



R&D Roadmap to enable India's Net Zero Targets through Carbon Capture, Utilization and Storage (CCUS) launched

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The first of its kind R&D Roadmap to Enable India's Net Zero Targets through Carbon Capture, Utilization and Storage (CCUS) was launched on December 2, 2025.

The R&D Roadmap to Enable India's Net Zero Targets through Carbon Capture, Utilization and Storage (CCUS) prepared by the Department of Science and Technology (DST) was launched by Prof. Ajay Kumar Sood Principal Scientific Adviser (PSA) to the Government of India.

He described the roadmap as an excellent guide for coordinated action and collaboration on climate solutions. He also highlighted that as India advances toward its climate goals, this CCUS Roadmap will guide coordinated action, foster collaboration, and enable investments that accelerate technology deployment. In doing so, he added that it will support the reduction of the nation's carbon footprint and reinforce India's role as a responsible global partner, marking an important step toward a sustainable future aligned with the vision of Viksit Bharat@2047.

Prof. Abhay Karandikar, Secretary, DST highlighted the DST's pioneering role in steering CCUS R&D in the country fostering national and international collaborations for accelerating the CCUS Technologies. He outlined that this Roadmap balances advancing current technologies toward commercial readiness with supporting breakthrough science to drive next-generation solutions. He added that the roadmap highlights the need for supportive frameworks—including skilled human capital, regulatory and safety standards, and early-shared infrastructure. It also provides strategic guidance on thematic priorities and funding pathways needed to accelerate CCUS development and DST is prepared to lead the implementation with initiatives like the ₹1 Lakh Crore Research, Development & Innovation (RDI) Scheme strengthening private-sector-led innovation in Industrial Decarbonization, complementing the roadmap's vision.

As the world faces the escalating challenges of Climate Change, the need for innovative pathways to reduce Greenhouse Gas emissions has become more urgent than ever. For India, achieving Sustainable Development—balancing rapid industrial growth with environmental responsibility—remains a defining priority. In this context reaffirming the nation's long-term commitment to a sustainable future and setting the ambitious goal of achieving Net-Zero emissions by 2070, Carbon Capture, Utilisation, and Storage (CCUS) has emerged as a core technological pillar essential for decarbonizing sectors where viable alternatives are limited.

DST has taken a leadership role in supporting translational R&D through the creation of CCU test beds in real industrial environments, leveraging innovative public-private partnership models. These test beds focus on hard-to-abate sectors such as Power, Cement, and Steel—areas central to India's long-term Decarbonisation trajectory.

The CCUS R&D Roadmap prepared by the Department of Science and Technology (DST) draws on nearly seven years of experience in supporting CCUS and the domain expertise of a High-Level Task Force formed thereafter.

It provides strategic guidance on thematic priorities and funding pathways needed to accelerate CCUS development. The roadmap balances advancing current technologies toward commercial readiness with supporting breakthrough science to drive next-generation solutions. Beyond technology, the roadmap highlights the need for supportive frameworks—including skilled human capital, regulatory and safety standards, and early-shared infrastructure.

Dr. Ashish Lele (Chair- HTF and Director, CSIR-NCL, Pune) underscored the pivotal role of DST in accelerating CCUS R&D and deployment is pivotal.

Dr. Anita Gupta (Head, CEST, DST) and Dr. Neelima Alam (Associate Head, CEST, DST) highlighted the technical details of the various national, multilateral and bilateral CCUS interventions supported by DST that led to acceleration of the CCUS technologies touching upon setting up of the country's first three National Centers of Excellence in CCUS by DST.

The launch saw strong participation from the broader CCUS community, including academia, researchers, policymakers, and government representatives. It also featured enthusiastic involvement from international partners from various embassies, industry representatives from hard-to-abate sectors, and multilateral institutions. Industry representatives from the energy, manufacturing, steel, cement, and technology sectors, along with experts from academic institutions and national laboratories, were also present.





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