

Why digestate and carbon credits matter to CBG project returns

14 August 2026 | Interviews

In an exclusive AgroSpectrum interview, Deepak Agarwal, Managing Director of GPS Renewables ARYA, explains why feedstock security, assured offtake, digestate monetisation and carbon credits will determine the commercial future of India's CBG sector



In an exclusive AgroSpectrum interview, Deepak Agarwal, Managing Director of GPS Renewables ARYA explains what it will take to make India's compressed biogas sector commercially viable. He discusses the GOBARDhan framework, assured offtake, reliable feedstock supply, technology standardisation and the monetisation of digestate and carbon benefits. Agarwal also outlines how long-term supply contracts and diversified revenue streams can transform CBG projects from standalone plants into bankable rural bioeconomy platforms.

Can the GOBARDhan framework make CBG commercially viable on its own, or will long-term viability continue to depend on subsidies, incentives and assured offtake?

The recent policy framework announced by the Ministry of Petroleum and Natural Gas, Government of India, under the GOBARDhan initiative, along with the incentives provided, will support the economic viability of CBG projects. However, projects will require policy and financial support during the initial years of operation. As the industry matures, technology upgradation, standardisation of project design and the indigenisation of critical equipment manufacturing can reduce capital costs. Lower capital expenditure will improve project internal rates of return and strengthen the long-term economics of CBG plants. Assured offtake of CBG and its by-products will remain critical. A plant may be technically capable of producing gas, but its commercial viability depends on whether the gas can be sold consistently and whether the by-products can generate additional revenue.

The GOBARDhan framework can help create this foundation by providing greater clarity on demand, pricing, infrastructure and project support. In the long term, the objective should be to reduce dependence on subsidies as projects become more efficient and develop diversified revenue streams.

What is the biggest economic bottleneck for CBG plants today—feedstock aggregation, plant utilisation, financing, gas pricing, logistics or the monetisation of digestate?

Feedstock aggregation is one of the biggest challenges facing CBG project developers. In many regions, farmers continue to burn agricultural residues because they lack access to collection systems or do not have a reliable buyer for the material. At the same time, several States lack the infrastructure and machinery required to collect, bale, store and transport the volume of feedstock needed by CBG plants. This limits the availability of raw material and affects plant utilisation. When feedstock supply becomes irregular, CBG production falls, revenues decline and the project's financial performance weakens. Feedstock must be available in the right quantity, at the right quality, at a predictable price and throughout the operating year. This requires long-term relationships with farmers, aggregators and local institutions, supported by storage, transport and pre-processing infrastructure.

Another major concern is the monetisation of digestate. Fermented organic manure, or FOM, has relatively low market acceptance in several regions and is also a seasonal product. As a result, CBG projects may not be able to realise the full value of the material produced alongside gas. Project developers should be allowed to adopt suitable technologies for converting digestate into different products. Instead of selling a single form of digestate, they could develop a product mix based on market demand, including organic manure, soil conditioners, fortified products and other agricultural inputs. This would improve revenue realisation and reduce the dependence of CBG projects on gas sales alone.

How can GOBARDhan evolve from a waste-management programme into a bankable rural bioeconomy model in which farmers, local bodies and CBG operators all have a clear economic stake?

GOBARDhan is fundamentally a waste-to-wealth programme. It can create value from agricultural waste such as paddy straw and agro-industrial waste such as press mud, while also addressing pollution, waste disposal and rural energy requirements. The Government of India has recognised the potential of the CBG sector and introduced a supportive framework under GOBARDhan. Assured offtake and predictable gas pricing can improve revenue visibility and help make projects more bankable. For the model to work at the rural level, every participant must have a clear economic role. Farmers should receive a fair and timely payment for agricultural residues and cattle dung. Local bodies should benefit from lower waste-management costs and improved sanitation. CBG operators should have access to reliable feedstock, infrastructure and markets.

The system must also include transparent measurement and payment mechanisms. Digital platforms can help track feedstock collection, weigh material, record farmer payments and monitor the movement of biomass from villages to plants. The success of GOBARDhan will depend on whether it creates a functioning local economy rather than simply shifting waste from one location to another. The objective should be to build rural bioeconomy clusters in which waste becomes feedstock, feedstock becomes energy and the resulting by-products return value to agriculture.

Does India need to rethink the economics of CBG beyond gas sales by fully valuing bio-slurry, carbon benefits and avoided waste-management costs? Could these additional revenue streams materially change project returns?

Yes. The economics of CBG projects can improve significantly through the valorisation of digestate and the monetisation of carbon benefits. A CBG plant should not be evaluated merely as a gas-production facility. It should be viewed as a circular bioeconomy platform that monetises energy, fertiliser, waste treatment and environmental services at the same time. The digestate produced during anaerobic digestion can be converted into commercially useful products. Project developers should be allowed to use different technologies to process the material and create a product portfolio based on market requirements. This can help address the low market acceptance of untreated FOM and improve the value of both solid and liquid digestate. A stronger market for organic manure can also reduce dependence on chemical fertilisers, improve soil health and create an additional link between CBG plants and farmers.

Carbon credits could provide another revenue stream. CBG projects reduce emissions by avoiding open burning, replacing fossil fuels, capturing methane and processing organic waste in controlled systems. If these benefits are measured and verified, they could generate carbon revenue and improve project returns. Avoided waste-management costs also have economic value. Local bodies and industrial producers may be willing to pay for reliable treatment of agricultural, livestock and organic waste. These payments can complement gas revenues and strengthen the overall financial model. The commercial value of a CBG project should therefore be assessed across multiple outputs rather than through gas sales alone.

If CBG is to scale from individual projects to a national ecosystem, which policy intervention would have the greatest multiplier effect: easier financing, feedstock guarantees, stronger offtake mechanisms, carbon markets or greater integration with city and rural waste systems?

A guaranteed feedstock and waste-supply ecosystem backed by long-term supply contracts would have the greatest multiplier effect. CBG plants do not fundamentally fail because digesters are incapable of producing gas. They fail when feedstock is unreliable, expensive, contaminated, seasonal or logistically difficult to transport. Long-term supply agreements can give project developers greater confidence while allowing farmers, aggregators, local bodies and industrial waste generators to plan their operations. Such contracts should establish clear standards for quantity, quality, pricing, delivery schedules and responsibility for contamination or short supply. Feedstock guarantees should also be supported by physical infrastructure. Collection centres, baling equipment, storage facilities, transportation networks and digital tracking systems are necessary to convert a contractual commitment into a reliable supply chain.

The policy framework should encourage the integration of city waste, rural waste, agricultural residues, cattle dung and agro-industrial by-products. This would allow plants to use multiple feedstocks and reduce their dependence on a single seasonal source. Financing, offtake, carbon markets and CGD integration will all remain important. But reliable feedstock is the foundation on which every other part of the project depends. India's CBG transition will therefore be determined not only by the number of plants commissioned, but by the quality of the ecosystems around them. If farmers are paid fairly, local bodies reduce waste-management costs, project developers secure consistent raw material and gas buyers provide predictable offtake, CBG can develop into a bankable rural bioeconomy rather than remain a collection of individual waste-to-energy projects.

-- Suchetana Choudhury (suchetana.choudhuri@agrospectrumindia.com)