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GOBARdhan Scheme: India Scales Compressed Biogas to Convert Organic Waste into Clean Energy, Rural Income and Economic Value

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Recent Developments:

- **Union Cabinet approval:** The Union Cabinet approved the revamped **GOBARdhan Scheme** in August 2026 with an outlay of **₹23,731 crore** for FY 2026–27 to FY 2035–36.
- **Formal launch:** The Union Minister for Petroleum and Natural Gas launched the scheme on **1 October 2026**, along with the GOBARdhan Handbook and a **Unified GOBARdhan Portal** designed to streamline applications and implementation.
- **Production target:** The scheme aims to increase domestic **Compressed Biogas (CBG)** production nearly ten-fold to around **5 MMSCMD** over its ten-year implementation period.
- **Current base:** As of August 2026, **217+ CBG plants** had been commissioned with installed capacity exceeding **1,700 tonnes per day (TPD)**; the wider Unified Registration Portal had 1,908 registered CBG/Bio-CNG plants, including 339 under construction.
- **Expected impact:** The scheme is projected to save more than **₹40,000 crore in foreign exchange**, add over **₹75,000 crore to GDP**, generate more than **1.5 lakh jobs**, replace **10 million tonnes of fossil fuel**, reduce more than **40 million tonnes of CO₂ emissions**, and support production of around **250 million tonnes of organic manure**.

GOBARdhan: Concept and Evolution:

Meaning and Core Objective:

- **GOBARdhan** stands for **Galvanizing Organic Bio-Agro Resources Dhan** and seeks to convert cattle dung, agricultural residues, food waste, press mud, municipal organic waste and other biomass into economically useful resources.
- The approach follows a **waste-to-wealth and circular bioeconomy** model in which organic waste becomes feedstock for CBG and organic manure, while creating additional rural economic activity.

From SBM-G to a National CBG Framework:

- GOBARdhan was initially launched in **2018 under the Swachh Bharat Mission–Grameen (SBM-G)** framework, with emphasis on converting cattle dung and biodegradable waste into biogas, CBG and bio-slurry.
- Under SBM-G Phase II, GOBARdhan remained an important component of **solid waste management** in rural areas, particularly for decentralised biogas and waste-management solutions.
- The **2026 revamped GOBARdhan Scheme** is different in institutional scope: it is administered by the **Ministry of Petroleum and Natural Gas** as a Central Sector Scheme focused on developing an integrated national CBG ecosystem.

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Compressed Biogas: Technology and Significance:

What is CBG?

- **Compressed Biogas** is purified biogas with a high methane content that can be compressed and used as a transport fuel or integrated into the gas distribution system.
- CBG is produced through **anaerobic digestion and biomethanation** of organic feedstock such as cattle dung, crop residues, food waste, municipal organic waste and other biomass.
- After removal of impurities and enrichment of methane, CBG has properties comparable to natural gas and can therefore be used within the existing gas ecosystem.

Why CBG Matters for India:

- India imports a significant share of its natural gas requirement, making domestic renewable gas production relevant to **energy security and import dependence**.
- CBG can simultaneously address **agricultural-residue management, waste disposal, rural employment, clean fuel production and organic-manure generation**.
- The model can create a local circular economy involving feedstock collection, aggregation, transportation, plant operation and manure production.

Six Major Components of the Revamped GOBARdhan Scheme:

1. Assured CBG Offtake:

- The scheme establishes an **offtake assurance framework** to provide producers with a predictable market for CBG.
- City Gas Distribution entities are assigned a **CBG procurement obligation** of 3% in FY 2026–27, 4% in FY 2027–28 and 5% from FY 2028–29 onwards for the CNG-transport and PNG-domestic segments.
- A predictable offtake mechanism can improve **project bankability, capacity utilisation and investor confidence**.

2. Stable CBG Pricing Framework:

- The scheme introduces an administered CBG price of **₹2,110 per MMBTU**, providing greater revenue visibility to producers.
- The pricing framework is designed to provide long-term certainty and strengthen the commercial viability of CBG projects.

3. Capital Assistance:

- Eligible **greenfield CBG projects** can receive capital assistance of up to **₹2 crore per TPD** of installed CBG capacity.
- Assistance can cover plant machinery as well as critical value-chain assets for **feedstock aggregation, organic-manure processing and manure value addition**.
- Brownfield projects undertaking additional capacity creation are also eligible, helping existing plants expand production.

4. Pipeline Infrastructure:

- The scheme supports pipeline infrastructure connecting CBG plants with **trunk pipelines and City Gas Distribution networks**.
- Up to **80% of eligible capital expenditure** can be supported for pipelines connecting CBG clusters with trunk pipeline networks, while standalone plants connecting to CGD networks can receive support of up to 50%.

- Better connectivity can reduce evacuation costs, expand market access and improve plant utilisation.

5. Credit Guarantee Support:

- A dedicated **Credit Guarantee mechanism** is intended to improve institutional lending to eligible MSME-based CBG projects.
- The mechanism can cover up to **85% of the outstanding amount at default**, subject to prescribed limits.
- The guarantee cap is **₹20 crore per general MSME project** and **₹25 crore for women-led MSME projects**, improving access to finance and reducing collateral constraints.

6. CBG Ecosystem Challenge Fund:

- The fund supports **feedstock assessment and mapping, aggregation infrastructure, district-level planning, technology development, capacity building and organic-manure value addition**.
- This component addresses a major structural constraint of CBG projects: ensuring a reliable feedstock supply and building a viable local ecosystem around each plant.

Economic, Environmental and Agricultural Significance:

Energy Security and Import Substitution:

- Domestic CBG production can substitute a portion of imported fossil fuels and strengthen **India's energy resilience**.
- The scheme targets foreign-exchange savings exceeding **₹40,000 crore** and seeks to replace 10 million tonnes of fossil fuel with clean gas.

Circular Economy and Waste Management:

- GOBARDhan converts **agricultural residue, cattle dung and organic municipal waste** into fuel and manure rather than treating them solely as disposal problems.
- This can reduce uncontrolled waste accumulation and improve the economic value extracted from biomass resources.
- Productive utilisation of agricultural residues can also complement efforts to address **crop-residue burning**.

Rural Economy and Farmers:

- CBG plants create opportunities in **feedstock collection, aggregation, transportation, processing, plant operations and organic-manure marketing**.
- The model can provide farmers and rural enterprises with additional income streams from biomass that may otherwise have limited economic value.
- The government therefore frames the transition as moving farmers from **“Annadatas” to “Urjadas”**, linking agriculture directly with domestic energy production.

Organic Manure and Soil Health:

- Biomethanation produces digestate that can be processed into **Fermented Organic Manure (FOM), Liquid Fermented Organic Manure (LFOM) and Phosphate Rich Organic Manure (PROM)**.
- The Market Development Assistance scheme provides **₹1,500 per metric tonne** for eligible organic fertilisers produced from GOBARDhan and CBG plants, supporting their marketing and adoption.

Allied Government Initiatives:

SATAT Initiative:

- **Sustainable Alternative Towards Affordable Transportation (SATAT)** was launched in 2018 to promote CBG as an alternative transport fuel and encourage entrepreneurs to establish CBG plants.
- SATAT created an initial **offtake framework** through Oil Marketing Companies, while the revamped GOBARDhan framework integrates demand assurance with capital support, pricing, infrastructure and credit mechanisms.

National Bioenergy Programme:

- The **Ministry of New and Renewable Energy** implements the National Bioenergy Programme covering **Waste-to-Energy, Biomass and Biogas** components.
- Its Waste-to-Energy component provides Central Financial Assistance for projects producing biogas, Bio-CNG/CBG and energy from urban, industrial and agricultural waste.

Biomass Aggregation Machinery Scheme:

- The **BAM Scheme**, implemented by the Ministry of Petroleum and Natural Gas, supports CBG producers in procuring machinery for biomass collection and aggregation.
- It has an approved outlay of **₹564.75 crore**, helping address the feedstock logistics challenge faced by CBG projects.

Development of Pipeline Infrastructure Scheme:

- The **DPI Scheme** supports infrastructure required to connect CBG plants with gas transmission and distribution networks.
- It has an approved outlay of **₹994.5 crore for FY 2024–25 to FY 2028–29**, complementing the pipeline component of the revamped GOBARDhan framework.

Key Challenges:

Feedstock Availability and Logistics:

- CBG plants require a **stable, geographically accessible and economically viable feedstock supply** throughout the year.
- Seasonal agricultural residues, fragmented farms, collection costs and transportation distances can affect plant economics.

Financial and Commercial Viability:

- High initial capital requirements, financing constraints and uncertain operating revenues have historically affected CBG project development.
- The revamped scheme attempts to address these barriers through **capital assistance, stable pricing, assured offtake and credit guarantees**.

Gas Evacuation Infrastructure:

- A plant may produce CBG successfully but still face commercial constraints if adequate pipeline or transportation infrastructure is unavailable.
- Therefore, **plant development and gas-network expansion must progress together**.

Organic-Manure Market:

- Large-scale CBG expansion will generate substantial quantities of digestate and organic manure.
- Effective quality standards, certification, marketing networks and farmer awareness are necessary to ensure that these by-products generate additional revenue rather than becoming a secondary waste-management

challenge.

Value Addition for UPSC:

Prelims Facts:

- **GOBARdhan:** Galvanizing Organic Bio-Agro Resources Dhan.
- **Revamped scheme:** Central Sector Scheme administered by the **Ministry of Petroleum and Natural Gas**.
- **Outlay:** ₹23,731 crore.
- **Implementation period:** FY 2026–27 to FY 2035–36.
- **CBG target:** Nearly ten-fold increase to around 5 MMSCMD.
- **Administered CBG price:** ₹2,110 per MMBTU.
- **CBG procurement obligation:** 3% in FY 2026–27, 4% in FY 2027–28 and 5% from FY 2028–29 onwards.
- **Capital assistance:** Up to ₹2 crore per TPD for eligible greenfield projects.
- **Pipeline support:** Up to 80% for eligible cluster-to-trunk pipeline expenditure and up to 50% for standalone plant connections to CGD networks.
- **Credit guarantee:** Up to 85% of outstanding amount at default, subject to scheme limits.

Mains Linkages:

- **GS-I:** Rural transformation and changing rural economic structures.
- **GS-II:** Centre-State coordination, cooperative federalism and institutional implementation.
- **GS-III:** Energy security, renewable energy, circular economy, waste management, agricultural-residue management and climate-change mitigation.
- **Essay: “Waste-to-wealth”** as a pathway linking environmental sustainability with economic development.
- **Key analytical theme:** GOBARdhan demonstrates how **energy security, agricultural waste management, rural livelihoods and circular economy principles** can be addressed through an integrated policy framework rather than through isolated schemes.