

GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
**LOK SABHA**  
**UNSTARRED QUESTION NO-1502**  
ANSWERED ON 04/12/2024

**NUCLEAR TECHNOLOGY**

1502. SHRI ANURAG SHARMA

Will the PRIME MINISTER be pleased to state:-

- (a) the details of advancements made by India in nuclear technology for sustainable energy production and the manner in which the Government is ensuring safety in its operations; and
- (b) the details of any recent developments in nuclear research or power generation?

**ANSWER**

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

- (a) India has achieved mastery in all aspect of Pressurised Heavy Water Reactor (PHWR) technology. Indigenous PHWRs have been evolved from unit size of 220 MW to 540 MW and 700 MW and reactors of all these sizes are in successful operation. The Indian industries have also matured and supplied components & equipment and executed works to the required exacting standards for these PHWRs.

All nuclear power plants are operated strictly in line with approved procedures and specifications, by highly trained personnel licensed by the Atomic Energy Regulatory Board (AERB) to ensure safety.

- (b) Research and development for indigenisation of pressurised water reactor technology for expansion of country's nuclear energy capacity through installation of large capacity reactors has been initiated. Design and development for small reactors such as Small Modular Reactors, is underway for repurposing of retiring coal-based power plants and catering to power requirements at remote locations.

Moreover, BARC has developed high temperature thermochemical processes for hydrogen production. R&D on gas cooled reactor and its coupling with thermochemical processes is being carried out for utilising high temperature generated in the reactor for green hydrogen production. Hydrogen produced in this process is likely to contribute in decarbonisation.

Research and development is underway for various technologies, fuels and materials for molten salt reactors to demonstrate thorium utilisation towards achieving long term energy security and net zero carbon emission goals.

A capacity of 1400 MW was added in the year 2023-24 by completion of KAPS 3&4 (2X700 MW) increasing the nuclear power capacity from 6780 MW to 8180 MW. In September 2024, another reactor, RAPP-7 (700 MW) also achieved criticality.

On completion of the commissioning of Prototype Fast Breeder Reactor (PFBR), the project will generate 500 MW of electricity. PFBR is expected to be operational by end-2025.

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