



# Bihar's First Nuclear Power Plant

## Why in News?

**Bihar** will be among the **first six states in India** to receive its first atomic power plant under the country's new [Nuclear Energy Mission](#).

## Key Points

About First Nuclear Power Plant

- **Announcement and Approval:** During the **5th Eastern Region Power Ministers' meeting in Patna**, the Union Power Minister announced the Centre's approval for Bihar to set up a **nuclear power plant** based on [Small Modular Reactor \(SMR\) technology](#).
  - The meeting, attended by representatives from Bihar, West Bengal, Odisha, Jharkhand, and the Andaman & Nicobar Islands, marked a key step towards **advancing nuclear energy in the eastern region**.
- **Significance for Bihar:** The project is expected to ensure a stable electricity supply, attract industrial investment, generate employment, and drive technological advancement in the state.
  - Given Bihar's historical challenges with power deficits and limited infrastructure, the initiative marks a transformative shift in its energy landscape.

Nuclear Energy Mission

- **Ambitious Capacity Expansion:** It aims to increase India's nuclear power capacity from the **current 8,180 MW** (as of January 30, 2025) to **100 GW by 2047**, positioning nuclear energy as a **major pillar in India's energy mix** and supporting long-term energy security and sustainability.
- **Focus on Indigenous Technology:** The mission prioritizes the research and development of indigenous technologies, especially **Small Modular Reactors (SMRs)**, with an allocation of **₹20,000 crore**.
  - The goal is to develop and operationalize at least five indigenously designed SMRs by 2033, leveraging India's expertise in [Pressurized Heavy Water Reactors \(PHWRs\)](#).
  - It also seeks to **set up one nuclear power plant in each state** to enhance India's energy security.
- **Private Sector Participation:** Legislative changes are planned to amend the [Atomic Energy Act, 1962](#), and the [Civil Liability for Nuclear Damage Act, 2010](#), to encourage private sector investment and collaboration.
  - This will facilitate **faster deployment of nuclear projects**, innovation, and economic growth, with private entities contributing land, capital, and funding, while [NPCIL](#) manages reactor operations.

Small Modular Reactors (SMRs)

- SMRs are **advanced nuclear reactors** with a capacity of **up to 300 MW(e)**, about one-third of traditional reactors.

- SMRs represent an **advanced, cost-effective, and safer nuclear technology** suitable for regions with moderate power demands, especially where **large-scale plants are not feasible**.
- **Bhabha Atomic Research Centre (BARC)** is working on SMRs for repurposing retiring coal-based power plants and meeting the energy needs of remote areas.
  - The **Department of Atomic Energy (DAE)** is also focusing on developing reactors such as **high-temperature gas-cooled reactors** for hydrogen generation and molten salt reactors to utilize India's vast thorium resources.



# SMALL MODULAR REACTORS

Small modular reactors (SMRs) are one of the latest innovations in producing nuclear energy. With a simplified, compact design and relative low-cost production methods, innovators hope to deploy them more readily.

## SMALL:

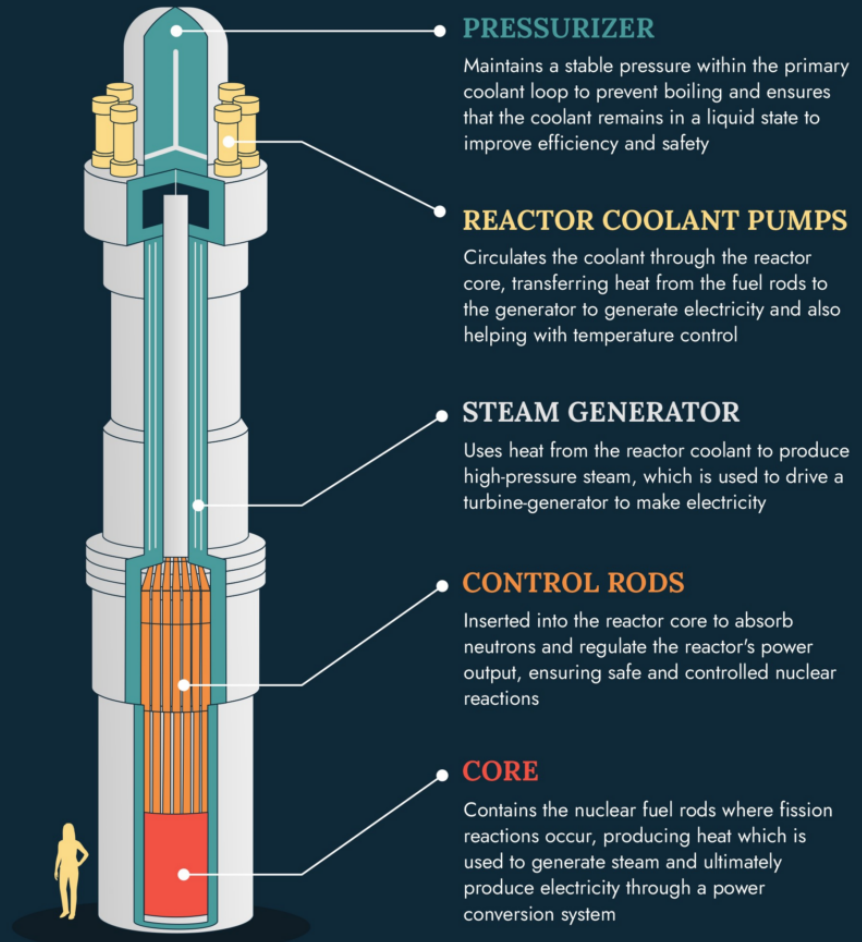
SMRs are designed to be in the range of 1 to 300 megawatts, roughly one third of the gigawatt scale of traditional nuclear reactors

## MODULAR:

SMRs can be manufactured in a factory and transported to the site, making them easier to deploy and potentially reducing construction costs

## REACTOR:

Like all nuclear reactors today, SMRs harness nuclear fission to generate heat to produce energy



Source: U.S. Department of Energy

## The Main SMR Types



Light Water Reactors



High Temperature Gas Cooled Reactors



Molten Salt Reactors



Fast Neutron Reactors

By using smaller, mass manufactured designs, SMRs can provide additional benefits in terms of **safety**, **cost**, and **flexibility** in nuclear power generation.

## Other Recent Developments in Power Sector

- **Battery Energy Storage Projects:** In addition to the nuclear plant, the Central

**Government has approved a 1,000 MW battery storage capacity project in Bihar.**

- This project will support [renewable energy integration](#) and enhance [grid stability](#), with [viability gap funding](#) of ₹18 lakh per megawatt.
  - The Prime Minister had also laid the foundation stone for a 500 MWh [Battery Energy Storage System \(BESS\)](#) project in Siwan on 20th June 2025.
- **Additional Support to Bihar:** To support peak summer demand, the Centre has also agreed to supply an additional 500 MW of electricity to Bihar for the next three to six months.
- The state was also commended for installing eight million [smart meters](#) and achieving a substantial reduction in technical and commercial losses, indicating significant progress in the power sector.

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