Ethanol blending

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***Source**: The Hindu*

Manifest pedagogy: Ethanol blending is a step which has a multisectoral impact. It helps not only the environment but also the economy. But aspirants fail to consolidate the topic in a single space. Any policy change towards it becomes important.

In news: Union Cabinet has approved a higher procurement price for ethanol.

Placing it in syllabus: Achievements in the area of biotechnology

Dimensions:

- Science behind ethanol blending
- Need for ethanol blending
- Ethanol blended petrol programme
- Impact of higher procurement price for ethanol

Content: The Union Cabinet has approved a higher procurement price for ethanol purchased by oil marketing companies for the ethanol blended petrol (EBP) programme, which will come into effect from December 1, 2019 for a period of one year.

Science behind ethanol blending:

- Ethanol is a renewable fuel made from various plant materials collectively known as “biomass.”
- Ethanol has the same chemical formula regardless of whether it is produced from starch- and sugar-based feedstocks, such as corn grain (as it primarily is in the United States), sugar cane (as it primarily is in Brazil), or from cellulosic feedstocks (such as wood chips or crop residues).

- There are several steps involved in making ethanol available as a vehicle fuel:

- Biomass feedstocks are grown, collected and transported to an ethanol production facility.
- Feedstocks are converted to ethanol at a production facility and then transported to a fuel terminal or end-user by rail, truck, or barge.
- Ethanol is blended with gasoline at the fuel terminal to make fuel and then distributed by truck to fueling stations.

Some facts about ethanol as a fuel:

- With a **113 octane rating**, ethanol is the highest performance fuel on the market.
- Because the ethanol molecule contains oxygen, it allows the engine to more **completely combust the fuel, resulting in fewer emissions.**
- Since ethanol is produced from plants that harness the power of the sun, ethanol is also considered a **renewable fuel.**
- Ethanol-blended fuel keeps the fuel system clean for optimal performance because it **does not leave gummy deposits.**
- Ethanol helps prevent wintertime problems by **acting as a gas-line antifreeze.**
- Ethanol can be combined with petrol in any concentration up to pure ethanol (E100).
- Ethanol can also be used to power fuel cells and to produce biodiesel.

Need for ethanol blending:

Steady rise in ethanol blending has following benefits:

- save import of crude oil (India is the third largest

consumer of energy in the world after China and the US),

- saves foreign currency reserves,
- encourage use of additional cane juice and other raw materials efficiently,
- protect the environment from release of motor vehicle obnoxious gas,
- helps reduce pollution and strengthen India's resolve towards fulfilling commitments made at COP-21, the UN Climate Change Conference held in France in 2015.
- The new Biofuel Policy allows the use of feedstock in line with the "**waste-to-wealth" concept,** other than molasses (sugarcane juice, damaged foodgrains, rotten potato, cassava, sweet sorghum, corn, surplus foodgrains) as a feedstock to manufacture ethanol in the country thus improves farmer's income.
- Use of wheat and rice stubble in ethanol production allows farmers to sell their surplus output to ethanol manufacturers when prices slump.
- A remunerative price for ethanol suppliers will help in reduction of cane farmers' arrears, in the process contributing to minimizing the difficulty of sugar cane farmers.

Ethanol blended petrol programme:

- Ethanol Blended Petrol (EBP) programme was launched in **January, 2003.**
- The programme sought to promote the use of alternative and environmentally friendly fuels and to reduce import dependency for energy requirements.
- During 2001, pilot projects on Ethanol Blended Petrol started at 3 locations i.e. at Miraj, Manmad (Maharashtra) and Aonla/Bareilly in Uttar Pradesh.
- The Government of India decided to launch EBP programme in 2003 **for supply of 5% ethanol blended Petrol.**
- Subsequent to this, EBP programme was **launched in 9 States i.e. Maharashtra, Gujarat, Goa, Uttar Pradesh,**

Haryana, Punjab, Karnataka, Andhra Pradesh, Tamil Nadu and 4 Union Territories.

- The Ministry of Petroleum & Natural Gas (MoP&NG) in 2006, directed the Oil Marketing Companies (OMCs) to sell 5% Ethanol Blended Petrol subject to commercial viability as per Bureau of Indian Standards specifications in notified 20 States and 4 UTs with effect from 1st November, 2006.
- At present, this programme has been **extended to the whole of India except Union Territories of Andaman Nicobar and Lakshadweep islands with effect from 01st April, 2019 wherein OMCs sell petrol blended with ethanol up to 10%.**
- **According to the new bio-fuel policy, government aims to achieve a target of 20 per cent ethanol blending with petrol by 2030, and to have 10 per cent blending with petrol by 2022.**

- The OMCs are to procure ethanol from domestic sources. Government has notified administered price of ethanol since 2014.
- For ethanol supply year 2019-20 (ie. 1st December 2019 to 30th November 2020), the Government has fixed remunerative price for ethanol procurement based on raw material utilized for ethanol production as follows:
- From C-heavy molasses at Rs. 43.75 per litre.
- From B heavy molasses / partial sugarcane juice at Rs.54.27 per litre.
- The price of ethanol from sugarcane juice/sugar/sugar syrup route be fixed at Rs.59.48 per litre.
- The OMCs will also pay the GST and transportation tax associated with the ethanol supply so that long distance transportation of ethanol is not disincentived (this provision existed in the previous plan as well).
- Government has reduced the GST rate on ethanol meant for

EBP Programme from 18% to 5%.

- OMCs are advised to continue according priority of ethanol from 1) sugarcane juice/sugar/sugar syrup, 2) B heavy molasses 3) C heavy molasses and 4) Damaged Food grains/other sources, in that order.

India is expected to need 10 billion litres of ethanol annually to meet the 20% blending target in 2030 if petrol consumption continues to grow at the current pace. At present, the capacity stands at 1.55 billion litres a year.

Second Generation (2G) Ethanol Production:

The Union government has allowed procurement of ethanol produced from non-food feedstock besides molasses like cellulosic and lingo-cellulosic materials including from the petrochemicals route. In view of the consistent under-supply of domestic ethanol from traditional sources, oil PSUs are establishing 12 2G (Second Generation) Ethanol bio-refineries across the 11 states of the country.

The foundation stone for the first bio-refinery in Bathinda, Punjab has already been laid. Second generation ethanol is based on biomass such as wheat straw, rice straw and crop stubble that can be converted into ethanol. It is more expensive than first-generation ethanol.

Impact of higher procurement price for ethanol:

- Ethanol availability for EBP programme is expected to increase significantly due to higher price being offered for procurement of ethanol from all the sugarcane based routes.
- The current blending levels stand at 6.20 per cent. Now due to higher procurement price, more ethanol would be supplied by next year for blending which would help to meet 7 percent of the blending levels.
- Agricultural wastes especially crop residues will be properly utilised thus benefiting farmers as well as

environment.

- The decision will serve multiple purposes of reducing excess sugar in the country and increasing liquidity with the sugar mills for settling cane farmer’s dues
- All distilleries will be able to take benefit of the scheme and large number of them are expected to supply ethanol for the EBP programme.
- Increased ethanol blending in petrol has many benefits including reduction in import dependency, support to agricultural sector, more environmentally friendly fuel, lesser pollution and additional income to farmers.