

The Ethanol Impetus

July 24, 2023 • vajiramandravi.com



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Why in News?

- Prime Minister Narendra Modi, at a G20 Energy Ministers' meet recently, said that India has rolled out 20% ethanol-blended petrol this year and aims to "cover the entire country by 2025".

About Biofuel

- Biofuel is a fuel that is produced over a short time span from biomass, rather than by the very slow natural processes involved in the formation of fossil fuels, such as oil.
- Since biomass can be used as a fuel directly (e.g., wood logs), some people use the words biomass and biofuel interchangeably.
- However, the **word biofuel is usually reserved for liquid or gaseous fuels**, used for transportation.
- Most of biofuel consumption occurs as a blend with refined petroleum products such as gasoline, diesel fuel, heating oil, and kerosene-type jet fuel.
 - However, some biofuels do not require blending with their petroleum counterparts and are referred to as drop-in biofuels.
- The most common biofuels now are –
 - **Bioalcohols** such as ethanol, propanol, and butanol (a substitute for petrol/gasoline);
 - **Biodiesel** (a substitute for diesel);
 - **Bio-oils** (substitutes for kerosene).

Generations of Biofuel

Image Caption: Generations of Biofuel

- Biofuels are also divided into four categories depending on their origin and production technologies.
- **First Generation -**
 - **1G** biofuels are produced from **consumable food items** containing starch (rice and wheat) and sugar (beets and sugarcane) for bioalcohols, or vegetable oils for biodiesel.
 - However, the yields of 1G biofuels are low and can have negative impacts on food security.
- **Second Generation -**
 - **2G** biofuels are mainly obtained from **non-food feedstocks** such as forest/industry/agricultural wastes and waste or used vegetable oils.
- **Third Generation -**
 - **3G** biofuels, known as 'algae fuel', are **derived from algae** in the form of both, biodiesel and bioalcohols.
 - Although the yield of 3G biofuels is approximately 10 times higher than 2G biofuels, producing adequate algal biomass and scaling up extraction techniques are as yet unresolved challenges.
- **Fourth Generation -**
 - Like the third generation, **4G** biofuels are **made using non-arable land**.
 - However, unlike the third, they do not need the destruction of biomass.
 - This class of biofuels includes electro fuels and photo-biological solar fuels.

What is Ethanol Blending?

- Ethanol is a biofuel, naturally produced by the fermentation of sugars by yeasts or by petrochemical processes like ethylene hydration.
- Ethanol is high in oxygen content, allowing an engine to more thoroughly combust fuel.
- In ethanol blending, a blended motor fuel containing ethyl alcohol derived from agricultural products is blended with petrol specifically.

How is Ethanol Produced?

- In India, the nodal department for the promotion of fuel-grade ethanol-producing distilleries is the **Department of Food and Public Distribution (DFPD).**
- Ethanol is produced or procured from sugarcane-based raw materials which are – C & B heavy molasses, sugarcane juice, sugar syrup, surplus rice with Food Corporation of India (FCI) and maize.
- A paper released by the NITI Aayog stated, that in 2019, over 110 billion liters of ethanol fuel was produced globally.
 - The **US and Brazil account for 84% of the global production followed by the European Union, China, India, Canada and Thailand.**

What are the Benefits of Ethanol Blending?

- Presently, India imports over 85 per cent of its oil requirement and ethanol blending could help in reducing dependency on petroleum.
 - In 2020-21, the net import of petroleum in India was 185 million tones at **USD 551 billion.**
 - Thus, ethanol blending can help in saving billions of dollars for the country and reduce import dependency.
- Also, ethanol is a less polluting fuel and equally efficient at a lower cost than petrol.

India's Biofuel Policy

- In 2021-22, the **Central government amended the Biofuel Policy (2018) to set a target of country-wide blending rates of 20% ethanol and 5% biodiesel by 2025.**
- According to the Roadmap for ethanol blending in India 2020-2025 report from NITI Aayog, **India will need to increase ethanol production capacity from the expected 3.3 billion liters (in 2020-2021) to at least 10.2 billion liters (5.5 billion liters from sugarcane and 4.7 billion liters from grains) by 2025.**

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Image Caption: Ethanol supplies by mills/distilleries to OMCs

- The above table shows ethanol supplies by mills/distilleries to Oil Marketing Companies (OMCs) soaring from a **mere 38 crore liters in 2013-14 to an estimated 559 crore liters in 2022-23**.
- In September 2022, foundation stone was laid for Krishak Bharti Cooperative Limited (KRIBHCO) Hazira's bio-ethanol project.
- The plant will use maize as a bio resource and the project will also provide raw material for high protein animal feed, fisheries and poultry.

Q1) Is aeroplane fuel petrol or diesel?

Aviation fuel isn't petrol or diesel. It's a type of kerosene, which is a thicker and more oily fuel.

Q2) What is offshore drilling in simple terms?

Offshore drilling is the process of extracting petroleum from reserves located beneath the Earth's oceans instead of reserves located on the mainland.

Source: [Ethanol+petrol: How to blend more and blend better](#)

Source: <https://vajiramandravi.com/current-affairs/the-ethanol-impetus/>

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