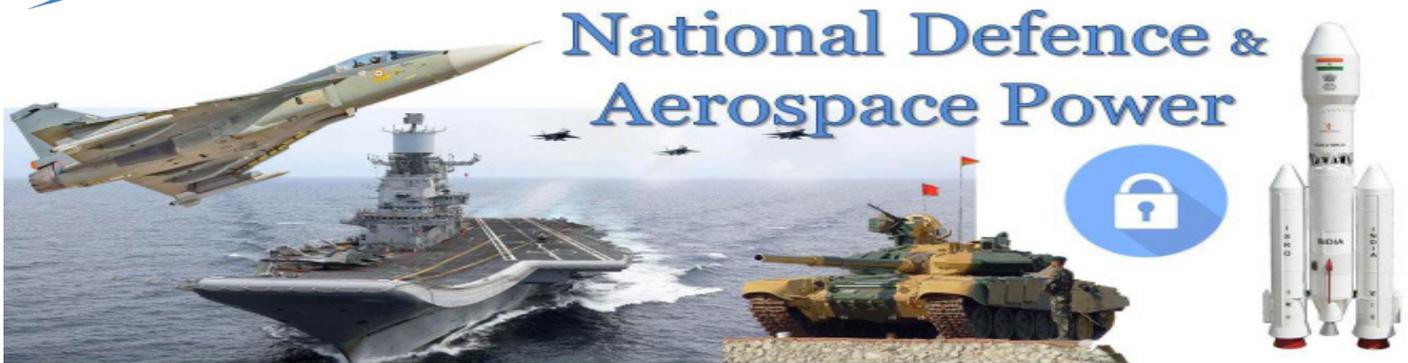




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INDIA'S NUCLEAR RECALIBRATION: UNPACKING THE SHANTI ACT

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India's civilian nuclear programme has made limited progress despite having significant potential and decades of technical expertise. Missed targets, delays, liability concerns, and the absence of a comprehensive ecosystem that actively pushed for power expansion have constrained the sector. As a result, nuclear power remains a marginal contributor to India's energy mix at just around 3 per cent of total power generation, falling far short of its full potential as a reliable, low-carbon pillar of energy security. The new Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act offers a promising break from this inertia, giving India a second chance to expand its nuclear energy programme. Cleared during the Parliament's 2025 Winter Session, this legislation offers India another opportunity to extensively scale up its nuclear power capacity and thereby become a key player in the global nuclear renaissance.

Key Provisions

The SHANTI Act is a watershed moment for the nuclear energy sector in India. Broadly put, it is a comprehensive umbrella legislation for nuclear power that replaces the existing Atomic Energy Act of 1962 as well as the more contentious Civil Liability for Nuclear Damage Act (CLNDA) of 2010. This is intended to recalibrate the sector towards a more liberalised model and realign it with global liability norms.

Under the Atomic Energy Act of 1962 (and its subsequent amendments in 1986,

1987, and 2015), the nuclear sector was opened in a limited way beyond the Central Government to allow government companies and joint ventures to participate in nuclear power generation.¹ This meant that the Central Government had a monopoly over the industry, with the right to produce, develop, use, and dispose of nuclear energy and associated aspects (even state governments were not permitted to participate). Private control of nuclear power generation was prohibited.

In contrast, under SHANTI, a wider number of participants will now be able to build, own, operate and/or decommission nuclear power plants or reactors through the introduction of a transparent licensing framework supported by an independent regulatory authority. Section 3 of the Act outlines this framework. Any government department, institution or company, joint ventures, or persons permitted by the Central Government can apply for licenses.² However, it is worth noting an important exception: private companies incorporated outside India are not permitted to operate under the SHANTI Act. Section 2(9) clearly defines a “company” to not include one that is incorporated outside India.³ Amit Kapur, Arun Kumar, and Sugandha Somi Gopal, partners at the law firm J Sagar Associates, say that foreign investors would most likely have to route their investments through a company incorporated under Indian laws.⁴ This pragmatic approach is to ensure domestic capability is reinvigorated within a state-led system.

Most notably, the Act accords statutory status to the Atomic Energy Regulatory Board (AERB) by bringing it under the parent legislation and strengthening its regulatory oversight to ensure radiation safety (Section 17).⁵ There is also a clear delineation of roles to ensure that radiation safety remains a priority throughout the planned expansion. While the government retains responsibility for licensing, the AERB – with its enhanced powers and now-statutory status – is tasked with safety authorisation. Sections 3(2) and 3(3) spell out this dual-authority framework and are explained in some detail in the following paragraph.

Section 3(2) casts a wide regulatory net over India’s nuclear sector, making a government license mandatory for a range of nuclear activities. This includes the construction and operation of reactors, the handling of nuclear fuel, transportation, and the import and export of nuclear materials, as well as the use of related equipment, technology,

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and software. Even fuel fabrication and limited enrichment are only permitted within the boundaries set by the government.⁶ Section 3(3) requires an additional safety authorisation by the AERB for any facility or activity that involves potential radiation exposure to individuals.⁷ While highlighting the strict and frequent inspections regime and the AERB's "sharper teeth," Union Minister of State Dr Jitendra Singh states plainly that "Safety is not a slogan; it is a discipline with numbers and routines."⁸

Crucially, Section 3 ensures that sensitive activities related to the fuel cycle, including uranium enrichment, spent fuel management (reprocessing and waste management) and production of heavy water, strictly remain under the remit of the Central Government or its wholly owned entities. However, the Act permits licensed private entities to undertake limited, non-strategic fuel-cycle activities, including conversion, refining, and low-level enrichment of uranium up to a certain threshold, within a tightly regulated framework. This regulatory "Goldilocks zone" ensures that an ambitious expansion of nuclear energy, involving a wider number of participants, is carried out responsibly and cautiously.

At the same time, under Section 9(1), anybody is welcome to carry out R&D and innovation on the peaceful applications of nuclear technologies without a license (with safety and national security caveats), given that proper safety and security is ensured where required.⁹ Relaxed licensing requirements mean that universities, start-ups, industry and even individual researchers can contribute to non-strategic R&D. A licensing exemption for research and innovation can spur domestic capabilities and interest and likely attract greater investment in these areas.

The Act also goes beyond nuclear energy alone. Amit Kapur, Arun Kumar, and Sugandha Somi Gopal state, "Interestingly, the ambit of SHANTI Act extends beyond power generation to include the application of nuclear technology in healthcare, food, water and agriculture, with the objective of providing a clearer and more predictable regulatory environment."¹⁰

The Act also clarifies some misconceptions regarding uranium mining privatisation. In August 2025, reports surfaced that the government was drawing up a regulatory framework that would allow private Indian firms to mine, import, and process uranium.¹¹ However, under SHANTI, although private firms may carry out specific exploration activities, uranium mining beyond specified thresholds will remain under government control.¹² Section 5 retains sovereign ownership of any uranium and thorium that is mined, isolated or extracted.¹³

Civil Nuclear Liability

Perhaps the most consequential aspect of the Act relates to the changes in civil nuclear liability. Its provisions were among the most debated in Parliament. Who is responsible in the event of an accident? How quickly are victims compensated? And by how much? The 2010 CLNDA went beyond international standards such as those set by the Convention on Supplementary Compensation (CSC), which placed liability burdens on the nuclear power plant operator alone. The CLNDA, however, also held the suppliers liable – meaning that operators had the right to seek legal recourse against its suppliers in case of a nuclear accident.

Despite its well-intentioned origins, which drew on tough lessons learnt from the 1984 Bhopal gas tragedy,¹⁴ the law remained a key obstacle for foreign suppliers seeking to engage in nuclear commerce with India due to its open-ended risk exposure. Neither the CLNDA Rules, nor the subsequent FAQs provided by the government could allay the liability concerns of US and French suppliers.¹⁵

The SHANTI Act addresses these long-standing ambiguities. Operators will be held liable for damage in the event of a nuclear accident (Section 11).¹⁶ Under Section 16, the operator's right to recourse is strictly restricted to two circumstances: (a) in cases where it is expressly provided for in a written contract or (b) in case a nuclear incident has occurred intentionally to cause damage.¹⁷ Now, India's liability framework is aligned with global liability norms where predictability is ensured. It is expected that India's nuclear liability reset with could also pave the way for the long-overdue fruition of the India-US nuclear deal and revive projects in Kovvada and Jaitapur.

Not only does SHANTI remove supplier liability (except in the specific circumstances outlined earlier), but it also replaces the earlier flat operator liability cap of INR 1,500 crore. Instead, the Second Schedule of the Act introduces a graded liability framework linked to the scale of the nuclear installation. The liability caps range from INR 100 crore for smaller reactors, certain fuel-cycle facilities, and transportation activities, up to INR 3,000 crore for large reactors exceeding 3,600 MWe.¹⁸ Section 13 specifies that SHANTI retains the overall incident liability ceiling of 300 million Special Drawing Rights (SDRs), which is an international reserve asset defined by the International Monetary Fund and used in global nuclear liability

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conventions (in Indian currency, currently the value of 1 SDR is about INR 130).¹⁹

A restructuring of the liability framework in this manner aims to encourage investment by smaller players without compromising victim compensation. It is a pragmatic approach to differentiate by capacity since not all facilities may necessarily pose the same level of risk. However, it will be necessary to ensure that no category drops below a minimum value without a clear regulatory rationale.

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As per Section 14, in case the damage exceeds operator liability limits, the government takes full responsibility for ensuring compensation is provided through a dedicated Nuclear Liability Fund and the CSC. Section 14(1) states that the government may “assume full liability for a nuclear installation not operated by it if it is of the opinion that it is necessary in the public interest to do so.”²⁰

Under the previous laws, there was no dispute-resolution mechanism in place, and any dispute was addressed through contractual agreements, with the possibility of redress through civil courts in accordance with general law. In an effort not to bog down civil courts with specialised and technical claims, the SHANTI Act introduces dedicated redressal mechanisms. It introduces a multi-tier redressal framework: under Section 47, the Act establishes an Atomic Energy Redressal Advisory Council, comprised of the AEC Chairperson, BARC Director, AERB Chairperson, and CEA Chairperson, to review grievances arising from regulatory decisions. Parties aggrieved by orders of the AERB or the government may approach the Council within a 60-day timeframe. Appeals from the Council lie with the Appellate Tribunal for Electricity, which includes technical members with expertise in nuclear energy and radiation safety, while the Supreme Court remains the final forum where decisions of substantial matter may be challenged.²¹ Taken together, this creates a time-bound and technically informed adjudicatory pathway.

The Act also marks a key policy shift by ensuring that operators will not be held liable in special circumstances, including terrorism. Under Section 12(1), the operator will not be held liable for damage caused by a nuclear accident due to a grave natural disaster, an act of armed conflict, hostility, civil war, insurrection or terrorism.²² Syed Akbaruddin, former permanent representative of India to the United Nations states, “The policy intent is to ensure that victims are not left in limbo when an uninsurable

event occurs. The political price is clear, too. If the state assumes the role of the last-resort player, it must also be the visible enforcer of rigorous security discipline, preparedness and accountability.”²³

The conflict between Russia and Ukraine, and the subsequent occupation of the Zaporizhzhia nuclear power plant, has raised important questions about the implications and consequences of nuclear power plants being located in areas of armed conflict or being subject to terrorist attacks. In this context, the SHANTI Act is especially forward-looking: by explicitly accounting for scenarios that fall outside traditional accident-based liability models, it updates India’s nuclear liability framework to reflect broader security concerns and clarifies where responsibility ultimately lies. This reassures suppliers and investors, and strengthens the public’s confidence that compensation and remediation will not fail in case of uninsurable events.

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Other forward-looking aspects of SHANTI deserve praise. The definition of “nuclear damage” has been broadened to include “loss of life or injury (including long-term health impact), loss or damage to property, environmental restoration costs, loss of income linked to environmental use, and the costs of preventive and mitigation measures” [Section 2(21)].²⁴ This expanded definition provides a more realistic understanding of the harm caused by nuclear incidents. The Act recognises that such consequences extend well beyond immediate physical damage to include long-term health, economic and environmental effects. It also creates a quicker claims pathway with defined timelines.

SHANTI’s forward-looking turn extends to innovations in the peaceful applications of nuclear technologies, too. Under the Atomic Energy Act, patents were prohibited for all research and innovations related to nuclear energy. In contrast, under Section 38 of the SHANTI Act, patents for nuclear-energy related innovations are permitted (again, with national security caveats).²⁵ A welcoming intellectual

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Conclusion

Following the passing of the SHANTI Act, there was an immediate international reaction. Within days, the United States (US) had moved to formally engage with India on aligning its domestic nuclear liability regime with international standards. US President Donald Trump signed the annual defence policy bill, the National Defense Authorisation Act (NDAA), into law. The law includes a section titled “Joint Assessment Between the United States and India on Nuclear Liability Rules.” It mandates the establishment of a joint consultative mechanism to explore how India could align its domestic liability framework with global norms, as well as the various pathways for implementing such strategies.²⁶

Domestically, SHANTI is an important policy reset geared towards a consolidated, investment-ready nuclear framework with an effective public-private model. It allows an opportunity for India to engage and explore between multiple suppliers. However, SHANTI’s ultimate success will depend on implementation: on whether regulatory capacity and timelines can turn legislative ambition into viable on-the-ground projects. A new nuclear policy framework has been established. The hard work starts now.

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¹³ Government of India, n.2, sec. 5, pg. 9.

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¹⁶ Government of India, n.2, sec. 11, pg. 12.

¹⁷ Government of India, n.2, sec. 16, pg. 15.

¹⁸ Kapur, Kumar, and Gopal, n. 4.

¹⁹ Moushumi Das Gupta, “The Enhanced Powers of Govt under SHANTI Bill & What’s Changed When It Comes to Nuclear Liability,” *The Print*, December 19, 2025, <https://theprint.in/india/governance/the-enhanced-powers-of-govt-under-shanti-bill-whats-changed-when-it-comes-to-nuclear-liability/2809188/>. Accessed on January 20, 2026.

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