

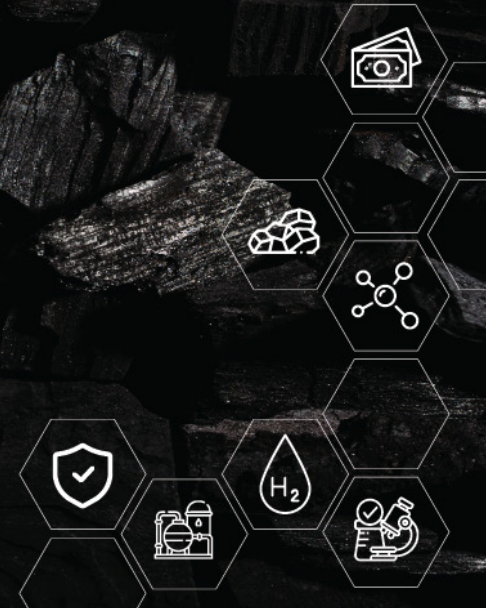


PANEL DISCUSSION

REIMAGINING INDIA'S ENERGY TRANSITION

The Role of
Coal-to-Chemicals
and Hydrogen
Pathways

11 June 2026 | India Habitat Centre, New Delhi, India



BACKGROUND NOTE

India's energy story, despite rapid strides in renewables, still begins with coal. Even as India targets 500 GW of non-fossil capacity by 2030, coal continues to anchor the system. Accounting for >70% of electricity generation and backed by nearly ~400 billion tonnes, coal remains the bedrock of India's energy security. As India's primary energy demand is projected to contribute over 23 per cent of global incremental energy demand by 2050, the question is not whether coal will remain relevant but how it will be reimagined.

Unlike import-dependent fuels such as natural gas or critical minerals for clean technologies, coal offers a uniquely domestic advantage. It supports millions of livelihoods, underpins industrial growth, and provides price stability in an increasingly volatile global energy market. Yet, its environmental footprint poses undeniable challenges, making it imperative to transition from conventional combustion pathways to more efficient and lower-emission utilisation routes.

This is where coal gasification emerges as a strategic bridge. By converting coal into syngas, a mixture of hydrogen, carbon monoxide, and other gases, India can unlock a versatile platform for producing both energy carriers and industrial feedstocks. Recognising this potential, the Government of India has set an ambitious target of achieving 100 million tonnes of coal gasification by 2030, alongside policy support for advancing Carbon Capture, Utilisation, and Storage (CCUS) technologies. With CO₂ capture rates of up to 90-95%, such pathways can align with emerging low-carbon benchmarks while leveraging domestic resources. The Government of India's proposed ₹20,000 crore CCUS mission further signals intent to scale these technologies.

Gasification fundamentally shifts the role of coal from a fuel to a feedstock. The syngas produced can be channelled into a range of value-added applications. On one hand, it enables the production of chemicals

such as methanol, monoethylene glycol, and dimethyl ether, reducing dependence on imports from fossil fuel-rich regions and strengthening domestic manufacturing. On the other hand, it opens pathways for hydrogen production, positioning coal within India's broader decarbonisation strategy.

Hydrogen demand in India, currently around 6 MMT, is expected to grow to 20–25 MMT by 2040, driven by hard-to-abate sectors such as steel, refining, and heavy transport. While the National Green Hydrogen Mission (NGHM) has set a target of 5 MMT of green hydrogen annually by 2030, backed by expected investments of ₹8–10 lakh crore, creation of over 6 lakh jobs, and the potential to avoid ~50 MMT of CO₂ emissions each year. But achieving this will require substantial renewable capacity, water resources, and imported critical minerals for electrolyzers. These constraints underscore the importance of adopting a diversified hydrogen strategy.

Coal-to-hydrogen pathways, particularly when integrated with CCUS, offer a complementary solution. With potential CO₂ capture rates of up to 90–95 per cent, such systems can align with emerging low-carbon benchmarks while leveraging domestic resources. Moreover, coal-based hydrogen can support large-scale ammonia production, strengthening fertiliser security and reducing import dependence, an increasingly critical concern in light of global supply chain disruptions. At the same time, expanding the coal-to-chemicals ecosystem presents an opportunity to create higher economic value from domestic resources. By producing fuels and specialty chemicals domestically, India can reduce foreign exchange outflows, enhance supply chain resilience, and build new industrial capabilities.

This discussion therefore seeks to move beyond a narrow, colour-coded framing of hydrogen towards a more holistic, lifecycle emissions-based approach. It aims to explore how coal, when reimagined through gasification and integrated with emerging technologies, can serve as a bridge between energy security, industrial growth, and decarbonisation. The discussion will be structured into two focused panel sessions, each examining a critical dimension of coal's transformation in India's energy transition.

The first panel will explore the coal gasification landscape in India, with a focus on upstream enablers such as coal availability, quality, and suitability for gasification, along with technological pathways, hydrogen yield efficiencies, and integration with carbon capture technologies. It will assess the feasibility of scaling gasification within India's existing resource and infrastructure constraints, while also examining the policy and investment ecosystem required to support this transition.

Building on this foundation, the second panel will examine the conversion of coal-derived syngas into value-added molecules, including hydrogen and industrial chemicals. The discussion will focus on techno-economic viability, lifecycle emissions, and the potential for producing fuels and chemicals such as ammonia, methanol, ethanol, and other specialty products. It will also explore the role of these pathways in enhancing fertiliser security, reducing import dependence, and strengthening domestic manufacturing value chains. Together, the two panels aim to provide a comprehensive view, from resource to end-use of how coal can be reimagined as a strategic feedstock in India's evolving energy and industrial landscape.

Expected Outcomes

- A reframed understanding of coal as a feedstock rather than merely a fuel
- Insights into the feasibility and scalability of coal gasification in India
- Clarity on the role of coal in hydrogen and chemicals value chains
- Policy-relevant recommendations for a diversified and resilient energy transition

EVENT STRUCTURE

Schedule	Particulars
13:00-13:45	Lunch and Registrations
13:45 – 14:00	Welcome Address <ul style="list-style-type: none">• Mr. Vaibhav Chaudhary, Director, ACPET• Mr. Shishir Priyadarshi, President, CRF
14:00 – 14:15	Inaugural Address <ul style="list-style-type: none">• Prof. G.D Yadav, Former Vice Chancellor, ICT Mumbai (TBC)
14:15 – 14:30	Keynote Address <ul style="list-style-type: none">• Smt. Rupinder Brar, Additional Secretary, Ministry of Coal (TBC)
14:30-14:40	Special Address <ul style="list-style-type: none">• Mr. Rajnath Ram, Energy Adviser, NITI Aayog (TBC)
14:40 – 14:50	Context Setting Presentation Setting the narrative: from coal as India's energy backbone to its transformation into a feedstock for future fuels and chemicals.
14:50 – 15:50	Panel I: Coal to Syngas - The Coal Gasification Route <i>This panel will examine the upstream and enabling ecosystem required to transition coal from combustion to conversion. The panel will encompass discussions on coal availability and suitability for gasification, national targets and deployment status, CCUS integration and emissions reduction potential, alongside the infrastructure, investment, and policy ecosystem required to scale coal gasification.</i> Q&A Session (15 mins)
15:50 – 16:50	Panel II: From Syngas to Value: Chemicals and Hydrogen Pathways <i>This panel will explore downstream opportunities and economic viability for converting coal to value added chemicals and hydrogen. The discussions will encompass examining the techno-economic viability of coal-to-chemicals and hydrogen pathways, including production routes for hydrogen, ammonia, methanol, ethanol, butanol, and specialty chemicals, while assessing lifecycle carbon intensity, fertiliser security, import substitution potential, industrial scalability, and emerging market</i> Q&A Session (15 mins)
16:50 onwards	Closing Remarks followed by Networking and Hi-Tea

ABOUT CRF

Chintan Research Foundation (CRF) is an emerging independent think tank dedicated to shaping policy through rigorous research and thought leadership. With a strong focus on fostering collaboration between policymakers and industry, CRF integrates practical insights into its research and advocacy efforts. It conducts comprehensive research to support informed decision-making and engages with stakeholders through discussions, events, and publications. CRF's research is focused on three core areas – Climate Change & Energy Transition, Economy & Trade, and Geopolitics & Strategic Studies. The Centre for Climate Change & Energy Transition aims to be a research and expertise hub, focusing on sustainable and clean energy, environmental stewardship, and climate actions.

For further information about CRF, please visit: crfindia.org

ABOUT ACPET

The Ashoka Centre for a People-centric Energy Transition (ACPET) supports the transition towards a net-zero economy by addressing critical knowledge gaps for India and the Global South. The Centre develops people-centric, context-responsive frameworks and solutions that strengthen the economic, social, and governance pillars of sustainable growth. Working with industry leaders, government institutions, and community champions, ACPET designs and tests practical interventions to create scalable and adaptable solutions. It also promotes collaboration, knowledge-sharing, and capacity-building through reports, policy briefs, publications, and discussions that contribute to informed policymaking and a more inclusive and sustainable energy transition.

For further information about ACPET, please visit: acpet.ashoka.edu.in