

PARLIAMENT QUESTION: RESEARCH AND INNOVATION PROGRAMMES

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The Government has been actively supporting Research, Development and Innovation through various schemes and initiatives that align with national priorities. The major Research & Development (R&D) initiatives taken by the Ministry of Science & Technology during last three years to promote research and scientific innovation, are as given below:

In order to strengthen the Research & Development ecosystem in the country, the Anusandhan National Research Foundation (ANRF) has been established under the Department of Science and Technology with a mandate to enhance participation from the private sector and promote interdisciplinary research aligned with national priorities. ANRF has launched several research funding programmes including Prime Minister Early Career Research Grant (PM-ECRG), Partnerships for Accelerated Innovation and Research (PAIR), J.C. Bose Grant (JBG), Advanced Research Grant (ARG), ARGMATRICS, National Post Doctoral Fellowship (N-PDF), Inclusivity Research Grant (IRG), Mission for Advancement in High-impact Areas (MAHA)-EV Mission, ANRF Translational Research and Innovation (ATRI), AI for Science & Engineering, Critical Raw Materials Research Programme, ANRF Catalytic Partnership Programme, MAHA MedTech Mission, 2D Innovation Hub, Convergence Research Centres of Excellence, Prime Minister Professorship and National Science Chair, among others, to promote frontier research, translational research, capacity building and innovation.

The government has launched and operationalized the Research Development and Innovation (RDI) Scheme to incentivize private sector participation in research and development. The RDI scheme has a total outlay of ₹1 lakh crore over 6 years, with ₹20,000 crore allocated for FY 2026–27. Several technology sectors of strategic importance have been identified under the RDI scheme such as energy security, climate action, deep-tech, quantum technologies, artificial intelligence, biotechnology, digital agriculture, digital economy, etc.

‘Vigyan Dhara’ scheme of the Department of Science and Technology has been operationalised to strengthen the Science, Technology, and Innovation (STI) ecosystem in the country, and to enhance the S&T infrastructure by fostering well-equipped R&D labs in academic institutions and promote research in critical sectors. The National Quantum Mission (NQM) with total outlay of Rs. 6003.65 for a period of 8 years is another major strategic initiative aiming to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in quantum technologies. The Mission has established four Thematic Hubs (T-Hubs) in the field of quantum computing, quantum communication, quantum sensing, and quantum materials & devices.

Under the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS), DST has launched BharatGen initiative for IoT & IoE, focusing on Large Language Modelling (LLM) and Generative AI for developing advanced Gen-AI models tailored to India’s linguistic, cultural, and socioeconomic diversity.

The government has launched the 'Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE)' scheme of the Department of Biotechnology with new components namely Biomanufacturing and Biofoundry. Bio-RIDE scheme is designed to foster innovation, promote bio-entrepreneurship, and strengthen India's position as a global leader in biomanufacturing and biotechnology. Moreover, 'Biotechnology for Economy, Environment and Employment (BioE3) Policy has been rolled out for fostering high-performance biomanufacturing.

In order to empower various sections of society through its Aroma Mission and Floriculture Mission, Council of Scientific and

Industrial Research (CSIR) is fuelling the growth of agri-based industry and rural employment. Additionally, CSIR has established a world-class Innovation Complex (CSIR-IC) at Mumbai to bridge the translational gaps (lab to regulator and to the market) of the technologies and products.

The Government has taken several steps to enhance industry– academia collaborations. The DST has established Technology Enabling Centres (TECs) to promote technology development, intellectual property generation, industry collaboration and commercialization of research outcomes. The Department of Biotechnology (DBT) through BIRAC supports industry–academia collaboration through programmes such as SBIRI (Small Business Innovation Research Initiative), PACE (Promoting Academic Research Conversion to Enterprise) and National Biopharma Mission (NBM).

The ANRF has supported mission-oriented programmes such as Electric Vehicle Mission, 2D Materials Innovation Hub, MedTech Mission and Artificial Intelligence for Science and Engineering programmes which mandate industry participation and promote industry– academia collaboration. The Biomedical Device and Technology Development (BDTD) Programme of DST encourages active participation of industry. The programme envisages transfer of developed biomedical technologies to industry for commercialization, with clearly defined technical and financial participation of industrial partners.

The Climate, Energy and Sustainable Technology (CEST) Wing of DST promotes industry– academia collaboration through collaborative programmes in Carbon Capture, Utilization and Storage (CCUS), hydrogen technologies, energy storage, water technologies and smart grids.

The CSIR labs have promoted industry-oriented research through development of innovative technologies and science-led interventions across diverse sectors.

The Department of Science & Technology has been supporting several activities for nurturing innovative and technology led startups under the National Initiative for Developing and Harnessing Innovations (NIDHI) program. The National Quantum Mission of DST has actively engaged with startups to foster innovation and accelerate the development of quantum technologies in India. Under the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS), the Technology Innovation Hubs (TIHs) support innovation and entrepreneurship by providing funding and resources to startups in cutting-edge domains such as Artificial Intelligence (AI) & Machine Learning (ML), Robotics, Internet of Things (IoT), Cybersecurity, FinTech etc.

The Department of Biotechnology through Biotechnology Industry Research Assistance Council (BIRAC) is supporting startups through schemes such as Biotechnology Ignition Grant (BIG); BioNEST (Bio-incubators Nurturing Entrepreneurship for Scaling Technologies), SEED (Sustained Enterprise and Enterprise Development Fund) and LEAP (Fund for Scaling up Start-ups), Fund of funds-AcE initiative, E-YUVA (Empowering Youth for Undertaking Value Added Innovative Translational Research) etc.

The Technology Development Board (TDB), a statutory body under the Department of Science and Technology, promotes the development and commercialization of indigenous technologies for wider domestic application. TDB supports technology commercialization in various sectors such as

semiconductors, telecommunications, medical devices, agriculture, chemicals, advanced manufacturing, etc.

Establishment of Anusandhan National Research Foundation (ANRF), launch of Research Development and Innovation (RDI) Scheme, Vigyan Dhara scheme, National Quantum Mission (NQM), Bio-RIDE, Bio-manufacturing, Bio-foundries etc has substantially increased public investment in scientific research and development.

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

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