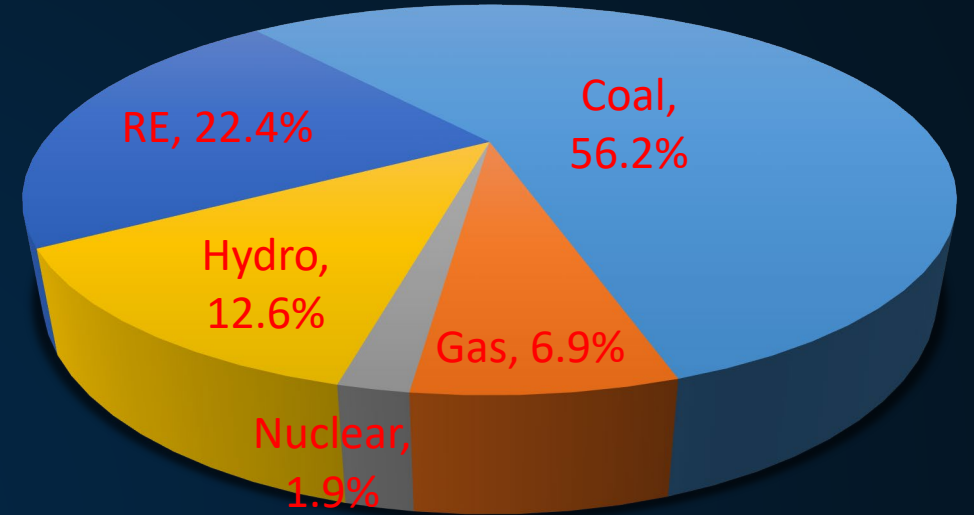
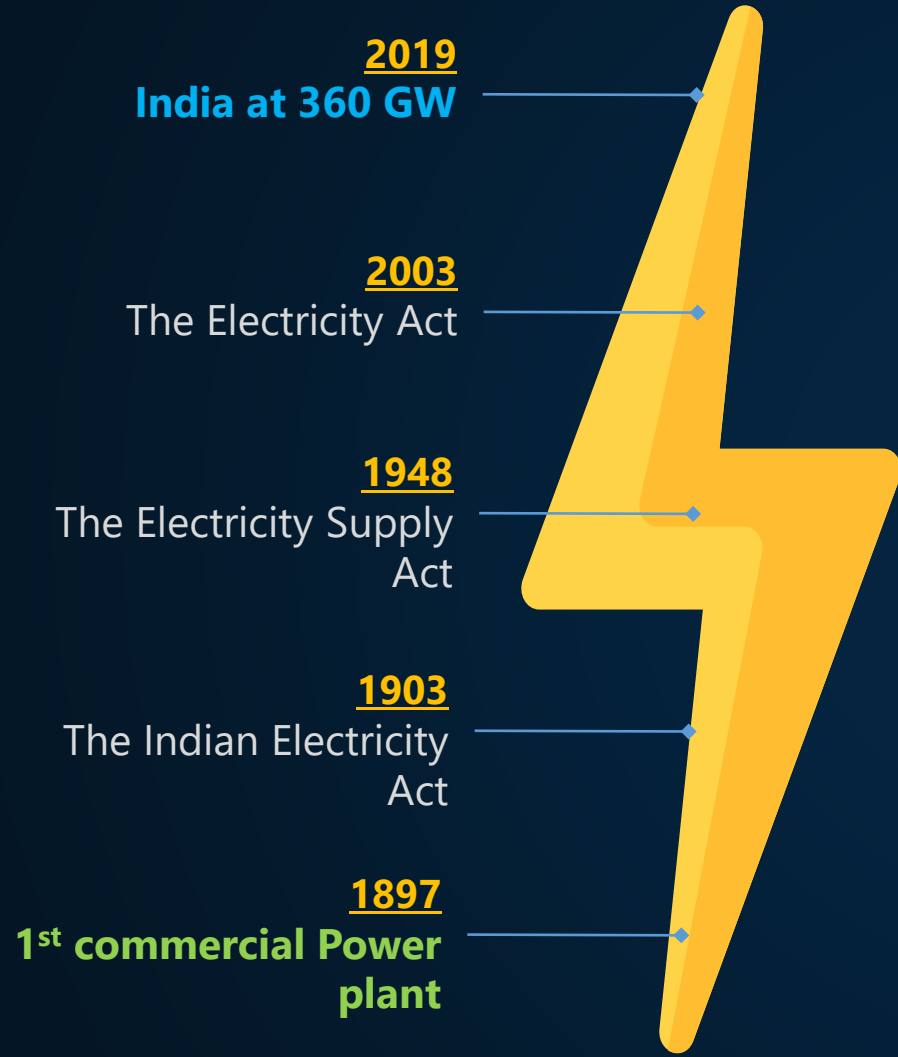


INDIA'S PROGRAMMES AND INCENTIVES BEING IMPLEMENTED TO SUPPORT BIOGAS SYSTEMS

17.09.2019

By-
Vijay Bharti,
Ministry of New and Renewable Energy,
Government of India

Indian Power Sector

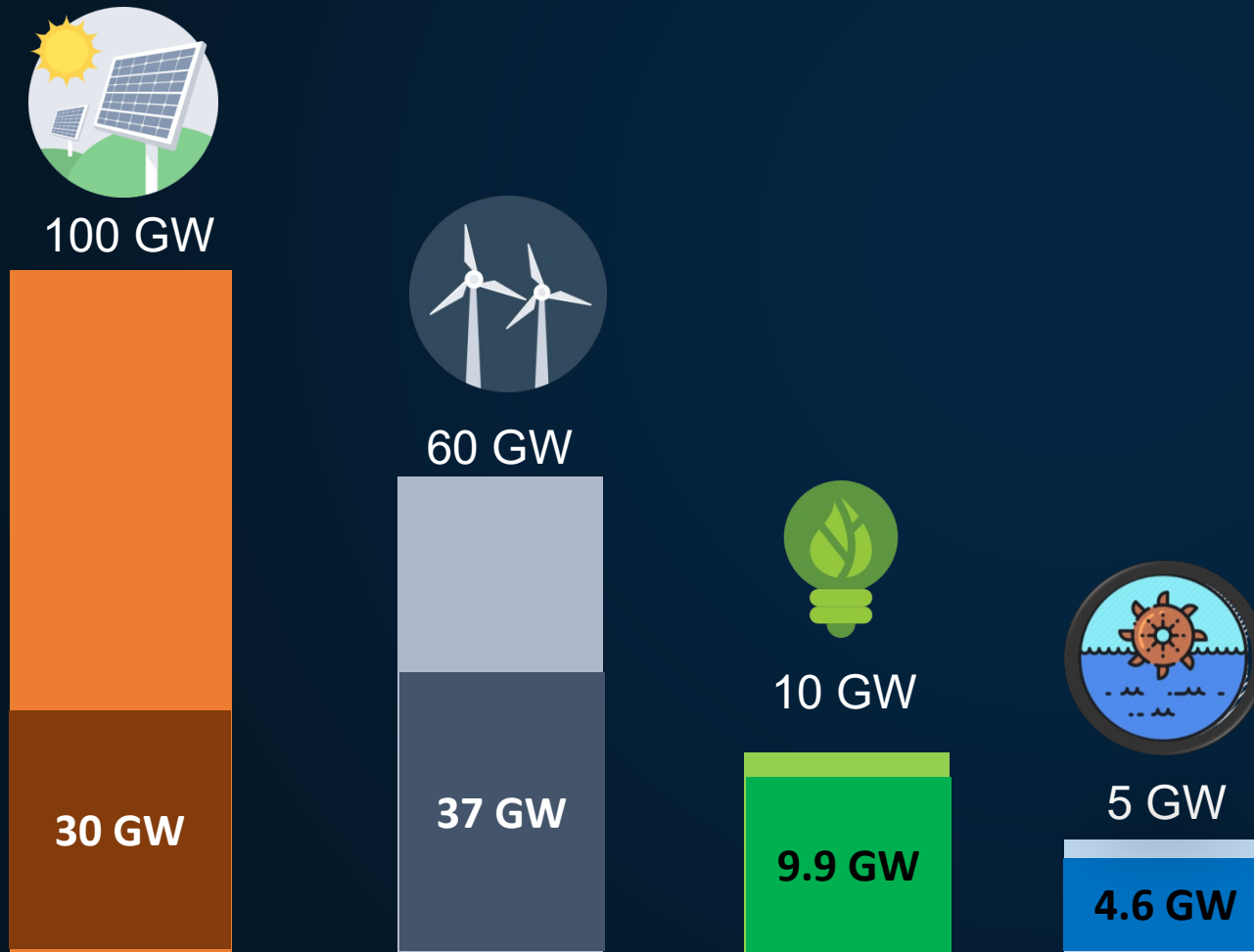


Source	Installed capacity in GW
Coal	202.53
Gas	24.94
Nuclear	6.78
Hydro	45.40
Renewable	80.63
TOTAL	360.28

RENEWABLE ENERGY

India made a pledge that by 2030, 40% of installed power generation capacity shall be based on clean sources.

175 GW of renewable energy capacity will be installed by 2022.



175 GW By 2022

40% RE By 2030

Bioenergy

- Bioenergy is energy generated from organic matter, such as biomass, biodegradable agricultural & Industrial wastes, municipal solid waste, sewage/waste water etc.
- Traditionally, Bioenergy, mostly in the form of heat, was generated from the combustion of biomass in the forms as wood, animal waste and traditional charcoal. Bioenergy generated in the form of heat was used for thermal application like cooking etc.
- With advent of modern technologies/processes, Bioenergy is now generated in the form of Power and fuels like biogas, BioCNG, liquid biofuels, pellet/briquettes etc.
- Bioenergy produced through modern technologies can be used in various applications like transport fuel, cooking purposes, thermal applications in industries etc.

Biogas solutions suitable for scale-up

- BioCNG from biodegradable waste and residue feedstocks for use as a transport fuel
- Energy recovery from municipal solid waste
- Ethanol, Bio-diesel and BioCNG blending in conventional fuel

BIOGAS PROGRAMMES

Waste to Energy Programme

All type of organic waste
Biogas plant size >2500m³ /day

01



Biogas Scheme

RURAL Areas
Biogas plant size <2500m³ /day

02



National Policy of Biofuels

03



04

SATAT Initiative

All type of organic waste
CBG plant size >2000kg/day

05

Gobar-Dhan

RURAL Areas
Biogas plant size <2500m³ /day





01

WASTE TO ENERGY PROGRAMME

"Programme on Energy from Urban, Industrial and Agricultural Wastes/ Residues"

To promote setting up of projects for recovery of energy in the form of **Biogas / BioCNG/Enriched Biogas/ Syngas/Power** from urban, industrial and agricultural wastes.

WASTE TO ENERGY PROGRAMME

- Target- Industrial, Agricultural & Urban waste
- Biogas plants in the size range of >2500 m³ per day and power generation capacity range of > 250 kW.
- MSW to Energy is covered under the programme.
- Mostly projects are set up in industrial sectors namely distillery, paper and pulp, solvent extraction, rice mills, textiles, pharmaceutical industries etc.
- To provide back-ended capital subsidy for setting up of Waste to Energy plants.

Waste to Energy Plants



POTENTIAL

5690 MW_{eq}*

Estimated potential of energy recovery from urban and industrial organic waste only. Agricultural waste also provides huge opportunity.



ACHIEVEMENT

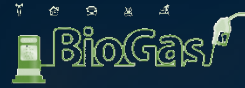
330 MW_{eq}

Waste to Energy projects mainly installed in Industries to treat effluent/waste generated:

Industrial waste	:	65%
Urban waste including MSW	:	34%
Agricultural waste	:	<1%

Incentives

- **Must run status** for Waste to Energy projects
- Ministry of Road Transport and Highways has also amended the Central Motor Vehicles Rules, 1989 and included the provisions for **usage of biogas, in the form of bio-CNG**, in motor vehicles produced from waste.
- **Concessional Customs Duty** and **GST** at rate of 5% for initial setting up of grid connected projects for power generation.



Financial Support

typically 20-30% of project cost

Biogas generation: **\$140k per 12000m³/day** (1MWeq)

BioCNG generation: **\$563k per 4800kg/day** (1MWeq)

Power generation: **\$422k per MW** (based on Biogas)

Gasifier for Electrical application:

- ✓ **\$35k** per MWe with **duel fuel** engines
- ✓ **\$211k** per MWe with **100% gas** engines

Gasifier for Thermal application:

- ✓ **\$9.4k** per MW_{th} for thermal applications.



02

BIOGAS PROGRAMMES

- i. **New National Biogas and Organic Manure Programme (NNBOMP)** – Family type Biogas Plant size ranging from 1 m³ to 25 m³ per day.
- ii. **Biogas Power Generation (Off-grid) and Thermal energy application Programme (BPGTP)**- Community scale Biogas plants in the size range of 30 m³ to 2500 m³ per day and power generation capacity range of 3 kW to 250 kW .

BIOGAS PROGRAMME

- Target- **RURAL AREAS**
- To provide **clean cooking fuel** for kitchens, lighting and meeting other thermal and small power needs of agriculture/ dairy farmers and other individual household users.
- To improve supply of **organic bio-manure system**, based on biogas plant slurry to reduce use of chemical fertilizers.
- Promotion of **decentralized RE for power generation and thermal energy** for heating/cooling from biogas for Dairy co-operatives, Individual farmers/organizations and communities.
- **back-ended capital subsidy** is provided for setting up of biogas plants.

Biogas Plants



POTENTIAL

12million Biogas plants

Estimated potential of biogas plants of **1 to 25m³/day** generation capacity is 12million in the country



ACHIEVEMENT

5 million Biogas plants

1. **NNBOMP (1-25m³/day) – 5 million Biogas plant**

2. **BPGTP (30-2500m³/day)-**

Power generation capacity - **8.753 MW**

Biogas generation capacity- **86,595 m³ /day**

Financial Assistance

Financial Support under NNBOMP scheme:

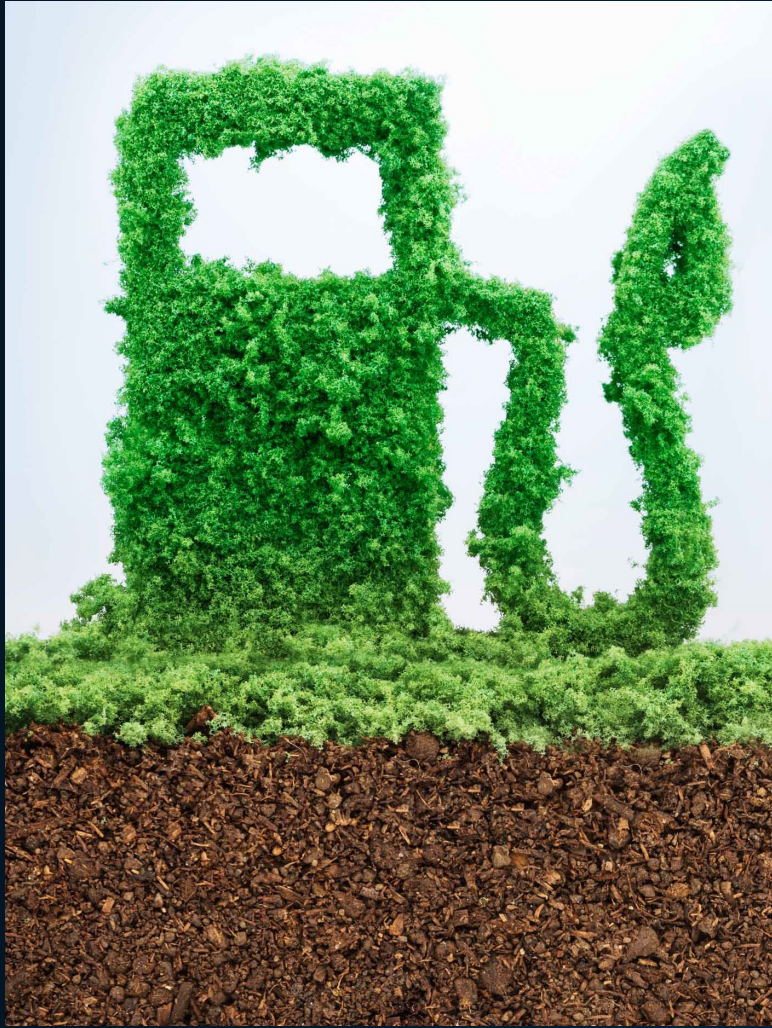
Plant size	1 m3	2-6m3	8-10m3	15m3	20-25m3
Subsidy (\$ per plant) -General	106	167	225	282	352

- **Additional Subsidy** for Biogas Plants Linked with Toilets for individual households and **enhanced subsidy** for backward states and backward community.

Financial Support under BPGTP scheme:

Plant size	3-20 kW	>20-100 kW	>100-250 kW
Subsidy (\$ per kW) – Power Generation	493	422	352
Subsidy (\$ per kW _{eq}) Thermal application	246	211	176

- Maximum support - **35%** of project cost.
- **Enhanced subsidy** for backward states and backward community.



03

National Policy of Biofuels

- To increase usage of Biofuels in the **energy** and **transportation sector**
- To utilize, develop and promote **domestic feedstock** and conversion of **surplus quantities of food** grains to ethanol
- To enable **availability of biofuels** in the market thereby **increasing its blending percentage**

BIOFUEL POLICY

- Re-launched in **June, 2018** (previously in 2009)
- Target- **Agricultural waste & surplus food-grain**

Strategy and approach

- Ethanol Blended Petrol (EBP) Programme
- Biodiesel Blending Programme
- Focus on **advanced biofuels** that includes–
 - Second Generation (2G) Ethanol,
 - algae based 3G biofuels,
 - drop-in fuels,
 - **bio-CNG**, bio-methanol,
 - DME, bio-hydrogen etc.

BioFuels



TARGET (BLENDING)

20% Ethanol
5% Biodiesel

Indicative target of **20% blending of ethanol** in petrol and **5% blending of bio-diesel** in diesel by **2030**.



ACHIEVEMENT

~5% Ethanol
<1% Biodiesel

~5% blending of ethanol in petrol
<1% blending of biodiesel in diesel



04

SATAT Initiative

“Sustainable Alternative Towards Affordable Transportation”

- ✓ promote **Compressed Bio-Gas or BioCNG** as an alternative, green transport fuel
- ✓ Support in the form of marketing of BioCNG.

SATAT Initiative

- **National Policy on Bio-Fuels 2018** emphasizes on promotion of advanced Bio-fuels including CBG.
- Launched in **October 2018** to promote **Compressed Bio-Gas (CBG)**.
- **Condition of CBG before SATAT:**
 - ~0.02 MMT per year of CBG generation capacity in India through **16CBG plants** under WTE Programme.
 - **No offtake guarantee from Government**, no fixed price of sale of CBG, sold to private companies and restaurant, Supply Chain issue
- ✓ SATAT Initiative aims to
 - **Guarantee Production offtake** where Public Sector OMC to buy CBG at fixed rate
 - Set up CBG Plants mainly by independent entrepreneurs.
 - Provide an additional revenue source to farmers.
 - **Reduce import of natural gas.**
- CBG to be sold through cascades initially at OMC fuel stations and later it can be integrated with gas grid.

Compressed Bio-Gas



POTENTIAL

62 MMT CBG

The potential for Compressed Bio-Gas production from various sources in India is estimated at about **62 million tonnes per annum**.



TARGET

15 MMT CBG
5000 CBG Plants

5000 CBG plants are expected to produce **15 million tonnes of CBG per annum by 2023**, which is about **40%** of current CNG consumption of 44 million tonnes per annum in the country.



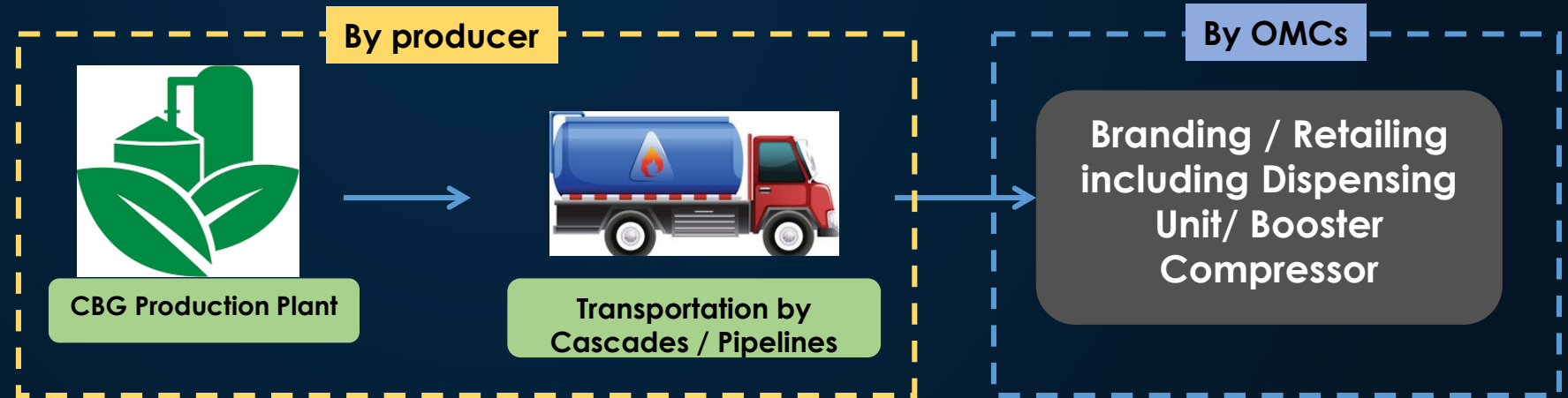
ACHIEVEMENT

344 CBG plants*

Letter of Intends for 344 CBG plants issued by OMCs.

Support under SATAT

Item	Price
Basic Price of CBG meeting IS 16087 : 2016 standard, compressed at 250 bar and delivered at OMC Retail Outlet in cascades	\$0.29/lb (Rs 46.00/kg)
GST at 5%	Rs 2.30/kg
Total supply price (incl. GST) to be paid to party	\$0.31/lb (Rs 48.30/kg)





05

GOBAR-Dhan Programme

“Galvanising Organic Bio-Agro Resources Dhan”

- ✓ Biogas from Bio-waste in villages
- ✓ Clean Villages

GOBAR-DHAN

- Part of **Clean India Mission(Rural)** to manage rural Biowaste.
- Rural India generates enormous quantities of bio-waste including animal waste, kitchen leftovers, crop residue, market waste and fecal sludge.
- GOBAR-Dhan announced in **Feb 2018**:
 - To harness Bio-waste to generate bioenergy in the form of **Biogas** available in villages
 - To clean villages
- Biogas plants to be set up by Self Help Groups, Gram Panchayat, Bulk Waste generators and Entrepreneurs.
- State will choose to develop at least **one project per district** to achieve effective bio-waste management in the villages.
- State, Districts and Gram Panchayat are key Stakeholders
- **Financial Support (back-ended)** is provided for setting up of Biogas projects.
- The total assistance is on the **basis of total number of households** in each Gram Panchayat.

Bio-Gas plants



TARGET

700 Biogas Plants

GOBAR-Dhan shall cover **700 districts** in 2018-19. The scheme will be implemented in **350 districts on pilot basis**. Remaining districts would be covered in second half of the financial year 2018-19.



ACHIEVEMENT

318 Biogas plants*

318 application received to set up biogas plant under the scheme.

Support under Gobar-Dhan

Model-A Gram Panchayat

- Plant to be set up by **Gram Panchayat** with the help of **Technical Agency**
- Financial support upto **100% of Biogas plant cost**
- Gram Panchayat must be **open defecation free** and the same should be verified by the State.

Model-B Self Help Group

- Plant to be set up by **Self help group** with the help of **Technical Agency**
- Financial support upto **75% of Biogas plant cost**
- Experience in community participation / supporting

Model-C Bulk Waste Generator

- Plant to be set up by Bulk Waste Generator **with/without** the help of Technical Agency
- Financial support upto **50% of Biogas plant cost**
- May sign agreement with Gram Panchayat for waste & biogas/ fertilizer supply

Model-D Any Eligible Enterprise

- Plant to be set up by **Entrepreneur** or any eligible enterprise Capable of producing BioCNG
- **No Financial support**
- State shall facilitate Memorandum of Agreement between the Entity and OMCs for purchase/ buyback purposes.

THANK YOU!!