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- वर्ष ७८ वे • पृष्ठ संख्या ६०
- किंमत रु. १५/- • एप्रिल २०२२

ISSN 2455 – 2097

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**THE NEW ERA OF
CLEAN MOBILITY**



COMPRESSED BIOGAS

A Greener Solution for A Sustainable Future

The Need:

Since 2000, India's energy consumption has nearly doubled, and the potential for further rapid growth is enormous. In the coming decades, India's energy market will be the fastest-growing in the world, increasing India's influence on the global energy scenario.

The IPCC report 2022 depicts climate change as one of the top 10 risks for the environment. The Glasgow climate pact's goal of limiting global warming to 1.5 degrees Celsius has been hampered by rising levels of greenhouse gas emissions and global warming. Sustainable energy solutions should be incorporated into the energy mix to reduce carbon intensity and thereby facilitate sustainable climate action. Biofuels made from renewable feedstocks have garnered considerable attention from scientists because they could be used to make both energy and alternative fuels. The renewable

energy sector is leading the way in terms of capacity expansion. According to India's renewable energy goals, 50 percent of its energy requirements should be met using renewable energy by 2030.

Compressed Biogas- A Sustainable solution

Compressed biogas (CBG) is an environmentally friendly biofuel produced from bio-organic wastes which have low or no commercial market value today. The chemical composition and energy potential of CBG are identical to those of commercially available compressed natural gas (CNG). In terms of calorific value and properties, CBG is a viable alternative to CNG. It can be used in diverse areas including transportation, industry, power, and cooking applications.

More than half of India's natural gas requirements are imported, and the country currently consumes approximately 43 MMT of gas per year. Due to the lack of additional gas reserves in the country, any additional

requirement will have to be met through imports. Additionally, India aims to generate 15% of its energy from gas by FY 2025, up from the current 7%. India is developing infrastructure to support the development of a gas economy. By FY 22, India's CGD (City Gas Distribution) network pipelines will cover 70% of the population and 53% of the land area. CGD gas consumption accounts for 17% of total gas consumption and is increasing at a 15% annual rate. By FY 25, the number of CNG vehicles is expected to double to 75 million from the current 30 million.

Policy drivers

The Indian government recently announced **SATAT**, a forward-looking and ambitious program aimed at encouraging the production of CBG from agricultural waste. Approximately 5000 CBG units are expected to be established by 2025 as part of this program, which includes a tie-up with OMCs (Oil Marketing Companies such as IOCL, BPCL, HPCL, GAIL, and IGL). Ministry of New & Renewable Energy (MNRE) is also encouraging this development with various central financial assistance schemes. Numerous states, including Uttar Pradesh and

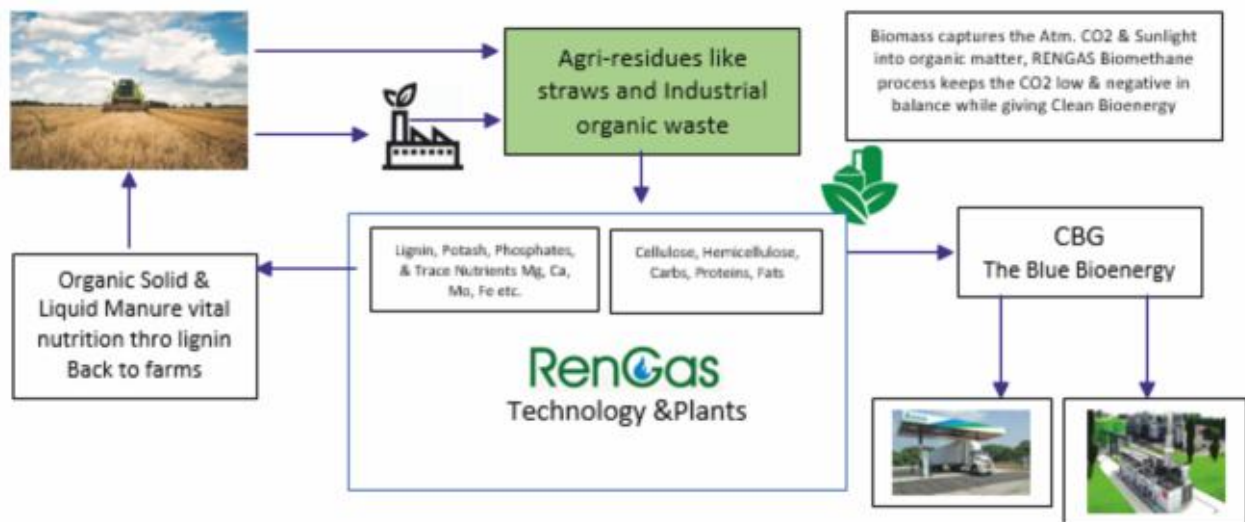
Gujarat, have designated the biogas sector as White Category, implying that no environmental clearances are required.

Benefits

CBG offers numerous benefits portraying environmental stewardship:

- » Decarbonization and responsible waste management that will eliminate stubble burning and help industrial waste disposal.
- » Boosting rural economies through the establishment of a biomass supply chain with the assistance of Farmer Producer Organizations (FPOs) and village-level entrepreneurs.
- » Increased revenue for the farmer by supplying raw materials and creating new job opportunities.
- » Indian farmer's transition from 'Annadata' to 'Urjadata'.
- » Increased availability of organic manure from manufacturing processes to support organic farming cultivation.
- » Decreased imports of natural gas and crude





oil facilitating the potential to save \$1 billion in annual oil costs

» Support India's PANCHAMRIT commitments at COP 26 by using farm-to-fuel energy sources and thereby reducing the country's carbon footprint.

Key enablers:

Despite the fact of the numerous benefits offered by CBG, certain enablers would provide a huge ramp-up to the technology. MNRE subsidies for CBG ventures can be re-instated. GST rates of 5 percent for CBG Plant & Equipment should be revived. The use of CBG in the transportation and manufacturing industries should be mandated. A peculiar offtake, supply, storage & distribution mechanism would ensure a stable ecosystem for the technology.

Praj as a torchbearer in Renewable gas- Ren-GasTM Technology

Praj is India's leading climate action company which drives sustainable climate action through bio-economy. As a global leader in biofuels technology & infrastructure, we have a strong track record in renewable biofuels. Ren-GasTM is Praj's technology for converting

various feedstocks like agri-residues, industrial wastes, variety of grasses into CBG. Over 2 decades, Praj has a comprehensive experience of over 50 industrial biogas plants based on distillery liquid vinasse. Our R&D center Praj Matrix expanded the technology innovation with special microbes and plug flow digester to process solid wastes such as agri-residues and industrial solid wastes into CBG. Praj Ren-GasTM technology focuses on a Circular Bio-economy with nature's balance in a carbon-negative manner.

We believe that if we all do our bit, our country will be closer to achieving its goal of zero carbon emissions sooner!



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