GRAIN ETHANOL MANUFACTURERS ASSOCIATION
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GEMA/2025-26/743 Date: 02.12.2025

To,

Shri Rajesh Verma (IAS), Chairperson
Commission for Air Quality Management (CAQM)
New Delhi

Subject: Recommendations for Cleaner, Greener & Sustainable Mobility

Respected Sir,

Greetings from Grain Ethanol Manufacturers Association.

We sincerely thank CAQM for its promoting clean and sustainable mobility. The recent Advisory (No.17) dated 2nd May 2025 has given Government agencies clear guidance to encourage the use of cleaner vehicle technologies such as BEVs, CNG/CBG vehicles, Strong Hybrid Electric Vehicles (SHEV), Flex Fuel Vehicles (FFV) with higher ethanol blends (E85/E100), and Flex Fuel Strong Hybrid Vehicles (FFV-SHEV) (Annex-1 attached).

We understand that CAQM is preparing an advisory for Delhi NCR States regarding the Vehicle Aggregator Policy. In this regard, we wish to submit the following points:

1. The automotive and energy sectors are introducing several clean mobility options, including hybrid electric vehicles (SHEV and PHEV), battery electric vehicles (BEV), and vehicles running on alternative fuels such as ethanol, CBG, and hydrogen.
2. The GOI Ethanol Blending Programme (EBP) has achieved strong results due to Government support and private-sector investments. Ethanol blending has increased from 1.5% in 2014 to 20% in 2025. This has helped reduce 74 MMT of GHG emissions, saved crude oil worth ₹1.44 lakh crore, and generated ₹1.21 lakh crore income for farmers. The industry is also developing FFVs and Electrified-FFVs (FFV-SHEV and FFV-PHEV) to support higher ethanol blends beyond E20.
3. Many studies have highlighted the benefits of technologies such as SHEV, PHEV, FFV, and Electrified-FFV. The National Green Tribunal (NGT) and the Energy Transition Advisory Committee (ETAC) have confirmed that SHEV and FFV-SHEV vehicles offer better fuel efficiency and emissions than petrol and diesel vehicles (Annex-2 attached).
4. A study by (Testing & Certification Agency of G) iCAT shows that SHEVs run up to 60% of the time and 40% of the distance on an electric motor alone, resulting in 60–80% lower emissions than BS-VI limits and 30–50% lower CO_2 emissions (Annex-3 attached).

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5. Study by Indian Institute of Sciences (IISc) found that FFV-SHEV vehicles have the lowest overall carbon emissions under Indian conditions (Annex-4 attached).

We humbly request CAQM to include/promote all clean and green technologies—like FFVs and Electrified-FFVs (FFV-SHEV & FFV-PHEV)—in its advisory for upcoming policy measures, including the Vehicle Aggregator Policy.

With regards

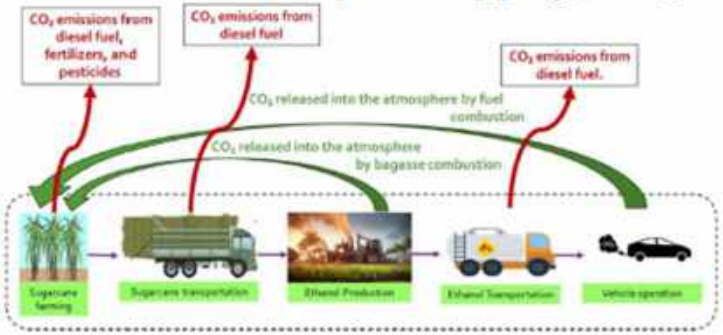
Dr. C.K. Jain, President

Enclosed: 1) Annex 1: CAQM Advisory May 2025
2) Annex 2: NGT+ETAC
3) Annex 3: iCAT Study Result
4) Annex 4: IISc Study Flex Hybrids Summary

Annexure -4

IISc - Well to Wheel Analysis of Ethanol-Gasoline Flex Fuel Hybrid Vehicle – Report Summary

Ethanol : Carbon Footprint Mapping (Farming to Vehicle Usage)



Green arrow signifies the cycle of CO_2 absorption by sugarcane during cultivation, which is later released during three different stages:

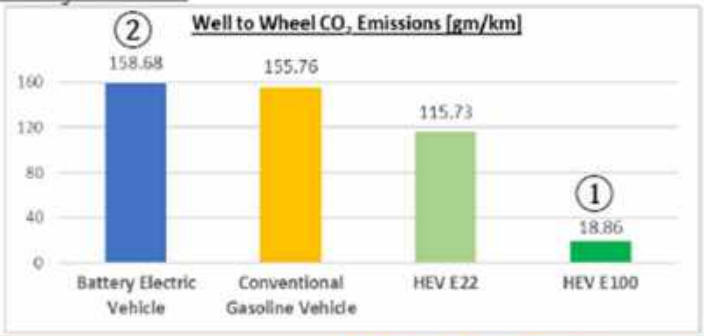
- Sugarcane harvesting
- Bagasse combustion
- Ethanol combustion in vehicles.

Red arrows indicate the actual environmental impact due to CO_2 release

Well-to-Wheel Analysis of Ethanol-Gasoline Flex Fuel Hybrid Vehicle

Prof. B. V. Ravishankar and Dr. M. Himabindu
Department of Mechanical Engineering
Indian Institute of Science
Bengaluru, India
May 2024

Study Result



Summary

① Ethanol-fueled **HEV E100 exhibits the lowest WTW CO_2 emissions**.

② BEV exhibits highest WTW CO2 as approximately **70% of India's electricity is generated by coal based thermal power plants**, which operate at **efficiencies of around 30%.** Furthermore, the electricity pathway incurs significant **transmission and distribution losses, estimated at 20.66%.**

Hybridizing powertrains, along with the use of biofuels, can significantly reduce CO2 emissions and improve WTW efficiency.

Tests undertaken by iCAT, GoI Certification Agency

Annexure -3

A Fuel Efficiency improvement with HEVs over ICE:

- 30~50% on MIDC cycle.
- 160~195% on MIDC Urban cycle. [Higher improvement due to higher idling conditions experienced in city driving]
- 40~80% in IRDE cycle.

B Low on regulated pollutants:

- 60~80% Lower w.r.t. BS6 limits [CO, HC, Nox]
- 30-50% less CO2

C Predominant mode of energy is electric in Hybrids:

- ~60% of time, e-drive observed in MIDC testing

Hybrids run 60% of time in EV mode
thus providing significant fuel savings and emission reduction

Annexure 2

National Green Tribunal

NGT Order dated 27th March 2023

Transport Sector Recommendations:
EVs should be aggressively promoted. However, till the time battery-EVs take over, strong hybrid electric vehicles (HEVs) that blend fuel & electric power are much more fuel-efficient & should be promoted (Page 33)

Energy Transition Advisory Committee

Low carbon transition of India's Oil & Gas sector

Energy for surface transport (page 293)
Four Wheelers - 'Vehicles with flex fuel capabilities and Hybrids may be promoted in the short & medium terms. This can be done through application of fiscal tools like taxation.'

Advisory No. 17

COMMISSION FOR AIR QUALITY MANAGEMENT IN NATIONAL CAPITAL REGION AND ADJOINING AREAS
17th Floor, Jawahar Vyapar Bhawan (STC Building) Tolstoy Marg, New Delhi- 110001

F. No. A-11011/07/2021/CAQM-VP. Vol. IV Dated: 02.05.2025

To

1. The Chief Secretaries, Government of Uttar Pradesh/Haryana/ Rajasthan/ GNCT of Delhi.
2. The ACS / Pr. Secretary, Transport Department, Government of Uttar Pradesh/Haryana/ Rajasthan/ GNCT of Delhi.

Subject: Procurement of clean vehicles by Governments, Public Sector Undertakings and Public Institutions in NCR – reg.

It needs no emphasis that contribution from the transport sector to the overall air pollution load in the entire NCR is significantly and consistently high during all times of the year. As part of the air pollution control efforts concerning this sector, it is imperative for a prioritized transition to cleaner mobility.

2. The concerns regarding vehicular pollution in Delhi-NCR have also been repeatedly expressed by the Ministry of Environment, Forest and Climate Change, Government of India in review meetings held from time to time, in the meetings of the Committee of Secretaries, chaired by the Cabinet Secretary and in the meetings of the High-Level Task Force for management of air pollution in Delhi and NCR, besides by the Hon'ble NGT and the Hon'ble Supreme Court.

3. Amongst various measures to curb vehicular pollution, transition to cleaner mobility, preferably towards zero emission vehicles like the Battery Electric Vehicles (BEV) and other such technologies that may develop in future, assumes significant importance and needs to be accorded priority.

4. The comprehensive policy devised by the Commission to curb air pollution in the National Capital Region also lays due importance on transition to cleaner fuels and electric mobility and, inter-alia, outlines the following action points:

(i) Amend / notify EV policies in all NCR States stating targets, mandates, incentives, funding strategies for proliferation of EV and charging infrastructure etc.

(ii) Set targets for EV penetration, including that for vehicles with the Governments and institutions etc.

5. Besides the efforts in the direction of zero emission vehicle technologies, amongst all fossil fuels, natural gas viz. CNG /LNG has emerged as a cleaner vehicular fuel option as compared to the polluting fossil fuels like diesel and petrol, despite transition to BS-VI standards. To this effect, vast CNG infrastructure has also been set up across the country. Furthermore, the National Policy on Bio-Fuels aims to promote the use of bio-fuels to reduce reliance on imported fossil fuels and envisages promotion and production of bio-ethanol for suitable fuel blending options under the Ethanol Blended Petrol (EBP) Program. Accordingly, Flex-Fuel Vehicles envisaging various levels of ethanol blending with petrol are now emerging. Augmentation in production of Bio-CNG / CBG across the country is also a targeted policy initiative integral to the National Policy on Bio-fuels as well as for ex-situ utilization of agriculture residue including paddy straw, to prevent its open burning.

6. Strong Hybrid Electric Vehicles (SHEV) offer substantial improvements in fuel efficiency and emission reduction as compared to conventional diesel/petrol vehicles. The Ministry of Heavy Industries (MHI) has also actively supported the adoption of strong hybrid vehicles through the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India (FAME India) Scheme.

7. While the concerns of vehicular emissions are universal, considering the ultra-high density of vehicular traffic particularly in Delhi-NCR, there is a need to develop an accelerated roadmap for cleaner mobility, focusing on transition from polluting vehicles, dependent purely on fossil fuels like diesel and petrol.

8. In the above light, the Commission desires that the Governments, Public Sector Undertakings (PSUs) and Public Institutions in Delhi-NCR may take a lead in this context and initiate policy measures / actions for transition to the cleaner mode vehicles viz. BEV / CNG / CBG / Strong Hybrid Electric Vehicles (SHEV)/ Flex Fuel Vehicles (FFV) with higher ethanol blending (E85/E100) / Flex Fuel Strong Hybrid Vehicles (FFV-SHEV) and mandate future purchase and hiring/ leasing of only such cleaner mode vehicles.

(Arvind Nautiyal)
Member Secretary

Copy for information and appropriate action, to:

1. Secretary, Department of Expenditure, Ministry of Finance – for considering suitable guidelines for Central Government offices, CPSUs and Public Institutions in Delhi-NCR.
2. Secretary, Ministry of Environment, Forest and Climate Change
3. Secretary, Ministry of Road Transport and Highways
4. Secretary, Ministry of Heavy Industries
5. Member Secretaries, State Pollution Control Boards Uttar Pradesh/Haryana/Rajasthan.
6. Member Secretary, DPCC, Delhi.

(Arvind Nautiyal)
Member Secretary