

Department of Atomic Energy Year End Review 2025

India's nuclear generation hits all-time high as NPCIL crosses 56,681 MUs in FY 2024-25

PM lays foundation stone for 4-unit Mahi Banswara Nuclear Power Project in Rajasthan

150-bed Homi Bhabha Cancer Hospital, Muzaffarpur inaugurated by Prime Minister

India releases first-ever Certified Reference Material for Rare Earth Elements

DAE wins Rajbhasha Kirti Puraskar; ECIL bags SCOPE Eminence Award for Institutional Excellence

प्रविष्टि तिथि: 10 DEC 2025 11:45AM by PIB Delhi

Department of Atomic Energy (DAE) has continued to deliver on its mandate of producing nuclear power, capacity building for nuclear power, creation and operation of research reactors and particle accelerators for radio-isotope and radio-pharmaceutical production, application of radiation technology solutions to address societal issues in areas of health care, food security, water & waste management. The Department also contributes towards National Security.



- Hon'ble Prime Minister has laid the foundation stone for the 4-unit Mahi Banswara NPP in Rajasthan on 25th Sept, 2025; to be deployed by NPCIL-NTPC JV, named ASHVINI
- Unit 7 at Rajasthan (RAPP-7), connected to Northern Grid and started commercial operation.
- NPCIL crossed the milestone of 50 billion Units (BUs) generation in a financial year for the first time in its entire operation history.
- Atomic Energy Commission (AEC) has given approval for pre-project activities for an additional 10 units of 700 MWe PHWRs; over and above the 22.5 GW capacity planned by 2032.
- The 150-bed Homi Bhabha Cancer Hospital and Research Centre, Muzaffarpur, Bihar, was inaugurated by the Hon'ble Prime Minister of India.
- IAEA has recognised Tata Memorial Hospital as a "Rays of Hope" Anchor Center.
- Agricultural Radiation Processing Facility (ARPF) has crossed the landmark of One Crore (10 million) medical devices sterilisation using its indigenously developed 10 MeV, 6 kW Linac for electron beam sterilisation.
- Indigenously developed Certified Reference Material (CRM) named 'Ferrocarnatite (FC) – (BARC B1401) formally released, first such CRM in India and the fourth in the world; crucial for REEs ore mining.
- DAE has set-up the first Electronics-grade (99.8% purity) Boron-11 Enrichment Facility at Talcher, suitable for semiconductor applications.
- DAE hosted 18th International Olympiad on Astronomy & Astrophysics (IOAA 2025) in August 2025, more than 300 students and 140 Members from 64 countries participated.

Achievements of DAE in this year are numerous and diverse. A selection of noteworthy achievements is provided below.

Achievements in Indian Nuclear Power Programme:

- Hon'ble Prime Minister has laid the foundation stone for the 4-unit Mahi Banswara NPP in Rajasthan on 25th Sept, 2025. The project will have four units of PHWR - 700 MW and to be deployed by NPCIL-NTPC JV, named ASHVINI.
- First two units of the indigenous 700 MWe PHWR at Kakrapar, Gujarat (KAPS – 3 & 4) have received AERB license for regular operation. Rawatbhata Atomic Power Project (RAPP) Unit 7 – the 3rd indigenous 700 MWe PHWR in a series of 16 sanctioned reactors, has started commercial operation on April 15, 2025.
- NPCIL has achieved the highest generation in its entire operating history – 56,681 million Units of electricity in FY 2024-25, avoiding about 49 million tons of CO₂ emissions. Continuous Operation for more than a year has been recorded 53 times so far, with TAPS-3 exceeding its earlier record of 521 days and KKNPP-2 operating more than a year.

Achievements in field of health care:

- DAE continues to contribute to the indigenous development, commercialization & supply of therapeutic/diagnostic radiopharmaceuticals and Cancer Care.
- The 150-bed Homi Bhabha Cancer Hospital and Research Centre, Muzaffarpur, Bihar, was inaugurated by the Hon'ble Prime Minister of India on 22.08.2025.
- TMC has seen a total of 1.3 Lakhs patient registration in FY 2024-25. Around 5 lakh women at Varanasi, Sangrur, Mullanpur and Guwahati have been screened for Oral, Breast, and cervical cancer.
- The 30 MeV Medical Cyclotron Facility, Kolkata, continues commercial production of FDG and other radiopharmaceuticals and delivered 371 Ci equivalent doses of radiopharmaceuticals were delivered to hospitals for cancer diagnostics.

- A novel therapeutic intervention, ¹⁷⁷Lu-DOTA-FAPI-2286 Therapy, and five new diagnostic interventions with enhanced precision have been introduced, which are being offered in routine clinical practice, thereby enhancing the scope of patient care. The technology for isotopic separation and enrichment of ¹⁷⁶Lu was successfully demonstrated in the indigenous Electromagnetic Isotope Separation Facility.
- Electron beam-based sterilization facility at Indore, Madhya Pradesh is continuously providing e-beam sterilization services to medical device manufacturers in compliance with ISO standards. In the month of Sept, 2025, the facility successfully completed cumulative sterilization of 1.53 Crore medical devices. The medical devices sterilized here are being exported to more than 35 countries including Germany, UK, Spain, France, Belgium, Italy, Netherlands, Switzerland, Austria, South Africa, Indonesia, Portugal, Czech, and Russian Federation.
- A High-Intensity Gamma Irradiator with Category II type design, ISOMED 2 was completed in May 2025 to serve healthcare industry for terminal sterilisation of healthcare products. ISOMED 2.0 is the only High Intensity Land Based Stationary Gamma Irradiator in the world today.

Achievements in High Technology Areas (particle accelerators, laser, plasma, cryogenic, quantum, space applications, fusion, internal as well as cyber security)

- An indigenously developed Certified Reference Material (CRM) named 'Ferrocarnatite (FC) – (BARC B1401) was formally released.' This CRM will play a pivotal role in exploration, extraction and process control for Rare Earth Elements (REEs) ore mining and allied production industries. The developed FC-CRM certifies thirteen (13) REEs (Ce, Dy, Er, Eu, Gd, La, Nd, Pr, Sc, Sm, Tb, Y and Yb) along with six (06) major elements (Al, Ca, Fe, Mg, Mn and P). This landmark achievement represents the first such CRM in India and the fourth in the world.
- NFC has successfully developed the technology for production of high Residual Resistivity Ratio Niobium ingots and sheets. This material is a critical material required for a range of advanced accelerator programs and is aimed at strengthening India's capabilities in materials research for critical applications.
- Towards Internal Security, ECIL has successfully developed, integrated and installed Chemical, Biological, Radiological and Nuclear (CBRN) System for protection from threats at vital installation. Also, first production module for Akash-Prime system, capable of 360° engagement of multi directional attacks from enemy aircrafts / drones, have been integrated.
- Towards National Security, ECIL has successfully developed and manufactured Integrated Power & Pyro Relay Units (IPPRU) and Launcher Interface Unit (LIU) for Agni missile Launcher System. Also, Weapon Control System (WCS) for Astra Missile (VL- SRSAM) was successfully tested and interfaced with other on-board systems on an Indian Naval Ship.
- C4I (Command, Control, Communication, Computers and Intelligence) systems for Shore Based Anti-Ship Missile System (SBASMS) have been integrated and supplied to M/s BrahMos Aerospace Private Limited for export to friendly foreign country. Integration of Vehicle Mounted Radar was undertaken for the first time.
- Niobium Thermit Production Facility (NTPF), a plant set up by NFC under MoU with Vikram Sarabhai Space Centre (VSSC), Department of Space (DoS) to meet the requirements of Niobium for space

programmes has been commissioned. First batch of Niobium oxide has been produced from the plant successfully and handed over to Secretary, Dept. of Space & Chairman, Space Commission.

Achievements in Basic & Directed Research:

- HWB has achieved a significant milestone in enrichment of Boron-11 of more than 99.8% purity (semiconductor grade) at the Boron Exchange Distillation Facility, HWBF-Talcher. The enriched product has been successfully converted into purified enriched boric acid for subsequent transformation into enriched BF₃ gas.
- IMSc researchers have developed a simple, intuitive, and highly accurate growth model using the Gompertz formula to predict the weight of a newborn. The model requires only four standard foetal measurements from at least three routine ultrasound scans. This breakthrough allows for the early detection of foetal weight deviations linked to risks of neonatal complications and stillbirth, enabling timely clinical interventions.
- The first run for the dark matter direct search experiment, Indian Dark matter search Experiment (InDEx) has been initiated by SINP at the Jaduguda Underground Science Laboratory to explore the low mass region of dark matter.

Achievements in applications of radiation-based technologies for Agriculture & Food Preservation and spin-offs and technology transfer from non-power applications of nuclear energy for societal benefits.

- An early maturing mutant banana variety – TBM-9 has been developed and notified in collaboration with National Research Centre for Banana (NRCB), Trichy. An early-maturing Sorghum mutant-variety, with 15-20% higher grain yield, RTS-43, was gazette notified. These has taken the number of varieties released by BARC to 72. Apart from this, 6 previously released BARC oilseed varieties have been now extended for cultivation to additional states.
- 17 MoUs were signed for setting up gamma radiation processing facilities in private and state government sectors and 6 such facilities were commissioned during this period, taking the total number of such facilities operating in the country to 40. BRIT is supporting these facilities by supplying Co-60 sources and establishing the plant operational parameters.

Recognitions at National & International levels:

- Indian students, mentored by TIFR, have registered stellar performances at the 5 International Olympiads in Biology, Mathematics, Physics, Chemistry and Astronomy & Astrophysics - 2 Gold and 2 Silver medals in 57th International Chemistry Olympiad (IChO) held in Dubai, UAE; 3 Gold and 2 Silver medals in 55th International Physics Olympiad (IPhO) held in Paris, France; 2 Gold and 2 Silver medals in 36th International Biology Olympiad (IBO), held in Quezon, Philippines; 3 Gold, 2 Silver, and 1 Bronze medal in 66th International Mathematical Olympiad (IMO), hosted at Sunshine Coast, Australia; 4 Gold and 1 Silver medal in 18th International Olympiad on Astronomy and Astrophysics (IOAA), held in India.

- IREL and ECIL have received the prestigious ‘SCOPE Eminence Award 2022-23 under the category of “Institutional Excellence” and “Other Profit Making / Surplus generating PSU”, respectively. The award was presented by Hon’ble President of India, Smt. Droupadi Murmu, on 29th August 2025 at Vigyan Bhawan, New Delhi.
- On Hindi Diwas on September 14, DAE has been awarded the Rajbhasha Kirti Puraskar for the second consecutive year.
- Smt. Sonia Kapoor, Headmistress, AECS-2 Mumbai has been conferred the National Award for Teachers 2025 by the Honourable President of India, a recognition that shines as a testament to the excellence of our faculty.
- NIRF ranking 2025 has placed HBNI at 7th position in the Research Institution category, 12th position in the University category, and 20th position in Overall category in India. The Nature Index 2024-25 has placed HBNI in the first position regarding publications in Physical Sciences and in the third position for overall publications among all institutions in India.





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2025 by the Honourable President of India

NKR/AK

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