potential toxins, warning that even now, these tools are not foolproof.

Dan Charles

Science | 2 October 2025

Closing the Biosecurity Gap in Synthetic Biology

AI is rapidly transforming protein engineering—unlocking possibilities for life-saving therapies and industrial biotechnology. But alongside these advances lies a growing policy challenge: existing biosecurity safeguards for synthetic DNA ordering may be outpaced by generative protein design tools.

Global Biodefence

7 October 2025

SELECTED PUBLICATIONS

The threat of Monkeypox virus: a review of its potential use as a biological weapon

The intentional use of highly pathogenic microorganisms to spread mass-scale diseases that destabilise populations is defined as bioterrorism. This paper seeks to analyse the feasibility of using the human Monkeypox Virus (hMPXV) as a biological weapon by evaluating possible scenarios and how First and Second Responders could intervene to heal an emergency of this level on a global scale.

Gian Marco Ludovici, et al.

The European Physical Journal Plus, Vol. 140, No. 827 | 2025

Biorisk governance: Advancing biosecurity education for life scientists

The report outlines seven approaches to biosecurity-related educational initiatives drawing from a wide range of past and present activities. It also lays out a general overview of the relevance of this form of education in the work of both the Biological Weapons Convention (BWC) and the World Health Organization (WHO). A roadmap for the development of a systematic processes of integrating biosecurity into life science teaching is also provided.

Sarah Ruth Opatowski

United Nations Institute for Disarmament Research | 2025

EVENT & ANNOUNCEMENT

International Conference on Biosecurity, Chemical Safety and Global Cooperation

The conference brings together researchers and practitioners working in biosecurity, chemical safety, environmental protection, and related fields. With a focus on the intersection of biosecurity and chemistry, the conference will highlight areas such as bioremediation, environmental biotechnology, analytical chemistry for biosecurity, and green chemistry for sustainable solutions.

Kyiv, Ukraine

15-16 March 2026

MIGRATION



Photo Credit: Wikimedia Commons

NEWS & COMMENTARIES

In Poland, migrant workers from Latin America report abuse, exploitation

In 2024, the number of work permits issued to Colombians soared to nearly 38,000. In many of these cases, agencies do not apply for work permits on the behalf of migrants, leaving people undocumented and at the mercy of their employers. It is unclear how many Colombians are living without status in Poland.

Agnieszka Pikulicka-Wilczewska

Al Jazeera | 1 October 2025

Migrant workers to get more support, training to look after their mental health

Singapore will be rolling out two new initiatives to bolster mental health support for migrant workers. This includes the expansion of a peer support leader programme to train selected migrant workers in psychological first-aid skills.

David Sun

The Straits Times | 5 October 2025

Aotearoa New Zealand: Discriminatory migration system fails climate-affected Pacific People

Climate change and disasters have deepened social inequalities and economic hardship across the Pacific. However, New Zealand's migration pathways provide permanent residency to only a limited number of nationals from Kiribati, Tuvalu, Tonga and Fiji.

Amnesty International

8 October 2025

Around the world, migrants are being deported at alarming rates — how did this become normalised?

The recent expansion of detention and deportations reflects an accelerated criminalisation and punishment of migrants, tied to a rising authoritarianism across purportedly liberal Western countries. In the US, UK and Australia, criminalising language, is now echoed by politicians across the political spectrum.

The New Indian Express

9 October 2025

SELECTED PUBLICATIONS

Legal identity, gender and migration: Understanding barriers to access

Access to legal identity is essential for inclusion, rights and protection. Yet, millions of people, especially women and girls, face persistent barriers. This publication highlights how gaps in legislation, institutional obstacles, digital divides and entrenched social norms can exclude women and girls.

International Organization for Migration
2025

The state of social justice 2025

This publication positions social justice as a foundational pillar for peace, stability, cohesion and sustainable development, rooted in the universal recognition of human and labour rights as essential to dignity and fairness. The research draws on interviews from 17 countries, demonstrating that many workers globally still face exclusion and mistreatment.

International Labour Organization
2025

EVENT & ANNOUNCEMENT

Digital Work, Mobilities and Changing Cities in Asia

This workshop aims to offer a nuanced perspective on the proliferation of new digital work modalities, materialities and mobilities in Asia. There has been an emergence of new careers and mobility patterns that have ballooned and accelerated after the pandemic, including digital nomads; freelance service providers; gig platform workers, and digital entrepreneurs.

Hybrid

30-31 October 2025