

HPCL's compressed biogas dream drives India's green energy push

SIMONTINI BHATTACHARJEE

MEERUT (UP): Amidst a silent corner of Uttar Pradesh's Meerut, where farm residues used to heap up in fields, Hindustan Petroleum Corporation Ltd (HPCL) is writing India's energy self-reliance narrative.

The government-owned energy behemoth, under its bio-energy arm covering over 19 acres of land in Mawana village, has converted this agro-industrial cluster into the hub of the country's Compressed Biogas (CBG) revolution, converting crop residues, press mud, and distillery effluents into a high-purity fuel.

The Circuit Plant: HPCL's Flagship Project

The pivot of this change is the Circuit CBG Plant, a Rs 50-crore facility which Prime Minister Narendra Modi dedicated to the nation in October 2023. Jointly developed with indigenous entrepreneurs the plant converts 150 tonnes of organic waste per day into 12 tonnes of CBG—proudly containing 99.1 per cent methane content—and 50 tonnes of Liquid Fermented Organic Manure (LFOM).

"This is not just about fuel," believes HPCL's Bio-Energy CEO. "It's about closing the loop between energy and agriculture, deriving value from waste." The LFOM, deployed to 5,000+ local farmers, has lowered chemical fertilizer consumption by 30 per cent in the region, a living example of circular economy in practice. Strategic Partnerships

and Policy Backbone HPCL's Meerut achievement is part of a national playbook. The company has signed offtake agreements with 15 Indian entrepreneurs, promising to buy all the CBG produced—a de-risking move that brings in private capital.

Having already installed plants in Badaun (UP) and Patnera (Rajasthan), and another 108 in the pipeline, HPCL plans to take advantage of the SATAT (Sustainable Alternative Towards Affordable Transportation) scheme, implemented in 2018, to provide 5 per cent of India's natural gas requirement through CBG by 2030. UP's stamp duty concessions under the State Bio-energy Policy and the National Biofuels Policy (2020) have reduced project costs by 15–20 per cent, speeding up rollout. "HPCL's guaranteed price—Rs 750–800 per kg—and 15-year purchase orders render CBG economically viable," says a plant developer.

Teach Leap: 99% Pure CBG

India's biogas journey from 1980s-era 50 per cent - methane has taken a quantum leap. Uptodate anaerobic digestion and membrane technology now produce CBG compliant to Bureau of Indian Standards (BIS) standards, and hence indistinguishable from fossil CNG.

HPCL's Meerut unit supplies gas directly into GAIL's pipeline grid, while 300+ fuel stations across the country sell CBG under SATAT.

National Impact: Reducing Imports, Increasing Security

With 88 per cent of India's crude oil being imported, CBG is a strategic tool. HPCL projects are supporting India's 'Panchamrit' commitments at COP26, including reducing emissions by 1 billion tonnes and reaching net-zero by 2070. The achievement of 20 per cent blending of ethanol and 5 per cent target for CBG has the potential to save Rs 1.5 lakh crore of oil imports every year. "Each CBG unit displaces 6,000 litres of diesel per day," said an Oil Ministry official.

Grassroots Gains: Jobs, Incomes, Cleaner Air

Aside from macroeconomics, CBG is revolutionising rural India. Farmers are paid Rs 800–1,500 per tonne for crop residues that used to be burnt—a major contributor to UP's 25 per cent reduction in stubble-burning cases since 2023. One plant generates 50–100 local jobs, from collection of feedstock to upkeep. "We use women's SHGs for waste accumulation," says Lalit, co-founder, Circuit Plant. "It's energy with social equity."

While GAIL's Pool Operator Mechanism compels City Gas Distributors to mix increasing CBG shares countrywide, HPCL aims to expand its bio-energy subsidiary's portfolio by ten times till 2030. The company has its sights set on 50+ plants in UP alone. "CBG is no longer an alternative," "It's the backbone of India's energy future," HPCL Chairman said.