Indian Economy · GS - III

Discuss how Compressed Biogas and waste-to-energy initiatives can contribute to India’s energy security and circular economy. (150 words)

EXAM YEAR	PAPER	SUBJECT
Daily Practice 07/10/2026	GS - III	Indian Economy

MARKS	WORD LIMIT
10	~150 words

Answer Hint

- **GOBARdhan; SATAT; CBG; organic waste; methane; fossil-fuel imports; biofertiliser; rural economy; emissions; feedstock logistics.**
- **Show the circular chain: waste → biogas → fuel + digestate → agriculture; mention implementation bottlenecks.**

Model Answer

Compressed Biogas (CBG) offers India an opportunity to connect waste management with energy security. Organic waste from agriculture, livestock, municipalities and food processing can be anaerobically digested to produce biogas, which can be purified and compressed as a transport fuel. The residual digestate can also serve as an organic fertiliser.

Under initiatives such as GOBARdhan and SATAT, CBG can reduce unmanaged organic waste, create rural enterprises and partially substitute fossil fuels. It can diversify India’s energy basket and reduce methane emissions that would otherwise arise from uncontrolled decomposition. Decentralised plants can also generate local employment and support the circular economy.

However, feedstock aggregation, assured supply, plant economics, financing and long-term offtake arrangements remain challenges. Small producers may face difficulties in accessing technology and markets. Quality standards, pipeline connectivity and transportation logistics also need strengthening.

A successful CBG ecosystem therefore requires integrated waste segregation, predictable feedstock contracts, viable pricing, infrastructure support and technical capacity. CBG should be viewed not only as an alternative fuel but as a mechanism linking clean energy, waste management, agriculture and rural livelihoods.

BECOME IAS
AI POWERED UPSC PREP