



## Future of Ethanol Blending in India

This editorial is based on [“Understanding ethanol blending”](#) which was published in The Hindu on 16/08/2022. It talks about the future of ethanol blending in India and related challenges.

**For Prelims:** Ethanol Blending, Biofuels, National Policy on Biofuels 2018, Industries Pradhan Mantri JI-VAN Yojana 2019, India Maize Summit

**For Mains:** Significance of Ethanol Blending for India, Food Security, Recent Government Initiatives to Promote Ethanol Blending in India

The **energy demand in our country is rising due to an expanding economy**, [growing population](#), increasing [urbanisation](#), evolving lifestyles and rising spending power. About **98% of the fuel requirement** in the road transportation sector is currently met by [fossil fuels](#) and the **remaining 2% by biofuels**.

The [National Policy on Biofuels 2018](#), provides an indicative target of **20% ethanol blending** under the [Ethanol Blended Petrol \(EBP\) Programme](#) by **2025**.

Achieving [energy security](#) and the transitioning to a thriving low carbon economy is critical for a growing nation like India. Blending locally produced ethanol with petrol will help India strengthen its energy security, **enable local enterprises and farmers to participate in the energy economy** and reduce vehicular emissions.

While ethanol blending **can** [reduce CO<sub>2</sub> emissions](#), **inefficient land and water use** for ethanol extraction as well as [food security](#) concerns still remain.

### What do We Understand by Ethanol Blending?

- Ethanol is an **agricultural by-product** which is mainly obtained from the **processing of sugar from sugarcane**, but also from other sources such as rice husk or **maize**.
  - **Blending ethanol with petrol to burn less fossil fuel** while running vehicles is called **Ethanol Blending**.
- Currently, **Ethanol makes up 10% of the petrol** we use in our vehicles.
  - The **original target for India was to raise this ratio to 20% by 2030**, but that deadline was pushed back to 2025 when the **NITI Aayog** released its **ethanol roadmap in 2021**.

### What is the Significance of Ethanol Blending for India?

- **India has adopted ethanol blending in petrol** in order to **reduce vehicle exhaust emissions**.

- India's net import of petroleum was 185 million tons in 2020-21. Most of the petroleum is used by vehicles and therefore a **successful 20% ethanol blending programme can save the country 4 billion dollars per annum.**
- The renewable ethanol content is **expected to result in a net reduction in the emission of carbon dioxide, carbon monoxide (CO) and hydrocarbons (HC).**
  - **Ethanol itself burns cleaner** and burns more completely than petrol it is blended into.
- Ethanol blending will help **bring down our share of oil imports** on which India spends a considerable amount of precious **foreign exchange.**
  - It is estimated that a **5% blending** (105 crore litres) **can result in replacement of around 1.8 million barrels of crude oil.**
- More ethanol produced from farm residue will **boost farmers' income** and **minimise air pollution** by reducing the amount of **stubble burned.**

## What are the Challenges Associated with Ethanol Blending?

- **Shift Towards Sugarcane Production:** In order to achieve a 20% blend rate, almost **one-tenth of the existing net sown area will have to be diverted for sugarcane production.**
  - Any such land requirement is likely to put a **stress on other crops** and has the **potential to increase food prices.**
  - There are already **indications that more sugarcane is being grown** and that the Government of India **encouraged more corn production** at the **India Maize Summit** in May 2022.
- **Storage Constraint:** Annual capacity of required bio-refineries is stipulated to be 300-400 million litres, which is still **not enough to meet the 5% petrol-ethanol blending requirement.**
  - Storage is going to be the main concern, for if **E10** supply has to continue in tandem with **E20** supply, **storage would have to be separate** which then raises costs.
    - **E10 fuel is 90 % petrol mixed with 10% ethanol.**
    - **E20 fuel is 80 % petrol mixed with 20 % ethanol.**
- **Food Insecurity:** Sugar and cane production that end up in the petrol tank cannot also appear on the dinner plate, in animal fodder, be stored in warehouses, or be exported.
  - India may not find it easy to simultaneously **strengthen domestic food supply systems, maintain an export market for grains, and divert grain to ethanol** at the expected rate in coming years, and this is an issue that **warrants continued monitoring,**
- **Instability of Ethanol Movement Between States:** There are restrictions on inter-state movement of ethanol due to **non-implementation of the amended provisions of Industries (Development & Regulation) Act, 1951** by all the States.
  - **Ethanol blending has not been taken up in North-East states** due to non-availability of feedstock or industries.
  - In order to develop Ethanol Blended fuels and vehicles on a pan-Indian scale, this concern must be addressed.
- **No Reduction in Emission of Nitrous Oxide:** Because ethanol burns more completely than petrol, it avoids emissions such as **carbon monoxide.** However, **there is no reduction in nitrous oxides,** one of the major environmental pollutants.

## What are the Recent Government Initiatives to Promote Ethanol Blending in India?

- [National Policy on Biofuels 2018](#)
- [E100 Pilot project](#)
- [Pradhan Mantri JI-VAN Yojana 2019](#)
- [Repurpose Used Cooking Oil \(RUCO\)](#)

## What Should be the Way Forward?

- **Ensuring Uniform Availability of Ethanol Blends:** To enable a pan-Indian roll-out, ethanol would need to be **supplied from surplus to deficit states** as per requirements so as to ensure uniform availability of ethanol blends in the country.
- **Promoting Advanced Biofuels:** Technology for production of ethanol from non-food feedstock, called **“Advanced Biofuels”** Including **second generation (2G)** should be promoted so as to tap this abundantly available resource **without causing any trade off with the food production system.**
  - Ethanol produced from **rice straw, wheat straw, corn cobs** and other such materials falls under the category of **second generation (2G) ethanol.**
- **Supply Enrichment:** Schemes for ethanol production from different feedstocks and encouragement to **augment bio-refineries** and **their capacities.**
  - For better implementation, it is necessary to **optimise engines for higher ethanol blends** and ensure durability test mechanisms.
- **Single Window for Clearances:** A system for single window clearances should be formulated to accord **speedy clearances for new and expansion projects** for ethanol production.
- **Setting a Floor Price for Ethanol:** In order to bring predictability and to encourage investment by entrepreneurs in **expansion/new ethanol capacities**, the government may devise a floor price of ethanol for a few years with an escalation clause for purchase by **oil marketing companies.**
  - Special efforts are needed to attract investors to the **North East India.**
- **Balance between Food Security and Ethanol Blending:** 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.**
  - **Producing ethanol from crop residue** will then be a good alternative.

### ***Drishti Mains Question***

Explain the role of Ethanol Blending in achieving energy security in India and discuss major challenges in its implementation.

## **UPSC Civil Services Examination, Previous Year Questions (PYQ)**

**Q. Given below are the names of four energy crops. Which one of them can be cultivated for ethanol? (2010)**

- (a) Jatropha
- (b) Maize
- (c) Pongamia
- (d) Sunflower

**Ans: (b)**

**Q. According to India’s National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)**

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

**Select the correct answer using the code given below:**

- (a) 1, 2, 5 and 6 only
- (b) 1, 3, 4 and 6 only
- (c) 2, 3, 4 and 5 only
- (d) 1, 2, 3, 4, 5 and 6

Ans: (a)



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