



Nuclear Energy in ASEAN: Progress and Way-Forward

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ASEAN Centre for Energy (ACE)

About ASEAN Centre for Energy (ACE)



Established in January 1999, ASEAN Centre for Energy (ACE) is an **intergovernmental organization within ASEAN** structure that represents the 10 ASEAN Member States' interests in the energy sector.

What We Do



Think Tank

Assist AMS in **research and identifying practical and specific solutions** on policies, legal, and regulatory frameworks, technologies, and innovative solutions.



Energy Data and Knowledge Hub

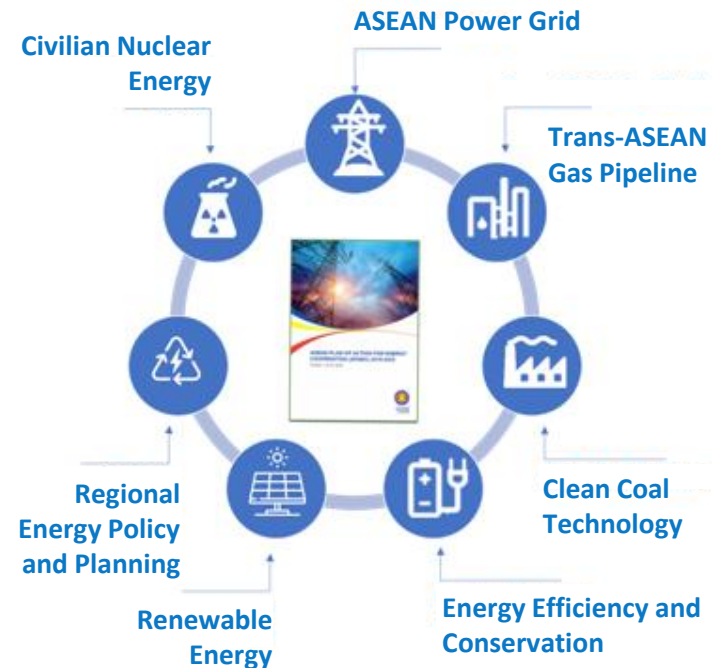
Provide a knowledge repository for ASEAN Member States (AMS) and services through data management, publication, and dissemination.



Catalyst

Unify and strengthen ASEAN energy cooperation by providing a platform for sharing, policy advisory, best practices, capacity building, and secretariat.

ASEAN Plan of Action for Energy Cooperation (APAEC)



What is APAEC?

A series of **guiding policy documents** serving as the platform for deeper cooperation both within ASEAN as well as with DPs and IOs.

What does APAEC do?

Promoting **multilateral cooperation and integration** in the energy sector.

What is APAEC trying to achieve?

To attain the goals of **ASEAN Economic Community (AEC)** by enhancing security, accessibility, affordability, and sustainability in the energy sector.

The APAEC Phase II: 2021-2025 consists of seven programme areas, reflecting the focus and interests of the region on energy cooperation



Programme Area 1:
ASEAN Power Grid (APG)



Programme Area 2:
Trans-ASEAN Gas Pipeline (TAGP)



Programme Area 3:
Clean Coal Technology (CCT)



Programme Area 4:
Energy Efficiency and Conservation (EE&C)



Programme Area 5:
Renewable Energy (RE)



Programme Area 6:
Regional Energy Policy and Planning (REPP)



Programme Area 7:
Civilian Nuclear Energy (CNE)

To **build human resource capabilities** on nuclear science and technology for power generation

OBS 1 – Improve nuclear energy literacy and public engagement

- Action Plan 1.1 Implement Information, Education, and Communication (IEC) campaigns
- Action Plan 1.2 Organise at least 2 activities on public engagement to raise awareness
- Action Plan 1.3 Develop at least 1 regional public communication strategy and plan
- Action Plan 1.4 Sustain and update the portal of nuclear communities and database

OBS 2 – Strengthen regional and international cooperation on nuclear energy for power generation

- Action Plan 2.1 Conduct a study on the potential regional nuclear energy facilitation and coordination
- Action Plan 2.2 Establish multi-year collaboration with at least 2 DPs and/or IOs

OBS 3 – Build human capabilities on nuclear legal and regulatory frameworks for power generation

- Action Plan 3.1 Organise at least 1 activity on nuclear legal and regulatory framework
- Action Plan 3.2 Organise at least 2 study-visits, attached to international nuclear regulatory body
- Action Plan 3.3 Conduct technical assistance or study on nuclear legal and regulatory framework

OBS 4 – Enhance human resource capabilities on nuclear science and technology for power generation

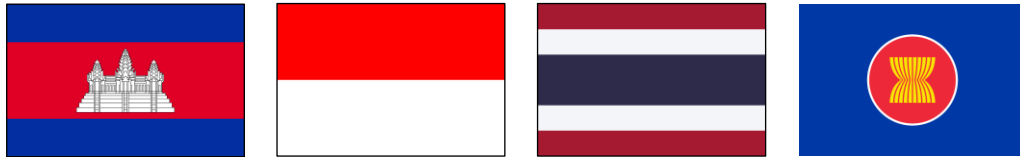
- Action Plan 4.1 Organise at least 1 activity on research and development, education, and training
- Action Plan 4.2 Organise at least 2 capacity building utilising the facilities of nuclear institution
- Action Plan 4.3 Collaborate with DPs/IOs for secondment on nuclear energy technology
- Action Plan 4.4 Conduct of at least 2 practical training activities

Post-2025 APAEC consultations and workshops

The event was held in Manila on 28 May 2024, hosted and chaired by the DOE of the Philippines



AMS and other institutions in attendance



Key topics of discussions:

1. **Key directions for the post-2025 APAEC** and progress updates of the achievements under the APAEC Phase II: 2021-2025
2. **Partners' presentations on their recommendations for the CNE Programme Area**, as part of the post-2025 cooperations planning and consultations.
3. **Consultation with NEC-SSN Focal Points** on the proposed priorities, strategies and action plans under the CNE Programme Area of the post-2025 APAEC, including interactive surveys and roundtable discussions.

Directives of the 42nd SOME to the NEC for post-2025 APAEC



The key directives was among the key output of the consultation and workshop sessions

- Suggested that NEC-SSN focus its activities on **capacity building and technology transfer** and requested NEC-SSN to **explore more initiatives on Small Modular Reactors (SMRs)**.
- Looked forward to further discussions **to define tangible targets and regional indicators** for the CNE programme area in the post-2025 APAEC.

* NEC-SSN : Nuclear Energy Cooperation Sub-Sector Network

Activities under the CNE Programme Area

Workshops, studies, and researches are the key activities under the CNE Programme Area



Workshop on Nuclear Technology Trend and Policy



Key works on studies on the ASEAN nuclear energy

ASEAN Energy Booklet Volume 2
Nuclear Energy Development in ASEAN



Other works:

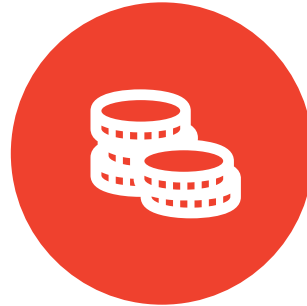
- Study on Nuclear Safety Security Safeguard (3S) in ASEAN.
- Booklet on the NPP roadmap and legal and regulatory framework.
- Policy briefs and articles on nuclear.

Considering the options of going nuclear

Factors to regain interest of nuclear energy from the ASEAN Countries



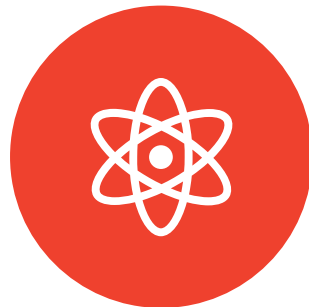
Energy security and decarbonisation targets



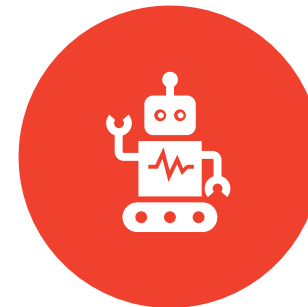
Potentials to advance economic growth



The safety record of nuclear for power generations



Exploring the use of nuclear beyond electricity use



Advanced technologies for better safety and returns

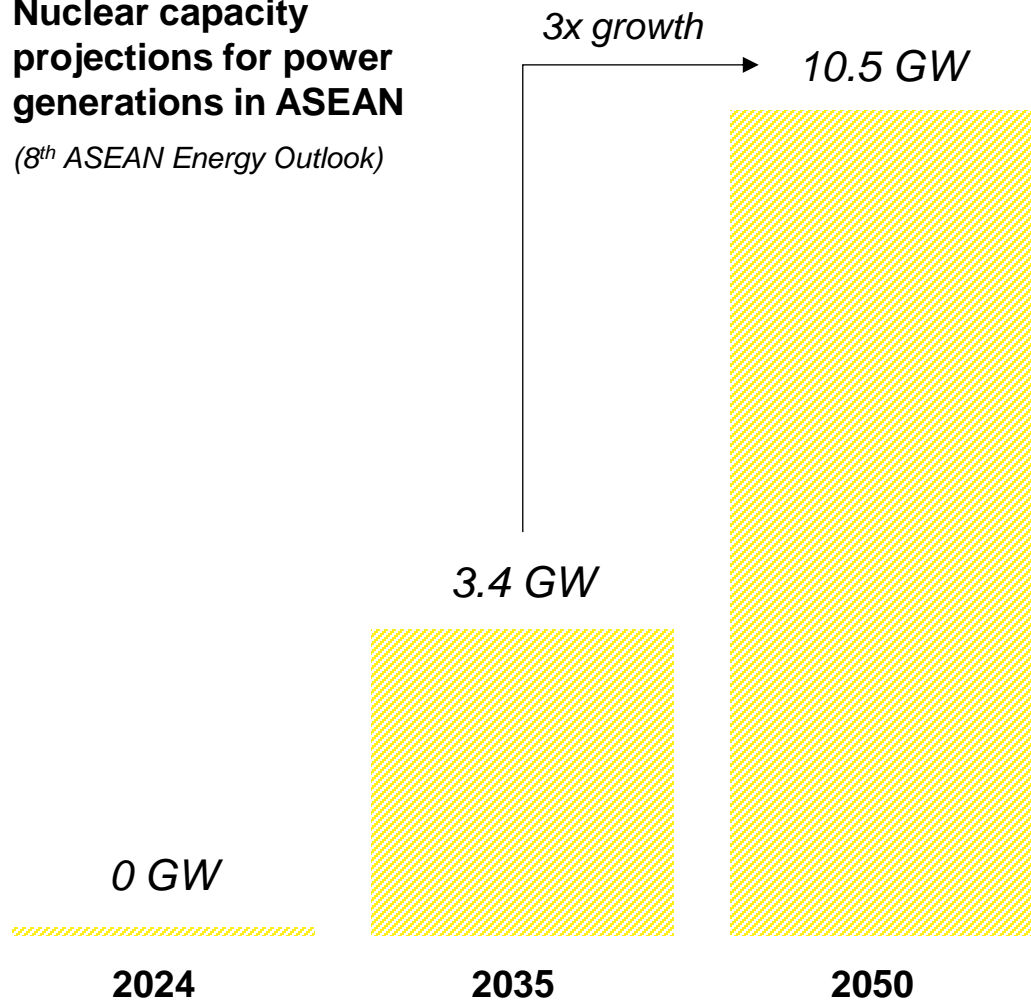
The landscape of nuclear in ASEAN



Nuclear energy is projected to grow significantly as part of national-level decarbonisation agenda

Nuclear capacity projections for power generations in ASEAN

(8th ASEAN Energy Outlook)



Selected national-level trends in ASEAN



Indonesia

- **Setting up NEPIO** to prepare the NPP project implementation, in line with NZE by 2060.
- **Included nuclear energy as priority** in the long-term national planning of 2025-2045, first operational in 2035



Philippines

- **Established NEP-IAC** as national coordinator for nuclear infrastructure preparation.
- **Planned nuclear capacity** of 1.2 GW (2032) and 4.8 GW (2050) for decarbonisation.



Vietnam

- **Regain interest in nuclear** by considering nuclear SMR in the next PDP.
- **Established relevant legal and regulation** to support NPP deployment in the country.

Relevant ASEAN documents on nuclear energy

Existing documents on nuclear in ASEAN shapes the discussions around CNE amongst the AMS



Treaty on Southeast Asia Nuclear Weapon-free Zone

- ASEAN Member States signed the SEANWFZ Treaty as a **commitment to preserve the region free of nuclear and other weapons of mass destruction** on 15 December 1995.
- ASEAN reaffirms the importance of the **Treaty on the Non-Proliferation of Nuclear Weapons (NPT)** in preventing the proliferation of nuclear weapons and in contributing towards international peace and security.
- The treaty marks **ASEAN as one among the five nuclear weapon-free zone (NWFZ)** together with Latin America and the Caribbean, South Pacific, Africa, and Central Asia.



Emergency Preparedness and Response Protocol

- The Protocol was proposed to **strengthen the coordination of AMS** for preparing and responding to nuclear or radiological emergencies, which occur within ASEAN or outside the region.
- The Protocol **complements and enhances national-level emergency arrangements** as response to nuclear or radiological emergencies is a national responsibility.
- The Protocol **suggests certain aspects that may be considered by AMS** to better fulfil their obligations under the relevant and existing legal instruments.

ASEAN and DP/IO Cooperation in nuclear Energy



Regional

ASEAN – IAEA Practical Agreement in Nuclear Energy (Economy, Technology and Policy)

ASEAN – JAEA/ISCN Technical Assistance in Nuclear Security and Non-Proliferation

ASEAN – Global Affairs Canada in Nuclear Energy Programme and Radiological Security

ASEAN – GCNEP India in Nuclear Regulatory Framework

ASEAN – WNA in Nuclear Policy and Technology

FNCA (Forum for Nuclear Cooperation in Asia)

RCA (Regional Cooperative Agreement)

Bilateral

Indonesia – US and ROK in SMR Feasibility

Philippines – ROK in feasibility of BATAAN re-activation

Philippines – Japan technical site visit

Thailand – Denmark in SMR Feasibility

Singapore and Philippines sign 123 Agreement with USA

International Cooperation in the Human Resource Development for Nuclear Sector



National Dimension

Long-Term Strategic Planning:

establish a comprehensive nuclear energy roadmap that outlines long-term goals and policies for workforce development.

Educational Infrastructure:

adequately prepare students for careers in nuclear technology.

initiate efforts on practical skills rather than only focus more on theoretical knowledge

Multi-Stakeholder Engagement:

Foster collaboration among stakeholders to create a robust training ecosystem.

Sustained Commitment:

ongoing commitment from National stakeholders in human resources over the long term, ensuring that workforce needs are anticipated and met as the nuclear sector evolves

International Cooperation

International Exposure:

Study Abroad Programs;
Participation in Global Conferences;
Investment in R&D

Best Practices Adoption

ASEAN countries can adopt proven methodologies and guidelines from established nuclear nations

Training Opportunities:

advanced training and exposure to operational nuclear facilities. This helps in developing hands-on skills and broadening perspectives



AMS views nuclear energy as a viable options and is working towards cooperations to support it

- **Nuclear are attractive for AMS**, mostly for non-power application, R&D, medical and industrial application.
- **Some AMS view nuclear energy as viable and remain living option for future energy mix.** Updates on information exchange on supporting policy, technology trends and required infrastructure are needed to keep the region being informed to the latest trend of the technology.
- **AMS signed treaties related to safeguard to ensure the peaceful use of nuclear energy.** Several regional initiative and cooperation are also existed such as **ASEANTOM**, Nuclear Southeast Asia **Nuclear Weapon-Free Zone**, and Protocol on regional **Emergency Preparedness**. The initiatives are positive signs that the region are deploying nuclear for peaceful purpose and to mark the effort that nuclear Safety, Security and Safeguard are well-implemented in the region
- Needs of regional and international cooperation in human workforce to support future nuclear sector



ASEAN Centre for Energy
One Community for Sustainable Energy

To know more about the latest ACE Publications,
those are available for download from:

aseanenergy.org/category/publications/



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Thank You