

GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO - 2788**  
ANSWERED ON 19/12/2024

**EFFORTS MADE BY DAE TO MAKE INDIA A DEVELOPED NATION BY 2047**

2788. SMT. SANGEETA YADAV

Will the PRIME MINISTER be pleased to state:-

- (a) the efforts made by the Department to realize the vision to make India a 'Viksit Bharat' by 2047 in the last five years, along with details of socially useful technology developed;
- (b) whether Department has formulated any roadmap or action plan to realize the goal of 'Viksit Bharat' by 2047, specifically in the industry and commerce sectors;
- (c) if so, the details thereof;
- (d) whether Department is evaluating new policies/schemes and legislative proposals based on their potential contribution towards achieving 'Viksit Bharat' by 2047?

**ANSWER**

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

- (a) In the true spirit of "Atoms in service of Nation", Department is in constant endeavour to realize the goal of developed nation, built on the foundation of self-reliance/ Atmanirbharta. Towards that goal, there are a host of efforts/ achievements from DAE in the last 5 years in the various sectors, from Nuclear Power to Health Care to Societal Applications of Radiation Technologies in Agriculture, Food Processing, Waste Management etc., along with contributions in the field of high sciences and multi-disciplinary directed research to keep the country at the forefront of science, technology & innovation. A select-few notable efforts/ contributions are listed below –
  - *Nuclear Power Program:* First 2 units of indigenous 700 MWe PHWR at Kakrapar, Gujarat have started commercial operation and a 3<sup>rd</sup> unit at Rajasthan has achieved first criticality (start of low power operation). With this, the nuclear power generation in the country has increased by about 27 % in last 5 years (47.9 billion units in 2023-24, as against 37.8 billion units in 2018-19) and this is helping towards achieving climate goals, as well, by preventing release of CO<sub>2</sub> equivalent annually to the tune of 42 million tonnes. NPCIL & NTPC has launched a JV company ASHVINI to build Nuclear Power Plants in the country.

- *Health Care:* Tata Memorial Centre (TMC) has expanded to 6 hospitals, located in Varanasi (2), Guwahati, Sangrur, Visakhapatnam, Chandigarh and Muzaffarpur. National Cancer Grid, spearheaded by TMC, is now a 362 member network of institutes providing uniform standardised treatment pan-India and treating approximately 60 % of country's total load. Till date 43 radiopharmaceutical products, developed by DAE units, are approved for clinical use. Fission Moly-99 plant which is commissioned at a DAE facility has the capacity to meet the country's annual demand. Cyclone-30, the medical cyclotron, became operational in 2018 and routinely being used for production of certain group of radio-isotopes.
- *Agriculture:* Using radiation technology and tissue-culture techniques, 70 crop varieties have been developed, released and approved for commercial cultivation.
- *Food Processing & Preservation:* DAE-run food irradiation unit, KRUSHAK has been upgraded and being used to enhance shelf-life of onions, potatoes and mangos (for export). Technologies developed for the preservation of permissible commodities, like fruits & vegetables, health drink & juices etc. Liquid Nitrogen based refrigerated transport system has been developed for transport of farm produce, fish, vaccine etc. DAE technology based multi-product food irradiation units are being considered by Ministry of Food Processing Industries, for setting up under Integrated Cold Chain & Value Addition Infrastructure, as part of PMKSY.
- *Waste Management:* Technology, named HgSBR, is developed for de-centralised waste water treatment. Another rapid composting technology, named SHESHA, is developed for decomposition of dry leaves, kitchen waste & temple waste.

(b) to (d) In pursuit to sculpt a resilient and forward-thinking roadmap for DAE Vision by the year 2047 and in line with Government of India directives, *Mahachintan Shivir* was organised on June 1-2, 2024 at Tata Institute of Fundamental Research (TIFR), Mumbai, with wide participation from all the units of DAE. The Mahachintan Shivir was focussed to develop a sustainable and forward-looking strategy for Vision 2047, aligning the efforts with the national agenda for scientific progress and technological independence.

For power applications, a capacity of about 58 GW by nuclear is envisioned by 2047, based on the available sites and technologies (PHWRs, LWRs and FBRs), by NPCIL and BHAVINI. For the balance 42 GW needed, vision is based on both existing and emerging new technologies. Setting up of 220 MW Bharat Small Reactors (BSRs) is

envisaged within the existing legal framework, broadly envisaging provision of land cooling water and capital by the private entity, with design, quality assurance, & operation and maintenance by Nuclear Power Corporation of India (NPCIL).

For nuclear fuel and structural material, exploration & augmentation resources of uranium, thorium and other RE material is envisaged. In addition, expansion of fuel fabrication capabilities for sustained operation of existing reactors and to meet the future requirements, development of advanced fuel for future reactors and construction & commissioning of integrated fuel reprocessing plants for recycling the fuel, development & deployment of partitioning & waste management technologies for safe disposal of nuclear waste are also envisaged.

The Laser and accelerator programme aims for phase wise development of high energy accelerators (typically 1GeV ADSS) for thorium utilization in a sustained manner and for transmutation / incineration of nuclear waste. The programme also emphasizes on development of accelerators for medical isotope production and frontier research.

The GOI is exploring the feasibility of the amendment in the Atomic Energy Act to allow participation of private industries in nuclear sector. The policy of waste management, fuel sourcing & handling, decommissioning, implementation of security and safeguards measures are being looked into.

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