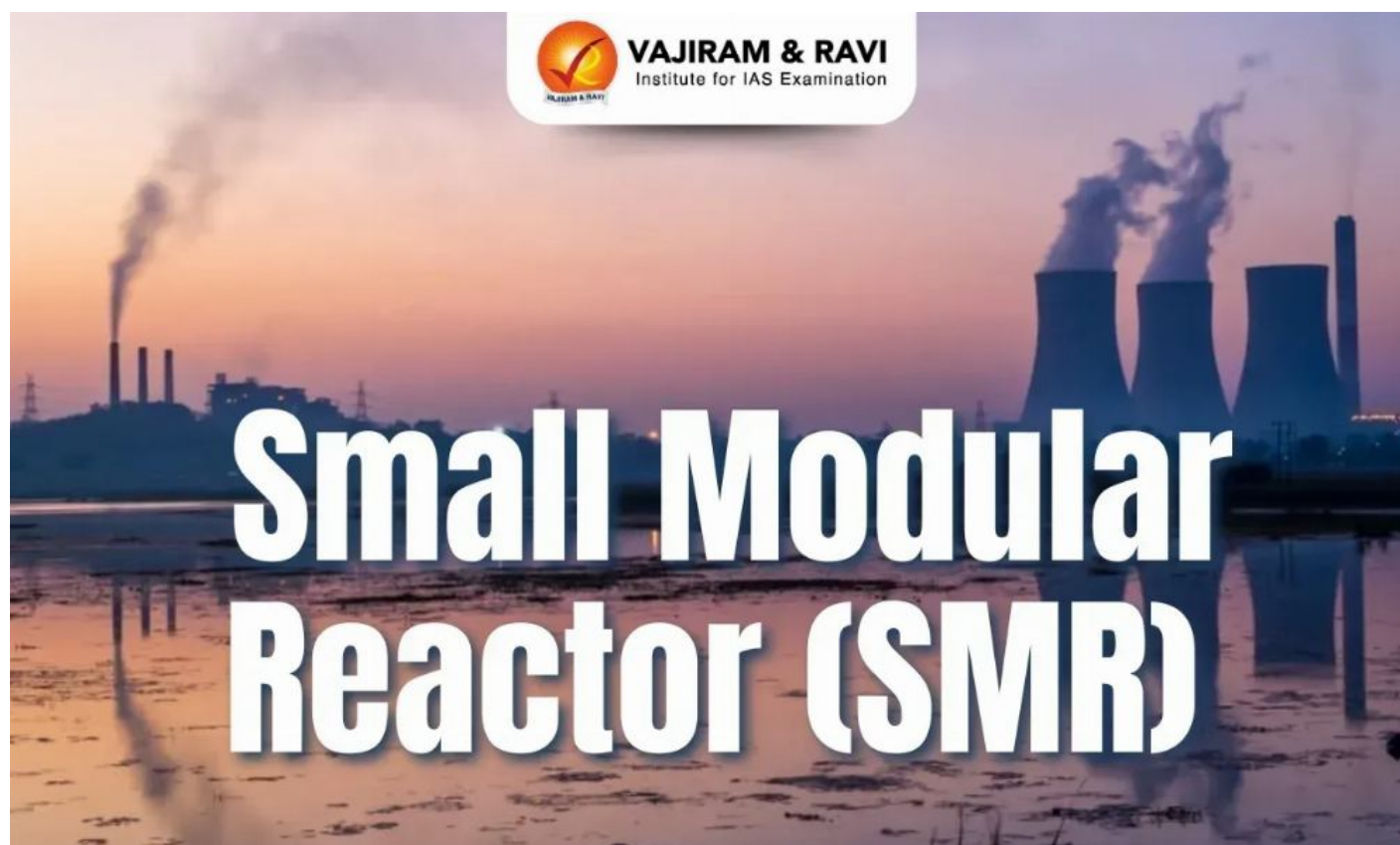


India's Push for Small Modular Reactors (SMRs) - Policy Reforms & Global Developments

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Small Modular Reactor (SMR) Latest News

- India is advancing its entry into the global **Small Modular Reactors** (SMR) manufacturing value chain, receiving institutional support through three key policy enablers announced in the Union Budget.
- These measures aim to catalyse development and strengthen India's position in nuclear energy innovation.

Legislative Reforms to Boost Private Participation in Nuclear Energy

- **New Vertical for Private Participation**

- The government plans to establish a separate division within the Department of Atomic Energy to facilitate private sector involvement in India's nuclear industry.
- This mirrors the successful space sector reforms and aims to leverage private expertise for SMR design, fabrication, and technology transfer negotiations with global players.

- **Amendment to the Atomic Energy Act, 1962**

- The proposed amendment seeks to expand private sector participation beyond equipment supply, allowing private firms to operate nuclear power plants, including Small Modular Reactors (SMRs).
- Currently, only NPCIL and its joint ventures with NTPC and NALCO have this authority.

- **Revisions to Civil Liability for Nuclear Damage Act, 2010**

- Changes are being considered to address foreign investment concerns regarding liability.
- The current law assigns operator liability to equipment suppliers, discouraging global firms like GE-Hitachi, Westinghouse, and Areva from investing in India's nuclear sector.
- Revisions aim to make investment conditions more favorable.

Triggers for India's Small Modular Reactor (SMR) Push

- **Need for Reliable Base-Load Power**

- As India reduces coal-fired power generation and increases renewable energy capacity, nuclear power is emerging as a stable and clean alternative.
- Renewable sources like solar and wind face challenges due to intermittent power generation and lack of viable storage solutions.
- Nuclear energy provides a round-the-clock power source to balance grid demands and support energy transition.

- **India's Strategic Entry into SMR Manufacturing**

- India aims to position itself as a competitive player in SMR design and manufacturing, leveraging its decades of experience with small reactors and cost-effective production capabilities.
- The move comes as China aggressively expands its SMR program, using it as a diplomatic tool for the Global South.
- India seeks to counter China's dominance in this emerging sector and establish itself as a credible alternative in the global SMR market.

SMRs: The Future of Nuclear Energy

- SMRs (30MWe to 300MWe per unit) are seen as a cost-effective and flexible nuclear energy solution.
- India is focusing on SMRs for clean energy transition and as a strategic foreign policy tool to expand its global influence.

- **India's Collaboration Efforts**

- The Department of Atomic Energy is in exploratory talks with Holtec International (USA), a leading exporter of nuclear components, for possible partnerships.

Global SMR Developments

- Two operational SMR projects exist globally:
 - Russia's Akademik Lomonosov (35 MWe x 2) – Floating SMR, operational since May 2020.
 - China's HTR-PM (grid-connected in 2021, operational in 2023).
- **Western firms developing SMRs:** Rolls-Royce (UK), NuScale's VOYGR (USA), Westinghouse's AP300 (USA), GE-Hitachi's BWRX-300 (USA), and Holtec's SMR-300.

Small Modular Reactor (SMR) FAQs

Q1. What is a Small Modular Reactor??

Ans. A Small Modular Reactor (SMR) is a compact nuclear reactor with a capacity of 30MWe to 300MWe, offering scalable and flexible power generation.

Q2. What are the benefits of SMR?

Ans. SMRs provide clean, round-the-clock energy, have lower costs, enhanced safety features, and can be deployed in remote locations.

Q3. What is the world's first SMR?

Ans. Russia's **Akademik Lomonosov**, a floating nuclear power unit with two 35MWe reactors, became the world's first operational SMR in 2020..

Q4. Do SMRs need water?

Ans. Yes, most SMRs require water for cooling, but some advanced designs use gas, molten salt, or liquid metal as coolants..

Q5. What is the lifespan of an SMR reactor?

Ans. The typical lifespan of an SMR reactor ranges from **40 to 60 years**, depending on design, maintenance, and operational conditions.

Source: [IE](#) | [IAEA](#)

Source: <https://vajiramandravi.com/current-affairs/indias-push-for-small-modular-reactors-smrs-policy-reforms-global-developments/>

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