

Project Appraisal and Monitoring Services Compressed Biogas Industry



About Us

Resurgent India Limited is a growing Investment Bank and a SEBI registered Category I Merchant Bank. We offer services in the lines of Techno-Economic Viability (TEV) studies, Lender's Independent Engineer (LIE) assessments, Agency for Specialized Monitoring (ASM) services, Mergers & Acquisitions, Private Equity, Debt Solutions, Structured Finance, Capital Market Solutions, Transaction Advisory, Valuations, ESG Advisory etc.

Our Project Appraisal and Monitoring vertical provides independent assessments of project viability along with reports that assist in both pre- and post-disbursement decision-making for lenders. We have delivered over 1,500 Techno-Economic Viability (TEV) studies and more than 500 Lenders' Independent Engineer's (LIE) reports. Furthermore, Resurgent India is empaneled with nearly all public sector banks, several private banks, and NBFCs for LIE and TEV studies, and with the Indian Banks' Association (IBA) as an Agency for Specialized Monitoring (ASM). With over 20 years of experience and our team of experts, including engineers, chartered accountants and industry specialists, we have successfully handled numerous assignments in TEV in various sectors like Agriculture, Logistics, Packaging, Education, FMCG, Textiles, Real Estate, Solar Power, Chemicals, Pharmaceuticals, Infrastructure, Healthcare, Hotel, Ethanol, Iron & Steel etc.

Compressed Bio-Gas (CBG) Sector Overview:

India's Compressed Bio-Gas (CBG) sector has emerged as one of the most strategically significant components of the country's clean energy transition. CBG is produced by upgrading biogas derived from the anaerobic digestion of organic feedstocks – including agricultural residue, cattle dung, municipal solid waste, sugarcane press mud, and sewage sludge – into high-methane (>90%) purified gas, which is subsequently compressed to CNG-equivalent standards. The resulting fuel is chemically and functionally identical to fossil-derived CNG, enabling its direct use across existing refuelling infrastructure, City Gas Distribution (CGD) pipelines, and industrial gas networks without any modification.

India currently imports approximately 47% of its natural gas requirements and over 85% of its crude oil, making it one of the most hydrocarbon-import-dependent large economies in the world. This exposure translates into persistent foreign exchange outflows and vulnerability to global commodity price cycles. CBG offers a domestically produced, renewable substitute that directly addresses this structural dependency. Beyond fuel substitution, the sector integrates organically into India's circular economy framework – agricultural residue burning, a major contributor to air pollution in northern states, can be redirected into productive

feedstock supply chains, while livestock effluent and urban solid waste, both significant environmental liabilities, are transformed into value-generating inputs.

The sector simultaneously generates bio-manure as a commercially valuable by-product. Officially recognized as Fermented Organic Manure (FOM) under the Fertilizer Control Order, bio-manure creates an additional revenue stream for plant operators while supporting soil health restoration and organic farming adoption among surrounding farming communities. Carbon credit monetization — through the displacement of fossil fuels and prevention of fugitive methane emissions from unmanaged organic waste — represents a further emerging revenue opportunity as India's domestic carbon market framework and voluntary carbon credit markets continue to mature.

High-value allied sectors are increasingly intersecting with CBG. The fisheries, dairy, poultry, and food processing industries all generate organic by-products that are viable CBG feedstocks, creating a natural linkage between agro-industrial value chains and the biogas ecosystem. This convergence positions CBG not merely as a standalone energy project category, but as an integral component of integrated agro-industrial park development, cold chain infrastructure, and rural value chain modernization.

The sector has demonstrated strong and accelerating momentum. As of early 2026, over 460 CBG projects are operational or under construction across India, per the International Energy Agency's India Bioenergy Report 2026. Approximately 114 plants have been formally commissioned, with 94 operational units collectively selling over 31,400 tons of CBG in FY2024–25. The CBG market, valued at approximately USD 319 million in 2025, is projected to reach USD 2,419 million by 2032, implying a CAGR of 33.6%. Five states — Uttar Pradesh, Madhya Pradesh, Maharashtra, Punjab, and Gujarat — contribute approximately 50% of India's total CBG production potential, supported by their strong agricultural output and livestock base. India's theoretical feedstock base supports a CBG production potential of 62 million tons per annum, against which the SATAT programmes targets 15 MTPA from 5,000 plants by 2030.

Government Initiatives under the Ambitious Vision of "Viksit Bharat"

The Government of India has designated the agriculture and allied sectors — including bioenergy — as the first engine of India's development under Union Budget 2025–26. A comprehensive, multi-layered policy framework has been deployed to accelerate CBG adoption, aligned with India's Net Zero 2070 commitment and the Viksit Bharat vision.

- **SATAT Scheme— Creating Market Linkages**

The Sustainable Alternative Towards Affordable Transportation (SATAT) scheme, launched in October 2018 by the Ministry of Petroleum and Natural Gas (MoPNG), constitutes the foundational architecture for the sector. The scheme creates a government-backed offtake mechanism wherein Oil Marketing Companies (OMCs) — Indian Oil Corporation Limited, Bharat Petroleum Corporation Limited, and Hindustan Petroleum Corporation Limited — enter into long-term purchase agreements with CBG producers, providing the pricing certainty and demand assurance that are fundamental to project bankability. The SATAT target of 5,000 plants and 15 MTPA output by 2030 sets the macro-scale ambition, with an associated bio-manure target of 50 million tonnes annually and an estimated employment generation potential of 75,000 individuals.

- **Compressed Biogas Blending Obligation (CBO)—Ensuring Demand**

The CBO, effective FY2025–26, represents the most consequential demand-side policy intervention in the sector's history. It mandates City Gas Distribution companies to blend specified proportions of CBG into their CNG and PNG supply — commencing at 1% in FY2025–26, stepping to 3% in FY2026–27, 4% in FY2027–28, and reaching 5% by FY2028–29. At full mandate in FY2029–30, the obligated volume reaches approximately 868,000 tonnes annually. This legally enforceable, growing demand floor fundamentally transforms the risk-return profile of CBG investments and is expected to drive a pronounced acceleration in capacity addition and private capital deployment across the value chain.

- **National Bioenergy Programme — Financial Assistance**

Under the Ministry of New and Renewable Energy (MNRE), the National Bioenergy Programme provides Central Financial Assistance of up to ₹10 crore per project — specifically ₹4 crore per 4,800 kg/day capacity for new installations and ₹3 crore for capacity upgrades. This directly reduces the capital cost burden for developers and improves equity return profiles. Phase I of the programme concludes in March 2026. The Biomass Aggregation Machinery (BAM) Scheme complements this by offering capital subsidies of up to ₹90 lakh for investment in biomass handling, baling, and transportation equipment — directly addressing feedstock supply chain fragmentation, which is a primary operational challenge for early-stage plants.

- **Infrastructure Development and Financial Access**

The CBG-CGD Synchronisation Scheme, with an outlay of ₹994.5 crore for FY2023–24 to FY2025–26, finances the development of dedicated pipelines and injection infrastructure enabling CBG plants to connect to CGD networks, resolving one of the most critical last-mile distribution bottlenecks. The Reserve Bank of India's 2020 classification of CBG projects under Priority Sector Lending (PSL) up to ₹50 crore has substantially improved credit access for SME developers, agri-entrepreneurs, and rural project promoters. The GOBARdhan Scheme further promotes community-level biogas development, strengthening decentralised feedstock aggregation ecosystems in rural and peri-urban areas.

- **State-Level Policies**

Several states have enacted sector-specific frameworks to attract and accelerate private investment. Punjab's CBG Policy mandates 80% paddy straw as feedstock — directly addressing the stubble-burning crisis while creating a commercially viable agri-waste utilisation channel. Madhya Pradesh's Bioenergy Policy 2025 offers capital subsidies, land allotment support, and fast-track environmental clearance procedures. Gujarat has structured incentive packages supporting plant development across both agricultural residue and municipal solid waste segments. These state-level initiatives, combined with the Pradhan Mantri Kisan Sampada Yojana (PMKSY) and the Production Linked Incentive Scheme for Food Processing (PLISFPI), create an enabling environment that strengthens feedstock ecosystems, cold chain development, and agro-industrial integration — all of which directly benefit the CBG sector.

Demand Drivers

India's CBG sector is driven by a convergence of regulatory mandates and structural shifts in energy consumption across transport, industry, and urban infrastructure, making demand visibility increasingly robust for investors and developers.

The most immediate driver is the Compressed Biogas Blending Obligation, which mandates CGD companies to blend CBG into CNG and PNG supply from 1% in FY2025–26 to 5% by FY2028–29. This establishes a legally enforceable and progressively expanding offtake base, comparable in structure to the Renewable Purchase Obligation that supported India's renewable energy scale-up.

The transport sector forms the second pillar of demand, with India's CNG vehicle fleet exceeding 5 million units across commercial freight, intercity buses, auto-rickshaws, and last-mile delivery segments. Given compatibility with existing infrastructure, the transition to blended or pure CBG supply involves no operational disruption, while tightening emission norms further support its adoption as a practical decarbonisation solution.

Expansion of City Gas Distribution networks provides an additional structural driver. The Petroleum and Natural Gas Regulatory Board has authorised CGD licences across 130+ geographical areas covering over 400 districts, with PNG connections approaching 14 million. As network coverage expands, the addressable market for CBG correspondingly increases, with each new district effectively emerging as a demand centre.

Industrial and commercial consumers connected to PNG networks represent a growing segment, particularly as refineries, food processing units, textile manufacturers, brick kilns, and commercial establishments face increasing ESG and emissions reduction requirements. The ability to substitute natural gas with CBG without process modification or additional capital investment makes it an efficient decarbonisation pathway.

At a macro level, India's commitments under the Paris Agreement and its Nationally Determined Contributions—targeting a 45% reduction in emissions intensity by 2030—reinforce long-term demand. This has led to increasing alignment of institutional capital, with development finance institutions and ESG-focused investors directing funding towards sectors such as CBG that offer measurable climate co-benefits, including methane mitigation, fossil fuel displacement, and carbon credit generation.

CBG Sector Growth Potential

India's CBG sector is positioned for exponential scale-up, underpinned by an abundant domestic feedstock base, a robust and enforced policy architecture, and accelerating institutional investment. India generates an estimated 750 million tonnes of organic feedstock annually — spanning agricultural crop residue, livestock effluent, press mud, municipal solid waste, and sewage sludge — of which a significant proportion currently remains unmanaged, contributing to greenhouse gas emissions and environmental degradation. This feedstock abundance, at a theoretical conversion potential of 62 MTPA of CBG, represents one of the country's

most significant untapped renewable energy assets.

The IEA India Bioenergy Report 2026 projects CBG production to increase more than seven-fold between 2025 and 2030, identifying India as among the fastest-growing biogas markets globally. Combined biogas and CBG supply is projected to grow 53% from 2025 to 2030. Critically, improving average plant utilisation from the current approximately 35% to 44% – an operationally achievable target through better feedstock management, multi-feedstock co-digestion strategies, and operational improvements – would alone be sufficient to meet the 2030 blending obligation without requiring significant incremental capacity addition.

Business segments across India's CBG value chain offering strong forward opportunity include feedstock aggregation and pre-processing infrastructure, advanced digester and upgrading technology, bio-manure processing and distribution, carbon credit origination and monetisation, and CGD integration works. The broader bio-based manufacturing ecosystem – encompassing bioethanol, biofertilisers, bio-CNG for heavy transport, and long-term green hydrogen pathways – is expected to benefit substantially from CBG sector infrastructure and institutional capacity development.

Banks and financial institutions have substantial and growing project finance opportunities in the CBG sector. Financing greenfield plant construction, feedstock supply chain infrastructure, post-harvest biomass storage, and CGD pipeline integration represents a structured lending pipeline aligned with Priority Sector Lending guidelines. Each 10 TPD CBG plant generates an estimated 50–70 direct and indirect employment opportunities.

Private sector mobilisation has reached a decisive inflection point, signalling deep institutional confidence in the sector. Reliance Industries has committed to developing 100 CBG plants by 2030 for distribution through its pan-India fuel retail network. Adani TotalEnergies Biomass is investing ₹500–600 crore, leveraging its city gas network for CBG distribution. IOCL has formed joint ventures with EverEnviro Resource Management and GPS Renewables for multi-state capacity. GAIL, through its Leafinti Bioenergy JV with TruAlt Bioenergy, is targeting 33 million kg of annual CBG production. Indraprastha Gas Limited has signed MoUs with four technology partners for 19 plants across Delhi, UP, Haryana, and Rajasthan. Total sectoral investment in FY2026–27 alone is projected to exceed USD 600 million.

Resurgent India has created a strong presence in Project Appraisal (TEV)

Compressed Bio-Gas (CBG) is emerging as a sustainable fuel in India, supporting clean energy, waste management, and rural economic development. Resurgent India has played a pivotal role in supporting the sector by conducting Techno-Economic Viability (TEV) studies and preparing detailed Project Reports (DPRs), enabling financial institutions to provide structured funding and long-term financing for CBG projects.

- TEV studies have been conducted for plants ranging from 4.8 TPD to 24 TPD, utilizing feedstocks such as Napier grass, rice husk, rice straw, cattle dung, and agricultural organic waste. The studies evaluated techno-economic feasibility, financial structuring, feedstock logistics, and operational optimization, supporting bankable project proposals.
- Assignments included market analysis, off-take planning, risk assessment, and technology evaluation, ensuring projects were commercially viable and aligned with SATAT guidelines.
- Resurgent India is currently preparing a detailed DPR for a 20 TPD CBG plant, covering techno-economic assessment, feedstock supply chain planning, plant design, and long-term off-take strategies, demonstrating its capability to support large-scale, commercially viable projects.



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