



COMPRESSED BIOGAS - ENVIRONMENT MAINS

Q. Discuss the significance of the Compressed Biogas (CBG) and enumerate the measures taken by the government to enhance the production of CBG in India. (10 marks, 150 words)

News: *Sugarcane byproduct pressmud can be a sweet spot for India's compressed biogas sector*

What's in the news?

- India has assumed a key position in the worldwide sugar economy, emerging as the foremost sugar producer since 2021-22, surpassing Brazil.

Key takeaways:

- The byproduct can help generate 460,000 tonnes of compressed biogas CBG valued at Rs 2,484 crore.
- The Low Carbon Transition of India's Oil and Gas Sector was released by the **Energy Transition Advisory Committee (ETAC)**.
- It emphasized the need for India's energy transition and highlighted various pathways to achieve a low-carbon future. Compressed biogas (CBG) can help plug this gap.

Biogas:

- Biogas is an **energy-rich gas produced by anaerobic decomposition of biomass**.
- It is produced from waste / bio-mass sources like agriculture residue, cattle dung, sugarcane press mud, municipal solid waste, sewage treatment plant waste, etc.
- Biogas, a renewable fuel, constitutes mainly of methane (~60%), carbon dioxide (~40%), and traces of hydrogen sulphide.

Compressed Biogas:

- Biogas can be burned directly as a fuel or purified & upgraded by **removing carbon dioxide (CO₂), hydrogen sulphide (H₂S)** and compressed to make Compressed Biogas (CBG).
- The CBG has **methane content** of more than 90%, which is similar to the commercially available natural gas in composition and energy potential.
- The purified biogas with more than 90% of methane can be compressed at 250bar and transported in gas cylinders (cascades) for the end use.
- CBG is exactly similar to commercially available natural gas in its composition and energy potential.
- With similar calorific value and other properties similar to CNG, compressed biogas can be used as an alternative, renewable automotive fuel.



- Given the abundance of biomass in the country, CBG has the potential to replace CNG in automotive, industrial and commercial uses in the coming years.
- The government of India has set a target to increase the share of gas in the energy mix up to 15 percent in 2030 to make India a gas-based economy.

Significance of CBG:

- It results in **responsible waste management**, reduction in carbon emissions and pollution.
- It generates **additional revenue source for farmers**.
- It boosts **entrepreneurship, rural economy and employment**.
- It supports **national commitments** in achieving climate change goals.
- It also helps in reduction in import of natural gas and crude oil.
- It also serves as buffer against crude oil and gas price fluctuations.
- Reduction in Crude and LNG imports thereby huge savings in forex.
- Utilization, development and promotion of domestic feedstock and its utilization for production of biofuels.
- Increasingly **substitute fossil fuels** while contributing to National Energy Security.
- **Climate Change mitigation** and control of pollution.
- Creation of new employment opportunities in a sustainable way.
- Encouragement in the application of advanced technologies for the generation of biofuels.

Scheme to promote CBG in India:

Sustainable Alternative Towards Affordable Transportation (SATAT):

- SATAT initiative launched in October, 2018 envisages setting up of 5000 Compressed Biogas (CBG) plants for production of 15Million Metric Ton (MMT) per annum of CBG by 2023-24.
- Under the initiative, oil and gas marketing companies (OGMCs) viz, Indian Oil, HPCL, BPCL, GAIL and IGL have been inviting expression of interest (EoI) from potential investors/entrepreneurs to procure CBG for further selling to automotive and commercial customers.
- Oil and gas companies are signing commercial agreements for 15 years for procurement of CBG, to be further extended mutually.

Aim:

- Achieve the **target production of 15Million Metric Ton (MMT) of CBG by 2023-24 from 5000 CBG Plants**.
- Empower and unleash the rural economy by supporting farmers
- Undertake developmental efforts to benefit vehicle users and entrepreneurs.
- Increase India's domestic energy production and self-sufficiency by reducing dependency on crude oil imports.



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- Efficient **tackling of urban air pollution** due to farm stubble-burning and carbon emissions
- **Promotion of organic farming** by using Fermented Organic Manure (FOM) produced from CBG plants.
- Help India lead the world toward a clean energy transition.

