

PARLIAMENT QUESTION: NUCLEAR ENERGY MISSION

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The Government has announced an ambitious Nuclear Energy mission for Viksit Bharat with a target of reaching a nuclear power capacity of 100 GW by 2047 to contribute significantly in achieving the target of Net Zero by 2070. Its main features are 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. Nuclear energy mission envisages deployment of large as well as small nuclear power plants in green fields, in brown fields, as captive plants and for off-grid applications in remote locations. This initiative aims for an active partnership with the private sector, R&D of Small Modular Reactors (SMRs) and enabling measures for new advanced technologies.

Three types of SMR are being designed and developed indigenously by BARC for demonstration. These reactors are:

- 200 MWe Bharat Small Modular Reactor.
- 55 MWe Small Modular Reactor
- 5 MWth High Temperature Gas Cooled Reactor for hydrogen production by coupling with a suitable thermochemical process for hydrogen production.

In-principle approval has been obtained for construction of these demonstration reactors. These demonstration reactors are likely to be constructed in 60 to 72 months after receipt of administrative sanction of projects. Lead units of BSMR & SMR are planned to be installed at DAE sites in collaboration with NPCIL.

These plants are designed & developed considering deployment as captive power plant, for repurposing of retiring fossil fuel-based plants and for hydrogen production to support the transport sector with the prime objective of decarbonization by increasing the penetration of nuclear energy in the industrial & transport sector.

Presently, the installed nuclear power capacity in the country comprises 24 reactors with a total capacity of 8780 MW, excluding RAPS-1 (100 MW) which is under long term shut down.

KAPS-3 & 4 (2x700 MW) and RAPP-7 (700 MW) are in commercial operation.

Presently, 18 reactors with a total capacity of 13600 MW (including 500 MW PFBR, being implemented by BHAVINI) are at various stages of implementation. On their progressive completion, the installed nuclear power capacity will reach 22380 MW from 8780 MW at present. The target of 100 GW is planned to be achieved by deploying reactors based on existing and new advanced technologies under development.

The department has established 4,33,800t *in-situ* U₃O₈ resource in 47 uranium deposits located in Andhra Pradesh, Telangana, Jharkhand, Meghalaya, Rajasthan, Karnataka, Chhattisgarh, Uttar Pradesh, Uttarakhand, Himachal Pradesh and Maharashtra. In recent years, the Department has established 26,437t *in-situ* U-oxide resource in Jaduguda North - Baglasai Mechua deposit, East Singhbhum district, Jharkhand; which is the north-western continuity of Jaduguda uranium deposit.

Highest priority is accorded to safety in all aspects of nuclear power viz. siting, design, construction, commissioning and operation. Nuclear power plants are designed based on the paramount safety principles of defense in depth, Redundancy, Diversity and Fail-safe design features; thus, ensuring multiple barriers between the source of radioactivity and the environment. The operations are performed through well laid out procedures by highly qualified, trained and licensed personnel. There is a robust and independent regulatory

mechanism in place and safety of nuclear power plants is continuously monitored and reviewed by the Atomic Energy Regulatory Board (AERB).

This information was given by Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, Earth Sciences, MoS PMO, MoS Personnel, Public Grievances & Pensions, Department of Atomic Energy and Department of Space, in a written reply in the Lok Sabha today.

NKR/PSM

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