SHANTI Bill – Strengthening the Energy Security

Mains: *GS III – Infrastructure: Energy*

Why in News?

Recently , the Parliament has cleared the Sustainable Harnessing and Advancement of Nuclear Energy in India (SHANTI) Bill, despite Opposition demands for amendments and review by a Select Committee.

What is the need for the bill?

- **Achieving energy security** – The government has boosted the Nuclear Energy Mission with **Rs.20,000 crore** dedicated to Small Modular Reactors and advanced pressurised water reactors.
- **Relaxing State control** – India's nuclear power sector has remained State-controlled and unchanged since 1956.
- **Lack of private sector participation** – The private and foreign partnership has been restricted under earlier laws — the Atomic Energy Act, 1962, and the Civil Liability for Nuclear Damages Act, 2010.
- Private and Foreign companies avoided India due to its strict liability laws.

What is the SHANTI Bill?

- **SHANTI Bill** – Sustainable Harnessing and Advancement of Nuclear Energy in India (SHANTI) Bill.
- It is an overarching legislation that opens India's nuclear power sector to private and foreign participation, which was earlier entirely State-controlled and deeply regulated.
- Under the Bill, private Indian companies can seek licences to own, build, and operate nuclear power plants.
- It is also open for foreign supplier participation.
- **Private sector participation** – The SHANTI Bill allows up to *49% private participation.*
- The *government control maintaining 51%* over sensitive activities such as:
    - Nuclear fuel production,
    - Heavy water manufacturing,
    - Radioactive waste management,
    - Safety mechanisms,
    - Licensing, and
    - Strategic oversight.
- **Ends the monopoly** – The Bill ends the monopoly of Nuclear Power Corporation of

India Limited (NPCIL) in plant operations.

- It allows private companies and joint ventures to build, own, and operate nuclear power plants.
    - The private sector will be involved in:
    - Fuel fabrication,
    - Equipment manufacturing,
    - Plant operations, and
    - Research and development.
- It will essentially be a public-private partnership model aimed at attracting private capital with government oversight.
- The Bill facilitates advanced nuclear technologies by enabling private participation and regulatory clarity.
- It supports the deployment of Small Modular Reactors (SMRs) and indigenous reactor designs, contributing to the clean energy transition and long-term energy security.

What is the role of AERB?

- **AERB** – The *Atomic Energy Regulatory Board (AERB),* constituted in 1983 under the Atomic Energy Act, has now been given statutory status and is *answerable to Parliament* rather than solely to the executive.
- **Responsibility** – The AERB is responsible for:
    - Ensuring nuclear safety,
    - Radiation protection,
    - Emergency preparedness, and
    - Quality assurance across civilian nuclear installations.
- **Authority** – It issues safety measures, licences and standards.
- It administers industrial safety provisions of the *Factories Act, 1948,* for units under the Department of Atomic Energy as per Section 23 of the *Atomic Energy Act* and conducts inspections to prevent radiation hazards.
- **Importance** – It plays a crucial role in strengthening regulatory oversight under the SHANTI Bill due to increased private sector participation.
- **Concerns** – The Bill has been criticised for concentrating power in one institution.

What safeguards are in place?

- **No explicit permit** – The Bill does not explicitly permit foreign direct investment in the nuclear power sector.
- The private companies will have to seek authorisation from the AERB.
- Authorisations are required for:
    - Setting up a plant range from production,
    - Possession,
    - Disposal of radioactive material and radiation generation equipment,
    - Establishing, operating, or withdrawing radioactive facilities.
- **Maintaining government control** – The government controls
    - The reprocessing and management of spent fuel and high-level radioactive waste;
    - Production and upgradation of heavy water;
    - Enrichment and isotopic separation of radioactive substances.

- **Liability fund** – The law also provides for the establishment of a nuclear liability fund to meet compensation needs in case of nuclear accidents.

What has changed with respect to liability?

- **Liabilities** – Compared to the earlier regime, the SHANTI Bill ensures that the liability aspect is transparent and predictable for operators.
- Liability caps are fixed as follows:
  - **Rs.3,000 crore** for large plants of *3,600 MW capacity*
  - **Rs.1,500 crore** for medium plants of *1,500-3,600 MW*
  - **Rs.100 crore** for Small Modular Reactors of *150 MW capacity*.
- **Penalties** – Penalties for legal violations in cases of severe breach are capped at Rs.1 crore.
- The Union government will bear liability beyond the operator's cap, with additional support from the proposed nuclear liability fund.
- Earlier, operators could hold suppliers liable for defective parts, faulty equipment, design inefficiency, and deliberate acts causing damage. The current Bill removes supplier accountability completely.

What is the government's viewpoint?

- **Strengthening energy security** – The Centre aims to strengthen India's energy security by diversifying the power mix, reducing dependence on fossil fuels and fuel imports, and expanding atomic energy capacity.
- Energy security is one of the main aims for boosting India's development index.
- **Guaranteed baseload** – It ensures *24x7 baseload power* as compared to solar energy and wind energy, which are subject to geographical conditions.
- **Enhancing energy sector** – It will be a boost for the energy sector, which is still heavily dependent on coal.
- It also ensures an enhancement for technology and the economy.
- **Ensuring clean energy** – Nuclear power ensures clean energy with very low carbon emissions and facilitates achieving India's net-zero targets for 2070.
- **Reviving stalled project** – The Bill may also revive the stalled civil nuclear deals with the U.S., France, and Japan, reduce dependence on Russia alone, and enhance India's image as a responsible global nuclear player.

Why does India need nuclear energy?

- **Geographic & Climatic factors** – India struggles with solar, wind, and hydro energy due to its geographical and climate variables and still majorly relies on coal for electricity generation.
- **High cost of renewable energy** – Storage and grid integration costs for renewables remain high.
- Thus, having sufficient baseload generation capacity is mandatory for an affordable and unrestricted supply.
- In order to achieve energy security for the growing economy, India has to strengthen and expand its nuclear energy sector.
- **Affordability & Reliability** – The electricity mix must have enough baseload

generation capacity in order to make it affordable and reliable for consumers.
- Nuclear power plants are one of the most effective in ensuring this.

What is India's nuclear energy mission?

- **Utilization of thorium** – India has a largely indigenous nuclear power programme based on a fuel cycle that aims to utilise India's vast thorium reserves.
- **Establishes reactors** – Currently, India manages 25 nuclear reactors in seven power plants:
  - **21** pressurised heavy water reactors (PHWR) and
  - **4** light water reactors — all managed by NPCIL.
- **PHWR** – India does not have enough uranium, the Nuclear Power Corporation of India Limited has mastered the design and operation of pressurised heavy water reactors.
- **Self-sufficient** – The Bhabha Atomic Research Centre has developed technologies to reprocess spent fuel to recover valuable materials and handle nuclear waste.
- In that sense, India is independent and *self-sufficient in its nuclear power generation.*
- **FBR** – India has operationalised the fast breeder reactor (FBR) for thorium use.

Why has the Opposition strongly criticised the Bill?

- **Weakens accountability** – The Opposition argues that the Bill dilutes accountability by allowing profit-driven private participation while placing liability on the State and society.
- **Apprehensions of accidents** – There is a fear of repeating incidents like the Bhopal Gas tragedy, where accountability and remuneration were evaded by the foreign firms in spite of recourse to civil courts.
- Moreover, such recourse is unavailable according to the new Law.
- **Absence of liability** – Removing supplier liability and capping operator liability and penalties at a nominal cost, as compared to the actual volume and expanse of damages, is considered unreasonable.
- The *'polluter pays'* principle has been undermined, and this compromises public safety.
- Private firms have no liability for accident costs, public safety issues and long-term risks.
- The cap on operator liability does not change in 15 years despite inflation or long-term assessment of health, environment, livelihood cost of any serious accident.
  - **Past examples** –The cases such as Fukushima and Chernobyl point out the huge expense of liability.
  - In the case of the Fukushima disaster, the actual civil damages were 700 times more than the cap proposed by the SHANTI bill.
- **Undermining of the RTI Act of 2005** – Section 39 of the Bill seeks to override the RTI act has raised several concerns as it seeks to remove public interest review and public appeal mechanisms.
- This will make the most crucial nuclear sector-related information — *including plant details, operations, mechanisms, regulatory submissions and data on nuclear materials* — 'restricted'.
- This dilutes the transparency and questions the public accountability of the proposed

system.

- **Dejection of labour safety** – Section 42 overrides occupational safety, health and working conditions for nuclear facilities.
- Nuclear workers are removed from the country's general labour safety framework.
- **Other concerns** – The Bill lacks provisions for
    - Mandatory public hearings,
    - Environmental impact assessment disclosures,
    - Community consent mechanisms,
    - Regular public reporting of safety inspections, or
    - Parliamentary scrutiny.
- **Compromising public safety** – The Bill is criticised for being pro-profit, pro-oligarch, catering to the crony capitalists while gambling with public safety.
- **International practice** – The Opposition also cited the example of France, where all nuclear reactors are under government control.

Reference

The Hindu| SHANTI Bill