

GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY

**LOK SABHA**  
**UNSTARRED QUESTION NO-588**  
ANSWERED ON 03/12/2025

**PROMOTION OF CLEAN ENERGY**

588. SHRI BABU SINGH KUSHWAHA

Will the PRIME MINISTER be pleased to state:-

- (a) the action taken/being taken by the Government to promote clean energy in the country by establishing new nuclear power plants, expanding existing ones and developing new technologies such as advanced reactors, light water reactors and small modular reactors (SMRs);
- (b) whether the Government has formulated any new policy, investment plan or new model for private sector participation to increase the share of nuclear energy to meet the clean energy targets by 2030 and if so, the details thereof; and
- (c) the details of new projects related to nuclear research, thorium-based reactors, nuclear waste management and safety related improvement in the country and current progress thereof?

**ANSWER**

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS  
AND PRIME MINISTER'S OFFICE (DR. JITENDRA SINGH)

- (a) Nuclear Energy Mission for Viksit Bharat aims to achieve nuclear power generation capacity of 100 GWe by 2047 to contribute significantly in achieving the target of Net Zero by 2070. It envisages to augment power production from nuclear energy with least carbon emission and to cater the base load requirement which is currently supported by fossil fuel base power plants. Under the Nuclear Energy Mission, fund have also been allocated for R&D of small modular reactors targeting design, development and operationalisation of indigenous SMRs by 2033.

The envisaged power generation capacity can be achieved by deployment of;

- i) Large reactors such as 700 MWe indigenous Pressurised Heavy Water Reactors (PHWRs) and large capacity imported advanced reactor designs at green field sites for rapid expansion.
- ii) Small modular reactors (SMR) such as 220 MWe Bharat Small Reactor (BSR-220), 200 MWe Bharat Small Modular Reactor (BSMR-200), and 55 MWe Small Modular Reactor (SMR-55) in brown field sites for;
  - a. Repurposing of retiring fossil fuel-based power plants,
  - b. Captive plants for energy intensive industries and
  - c. Off-grid applications for remote locations.

BARC has initiated design and development of BSMR-200 and SMR-55. These SMRs are based on pressurised water reactor technology.

Nuclear Power Corporation of India Limited (NPCIL) a Public Sector Undertaking under DAE has also floated a Request for Proposal (RFP) for setting up Bharat Small Reactors (BSR) for decarbonisation of hard to abate industries.

- (b) Government has announced to partner with private players for deployment of 220 MW Bharat Small Reactors (BSR). Accordingly, NPCIL has issued a Request for Proposal (RFP) within the existing legal framework, inviting Indian industries to participate in setting up of BSR for captive power generation, to provide a sustainable, low-carbon energy solution for industries, enabling them to decarbonize their operations. During Budget 2025 announcement, the Government has announced that active private sector participation will be facilitated by undertaking amendments to Civil Liability for Nuclear Damage Act 2010 and the Atomic Energy Act 1962.
- (c) Bhabha Atomic Research Centre (BARC) is pursuing R&D in the field of nuclear research, thorium-based reactors, nuclear waste management and safety related improvement. The details are as mentioned below;

The Molten Salt Reactor (MSR) is expected to play an important role in the efficient, long term, self-sustainable utilization of thorium resources. In order to demonstrate the technologies involved, the design of a low power demonstration molten salt reactor has been initiated. As a part of this effort, development of special materials, fluoride salts and other related areas are underway.

In the field of nuclear waste management, efforts are in progress to reduce nuclear waste generation through recovery, reuse and recycle. R&D is being carried out on development of improved processes to achieve better decontamination factors and reduce environmental discharges. The technologies like partitioning of long-lived radionuclides are being developed and implemented leading to reduction in waste volumes for disposal. This technology is also enabling recovery of specific radionuclides for societal application.

Department has improved containment safety by putting hydrogen and radionuclide management system and currently working on retaining the radionuclides within the reactor vessel for BSMR-200 by employing internal and external vessel cooling.

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