



भारतीय प्रौद्योगिकी संस्थान मुंबई INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

प्रकाशन और जनसंपर्क कार्यालय
Publications and Public Relations Office

पवई, मुंबई - 400076, महाराष्ट्र, भारत
Powai, Mumbai - 400076, Maharashtra, India

दूरभाष: (+91-22) 25767026-27 | वेबसाइट: www.iitb.ac.in
Ph: 022-25767026-27 | web: <http://www.iitb.ac.in>

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IIT Bombay, NTPC Drill India's First CO2 Storage Test Well; Second Well Underway

Mumbai | December 29, 2025: In a major breakthrough in academia-industry collaboration in Carbon Capture, Utilisation and Storage (CCUS), NTPC and IIT Bombay have successfully completed the drilling of India's first well for testing the viability of geological CO2 storage in sedimentary formations such as coal and sandstone.

The collaboration, launched under the aegis of NITI Aayog, Government of India, in November 2022, brought together NETRA - the R&D wing of NTPC, and the Department of Earth Sciences, Indian Institute of Technology Bombay in building India's first geological storage atlas for coalbed methane rich coalfields. The atlas provided layer-by-layer simulation results with experimentally validated inputs for quantifying the potential for geological CO2 storage in four major coalfields.

Subsequently, in September 2025, NTPC and IIT Bombay launched the country's first dedicated drilling reaching the depth of 1200m, for potential CO2 storage at a site in Pakri Barwadih, in the vicinity of a coal mining area, and completed it on November 15, 2025. A second well drilling was initiated on December 21, 2025; and both CO2 injection and plume monitoring using these wells will be implemented.

On the success of the first drilling, Dr. V.K. Saraswat, Member, NITI Aayog, and Chairman, Advisory Committee, DST-National Centre of Excellence (NCOE) in CCUS at IIT Bombay stated that as India stands at the cusp of honouring our net-zero commitments in line with the 'Panchamrit' climate goals announced by the Hon'ble Prime Minister, accelerating indigenous science and technology outcomes for commercialization of CCUS technologies will be crucial to the journey towards 'Atmanirbhar' and 'Viksit' Bharat commitments. We should also keep a strict watch on

Media Contact:

Mrs Falguni Banerjee Naha, Public Relations Officer, IIT Bombay Ph. No. 022-25767025/4027 | Email: pro@iitb.ac.in



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subsurface characterisation, conservative injection pressure limits, robust well design and sealing, and continuous monitoring of pressure and seismicity.

Mr. Gurdeep Singh, CMD, NTPC, complimented the team on this success and stated that it marks an important step towards decarbonisation. Joining him, Prof. Shireesh Kedare, Director, IIT Bombay, celebrated this landmark contribution of the Institute, and emphasised the role of the translational R&D in architecting the roadmap for India's energy transition and decarbonisation.

Project lead Prof. Vikram Vishal said the initiative marks a shift in research from laboratories to field deployment, and thanked NTPC and NITI Aayog for their visionary leadership and stewardship. The project will provide feasibility and risk assessments for a full-scale CCS development, including a detailed storage complex analysis and a commercial development plan. Preliminary studies indicate high geological CO₂ storage potential in the North Karanpura coalfield, with the Pakri-Barwadih block showing potential to inject up to 15.5 Mt over 10-year injection period', he said.

It may be recalled that in 2017, IIT Bombay and NTPC collaborated to curate India's first CO₂ capture and utilisation facility in the power sector, which led to the establishment of the Vindhyachal CCU plant that captures 20 tonnes of CO₂ per day and converts it into a fuel-methane. India's CCUS journey is being advanced through a mission-mode approach, with the Ministry of Power as the nodal agency, supported by inter-ministerial collaboration to scale up CCUS technologies across hard-to-abate sectors. At the 25th Prime Minister's Science, Technology & Innovation Advisory Council meeting chaired by Prof. Ajay Kumar Sood, Principal Scientific Adviser to the Government of India, experts (that included Prof. Vikram Vishal) and officials highlighted the need for a robust policy framework, institutional mechanisms, and widespread adoption of CCUS to help India reduce emission intensity and achieve net-zero goals.

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About IIT Bombay:

The Indian Institute of Technology Bombay, set up in 1958 as the second IIT, is recognised worldwide as a leader in the field of science and engineering education and research. The Institute was granted the status of 'Institution of Eminence' by the Ministry of Education (the then Ministry of Human Resources Development) on July 9, 2018. IIT Bombay is reputed for the quality of its faculty, cutting edge research, industry relations and the outstanding calibre of students graduating from its undergraduate and postgraduate programmes. The Institute has 17 academic departments, 47 other academic entities (Centres/ Programmes/ Academic facilities/ Hubs/ Externally funded centres and Labs) and three schools. Over the last six decades, more than 75,000 engineers and scientists have graduated from the Institute. It is served by 751 faculty members and about 150 visiting and part-time faculty considered not only amongst the best within the country but also highly recognised in the world for achievements in the field of education and research. On June 19, 2025, IIT Bombay was ranked 2nd in India and 129th in the world in the Quacquarelli Symonds (QS) World University Rankings for 2026.

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