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COMPRESSED BIO-GAS (CBG)

Why in the news?

- **Parliamentary Standing Committee submitted an action taken report on its earlier recommendations on the subject 'Review of Implementation of up Compressed Bio-Gas (SATAT)'.**

SATAT

SUSTAINABLE ALTERNATIVE TOWARDS AFFORDABLE TRANSPORTATION

SATAT: Sustainable Alternative Towards Affordable Transportation

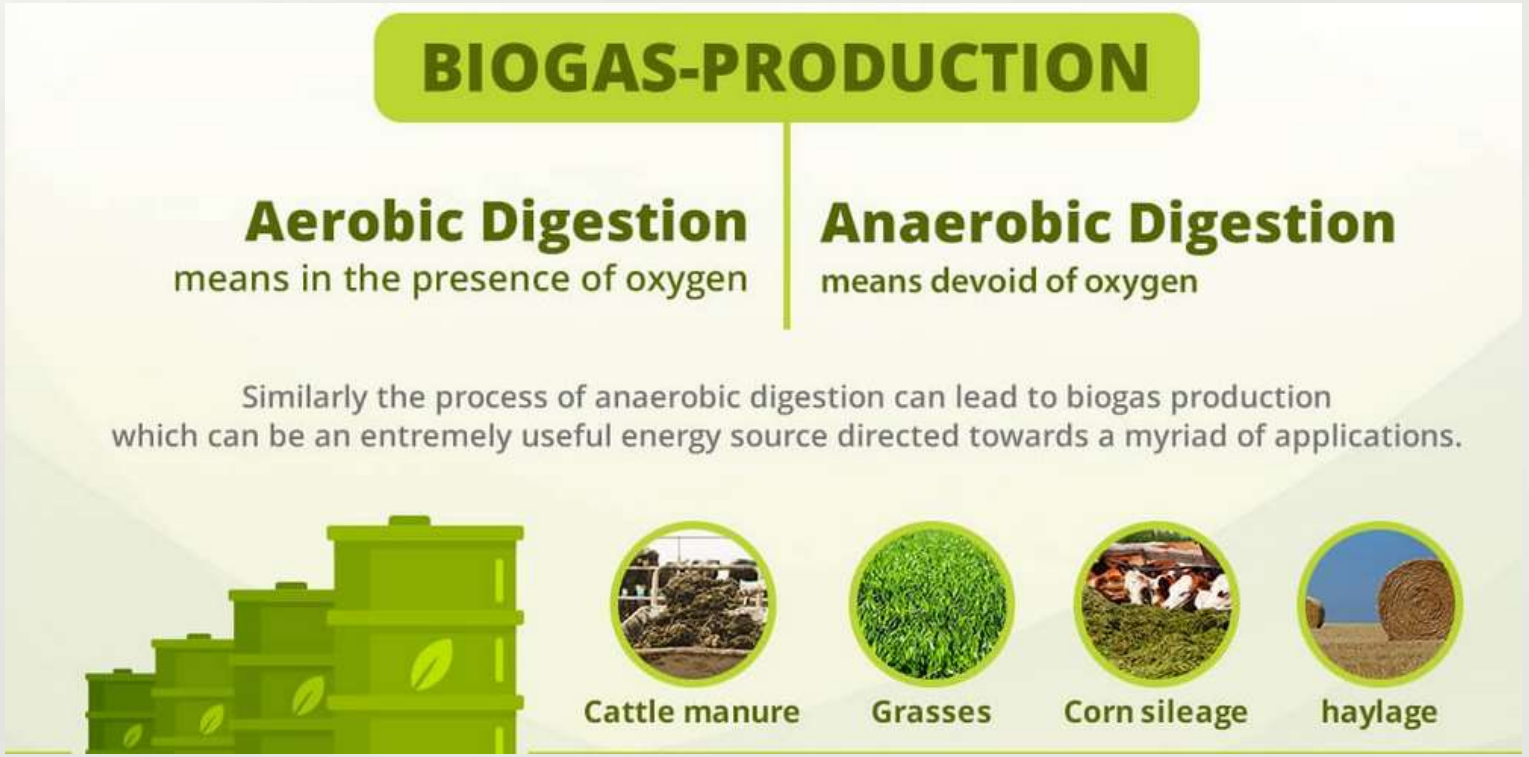
- **Launch: 2018.**

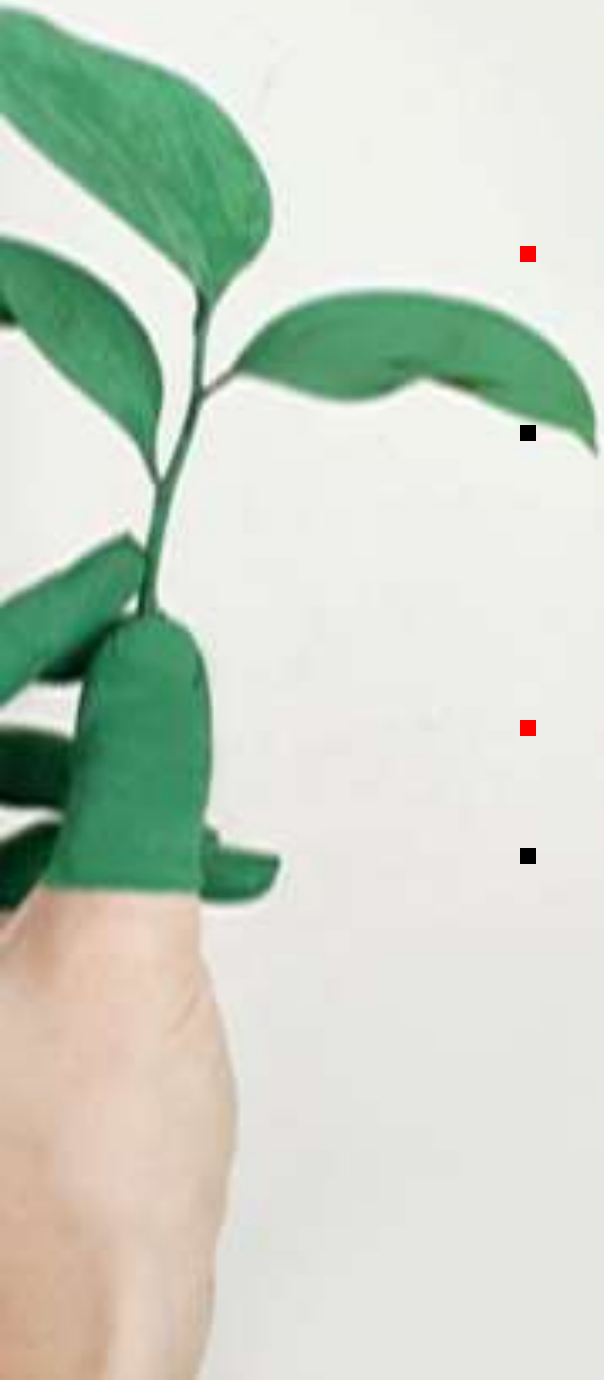
- Objective: **To set up Compressed Bio-Gas (CBG) production plants** and **make available CBG in** the market for use in **automotive fuels.**

What is Compressed Bio-Gas?

✓ **CBG is obtained after purification and compression of bio-gas**

✓ **Bio-gas is produced naturally through the anaerobic decomposition of biomass, such as agricultural residue, municipal solid waste, sugarcane press mud, etc.**





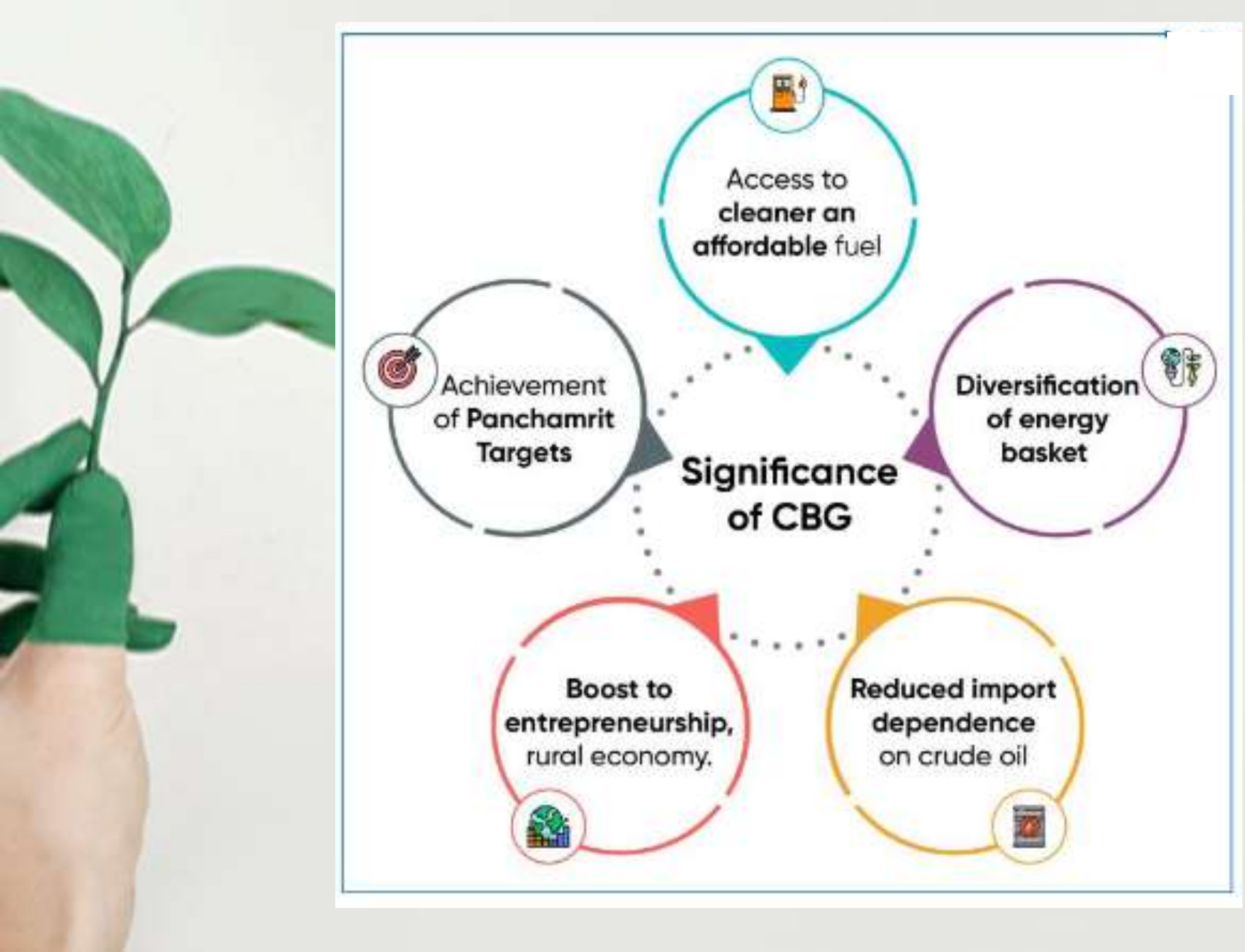
Composition of biogas and Compressed Bio-Gas

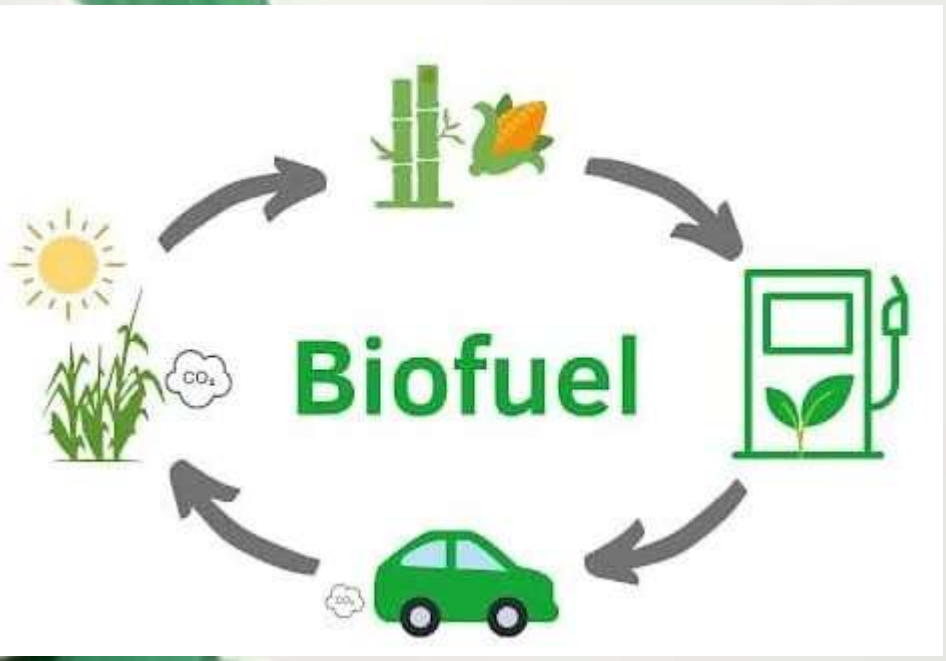
Biogas

- typically consists of methane (50–75%), carbon dioxide (25–50%), and smaller amounts of nitrogen (2–8%).
- Trace levels of hydrogen sulfide, ammonia, hydrogen, and various volatile organic compounds are also present in biogas depending on the feedstock.

Compressed Bio-Gas composition-

- Methane content (>90%) and higher calorific value (47-52 MJ/kg).
- Other components of CBG include – CO2 (<4%), Hydrogen Sulphide (<16 ppm), Nitrogen (<0.5%), Oxygen (<0.5%), and Moisture (<5mg/m3).


Access to cleaner an affordable fuel
Diversification of energy basket
Reduced import dependence on crude oil
Boost to entrepreneurship, rural economy.
Achievement of Panchamrit Targets
Significance of CBG



BIOFUEL

Any hydrocarbon fuel that is derived from biomass (organic matter)—that is, plant or algae material or animal waste.

- biofuel is considered to be a source of renewable energy, Since such feedstock material can be replenished readily, unlike fossil fuels such as petroleum, coal, and natural gas.

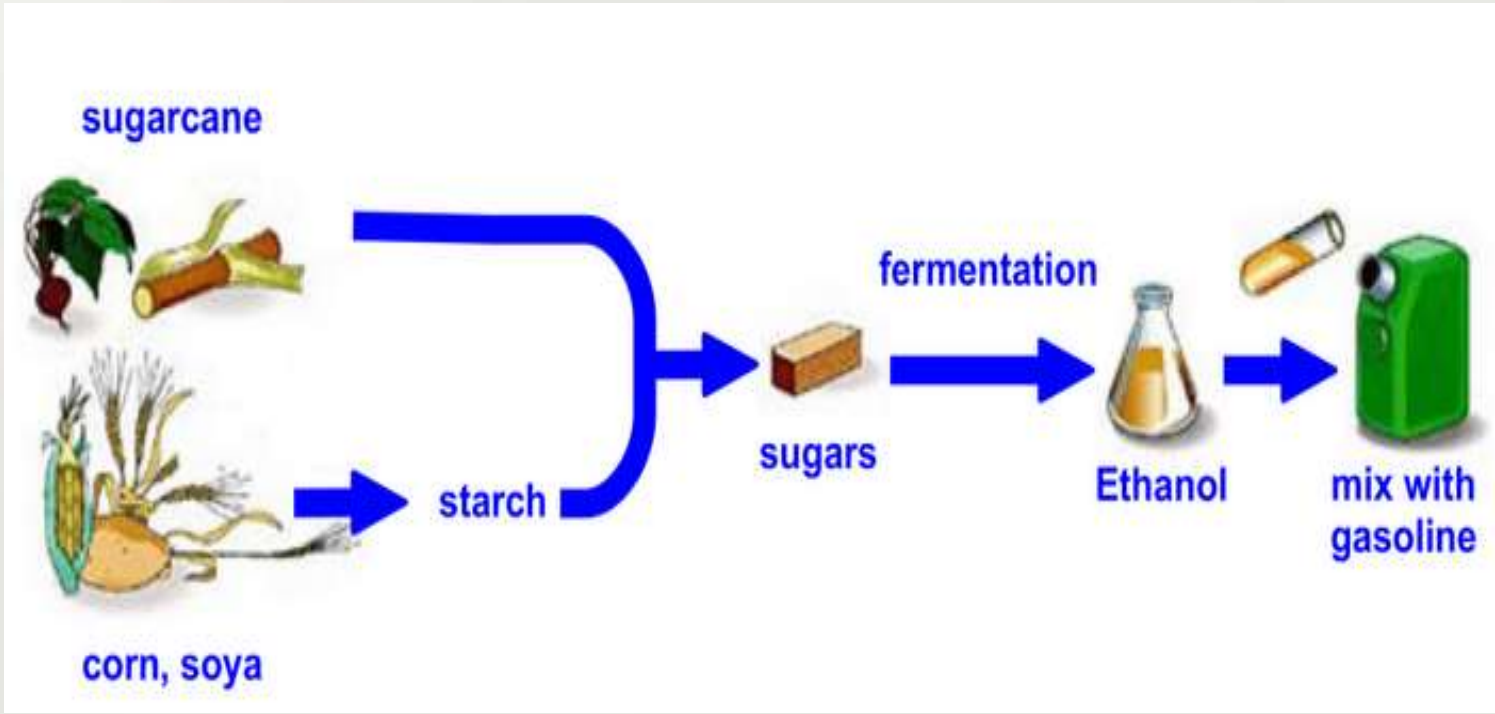
- Biofuels may be solid, liquid or gaseous in nature.

1. Solid: Wood, dried plant material, and manure
2. Liquid: Bioethanol and Biodiesel
3. Gaseous: Biogas (methane)

Classification of Biofuels

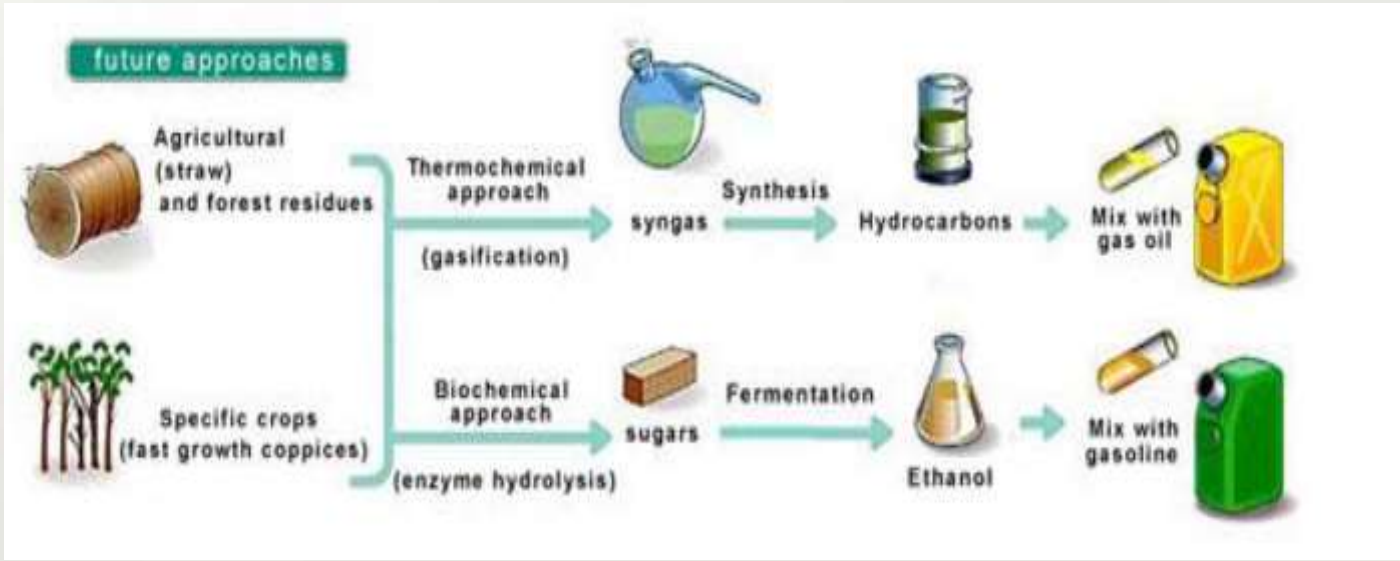
1st generation biofuels

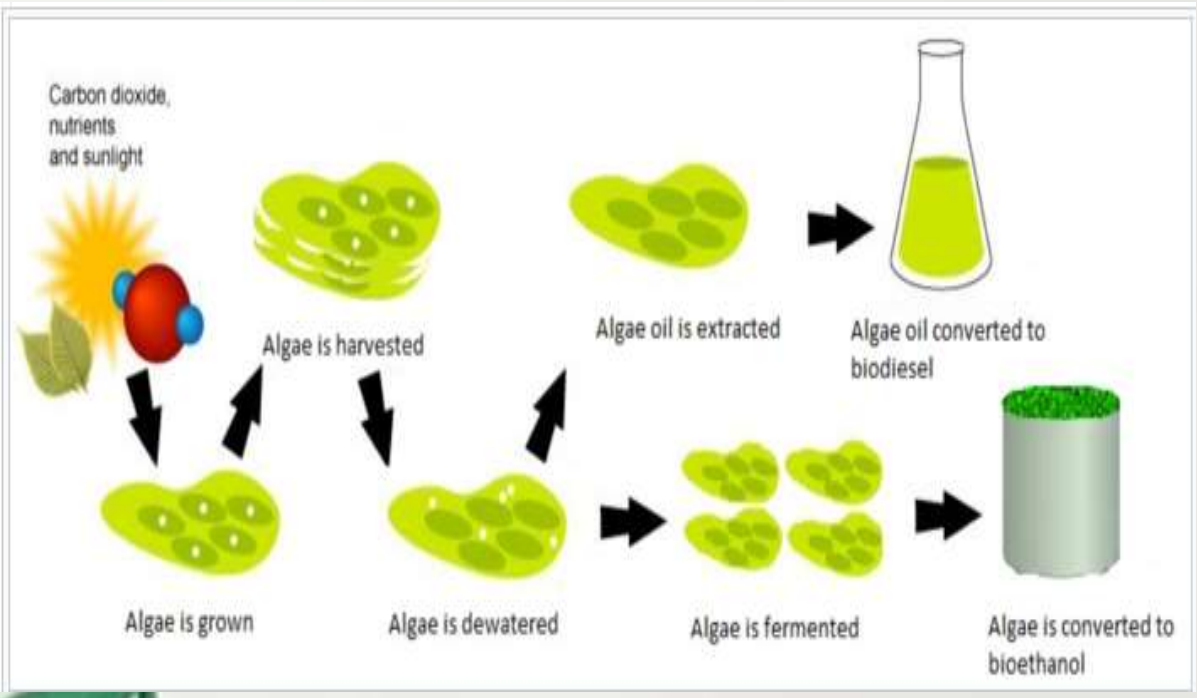
- Any biofuel made from a feedstock that can also be consumed as a human food is considered a first-generation biofuel.
- these are made of all food products (sugar, starch, or vegetable oil).
- also called conventional biofuels.
- Eg bioethanol, biodiesel



2nd generation biofuels

- produced from sustainable feedstock.
- They are not food crops
- Second generation biofuels are often called “advanced biofuels.” it can be made from feedstock such as wood, straw etc





3rd generation biofuels

- derived from algae.

4th generation biofuels

- genetically engineered crops to take in high amounts of carbon are grown and harvested as biomass. Eg. Engineered algae

Benefits of biofuels

- ***Import dependency:*** **The biofuel policy aims at reducing import dependency.**

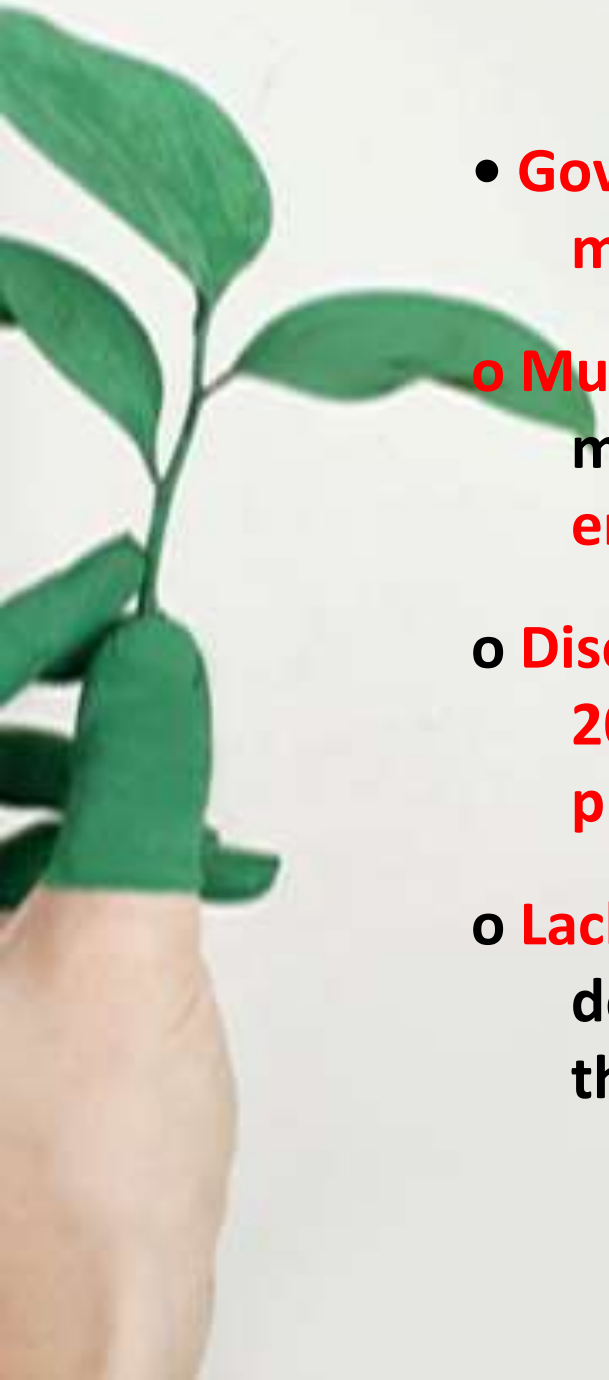
- ***Cleaner environment:*** **By reducing crop burning & conversion of agricultural residues/wastes to biofuels there will be further reduction in Green House Gas emissions.**

Other initiatives to promote CBG in India

- National Policy on Biofuels, 2018: It aims to promote the production of CBG and other bio-fuels. The policy has the objective of reaching 20% ethanol-blending in petrol and 5% biodiesel-blending in diesel by the year 2030.

- GOBAR-Dhan Scheme: To support villages in effective management of cattle and bio-degradable wastes.

- Recognition of CBG projects under the Priority Sector Lending (PSL) scheme by the RBI to improve access to credit.



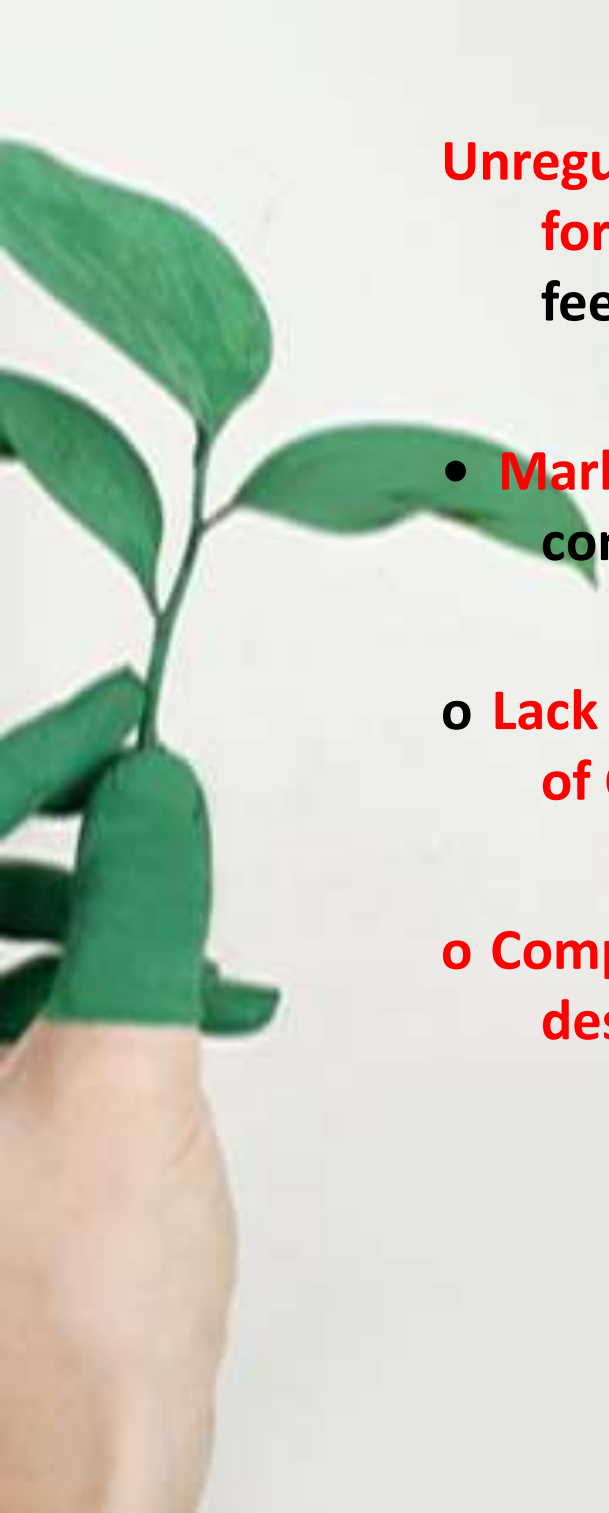
Challenges in Implementation

- **Governance-related issues: Limited technical capabilities of the municipal bodies act as a hindrance.**

o **Multiple regulatory approvals and involvement of various ministries, including MoEFCC, MoPNG, MoNRE, etc., hinder entrepreneurs.**

o **Discontinuation of Central Financial Assistance (CFA) since April 2021 for extending support to new and renewable energy projects.**

o **Lack of interest among Oil PSUs in setting up CBG projects despite domestic natural gas production being a mandate of the upstream oil PSUs**



Unregulated bio-mass supply chain: Limited timeframe of 30–40 days for gathering agricultural feedstock and the unpredictability of feedstock prices.

- Market: No buyers for fermented organic manure on which CBG companies base 15-20% of their revenue.

o Lack of bio-CNG consumers in rural areas due to limited availability of CNG vehicles.

o Compressed Bio-Gas (CBG) projects are not being implemented at a desired rate (only about 40 CBG plants have been set up.)

Way Forward

- **Coordination mechanism**: Convene **meetings of the National Bio-fuel Coordination Committee (NBCC) regularly** to **sort implementation issues.**

- **Financial assistance:** Need to **move towards Generation Based Incentive** (GBI) **instead of Capex-based subsidy** for CBG plants.

- Governance reforms

o **Simplify and digitise regulatory approvals** by creating **single window clearance** for disbursal of subsidies.

o **Capacity building of Urban Local Bodies** and involving the **PPP model to ensure effective waste segregation** in municipalities.

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