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## Bioethanol Blending of Petrol

Notes for civil services preparation



UPSC

General Studies

### Bioethanol Blending of Petrol

- The government has set targets of **10%** bioethanol blending of petrol by **2022** and to raise it to **20%** by **2030** under the **Ethanol Blended Programme (EBP)**.
- The EBP was launched in line with the **National Biofuels Policy, 2018**.

#### Key Points

- Many countries, including India, have adopted **ethanol blending in petrol** in order to **reduce vehicle exhaust emissions** and also to **reduce the import burden on account of crude petroleum**.
- Currently, the bioethanol blending in petrol stands at **5%**.

#### Reasons for Ethanol Blending:

- It is estimated that a **5% blending** can result in replacement of around 1.8 million Barrels of crude oil.
- As the ethanol molecule contains oxygen, it **allows the engine to more completely combust the fuel**, resulting in fewer emissions and thereby reducing the occurrence of environmental pollution.
- The **renewable** ethanol content, which is a by-product of the sugar industry, is expected to result in a net reduction in the **emission of carbon dioxide, carbon monoxide (CO) and hydrocarbons (HC)**.

#### Background:

- - The **Ethanol Blended Petrol (EBP)** programme was launched in January, 2003 by the Ministry of Petroleum & Natural Gas (MoP&NG).
  - The EBP seeks to achieve blending of **Ethanol with Petrol** with a view to **reducing pollution, conserving foreign exchange and increasing value addition in the sugar industry** enabling them to clear cane price arrears of farmers.
  - The **Oil Marketing Companies (OMCs)** are to procure ethanol from domestic sources at remunerative **prices fixed** by the government.
  - The Central Government recently **extended the ambit of the programme** to extract the fuel from surplus quantities of food grains such as maize, jawar, bajra fruit and vegetable waste which was limited only to sugarcane perviously.
  - Recently, the Cabinet Committee on Economic Affairs (CCEA) has approved **Pradhan Mantri JI-VAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana** to **create an ecosystem for setting up commercial projects** and boost to **Research and Development in 2G Ethanol sector**.
  - **1G bioethanol plants** utilise sugarcane juice and molasses, byproducts in the production of sugar, as raw material, while **2G plants** utilise surplus biomass and agricultural waste to produce bioethanol.
  - This scheme is promoting Second Generation (2G) Biofuels Technology moving away from food crops used in First Generation(1G) to feedstocks, nonfood crops agricultural residues or waste.
  - The three public OMCs **Indian Oil Corporation Ltd. Bharat Petroleum Corporation and Hindustan Petroleum Corporation Ltd.** are currently in the process of setting up **2G bioethanol plants**.
  - India celebrated **World Biofuel Day** on 10th August 2020 with the **theme** “Biofuels towards Atmanirbhar Bharat”.

#### Challenges in Ethanol Blending:

- - **Less Production:** Currently, domestic production of bioethanol is not sufficient to meet the demand for bio-ethanol for blending with petrol at Indian OMCs.
  - **Sugar mills**, which are the key domestic suppliers of bio-ethanol to OMCs, were able to supply only 6% of the total demand.
  - Sugar mills do not have the **financial stability** to invest in biofuel plants.

- There are also concerns among investors on the **uncertainty on the price of bioethanol** in the future as the prices of both sugarcane and bio-ethanol are set by the central government.

#### Water Footprint:

- While India has become one of the top producers of ethanol but it lags top producers, the USA and Brazil, by a huge margin and remains **inefficient** in terms of water usage.
- India's water requirements for producing ethanol **are not met through rainwater** and the groundwater is used for drinking and other purposes.
- Water footprint, that is water required to produce a litre of ethanol, includes rainwater at the root zone used by ethanol-producing plants such as sugarcane, and surface, ground water, and fresh water required to wash away pollutants.

#### Limited Sugarcane Availability:

- Sugarcane is another limited resource that affects the ethanol blending in the
- In order to achieve a 20% blend rate, almost one-tenth of the existing net sown area will have to be diverted for sugarcane Any such land requirement is likely to **put a stress on other crops** and has the potential to increase food prices.
- India's biofuel policy stipulates that fuel requirements **must not compete with food requirements** and that only surplus food crops should be used for fuel production, if at all.

#### Lack of Alternatives:

- Producing ethanol from crop residue can be a good alternative but the **annual capacity of biorefinery is still not enough** to meet the 5% petrol-ethanol blending requirements.
- Other biofuels such as **Jatropha** have often proven to be commercially unviable.
- **Handling issues:** Ethanol being a highly flammable liquid marks obligatory **safety and risk** assessment measures during all phases of production, storage and transportation, thus increasing the cost and risk factor.

#### Way Forward

- 2G bioethanol not only provided a clean source of energy, but also helped to provide **greater income to farmers and help meet the aim of doubling the farmers income by 2020** and prevent them from having to burn agricultural waste which can be a major source of **air pollution**.
- The government could provide greater visibility on the price of bioethanol by **announcing a mechanism** by which the price of bio-ethanol would be decided.
- Setting a target that a certain percentage of ethanol blending be done using ethanol generated from 2G plants would help boost investment in the area. Also, alternatives like **3rd generation (derived from algae) and 4th generation biofuels (derived from specially engineered plants or biomass)** should be encouraged.