

PARLIAMENT QUESTION: POLICIES FORMULATED RELATING TO SCIENCE AND TECHNOLOGY

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During the past three years, the Government has undertaken important policy and institutional measures to strengthen the science and technology ecosystem. The Union Cabinet approved the BioE3 (Biotechnology for Economy, Environment and Employment) Policy on 24 August 2024 as India's first biotechnology policy, to foster high-performance biomanufacturing across **six thematic areas** (i) Bio-based chemicals, biopolymers, active pharmaceutical ingredients (APIs) and enzymes, (ii) Smart proteins and functional foods, (iii) Precision biotherapeutics (cell & gene therapy, mRNA therapeutics and monoclonal antibodies), (iv) Climate-resilient agriculture, (v) Carbon capture and utilization; and (vi) Futuristic marine and space research.

The Government also brought out the Indian Space Policy, 2023 in April 2023, which provides a level playing field for Non-Government Entities in the space sector by enabling their participation across the entire value chain of space activities, fostering a commercial space ecosystem, and boosting "Make in India" initiatives. The National Geospatial Policy, 2022, notified on 28 December 2022, aims to liberalize and democratize access to geospatial data and services, foster innovation, enable its widespread use across governance, businesses and academia.

The Government has also advanced **institutional and financing reforms** for research and innovation through the establishment of the **Anusandhan National Research Foundation (ANRF)** to provide strategic direction to research, innovation and entrepreneurship, and through the operationalisation of the **Research, Development and Innovation (RDI) scheme** to incentivise private sector investment in higher Technology Readiness Level research and innovation projects. In addition, mission-mode initiatives such as National Quantum Mission, the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), and the IndiaAI Mission have been taken forward to strengthen emerging technology capabilities, translational research, startup support and commercialization.

The Government has identified several new and emerging areas of development in science and technology. These include **quantum technologies, artificial intelligence, machine learning, cybersecurity, Internet of Things (IoT), robotics, medical devices and diagnostics, cyber-physical systems, electric mobility, critical minerals, geospatial technologies, carbon capture, utilization and storage (CCUS), biotechnology, biomanufacturing, synthetic biology, circular economy technologies, clean energy technologies, blue economy, space technologies, and semiconductors**. These areas are being advanced through a combination of policy support, institutional mechanisms, mission-mode programmes, and innovation and research funding initiatives.

This information was given by the Minister of State (Independent charge) for the Ministry of Science and Technology & Earth Sciences Dr. Jitendra Singh in a written reply in the Lok Sabha today.

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