Ministry of Petroleum

Ethanol Blending & Flex Fuel Vehicles

Relevant to M&M - Auto

4th July 2021

Context

NITI Aayog constituted an expert committee comprising of relevant stakeholders and has created a **"Roadmap for Ethanol blending in India-2021-25"** addressing the concern of all stakeholders. The report emphasizes the adoption of higher blends of ethanol by the auto-industry and creating a roadmap for **Flex-Fuel Vehicles (FFVs)**. 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. The Ministry of Petroleum & Natural Gas (MoP&NG) had instituted an Expert Group to study the issues such as pricing of ethanol, matching pace of the automobile industry to manufacture vehicles with new engines with the supply of ethanol, pricing of such vehicles, fuel efficiency of different engines etc.

Blending Target

- The Government of India has advanced the target for 20% ethanol blending in petrol (also called E20) to 2025 from 2030.
- Currently, 8.5% of ethanol is blended with petrol in India.

Objectives of Ethanol Blending

- **Energy Security:** Increased use of ethanol can help reduce the oil import bill. India's net import cost stands at USD 551 billion in 2020-21. The E20 program can save the country USD 4 billion (Rs 30,000 crore) per annum.
- **Incentives for Farmers -** The oil companies procure ethanol from farmers that benefits the sugarcane farmers. Further, the government plans to encourage use of water-saving crops, such as maize, to produce ethanol, and production of ethanol from non-food feedstock.

Impact on Emission

- Use of ethanol-blended petrol decreases emissions such as carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx).

- The unregulated carbonyl emissions, such as acetaldehyde emission were, however, higher with E10 and E20 compared to normal petrol. However, these emissions were relatively lower.

Industry Reactions / SIAM Suggestions

- SIAM proposes to introduce 10% ethanol blended motor gasoline (E10) with RON95 in 2021 and achieve pan-India implementation of this fuel by 2022. Industry would then launch fully compatible E10 vehicles, compliant to BS VI Phase II by 2024 by redesigning hardware and calibrating vehicles to take advantage of higher RON95 and E20 material compliance.

- As a next step to this roadmap post implementation of E10 with RON95 pan-India, it is proposed that 20% ethanol blended motor gasoline (E20) fuel can be introduced by 2023 and pan-India consistent supply would be ensured by 2025 so that E20 compatible vehicles can be launched in 2025.

- Considering that E20 fuel is ensured pan-India by 2025, it is proposed that dispensing of higher ethanol blends may be started from 2026 and blends like E85 can be dispensed in ethanol surplus areas from 2027. With this industry would then also start launching of Flex Fuel Vehicle (FFVs) models from 2027.

- E10 dispensation to continue to support large number of existing Vehicles on road till ELV, which are not designed for any higher blend than 10% for Material compatibility and Performance.

- SIAM proposes 3 phase implementation of Ethanol blends across country so that maximum benefits of fossil fuel saving & GHG Emissions reduction could be achieved.

i. **Phase I:** Launch of E10 fully compatible vehicles by 2022.

ii. **Phase II**: Launch of E20 compatible vehicles from 2025 so that from 2026 only E20 fully compatible vehicles are sold in market. Parallel dispensing of E20 fuel to be started in 2023 and achieve pan-India dispensing by 2025.

iii. **Phase III:** Introduction of flex fuel vehicles - SIAM recommends that higher blend of ethanol may be kept as E85 and not E100. Since E100 fuel dispensed has ethanol concentration of 93% only and E100 compatible vehicle design is far more complicated and expensive than E85 FFV. It is expected that E85 will have almost same level of ethanol % utilization as E100. Also, across the globe, no country other than Brazil has E100 for the same reason. Once Phase I and Phase II are successfully implemented, Government of India may start dispensing of higher ethanol blends from 2026.Blends like E85 can be dispensed in ethanol surplus areas from 2027.

Conclusion

For auto companies, introduction of FFVs will pose another challenge that they are already facing with the fast adoption of electric vehicles. If standards on FFVs are made mandatory, it would require additional investment in production lines and technology transfers to change the character of the vehicles. Already the use of 10 per cent ethanol blended petrol and introduction of BS VI fuel have added to the cost of making a vehicle. Taking blending to 20 per cent require few minor changes in vehicle configuration, but adoption of FFVs will future proof the design to adopt to any more changes in blending options and configuration.