

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

RAJYA SABHA
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Targets of biotech Industry

4457 Shri Ayodhya Rami Reddy Alla:

Will the Minister of **SCIENCE AND TECHNOLOGY** be pleased to state:

- (a) the details of measures taken to achieve target to become a \$150 billion biotech industry 2025 as per National Biotech Development Strategy 2021;
- (b) the steps taken to enhance export potential of the biopharmaceutical sector; and
- (c) the steps taken to identify gaps in and strengthen the existing framework of Research Institutions, Universities, incubators and industries in the sector?

ANSWER

**MINISTER OF STATE (INDEPENDENT CHARGE) FOR THE
MINISTRY OF SCIENCE AND TECHNOLOGY & EARTH SCIENCES
(DR. JITENDRA SINGH)**

(a) India's bioeconomy crossed the \$150 billion milestone in 2023, achieving its projected target two years ahead of schedule. By the end of 2024, the sector reached \$165.7 billion (https://www.birac.nic.in/webcontent/indian_bioeconomy_report_2025.pdf). Aligned with the National Biotech Development Strategy 2021, which prioritizes innovation and manufacturing excellence, the Department of Biotechnology along with its Public Sector Enterprise, the Biotechnology Industry Research Assistance Council (BIRAC) has implemented strategic measures to bolster the national biotech ecosystem and accelerate industry growth. Through targeted funding, policy interventions, and institutional capacity building, these initiatives have catalyzed bio-innovation, entrepreneurship, and domestic biomanufacturing. Key initiative includes:

- Building Capacities to promote biotech innovations: DBT-BIRAC has established a robust network of 94 bioincubators across 25 States and Union Territories to support early-stage biotechnology innovations.

- Funding support to Startups and R&D driven Industry: DBT-BIRAC provides continuous financial support throughout the innovation lifecycle, with funding ranging from INR 50 lakhs to INR 10.5 crore per startup through various schemes and programs.
- Handholding of Startups, Entrepreneurs, Academia with Tech transfer, Regulatory Support: To bridge the gap between research and the market, DBT-BIRAC provides comprehensive handholding for startups, entrepreneurs, and academia. This is facilitated through Technology Transfer Offices (TTOs) and the FIRST Hub/Regional Information Facilitation Centre (RIFC) platforms.
- BioEconomy Monitoring: DBT-BIRAC's Make in India Facilitation Cell (PMU) tracks the nation's progress by publishing the annual India BioEconomy Report.
- The National Biopharma Mission (NBM), a ₹1,500 crore joint initiative of the DBT and the World Bank. It focuses on accelerating the transition of biopharmaceuticals from discovery research to early-stage development. The mission is a key driver in achieving India's vision of a \$150 billion biotechnology industry, fostering deep collaboration between industry and academia.
- BIRAC through its PPP schemes promote innovation and research in the field of biotechnology, across the country through i4 programme (Intensifying the Impact of Industrial Innovation) and PACE Programme (Promoting Academic Research Conversion to Enterprise). The schemes support both startups, companies and academic institutions.
- The Department of Biotechnology (DBT), Government of India, with the approval of the Cabinet, has announced the BioE3 Policy (Biotechnology for Economy, Environment and Employment) to foster high-performance Biomanufacturing. The BioE3 Policy provides a comprehensive framework to empower Indian institutions, universities, startups, and industries to lead transformative innovations. The policy focuses to augment discovery and translational research across the sectorial verticals:
 - Bio-based chemicals, Bioplastics, Active Pharmaceutical Ingredients (APIs), and Enzymes
 - Functional Foods and Smart Proteins

- Precision Biotherapeutics (monoclonal antibodies, mRNA therapeutics, cell & genetherapy)
- Climate resilient agriculture (agribiologicals)
- Biofuels and Carbon capture
- Futuristic marine and space research

This policy positions Bharat to realize the full potential of bio-economic growth through inclusive and sustainable resource management.

(b) With a vision to elevate India's biopharmaceutical industry, the Government of India has announced the Biopharma SHAKTI scheme with a total outlay of ₹10,000 crore over a five-year period. Implemented by the Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, the initiative intended to benefit the Indian pharma industry.

Besides this, the DBT and BIRAC has implemented various R&D and innovation-led programs across healthcare, agriculture, and allied sectors. These initiatives are pivotal in enhancing the global competitiveness of India's biopharmaceutical industry and expanding its export potential. Steps initiated in this regard include:

- The National Biopharma Mission (NBM) drive a nationwide program to advance India's R&D in vaccines, biologics, and medical devices, ensuring these products meet international standards for global market readiness. NBM has provided critical support for pioneering products, including the ZyCoV-D vaccine, COVID-19 diagnostic kits, and therapeutics such as Liraglutide, Pegylated Interferon, and Aflibercept. Significant advancements in medical infrastructure include the development of an indigenous MRI scanner, endoscopic devices, and the OmniBRx bioreactor.
- Through the i4 and PACE schemes, BIRAC nurture startups by accelerating research translation and supporting commercialization. These biotech solutions—spanning health, agriculture, and the environment—meet rigorous global quality standards, ensuring they are competitive in the international marketplace.

(c) BIRAC has strategically adopted a comprehensive approach to advance the Indian biopharmaceutical sector from basic research to commercial manufacturing by identifying systemic gaps and implementing targeted interventions. This is achieved through various

mechanisms such as national stakeholder consultations, brainstorming sessions, performance and portfolio analysis and infrastructure mapping etc.

Besides this, NITI Aayog has conducted a comprehensive study on the Ease of Doing Research, identifying key bottlenecks within the R&D ecosystem and proposing strategic measures to eliminate obstacles. The report focuses on seven critical areas: (a) R&D Funding and Utilization; (b) Attraction and Retention of Quality Human Resources; (c) Institutional Structures and Processes; (d) Technology Development, Translation, and Commercialization; (e) Access to Knowledge and Resources; (f) R&D in State Institutions; and (g) Monitoring, Evaluation, Capacity Building, and Policy Administration.

Further, in order to strengthen the domestic biopharmaceutical sector BIRAC supports Technology Clusters, like the NCR Biocluster, fostering collaboration among universities, hospitals, and industries. Through the Bioincubators Nurturing Entrepreneurship for Scaling Technologies (BioNEST) and Empowering Youth for Undertaking Value Added Innovative Translational Research (E-YUVA) schemes, BIRAC has established 94 centers, mainly focused on healthcare, across India. These initiatives provide infrastructure, regulatory guidance, and promote translational research, with a focus on regional inclusivity. BIRAC also strengthens industry-academia links by supporting Translational Research Consortia and Clinical Trial Networks, and offers funding via the Biotech Ignition Grant (BIG) and equity funds, aiding startups in product development.

Besides this, The Council of Scientific & Industrial Research (CSIR) has developed a framework to enhance the transition from lab research to market-ready applications. This involves incubating startups, offering scientific support, and organizing networking events like startup conclaves and industry meets. CSIR frequently holds training and skill development programs, collaborates with academic and industrial partners through MoUs, and facilitates industrial and educational visits. The CSIR Integrated Skill Initiative and DSIR-PRISM scheme support innovation and skill enhancement, with programs aimed at promoting science among students and teachers through hands-on research experiences and specialized workshops.
