The programme will be accelerated through international collaboration, inter-ministerial coordination, and Public-Private Partnerships (PPP). Appropriate regulatory reforms and compelling incentives will reduce timelines of development and commercialisation.

BIOE3 aligns with National Agenda

- Union Budget 2023-2024: Emphasis on Green Growth.
- Hon'ble PM's vision to make India a 'Net Zero' carbon economy.
- Lifestyle for Environment (LiFE) was launched by the Hon'ble PM.

Benefits of BioE3

- Positioning India as a Global Biomanufacturing Hub.
- Steer India on the path of accelerated Green Growth.
- To fast-track innovation to technology sustainably.
- Drive employment and intensify entrepreneurial momentum.
- Achieve bioeconomy targets and national economic goals for 2047.
- Create a Bio-Vision for Bharat.

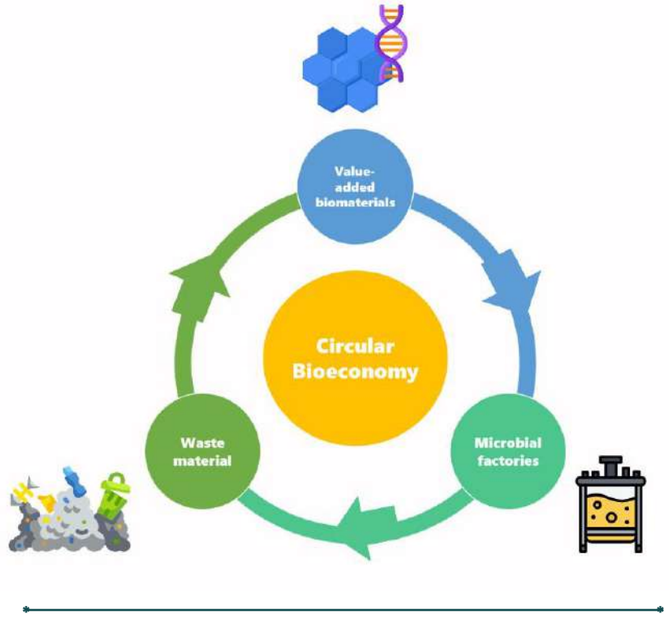
Impact

This policy document will galvanize research and technological skills within the country, attract startups and industries, and thus effectively steer biomanufacturing to build a robust bioeconomy. The technology convergence will advance innovations in medical treatments, address farming and food challenges, and promote bio-based products.

Overall, this policy will further strengthen government's initiatives, such as the 'Net Zero' carbon economy and 'Lifestyle for Environment', and will steer India on the path of accelerated 'Green Growth' by promoting a '**Circular Bioeconomy**'. Biomanufacturing approaches will thus build a more prosperous, equitable, and sustainable future for all and achieve the target of Viksit Bharat:

BioE3

Biotechnology for Employment, Economy & Environment



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DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science & Technology
Government of India

BioE3

Biotechnology for Economy, Environment & Employment

Towards a Green, Clean and Prosperous India

Background

The Union Cabinet approved BioE3 policy (Biotechnology for Economy, Environment and Employment) to usher a new scientific revolution in biomanufacturing driven by regenerative principles. The BioE3 policy framework creates a convergence between biotech, engineering and digitalization for building a more equitable and sustainable future through Biomanufacturing. This timely policy intervention is expected to create jobs, develop new technologies and products thereby accelerating the growth of manufacturing units, catapulting India's bioeconomy to new heights. BioE3 envisages green, clean, prosperous and Atmanirbhar Bharat and putting the country well ahead of its net zero carbon emission target. #ViksitBharat2047

Policy Framework

Vision: To set Bharat at the forefront of a future that is more sustainable and responsive to global challenges by accelerating and harnessing biomanufacturing solutions that encompass diverse bioeconomic activities while safeguarding environmental and climate impacts.

Goal: To fast-track innovation-to-technology sustainably by weaving together fragmented activities under the umbrella of biomanufacturing and incentivize concrete options to build a sustainable future.

Objective: To set forth a framework that ensures the adoption of cutting-edge advanced technologies, and to align innovative research aimed at revolutionising biomanufacturing processes for enhanced efficiency, sustainability, and quality while also accelerating the development and production of bio-based high-value products.

About the Policy

The policy provides a framework to empower Indian institutions and industries to engage in transformative innovations by:

- Intensifying research and innovation to address challenges such as mitigation of climate change and achieving decarbonisation.
- Boosting domestic biomanufacturing capability by enabling synergy between science, technology, engineering, and manufacturing.

Fostering High-Performance Biomanufacturing

Manufacturing that uses biological systems:

- Leveraging living systems to create new sustainable and efficient manufacturing processes.
- Versatile processes that can create products with efficient utilisation of resources in a scalable, cost-effective manner and reduce environmental impact.
- Promote bio-based products, advance medical treatments, support food with a low carbon footprint, agribiologicals, and marine and space

Policy Overview

Through this policy, the government will delineate an ambitious vision to achieve technological leadership and tackle major challenges with a focused mission in six thematic sectors:

- Bio-based Chemicals and Enzymes
- Functional Food and Smart Proteins
- Precision Biotherap-eutics
- Climate-Resilient Agriculture
- Carbon Capture and its Utilization
- Marine and Space Research

To augment research and translation across these six verticals, Bio-Enablers, i.e., Bio-Artificial Intelligence (AIs) Hubs and Biomanufacturing Hubs/Biofoundries, will be set up across the country.

Strategies to Promote Biomanufacturing

The policy will be implemented in 3 buckets:

- **Discovery and Innovative Research Network** for developing advanced biosynthetic platforms to establish proof-of-concept.
- **Bridging the Gap for Scaling Up from Lab to Market** for already-established proof-of-concepts.
- **Setting up of Bioenablers:** The 'Bio-AI Hubs' will enable discovery research across the sectors, while the Biofoundries/'Biomanufacturing Hubs' will support facilities for pilot-scale and pre-commercial-scale research.