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# Nuclear Energy Mission in Union Budget for 2025-2026

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## Context:

The **Union Budget for 2025-2026** introduces a significant development in India's energy landscape with the announcement of the **Nuclear Energy Mission**, aimed at expanding India's nuclear power capacity. This initiative supports the vision of **Viksit Bharat** (Developed India) by ensuring **energy reliability** and reducing the nation's dependency on **fossil fuels**.

## Key Highlights of the Nuclear Energy Mission:

- **Target Capacity:** India aims to reach **100 GigaWatt (GW)** of nuclear power capacity by **2047**, significantly increasing its current capacity of about **8 GW**.
- **Focus on Small Modular Reactors (SMRs):**
- A **₹20,000 crore** allocation has been made for **Research & Development (R&D)** to develop **indigenous SMRs**.
- The goal is to have **five SMRs operational by 2033**.
- **Boosting Private Sector Participation:**
- To promote private involvement in nuclear energy, key legislative amendments are planned, including changes to:
  - **Atomic Energy Act, 1962:** Governs the development, control, and use of atomic energy in India.
  - **Civil Liability for Nuclear Damage Act, 2010:** Ensures prompt compensation for victims in case of nuclear incidents, with operators held accountable.

## Government Initiatives to Enhance India's Nuclear Capacity:

- **Capacity Expansion:**
- The construction and commissioning of **10 reactors** (totaling **8 GW**) across several states: **Gujarat, Rajasthan, Tamil Nadu, Haryana, Karnataka, and Madhya Pradesh**.
- **Indigenous Achievements:**
- **Rajasthan Atomic Power Project Unit-7 (RAPP-7)**, one of India's largest indigenous reactors, achieved criticality in **2024**, marking a significant milestone in India's nuclear energy development.
- **Bharat Small Reactors (BSRs):**
- The government is expanding its nuclear energy sector by developing **BSRs** and exploring private sector partnerships.
- **BSRs are 220 MW Pressurized Heavy Water Reactors (PHWRs)** known for their proven safety and performance record.

## About Small Modular Reactors (SMRs):

- **Definition:** SMRs are **advanced nuclear reactors** with a power capacity of up to **300 MW(e)** per unit, about **one-third of traditional nuclear power reactors**.
- **Key Features:**

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- **Modular Construction:** SMRs are designed for **factory fabrication** and then transported to sites, offering greater flexibility in construction and installation.
- **Incremental Deployment:** SMRs can be deployed in **single or multiple modules**, allowing for scalable power generation that can be adjusted according to energy demand.
- **Benefits:**
- **Reduced Initial Capital Investment:** SMRs offer lower upfront costs compared to traditional nuclear reactors.
- **Flexibility:** The option to combine nuclear energy with **alternative sources**, including **renewables**, makes SMRs an attractive and versatile option.

### Conclusion:

The **Nuclear Energy Mission** aligns with India's long-term goals of ensuring energy security while transitioning to **clean energy**. By focusing on **Small Modular Reactors**, encouraging **private sector involvement**, and expanding its nuclear energy capacity, the government is positioning India to become a leader in sustainable energy. The development of indigenous nuclear technology, alongside legislative reforms, will help India meet its growing energy demands while significantly reducing reliance on fossil fuels.