

Kickoff Event cum Workshop on Biomanufacturing for Circular Bioeconomy; Carbon Capture and its Utilization (CCU): Technology Development, Pilot Deployment & Policy Integration

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Member NITI Ayog Dr. V.K. Saraswat released the Booklet on ‘Biomanufacturing for Carbon Capture and It’s Utilization,’ a cohort of projects demonstrating lab to field scale deployable biosolutions for Carbon Capture Utilization.

Department of Biotechnology announces Projects on Scaling Up Biomanufacturing Solutions for Reducing Industrial CO₂ Emissions.

CO₂ to Circular Bioeconomy: Scaling up biomanufacturing innovations to transform industrial emissions into sustainable value under the aegis of BioE3 Policy.

The Department of Biotechnology, under the aegis of the BioE3 Policy, announces projects aimed at utilizing and converting industrial CO₂ emissions into value-added products through a circular bioeconomy approach.

The Department of Biotechnology (DBT), Govt. of India, along with its PSU arm, the Biotechnology Industry Research Assistance Council (BIRAC) organised a national Kick-off Event-cum-Workshop on “Biomanufacturing for Circular Bioeconomy; Carbon Capture and its Utilization (CCU): Technology Development, Pilot Deployment and Policy Integration” on 23rd January 2026 at the National Institute of Immunology (NII), New Delhi. The event marked a significant milestone in India’s journey towards climate- resilient growth by formally initiating a new cohort of DBT- BIRAC supported CCU projects under the BioE3 Policy. The event brought together scientists, policymakers, industry leaders, startups, and academic institutions from across the country to deliberate on advancing biomanufacturing led solutions for a circular and low-carbon bioeconomy.

The event was graced by Dr. V.K. Saraswat, Hon’ble Member NITI Aayog as Chief Guest. Dr. Saraswat released the booklet titled “Biomanufacturing for Carbon Capture and its Utilization” and formally announced the implementation of DBT- BIRAC supported CCU projects. Addressing the gathering, he highlighted that CCU-enabled biomanufacturing offers a practical and scalable pathway to reduce industrial emissions while creating new value chains and strengthening industrial competitiveness. He emphasised that sustained collaboration across academia, industry, and policy will be critical for translating CCU innovations from pilots to large-scale deployment, thereby supporting India’s Net Zero 2070 commitment and advancing the broader vision of Viksit Bharat 2047

Speaking on the occasion, Dr. Rajesh S. Gokhale, Secretary, DBT; Director General, BRIC; and Chairman, BIRAC, articulated the national vision for CCU-enabled biomanufacturing under the BioE3 Policy as a shift towards a green, inclusive and circular bioeconomy. He emphasised that integrating carbon capture and utilisation with biomanufacturing enables decarbonisation, defossilisation, and zero-waste industrial growth by treating CO₂ as a valuable feedstock. Dr. Gokhale highlighted CCU as a foundational pillar of BioE3 and noted that enabling frameworks such as the Carbon Credit Trading Scheme can accelerate industry adoption. He highlighted that CCU driven biomanufacturing should be viewed as a systems-level intervention integrating science for deployable solutions for decarbonising industry through circular bioeconomy approach, supporting India's long-term climate commitments through green growth and manufacturing.

Dr. Jitendra Kumar, Managing Director, BIRAC said that 'the initiative on CCU will position India as a global leader in biological carbon valorisation and regenerative bio-economy solutions, showcasing the country's innovation and industrial capability. Dr. Debasisa Mohanty, Director, National Institute of Immunology made welcome remarks during the event.

The technical deliberations were designed to closely align academia and industry, with academic institutions showcasing core bio-based CCU technologies and user industries, including Aditya Birla Group, Jindal Steel and Power, Praj Industries, 4NBio, Engineers India Limited, and IOCL, sharing insights on operational needs, scale-up, and deployment considerations, to understand gaps between technology development and industrial application while fostering partnerships for scalable CCU solutions.

Representatives from the steel and iron, fuels and chemicals, fibre and textiles, and clean-tech sectors shared valuable insights on industrial requirements and highlighted industry's increasing interest in CCU as a viable pathway for emissions mitigation, while also creating opportunities for new value chains and advancing sustainable manufacturing practices.

A strategic workshop and breakout discussion session formed an integral part of the event, enabling focused deliberations on priority themes such as bioconversion and synthetic biology, electro-bio integration and reactor engineering, product development and market strategies, and policy, finance, and entrepreneurship. The breakout sessions facilitated constructive dialogue to get holistic views on mapping CCU technologies to industrial needs, pairing academia with industry partners, strengthening engagement across the innovation value chain, and identifying policy and financing mechanisms to accelerate adoption.

The deliberations underscored the need for coordinated efforts to build the shared clusters for demonstrating together at pilot and field scale, the bimanufacturing solutions for Carbon Capture and its Utilization. It has also highlighted the need for building the deployment level for shared infrastructure, generate indigenous intellectual property, and create enabling policy and regulatory frameworks. Exchange resulted in building extended industry- academia collaboration for pilot and field scale deployment of CCU driven biomanufacturing solutions to tackle industrial emissions.

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