



*September 2026*

# TRANSBOUNDARY NUCLEAR LIABILITY IN ASEAN: BRIDGING THE LIABILITY GAP

ASEAN stands at a critical juncture in its energy policy. Facing surging electricity demand, population growth among its approximately 700 million inhabitants, and ambitious decarbonisation commitments, multiple member states have announced nuclear energy programmes.

Modern nuclear reactor designs incorporate safety features intended to reduce the likelihood and consequences of severe accidents. Some designs, including certain Gen III+ reactors and certain small modular reactors, use passive systems to reduce reliance on external power or operator intervention. These features require design- and site-specific assessment and do not eliminate accident risk; estimated accident frequencies are not observed accident rates.

A clear and comprehensive compensation framework to address nuclear accidents is essential for sound risk management and to support public confidence in nuclear development as a pathway to a cleaner energy future.

Against that backdrop, the absence of a transboundary nuclear liability framework within ASEAN is a significant regulatory gap. At present, only the Philippines is party to any international nuclear liability convention.

There is therefore no uniform treaty-based route to compensation across ASEAN; cross-border claims may nevertheless be covered, depending on the applicable convention and domestic law.

This article examines the existing international nuclear liability architecture, maps ASEAN's current regulatory landscape and proposes a framework for regional engagement.

## IMPORTANCE OF A ROBUST TRANSBOUNDARY NUCLEAR LIABILITY REGIME

A robust transboundary nuclear liability regime is essential to ensure that victims of a nuclear incident in one ASEAN state can obtain prompt and equitable compensation regardless of which side of a border they reside on. The events of the Chernobyl disaster, and images of nuclear fallout that crossed parts of Europe, are forever etched in the memories of many, including ASEAN citizens.



Beyond victim protection, a robust transboundary nuclear liability regime is a prerequisite for the commercial viability, bankability, and public acceptance of ASEAN's nuclear ambitions. International suppliers, lenders, and insurers consistently identify legal certainty on nuclear liability as a precondition for participation in nuclear projects. Equally, public acceptance across the region — already fragile after Fukushima — requires demonstrating to populations in neighbouring non-nuclear states that they will not bear transboundary risk without recourse.

## THE CONCEPT OF NUCLEAR LIABILITY

It is important to distinguish nuclear liability from the related but distinct fields of nuclear safety and security. Nuclear safety concerns the prevention of accidents through reactor design, operational standards, and regulatory oversight. Nuclear security addresses the protection of nuclear materials and facilities against malicious acts such as theft and sabotage. Both are preventive and regulatory.

Nuclear liability, by contrast, operates on the premise that despite preventive measures, residual risk cannot be eliminated, and addresses what happens *after* an incident: who compensates victims, how much compensation is available, and in which forum claims are heard. A state may have world-class safety standards, but if a low-probability, high-consequence accident causes transboundary damage, the absence of a transboundary liability framework may leave foreign victims without legal recourse.

## THE PARIS CONVENTION, VIENNA CONVENTION AND THE JOINT PROTOCOL

Because nuclear accidents can be low probability but catastrophic, with long-lasting environmental and health impacts and complex causation issues, ordinary tort law is often inadequate. Low estimated probabilities do not justify disregarding extreme external hazards, common-cause failures or events affecting several units. To deal with this, two parallel international conventions emerged:

1. the Convention on Third Party Liability in the Field of Nuclear Energy (the “**Paris Convention**”), adopted in 1960 under the auspices of the Organisation for European Economic Co-operation (**OEEC**), the OECD’s predecessor, for OECD members; and
2. the Vienna Convention on Civil Liability for Nuclear Damage (“**Vienna Convention**”), adopted in 1963 under the auspices of the International Atomic Energy Agency (“**IAEA**”) (the UN “nuclear watchdog”), which aimed to create a truly international instrument open to all states given that the Paris Convention was institutionally limited to OECD membership.

The Paris Convention entered into force in 1968 while the Vienna Convention entered into force in 1977.

Despite their separate institutional origins, both conventions are built upon the same core principles:

1. Strict liability: the operator is liable irrespective of fault.
2. Exclusive operator liability and legal channelling: Subject to limited exceptions and rights of recourse, they channel third-party liability for nuclear damage covered by the relevant convention to the operator, generally shielding suppliers and contractors from direct claims and simplifying insurance arrangements.
3. Mandatory financial security: operators must maintain insurance or other financial guarantees to fund covered claims within the applicable limits.
4. Exclusive jurisdiction: the courts of one state — typically the installation state — have sole competence over claims. This prevents forum shopping and conflicting judgments.
5. Non-discrimination: compensation must be available without distinction as to nationality, domicile, or residence of the victim.



6. Limitation in amount and time: liability is capped at defined ceilings (unless contracting parties provide for unlimited liability in which case the State steps in above insured amounts), and claims must be brought within prescribed periods.

These principles aim to collectively balance victim protection (whether domestic or foreign), legal certainty for operators, and the facilitation of nuclear energy development.

To “bridge” the two parallel conventions, the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (“**Joint Protocol**”) was adopted in 1988. First, it establishes that only one convention applies to any given incident, determined by the location of the liable operator’s installation. Second, it extends the benefits of whichever convention applies to victims in the territory of any Joint Protocol party, regardless of which convention that party has ratified. Thus, a victim in a Paris Convention state can claim under the Vienna Convention if the incident occurs in a Vienna Convention state that is also a Joint Protocol party, and vice versa.

The Paris Convention and Vienna Convention have been amended over the years, including through the 1997 Protocol to the Vienna Convention (“**1997 Vienna Protocol**”) and the 2004 Protocol to the Paris Convention (“**2004 Paris Protocol**”), to increase the minimum operator liability from the original floor of just US\$5 million to not less than 300 million Special Drawing Rights (“**SDRs**”) (approximately US\$400 million at September 2026 rates), increase the minimum amount of public funds available as compensation, and broaden the definition of “nuclear damage” beyond personal injury and property damage.

Despite these advances, the practical impact of both protocols remains limited by uptake. The 1997 Vienna Protocol has attracted relatively few parties (17 parties only). The Philippines – the sole ASEAN Vienna Convention state – has signed but not ratified it. The 2004 Paris Protocol, though ratified by essentially all Paris Convention parties and in force since 2022, is constrained by the narrow membership of the Paris Convention itself, which is confined to Western and Central Europe.

Further, notable absences from the Vienna Convention include the United States, China, Japan and India. The United States, in particular, regarded the Vienna Convention as incompatible with its domestic Price-Anderson system, which uses “economic channelling” (under which suppliers may in principle be liable, but operators bear the ultimate financial burden through pooled insurance and industry funds) rather than the “legal channelling” required by the Vienna Convention, where all liability is shifted exclusively to the operator.

## THE CONVENTION ON SUPPLEMENTARY COMPENSATION FOR NUCLEAR DAMAGE

Recognising that the Joint Protocol could not achieve universal coverage, the IAEA negotiated the Convention on Supplementary Compensation for Nuclear Damage (“**CSC**”), adopted in 1997 and entering into force in 2015. The CSC represents the most significant attempt at creating a genuinely global compensation mechanism. Uniquely, the CSC is open to Paris Convention parties, Vienna Convention parties, and, critically, states that are party to neither convention – provided they have enacted domestic legislation that meets specified minimum standards consistent with the core nuclear liability principles.

The CSC establishes two tiers of compensation:

1. similar to the Vienna and Paris regimes, a first tier requiring each contracting state to ensure that its national law provides for compensation of at least 300 million SDRs (approximately US\$400 million) from the operator, through insurance, state funds or other financial security; and
2. a second tier creating an international supplementary fund constituted by mandatory contributions from all contracting parties, calculated according to a formula in the CSC that weights each state’s contribution principally on its installed nuclear capacity.



The CSC also mandates that at least 50 percent of the international supplementary fund must be available for claims of transboundary damage. Where a contracting state ensures 600 million SDRs or more at the national level, the entire international fund is available on a non-differentiated basis for both domestic and transboundary claims.

Additionally, the CSC explicitly permits regional arrangements, providing a legal basis for ASEAN to develop supplementary mechanisms consistent with the CSC framework. This provision was specifically designed to accommodate regional cooperation in nuclear liability without requiring departure from the global architecture. An amendment to the CSC adopted in January 2026 removes the requirement for states with no nuclear reactors to contribute to the supplementary fund. States such as Singapore, the Philippines, or Thailand could accede to the CSC without capacity-based financial obligations while accessing the international supplementary fund's protections. This development fundamentally alters the cost-benefit calculus of CSC accession for the region.

## NO SINGLE UNIFIED CONVENTION

As demonstrated above, the international transboundary nuclear liability regime does not consist of a single unified convention but multiple overlapping instruments. That said, the CSC is the single existing international nuclear liability convention covering the greatest number of nuclear power reactors in operation worldwide. Its reach owes much to the participation of the United States<sup>1</sup>, which is party to the CSC but to no other nuclear liability convention. Following the United Kingdom's accession on 1 January 2026 — the first Paris Convention party to join the CSC — the convention now covers approximately 190 operational reactors, or about 45 per cent of the global fleet.

Within ASEAN's major nuclear neighbours, China and South Korea remain outside every international nuclear liability convention, while India and Japan are party to the CSC alone, having

joined neither the Paris nor the Vienna Convention. Greater participation in the CSC by APAC states would, in the authors' view, go some way towards addressing citizens' concerns around nuclear accidents and, in turn, encouraging greater investment in the sector.

## NATIONAL NUCLEAR LIABILITY LAWS

Although the nuclear liability conventions described above have struggled to gain universal adherence, their principles are reflected in national laws in most states which operate nuclear power reactors. However, liability caps, insurance amounts, and state backstops can vary.

Japan's handling of compensation under national law after the 2011 Fukushima accident, before it joined the CSC in 2015, illustrates the role of national compensation regimes and state financial support.

## BENEFITS OF TREATIES

Treaty relations are, however, beneficial to operators, the nuclear supply chain and investors as there is greater certainty of where claims will be brought against them. Where there are no treaty relations, there is no agreed mechanism to channel claims, meaning that claims could be made by victims in jurisdictions beyond where an incident takes place, exposing the supply chain and investors to claims in multiple jurisdictions. Such legal uncertainty increases costs and may delay the resolution of claims, as well as give rise to additional disputes over which country's courts should hear the case. All of these impact the potential viability of nuclear projects. For example, five Fukushima-related lawsuits were brought in US federal courts in California, the District of Columbia and Massachusetts. Because there were no treaty relations in respect of nuclear liability between the United States of America and Japan at the time of the accident, US courts were under no obligation to defer to the jurisdiction of Japanese courts and were not bound by rules regarding the channelling of liability exclusively to the operator.

---

<sup>1</sup> The United States benefits from a grandfather clause that allows it to join the Convention without being required to change certain aspects of the Price-

Anderson system (which embodies "economic channelling") that would otherwise be inconsistent with its requirements.



For newcomer countries, acceding to an international nuclear liability convention would attract greater participation from suppliers, investors, and insurers by providing them with clear and predictable rules on liability exposure — a precondition that most nuclear industry participants require before committing to a project.

From a foreign victim's perspective, while national nuclear liability laws may sufficiently protect foreign victims, such laws cannot themselves provide the same level of certainty that treaty relations can provide. Foreign judgments may also face enforceability hurdles without treaty relations.

## ASEAN'S NUCLEAR LIABILITY LANDSCAPE

No ASEAN member state currently operates a power-generating nuclear power plant. Nevertheless, several states have established domestic nuclear liability regimes incorporating internationally accepted principles, creating a foundation upon which regional harmonisation could be built. These states are the Philippines, Vietnam, Indonesia and Malaysia – please see table below. Out of these states, only the Philippines and Vietnam's legislation address transboundary nuclear incidents.

|                                                    | Philippines                                                                                                                                                      | Vietnam                                                                                                                                                                | Malaysia                                                                                                                                                                | Indonesia                                                                                |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Key Legislation on Liability</b>                | Republic Act No. 5207 ( <b>RA 5207</b> ), as amended by Presidential Decree No. 1484                                                                             | Law on Atomic Energy No. 94/2025/QH15                                                                                                                                  | Atomic Energy Licensing Act 1984, as amended by the Atomic Energy Licensing (Amendment) Act 2025                                                                        | Law No. 10 of 1997 on Nuclear Energy                                                     |
| <b>International Nuclear Liability Conventions</b> | <ol style="list-style-type: none"><li>1. Party to the Vienna Convention, but not the 1997 Vienna Protocol.</li><li>2. Signed but not ratified the CSC.</li></ol> | Not a party to any international nuclear liability convention.                                                                                                         | Not a party to any international nuclear liability convention.                                                                                                          | Signed but not ratified the Vienna Convention and the CSC.                               |
| <b>Liability Regime</b>                            | RA 5207, aligned with the Vienna Convention, remains the governing instrument for liability. A proposed Philippine Nuclear Liability Act to modernise these      | Operators must obtain insurance or financial guarantees; any state support for excess liability. Total compensation is subject to the applicable statutory conditions. | The Director-General may adjust liability limit, subject to a floor of RM12 million (approximately US\$2.7 million). This floor is well below international benchmarks. | Strict operator liability capped at approximately US\$93 million — a relatively low cap. |



|                                           |                                                                                   |                                                                                                          |                                   |                                   |
|-------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
|                                           | provisions in line with the 1997 Vienna Protocol remains pending before Congress. | Compensation limits depend on applicable domestic law and any international treaties binding on Vietnam. |                                   |                                   |
| <b>Transboundary Liability Provisions</b> | Yes.                                                                              | Yes.                                                                                                     | Not addressed in the legislation. | Not addressed in the legislation. |

## A HARMONISED ASEAN APPROACH

In the near term, ASEAN member states with nuclear power programmes should align their domestic legislation to CSC standards and accede to the CSC.

Operationalising a nuclear liability regime, however, cannot be a purely national exercise. Because the effects of a nuclear accident can be cross-border, member states must act in concert on the practical dimensions of an incident, such as transboundary claims-handling processes and procedures, and the mutual recognition of compensation awards. There are also a range of matters that the convention leaves to national laws, such as the extent of compensation for non-core heads of damage and whether a particular loss is causally attributable to the nuclear incident. ASEAN should agree on a harmonised approach to these matters.

Experience from Fukushima, for which some estimates of total accident-related costs – including decommissioning and decontamination, not just victim compensation – have exceeded US\$200 billion, suggests ASEAN should consider whether it would be possible to generate compensation amounts that are significantly higher than those envisaged under the existing instruments. At the same time, ASEAN could also pursue a regional nuclear insurance pool that aggregates the modest capacity of member-state insurers into a single facility. ASEAN could look for guidance in other sectors where governments act as reinsurers of last resort. It could also consider creating an additional fund comprising contributions from supply chain participants,

drawing by analogy on the reactor-operator-funded supplementary tier of the US Price-Anderson arrangements. It could also draw inspiration from the oil receiver-funded mechanisms used for marine oil pollution, another low-probability, high-consequence catastrophic risk.

ASEAN's nuclear liability regime should also reflect the technology the region is most likely to deploy. Because much of the region's anticipated build-out involves small modular reactors ("SMRs"), it should anticipate SMR-specific liability questions rather than assuming a conventional large-reactor model. These are questions that the global nuclear community is still considering, and on which the existing conventions offer incomplete answers. ASEAN should engage actively in these international discussions and ensure its regional framework addresses SMR-specific liability squarely. Other innovations include nuclear-powered ships and transportable nuclear power plants.

The region possesses relevant institutional infrastructure: the ASEAN Network of Regulatory Bodies on Atomic Energy (the "**ASEANTOM**"), which links the national nuclear regulators of the member states, and the Nuclear Energy Cooperation Sub-Sector Network (the "**NEC-SSN**"). This work is, moreover, already embedded in the region's strategic planning – ASEAN's energy blueprint, the ASEAN Plan of Action for Energy Cooperation 2026-2030, integrates nuclear energy into long-term regional planning and includes among its action items a commitment to "establish policies and capacity development for responsible nuclear waste



management and nuclear liability” and “explore economic feasibilities, financing and insurance mechanisms and other opportunities for nuclear energy programmes”.

Regional cooperation has proved vital elsewhere in creating the infrastructure necessary to advance commercial nuclear power. The European Atomic Energy Community (“EURATOM”) has provided economic, legal, and regulatory support to its European Union member states, and the Gulf Cooperation Council has coordinated feasibility and implementation studies for its members' nuclear programmes. It would be valuable for ASEAN states to survey these initiatives.

Building on this foundation, ASEAN should link any liability framework to its existing emergency-response architecture. The region already has a Protocol for Nuclear/Radiological Emergency Response, but that instrument addresses operational coordination only, not compensation. Connecting the two would create a coherent system covering both the technical response to an incident and the rights of those it harms.

Encouragingly, momentum is already building. The IAEA has been actively promoting accession to the CSC as a pathway towards a global nuclear liability regime, and ASEAN states appear increasingly receptive. In December 2025, the IAEA co-organised a workshop in Bangkok — mirroring one held in Europe that October — which brought together representatives from six member states (Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Vietnam) to deepen their understanding of the CSC.

## CHALLENGES TO A HARMONISED ASEAN APPROACH

These foundations notwithstanding, the path to a regional liability framework faces real obstacles. ASEAN operates on a consensus-based model grounded in non-interference and respect for sovereignty, which makes binding, cost-bearing commitments harder to achieve than the prohibitory commitment embodied in the Treaty on the Southeast Asia Nuclear Weapon-Free Zone, known as the Bangkok Treaty, under which all ASEAN member states have agreed to ban nuclear weapons throughout the region. A nuclear liability

regime asks states not merely to refrain from conduct but to accept affirmative financial obligations and cross-border exposure. Further, many states hold the view that national nuclear programmes are matters of national sovereignty.

Member states are also at markedly different stages of nuclear development — Vietnam and the Philippines have advanced programmes, while others remain in early exploration — so their appetite for assuming liability commitments varies widely. Disparities in regulatory capacity, legal infrastructure, trained personnel and geopolitical alliances further complicate harmonisation, particularly for less-developed member states still building the “bare minimum” of nuclear governance.

## CONCLUSION

Features intended to improve safety in modern reactor designs do not eliminate accident risk or the need for comprehensive compensation arrangements, even where assessed accident probabilities are low. Nevertheless, ASEAN currently has no coherent framework to address cross-border nuclear damage. Existing domestic laws are uneven, compensation limits are often far below international benchmarks, and only one member state presently participates in any international liability convention. At the same time, the international regime itself is fragmented, with multiple overlapping instruments and major nuclear states outside the core conventions.

ASEAN needs to bridge this liability gap. While political, institutional, and capacity constraints are real, a credible transboundary nuclear liability regime is not optional. It is a precondition for protecting victims in the rare event of an accident, enabling investment, and securing public confidence in nuclear power as part of ASEAN’s energy transition.



## CONTACT US



---

### NICK DINGEMANS

#### *Partner*

+65 8180 4076  
nick.dingemans  
@stephensonharwood.com



---

### JOHN ZADKOVICH

#### *Partner*

+65 9151 9367  
john.zadkovich  
@stephensonharwood.com



---

### LENA OW

#### *Associate*

+65 9171 2759  
lena.ow  
@stephensonharwood.com