

1. Shanti Bill- Polity

The Union Cabinet has approved the Atomic Energy Bill, 2025, titled SHANTI (Sustainable Harnessing of Advancement of Nuclear Technology for India). The Bill seeks to create a unified and modern legal framework for India's nuclear sector

Background and Existing Framework

Traditionally, India's civilian nuclear power programme has been a state monopoly, reflecting the strategic and sensitive nature of nuclear technology. Ownership and operation of nuclear power plants are restricted to

1. Nuclear Power Corporation of India Ltd (NPCIL)
2. Bharatiya Nabhikiya Vidyut Nigam (BHAVINI), a fully owned subsidiary focused on fast breeder reactors.

Private participation has been legally barred due to

1. Atomic Energy Act, 1962- Vests exclusive control of atomic energy in the Union government.
2. Civil Liability for Nuclear Damage Act, 2010 (CLNDA) Imposes supplier liability, deterring global and domestic private investors.

Rationale for Legislative Amendments

Capital-intensive nature of nuclear energy- nuclear projects involve high upfront costs, long gestation periods, and complex risk profiles.

Technological constraints- State entities alone cannot rapidly scale advanced reactor technologies such as SMRs, Gen-IV reactors, and fuel-cycle innovations.

Global best practices- Many nuclear-powered countries allow regulated private participation while retaining sovereign control over strategic functions.

Key Provisions of the Proposed Bill

Partial Opening of the Nuclear Value Chain

Permitted Areas for Private and Global Participation

1. Atomic mineral exploration (non-strategic minerals).
2. Nuclear fuel fabrication and component manufacturing.
3. Design, construction, and supply of nuclear equipment and balance-of-plant systems.

Strategic Red Lines Maintained

1. Reactor ownership and operation.
2. Nuclear weapons-related research.
3. Sensitive enrichment and reprocessing activities.

Significance

1. Enables creation of a domestic nuclear manufacturing ecosystem.
2. Reduces import dependence and aligns with *Atmanirbhar Bharat* in high-technology sectors.

Revamp of the Nuclear Liability Regime

Existing Problem- CLNDA's supplier liability clause deviates from international conventions and increases investor risk.

Proposed Reforms- Clear apportionment of liability among Plant operators, Equipment suppliers, Government as the ultimate guarantor Introduction of insurance-backed liability caps to ensure financial predictability. Government assumption of liability beyond a predefined threshold in catastrophic events.

Impact- Aligns India's regime with global nuclear liability norms. Encourages participation from foreign reactor suppliers and domestic private firms.

Establishment of an Independent Nuclear Safety Authority

Current Issue- Overlap between promotional and regulatory roles undermines institutional credibility.

Proposed Authority- Statutorily independent nuclear safety regulator. Clear separation from operator entities and the Department of Atomic Energy.

Functions- Licensing, inspections, safety audits, and emergency preparedness. Public disclosure and

transparency to build societal trust.

Strategic Value– Enhances global confidence in India's nuclear safety governance. Reduces reputational and environmental risks.

Dedicated Nuclear Tribunal

Purpose– Fast-track adjudication of nuclear-related disputes.

Jurisdiction– Compensation claims. Liability disputes. Regulatory and contractual conflicts.

Benefits– Reduces judicial delays. Provides sector-specific expertise. Improves investor confidence through predictable dispute resolution.

Strategic Rationale Behind the Reform

Achieving the 100 GW Nuclear Target by 2047– Nuclear capacity is currently modest compared to India's energy needs.

Achieving 100 GW requires

1. Massive capital mobilisation.
2. Faster project execution.
3. Advanced reactor deployment at scale.

Supporting India's Energy Transition– Nuclear power provides– clean baseload electricity, unlike intermittent solar and wind. Grid stability critical for high renewable penetration. Direct contribution to India's climate commitments by Reducing coal dependency. Lowering lifecycle carbon emissions.

Enhancing Energy Security– Diversification of energy sources Reduces exposure to fossil fuel price volatility. Minimises geopolitical risks associated with energy imports. Strengthens India's strategic autonomy in long-term power planning.

Challenges and Concerns– Nuclear safety risks and disaster management preparedness. Public opposition due to historical nuclear accidents globally. Need to prevent regulatory capture and dilution of safety standards. Balancing private profit motives with national security imperatives.

Way Forward (Policy Roadmap)

Clear and Predictable Regulatory Framework– Codify safety, liability, and security norms in unambiguous legal language. Ensure parliamentary oversight and periodic regulatory review.

Structured Public-Private Partnership (PPP) Models– Government retains

1. Ownership of reactors.
2. Control over fuel cycle and strategic decisions.

Private sector contributes

1. Capital investment.
2. Technology and innovation.
3. Project management efficiency.

Gradual and Phased Implementation– Begin with

1. Pilot projects.
2. Small modular reactors (SMRs).

Scale up based on safety performance, regulatory learning, and public acceptance.

Public Engagement and Transparency– Strengthen risk communication. Institutionalise community participation near nuclear sites. Ensure fair compensation and rehabilitation frameworks.

Concluding Assessment

The proposed reforms represent a paradigm shift in India's nuclear governance. If implemented cautiously, they can

1. Unlock investment.
2. Accelerate clean energy transition.
3. Strengthen energy security.

However, success depends on institutional integrity, safety culture, and regulatory credibility, making governance quality as critical as legislative change.

Source– https://www.thehindu.com/news/national/cabinet-nod-for-bill-seeking-to-open-up-civil-nuclear-sector-for-private-participation/article70388917.ece#google_vignette