SHANTI Bill 2025, Objectives, Provisions, Concerns, Way Forward

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Why SHANTI Bill 2025 in News?

The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India, SHANTI Bill 2025, officially called the Atomic Energy Bill 2025, is in the news because the Union Government has approved it to open India's nuclear energy sector to private and foreign participation.

What is the SHANTI Bill 2025?

The **SHANTI Bill 2025** is a proposed law to reform India's civil nuclear energy sector and make it more open, modern, and investment-friendly. It **replaces the Atomic Energy Act, 1962 and the Civil Liability for Nuclear Damage Act, 2010**, which earlier kept the sector under strict government control. The Bill allows limited private and foreign participation in nuclear power while retaining state oversight.

SHANTI Bill 2025 Objectives

The SHANTI Bill 2025 aims to reform India’s civil nuclear energy sector to meet future power and climate needs. Its objectives are:

- Expand nuclear power capacity to provide reliable, round-the-clock (baseload) electricity and reduce dependence on coal.
- Support India’s climate commitments by promoting low-carbon and clean energy sources alongside renewables.
- Open the nuclear sector to private and foreign participation in a controlled manner to attract long-term capital and investment.
- Promote Small Modular Reactors (SMRs) for faster deployment, industrial decarbonisation, and captive power use.
- Improve grid stability as renewable energy capacity increases across the country.
- Strengthen India’s energy security by diversifying the power mix and reducing fuel import risks.
- Leverage international nuclear cooperation, including the Indo-US civil nuclear deal, while maintaining strategic oversight.

Provisions of the SHANTI Bill 2025

- **Expanded role of the private sector in areas such as:** Exploration and mining of atomic minerals, Nuclear fuel fabrication, Manufacturing of nuclear equipment and components, and Research and Development (R&D) in civil nuclear technologies
- **Minority equity participation**: Private companies are permitted to hold up to **49% equity** in nuclear power projects, with the government retaining majority control.
- **Promotion of Small Modular Reactors (SMRs)** for industrial use, captive power, and quicker deployment of nuclear capacity.
- **Foreign investment framework** through partnerships and sovereign wealth funds, aligned with global nuclear practices.
- **Nuclear Energy Mission support**, including a ₹20,000 crore outlay for SMR research and development.
- **Long-term capacity target** of achieving **100 GWe nuclear power by 2047**.
- **Government oversight and safety control** to remain with state agencies such as NPCIL, ensuring nuclear safety and security.
- **Framework for liability and risk-sharing mechanisms** to make nuclear projects commercially viable while protecting public interest.

Atomic Energy Regulatory Board

The Atomic Energy Regulatory Board (AERB) is India’s premier authority responsible for ensuring nuclear and radiation safety. It was constituted in November 1983 by the President of India under the Atomic Energy Act, 1962. The AERB derives its regulatory powers from rules and notifications issued under the **Atomic Energy Act, 1962** and the **Environment (Protection) Act, 1986**. Key functions include:

- Regulates **nuclear and radiation safety** across civilian nuclear installations
- Issues safety codes, standards, and licensing conditions

- Enforces safety provisions under the **Atomic Energy Act, 1962** and **Environment (Protection) Act, 1986**
- Administers **industrial safety provisions of the Factories Act, 1948** for units under the Department of Atomic Energy (DAE) as per Section 23 of the Atomic Energy Act
- Conducts safety inspections and reviews to prevent radiation hazards
- Plays a crucial role in strengthening regulatory oversight under the **SHANTI Bill 2025** amid increased private sector participation

SHANTI Bill: Comparison with Existing Laws

The SHANTI Bill 2025 marks a significant shift from India's earlier nuclear laws by reforming ownership, participation, and liability frameworks in the civil nuclear sector. The comparison of this bill and existing laws has been discussed below:

SHANTI Bill: Comparison with Existing Laws		
Aspect	**Atomic Energy Act, 1962 & CLNDA, 2010**	**SHANTI Bill 2025**
Sector Control	Complete government monopoly over nuclear energy	Government control retained, but limited private participation allowed
Private Participation	No role for private companies	Private firms allowed up to 49% minority equity
Foreign Involvement	Effectively restricted due to legal and policy barriers	Foreign participation permitted through partnerships
Liability Framework	Strict supplier liability under CLNDA	Risk-sharing and liability management mechanisms proposed
Technology Focus	Large, indigenous nuclear reactors	Emphasis on **Small Modular Reactors** (SMRs)
Investment Environment	Closed and risk-heavy for investors	More investment-friendly and aligned with global practices

Concerns and Challenges Related to the Bill

- **Nuclear safety concerns**: Expanding private participation raises fears about safety standards, making strong and independent nuclear regulation essential.
- **Public trust and acceptance**: Nuclear projects often face local opposition due to health, environmental, and displacement concerns.

- **Liability and compensation issues**: Changes in nuclear liability rules may raise worries about whether victims will receive timely and adequate compensation in case of an accident.
- **Commercial viability for private players**: High costs, long project timelines, and uncertainty in tariff recovery may discourage private investment.
- **Regulatory capacity**: Existing regulatory institutions may face challenges in effectively supervising a larger and more complex nuclear sector.
- **Technology and scalability issues**: India’s heavy reliance on indigenous reactor designs may limit rapid scaling and global integration.

Way Forward

- **Strengthen nuclear safety regulation** by enhancing the autonomy, capacity, and transparency of the Atomic Energy Regulatory Board (AERB).
- **Ensure clear and fair liability mechanisms** that protect victims while providing certainty to investors and suppliers.
- **Promote Small Modular Reactors (SMRs)** for industrial decarbonisation, captive power, and improved grid stability.
- **Build public trust** through stakeholder consultations, transparency, and awareness about nuclear safety.

- **Encourage phased private participation** to test commercial viability before large-scale expansion.
- **Integrate nuclear energy into India’s climate strategy**, aligning it with renewable energy growth and net-zero targets.

Source: https://vajiramandravi.com/current-affairs/shanti-bill-2025/