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Gist of  **Debate**

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SIGNIFICANCE & ROAD AHEAD

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ETHANOL BLENDING SIGNIFICANCE & ROAD AHEAD

INTRODUCTION

- Centre Government has resolved to meet the target of 20 percent ethanol blending in petrol by 2025.
- This will help India strengthen its energy security, enable local enterprises and farmers to participate in the energy economy and reduce vehicular emissions.

In this episode, we will discuss and analyze all aspects of this issue.

EDITED EXCERPTS FROM THE DEBATE



Roadmap for Ethanol Blending in India by 2025

- The central government has released an expert committee report on the *Roadmap for Ethanol Blending in India by 2025*.
- The roadmap proposes a gradual rollout of ethanol-blended fuel to achieve E10 fuel supply by April 2022 and phased rollout of E20 from April 2023 to April 2025.
- Currently, 8.5 per cent of ethanol is blended with petrol in India.
- In order to introduce vehicles that are compatible the committee recommends roll out of E20 material-compliant and E10 engine-tuned vehicles from April 2023 and production of E20-tuned engine vehicles from April 2025.



How will the new target help India?

Ethanol has become one of the major priorities of 21st Century India for the following reasons:

- **Reduction in imports:** Mixing 20 percent ethanol in petrol holds multiple attractions for India. It can potentially reduce the auto fuel import bill by a yearly \$4 billion, or Rs 30,000 crore.

India is the world's third-biggest oil importer, relying on foreign suppliers to meet over 85 per cent of its demand.

- **Increase in farmer's income:** It also provides for farmers to earn extra income if they grow produce that helps in ethanol production.
- **Environment friendly:** Ethanol is less polluting than other fuels and, per the NITI Aayog paper, "offers equivalent efficiency at lower cost than petrol".
 - ▶ Spelling out the opportunity for India for embracing ethanol, the paper stresses that "availability of large arable land, rising production of foodgrains and sugarcane leading to surpluses, availability of technology to produce ethanol from plant-based sources, and feasibility of making vehicles compliant to ethanol blended petrol make E20 not only a national imperative, but also an important strategic requirement".
- Use of ethanol-blended petrol decreases emissions such as carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx), the expert committee noted. Higher reductions in CO emissions were observed with E20 fuel — 50 per cent lower in two-wheelers and 30 per cent lower in four-wheelers.



Which countries are doing it?

- Given the constraints of finite sources of fuel, frequent fluctuations in prices and their overall impact on the environment, alternatives like ethanol in fuel are being explored by countries.
- The NITI Aayog paper said that the global production of fuel ethanol stood at 110 billion litres in 2019 after clocking an average yearly growth of 4 percent in the last decade.
- The US and Brazil account for 84 percent of the global production followed by the European Union (EU), China, India, Canada and Thailand.
 - ▶ **Brazil** has mandated that ethanol content in gasoline sold in the country should be in the range of 18 percent to 27.5 percent.
 - ▶ **EU** has a target for 10 percent of transportation fuel for each member country to come from renewable sources, such as biofuels, by 2020.



E-20-tuned engines

- There is an estimated loss of six-seven per cent fuel efficiency for four wheelers and three-four per cent for two wheelers when using E20, the committee report noted. These vehicles are originally designed for E0 and calibrated for E10.

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- The use of E20 will require new engine specifications and changes to the fuel lines, as well as some plastic and rubber parts due to the fuel's corrosive nature, analysts cautioned.
- The engines, moreover, will need to be recalibrated to achieve the required power-, efficiency- and emission-level balance due to the lower energy density of the fuel. This can be taken care of by producing compatible vehicles.
- E20 material compliant and E10 compliant vehicles may be rolled out across the country from April 2023, the committee noted.
- These vehicles can tolerate 10 to 20 per cent of ethanol blended petrol and also deliver optimal performance with E10 fuel.
- Vehicles with E20-tuned engines can be rolled out all across the country from April 2025. These vehicles would run on E20 only and will provide high performance.

CONCLUSION

As India progress towards higher blending of ethanol, careful monitoring and assessment of emissions changes will be needed to make sure that emission reduction potential can be enhanced both for regulated and unregulated pollutants.

VALUE ADDITION

What is Ethanol Blending?

- Ethanol is high in oxygen content, which therefore allows an engine to more thoroughly combust fuel.
- It has a higher octane number than gasoline, hence improves the petrol octane number.
- It can be mixed with fuel in different quantities and can help reduce vehicular emissions. Also, since it is plant-based, it is considered to be a renewable fuel.

Ethanol

- Ethanol is a biofuel, that is, a fuel produced by processing organic matter.
- It is the organic compound Ethyl Alcohol which is produced from biomass. It is also an ingredient in alcoholic beverages.
- 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 India is obtained primarily from sugarcane via a fermentation process.

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CSE RESULTS

TOP 100
ALL INDIA RANKING
CSE 2019

3	6	10	11	16	17	21	22	28			
30	33	38	39	42	44	46	53	54	59	66	69
70	72	77	78	80	82	84	86	87	94	97	98

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TOP 100
ALL INDIA RANKING
CSE 2018

2	3	5	7	27	36	37	40	44	49		
51	52	56	58	62	74	81	89	92	94	98	100

TOP 100
ALL INDIA RANKING
CSE 2017

3	10	19	31	33	35	40	41	44	45	48		
97	100	54	57	63	64	68	71	75	77	80	83	93

TOP 100
ALL INDIA RANKING
CSE 2016

5	6	9	15	26	29	43	48	53	59	67
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TOP 100
ALL INDIA RANKING
CSE 2015

9	13	26	34	39	75	77	78	89	91
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