

## Ethanol Blended Petrol Programme [E20 Fuel]

Government schemes and initiatives are very important for the UPSC exam. The Ethanol Blended Petrol Programme (EPB Programme) is an important government programme having an impact on various sectors such as agriculture, energy, environment, etc. In this article, you can learn all about the Ethanol Blended Petrol Programme for the [IAS exam](#).

### Ethanol Blended Petrol (EBP) Programme

The Ethanol Blended Petrol Programme was launched in 2003 with an aim to promote the use of renewable and environmentally friendly fuels and reduce India's import dependence for energy security.

- Starting with 5% blending, the government has set a target of 10% ethanol blending by 2022 and 20% blending (E20) by 2030.
- The programme is implemented in accordance with the [National Policy on Biofuels](#).
- Under this programme, oil marketing companies (OMCs) will procure ethanol from domestic sources at prices fixed by the government.
- Till 2018, only sugarcane was used to derive ethanol. Now, the government has extended the ambit of the scheme to include foodgrains like maize, bajra, fruit and vegetable waste, etc. to produce ethanol.
  - This move helps farmers gain additional income by selling the extra produce and also broadens the base for ethanol production in the country.

### What is Ethanol Blending?

An ethanol blend is defined as a blended motor fuel containing ethyl alcohol that is at least 99% pure, derived from agricultural products, and blended exclusively with petrol.

Ethanol is one of the principal biofuels, which is naturally produced by the fermentation of sugars by yeasts or via petrochemical processes such as ethylene hydration. It has medical applications as an antiseptic and disinfectant. It is used as a chemical solvent and in the synthesis of organic compounds, apart from being an alternative fuel source.

### Benefits of ethanol blending:

- The auto fuels we commonly use are mainly derived from the slow geological process of fossilisation, which is why they are also known as fossil fuels. Ethanol in comparison is a biofuel, that is, it is primarily derived from processing organic matter (hence, it is a biofuel). In India, ethanol is largely derived from sugarcane via a fermentation process.
- Since it is a plant-based fuel, ethanol is considered **renewable**.

- Since ethanol is high in oxygen content, engines using ethanol blends combust fuel more thoroughly reducing vehicular emissions. Hence, this process will also help reduce the country's **carbon footprint**.
- Mixing 20 percent ethanol in petrol can potentially **reduce the auto fuel import bill** by a yearly \$4 billion, or Rs 30,000 crore.
- Another major benefit of ethanol blending is the **extra income** it gives to farmers. Ethanol is derived from sugarcane and also foodgrains. Hence, farmers can earn extra income by selling their surplus produce to ethanol blend manufacturers.

## E20 Fuel

### E20 Latest News

**PM Modi introduced the E20 fuel at the India Energy Week 2023 event in February 2023. In India, the fuel is being introduced in 83 locations across 11 states and union territories.**

#### *What is E20 Fuel?*

- E20 fuel, a 20–80 ethanol–petrol blend, aims to give the Indian government some relief from rising oil imports.
- E20 fuel, a popular ethanol and gasoline (petrol/diesel) blend, contains 80% gasoline and 20% ethanol by volume.
- For internal combustion engines, it is used in automobiles, trucks, and bicycles.
- Additionally, the leftover sugarcane and damaged plant grains are converted into ethanol, supporting the sugar industry by providing a new revenue stream.

### Significance of E20

- **Reduces carbon emissions:** Ethanol is a renewable energy source that burns relatively more cleanly than gasoline, making E20 a more environmentally friendly fuel.
- **Encourages the use of renewable energy sources:** E20 encourages the use of renewable energy sources by including ethanol in the fuel mix. It lessens reliance on all fossil fuels, including petroleum.
- **Enhancing engine performance:** Ethanol serves as an octane booster, which can enhance engine efficiency and lessen knocking noises.

### Impact on Environment

- Carbon monoxide (CO), hydrocarbons, and nitrogen oxides are the main combustion-related emissions from standard gasoline vehicles (NOx).
- According to the Central Committee report, ethanol blending reduces these emissions.

- In two-wheelers and four-wheelers, the emission of carbon monoxide was reduced by 50% and 30%, respectively. A 20% reduction in hydrocarbon emissions was observed when compared to regular gasoline.
- Since nitrogen oxide emissions depend on the type of engine and the operating environment, they were largely unaffected.
- **The biofuel that makes up 20% of ethanol in E20 fuel is made from damaged plant grains and sugarcane.**
- The ethanol blend was found to reduce harmful emissions.

### Impact on Consumers

- The fuel efficiency of vehicles will reduce by:
  - 6-7% for 4 wheelers designed for E0 and calibrated for E10
  - 3-4% for 2 wheelers designed for E0 and calibrated for E10
  - 1-2% for 4 wheelers designed for E10 and calibrated for E20
- However, with improvements in engines, the loss in fuel efficiency can be minimised.

### Impact on Vehicle Manufacturers

- Engines and components will need to be tested and calibrated with E20 as fuel.
- No major change in the assembly line is required.
- Vendors need to be developed for the procurement of additional components compatible with E20.

### Significance of E20 for India:

- In India, very few [electric vehicles](#) are sold. Numbers are not rising as anticipated. Additionally, compared to other nations, less electric vehicle production is being done.
- GoI is working to cut emissions to zero. The E20 is a suitable substitute in this instance.
- **E20 and electric cars are two strategies for making the country emission-free.**

### *Ethanol Production*

The Department of Food and Public Distribution (DFPD) is the nodal department for the promotion of fuel grade ethanol producing distilleries in the country. The Government has allowed ethanol production/procurement from sugarcane-based raw materials viz. C & B heavy molasses, sugarcane juice sugar syrup, surplus rice with [Food Corporation of India \(FCI\)](#) and maize.

The supply of ethanol under the EBP Programme has increased from 38 crore litres during 2013-14 to 173 crore litres during 2019-20 resulting in an increase in blend percentage from 1.53% to 5.00% respectively.

## Challenges in Ethanol Blending Programme

Although promising, the ethanol blending programme faces several challenges and concerns. Some of them are discussed below.

- **Availability of sufficient feedstock on a sustainable basis:** Current regulations in the country allow the production of ethanol from sugarcane, sugar, molasses, maize and damaged foodgrains unfit for human consumption. Further, surplus rice with FCI is also allowed. Some states have demanded that rice procured by state governments be allowed for ethanol production. However, there is the issue of diverting foodgrains from human consumption to ethanol production when hunger and malnutrition are still problems faced by many in the country.
- **Production Facilities:** Ethanol production facilities have to be augmented if the goals of 20% blending by 2030 are to be achieved. Currently, ethanol production is largely confined to sugar-producing states. Sugar mills, which are the key domestic suppliers of bio-ethanol to OMCs, were able to supply only 57.6% of the total demand. The mills also do not have enough financial stability to invest in biofuel plants.
- **Price uncertainty:** The prices of both ethanol and sugarcane are fixed by the government leading to concerns among investors regarding the price of bioethanol.
- **Availability of Ethanol:** Ethanol is not equally available all over the country. This leads to an increase in transportation and logistics costs. Moreover, handling and storage of ethanol are also risky as it is a highly flammable liquid.
- **Challenge for vehicle manufacturers:** Vehicle manufacturers must work with vendors to develop automobile parts compatible with ethanol. They should work on engine optimisation for higher ethanol blends.
- **Environmental clearances:** Currently, ethanol production plants/distilleries fall under the “Red category” and require environmental clearance under the Air and Water Acts for new and expansion projects. This often takes a long time leading to delays.