

DAILY PT POINTERS

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The Hindu-Environment(GSIII)Page 10

Should not EVs and Hybrids be treated equally for govt. subsidies?



Avinash Kumar Agarwal
Director, IIT Kanpur and the lead author of a study comparing greenhouse gas emissions of battery, hybrid and ICE vehicles

PARLEY

India's road transport sector contributes about 12% to the country's CO2 emissions, according to the International Energy Agency, making it the third most greenhouse gas emitting sector after energy and agriculture. The Union government has been attempting to fast track decarbonising transport for almost a decade with the introduction of the Faster Adoption and Manufacture of Hybrid and Electric Vehicles, or FAME in 2015. The third iteration of this policy is likely to be announced in this year's Union Budget. FAME attempts to generate demand for electric vehicles (EVs) and hybrids by subsidising retail sales, encouraging the manufacture of components and creating and nurturing an EV ecosystem nationwide. But the policy has changed from when it was introduced, with a steady removal of subsidies for hybrids. Some have welcomed this move, while others point to the lack of charging infrastructure, import dependence on advanced battery components and technology, and a grid still dominated by coal-based power, leading to an increase in EVs overall carbon footprint from mining rare earth elements to charging.



Sharvari Patki
Program Head, Electric Mobility at the World Resources Institute, India

Professor Avinash Kumar Agarwal and Sharvari Patki discuss the question in a conversation moderated by **Kunal Shankar**. Edited excerpts:

The government in 2017, withdrew the subsidy support for "mild hybrids" affecting popular car models. Moreover, this segment took advantage of about 68% of the subsidy component at the time. How do you view this decision by the Centre?

Sharvari Patki: About 90% of emissions in transport are from road transport and 20% of this from passenger cars. Now put hybrids in perspective. Currently, two-wheelers constitute 75% of our vehicle sales and three-wheelers another 4%, so together they are almost 80% of vehicle sales. The EV market has already solved major operational issues in these segments. The majority of success in EV transition is seen in these two categories. When we look at commercial vehicles - primarily freight vehicles - they are just 5% of the overall vehicle population, but they alone contribute 34% of emissions, yet we do not have the hybrid truck discussion on the table. If we remove this major chunk and then we come to passenger cars, hybrids are a small portion of this. I am counting strong hybrids because they offer almost 25-30% fuel efficiency compared with internal combustion engines (ICE). But the models cost approximately 20 lakh apiece, asking them fall under the luxury car segment. We don't need to make incentives for people who are looking



An electric car. GETTY IMAGES

cars worth 20-40 lakh. If we go back to the genesis of FAME, it was to move towards emissions-free energy efficient India. We understand that in the policy space, there is no silver bullet. You have to keep evolving as the ecosystem evolves. If I go back to 2015 when early electric cars were launched in India, we had a range of around 120 kilometres, but in the past years, we have indigenous cars, offering 350 to 400 kilometres on a single charge and with zero emissions. We don't have an infinite amount of taxpayers' money. The limited pot has to be given to help transition towards energy-efficient and emissions-free India. That means we have to understand where we are getting maximum value for our incentives. I think the government is cognisant of this and has accordingly changed the incentive patterns.

Avinash Kumar Agarwal: I think Sharvari has made very nice points. I would slightly differ with her on certain aspects. I would like to question the idea of a zero-emissions vehicle anywhere in the world. You need some primary source of energy and in India, more than 75% of electricity is produced from coal. And if you look at the average per kWh that you are charging, there is a certain emission that you are emitting into the environment. So when you evaluate and make policies on ICE versus hybrids versus electric, I must ask, am I getting the kind of emission reductions that I am looking for? To assess this, we looked at the car segment in a recently published report. We had looked at two-wheelers earlier. This report is available freely on the website of IIT Kanpur. When you talk about the sustainability of any technology, you have three aspects - the life cycle emission analysis, or LCA, per kilometre usage of a vehicle right from production, mining and recycling and how much emission you are emitting into the environment and finally, an



Policies must evolve with the changing sectoral landscape. We must aim towards zero-emissions vehicles because that will help us reach our climate and energy security goals

SHARVARI PATKI

important aspect especially in the Indian context is the total cost of ownership or TCO. This gives us total emissions, cost per kilometre and then of course there is a social sustainability aspect, which is more of a qualitative number. So let's just focus on LCA and TCO. When we did this analysis for many of the cars which are being sold in India, from the Indian players and players with foreign origin, our estimates suggest, in most cases, emissions from electric are higher than ICE vehicles, and certainly more than hybrid vehicles. The tendency we have in India is to consider emissions and cost only from the charging phase. So we say, 0.1 per kilometre and give these numbers only for the usage phase. But you don't put the cost of, say, for example, battery charge. So we did this total cost of ownership for all these two power trains and then we figured in most cases, hybrids emerged to be best in terms of environmental impact, which means they were the least polluting of all the three power trains. And EVs were actually in some cases, even more polluting than ICE vehicles. This is a limited case that I'm making in the context of India, where 75% of the power is from carbon. So we find it difficult to digest when my EV enthusiast friends say that it is CO2 free, it is not. We also don't have the basic raw materials for making battery electric vehicles. You need large amounts of metals like cobalt, nickel and lithium. And so in hybrids, the advantage is that you can manage with a very small battery pack and their total cost of ownership is slightly higher because of the differential tax rate. Hybrids today are taxed even more than ICE vehicles.

Although the GST on them has been proposed to be significantly reduced...

AKA: Absolutely, but the government should look at the overall objective. They should not get into the business of choosing technology. You must specify life cycle emission and GHG norms, but when you start subsidising and start choosing, then technology development and progression actually stop. For a country like India, the subsidy is not sustainable because of the sheer numbers.

We must contextualise this conversation in

the backdrop of the rapid deployment of renewables across India and the country's COP26 commitment to generate half of our power from non fossil based sources and ramping up renewables capacity to 500 GW by 2030. What do you think?

SP: As the professor rightly pointed out, today we don't have a completely clean grid, but this is going to change. We are striving to ensure our grid becomes greener and cleaner. But if we wait for our grid to become green and then start our transport transition, it might be too late. So there would be some overlap where both sectors' transition must go hand in hand. We will keep electrifying our transport, while we green our grid. And when we say zero emission, we completely understand we are talking about zero tail pipe emission. So in the interim scenario, when we are charging everything with coal, we can say that hybrid makes better sense. But again this depends on how many kilometres you are running, which is the use case, the vehicle class, etc. And when we consider energy efficiency, 300 units of energy in ICE versus 100 units of energy in EV, the majority of the energy we apply in ICE is not utilised for actual movement. Whereas, in EVs, the majority of energy is used in traction, so by default, I think EVs are more efficient. We must also understand when we do a TCO analysis, we don't consider the cost before tax. We consider what a user pays. So again, TCO calculations have many assumptions. How much fuel is used? How the charging is done and at what rate? For example, I come from Maharashtra. We have electric meters which offer us EV tariff at 15 and then the TCO changes drastically. So these are multiple things at play and I understand that we must ensure to push technologies which are effective overall and not in silos.

As the government frames FAME 3, should it consider hybrids on an equal footing for subsidies?

AKA: I think they should be at an equal footing. There should be no discrimination.

SP: I think we must consider multiple calculations and factors. Policies must evolve with the changing sectoral landscape. We must aim towards zero-emissions vehicles because that will help us reach our climate and energy security goals.



To listen to the full interview Scan the code or go to the link www.thehindu.com

- India's road transport sector contributes about 12% to the country's CO2 emissions, according to the International Energy Agency, making it the third most greenhouse gas emitting sector after energy and agriculture. The Union government has been attempting to fast track decarbonising transport for almost a decade with the introduction of the Faster Adoption and Manufacture of Hybrid and Electric Vehicles, or FAME in 2015.
- FAME attempts to generate demand for electric vehicles (EVs) and hybrids by subsidising retail sales, encouraging the manufacture of components and creating and nurturing an EV ecosystem nationwide.
 - The third iteration of this policy is likely to be announced in this year's Union Budget.
- The Prime Minister Narendra Modi-led government's flagship electric vehicle incentive programme, faster adoption and manufacturing of electric vehicles (FAME), is gearing up for its third edition with a significant outlay of approximately Rs 10,000 crore.

Bhartruhari Mahtab appointed *pro tem* Speaker of Lok Sabha

The Hindu Bureau
NEW DELHI

President Droupadi Murmu has appointed Bhartruhari Mahtab, seven-time MP from Cuttack, the *pro tem* Speaker of the 18th Lok Sabha, Parliamentary Affairs Minister Kiren Rijju said on Thursday.

But Opposition leaders questioned the Narendra Modi government for ignoring the convention of giving the honour to the senior-most member and eight-term MP Kodikunnil Suresh of the Congress.

"President is pleased to appoint Shri Bhartruhari Mahtab, Member, Lok Sabha as Speaker Protem under Article 95(1) of the Constitution to perform the duties of Speaker till election of the Speaker," Mr. Rijju said in a post on X.

The newly elected members of the 18th Lok Sabha will make oath or affirmation before the *pro tem* Speaker.

Mr. Rijju added that Mr. Mahtab would be assisted by a panel of chairpersons comprising Mr. Suresh, DMK leader T.R. Baalu, Trinamool Congress leader Sudip Bandyopadhyay, and BJP leaders Radha Mohan Singh and Faggan Singh Kulaste.



Bhartruhari Mahtab

that by convention, the MP who had served the highest number of terms was appointed *pro tem* Speaker for the first two days when oath is administered to all newly elected MPs.

'A mistake'

"The senior-most MPs in the 18th Lok Sabha are Kodikunnil Suresh (Congress) and Virendra Kumar (BJP), both of whom are now serving their eighth term. The latter is now a Union Minister and hence it was expected that Kodikunnil Suresh would be the Speaker Pro-tem. Instead, a seven-time MP, Bhartruhari Mahtab, has been appointed Speaker Pro-tem. He was a Biju Janata Dal MP for six terms and is now a BJP MP," he said.

Calling it the "first mistake" of the new Parliamentary Affairs Minister, the Congress's Manickam

- The Speaker is the Presiding Officer of Lok Sabha and thus have some key duties related to the day-to-day proceedings of the House. Since the Speaker has to be elected by a simple majority in the House, until then, a *pro-tem* Speaker is chosen to perform the Speaker's duties, including the oath-taking of MPs.
- The word 'pro-tem' means 'for the time being' or 'temporarily'. Although the 'pro-tem' post is not mentioned in the Constitution, the 'Handbook on the Working of Ministry of Parliamentary Affairs' mentions the 'Appointment and Swearing in of Speaker pro-tem'.

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Limbless amphibian found in Kaziranga for first time

The Hindu Bureau
GUWAHATI

A limbless amphibian has been added to the fauna in the 1,307.49 sq. km Kaziranga National Park and Tiger Reserve.

Assam's wildlife officials said a team of herpetologists recorded the striped caecilian (*Ichthyophis spp*) in the tiger reserve for the first time during a rapid herpetofauna survey conducted from June 14-17.

The survey was conducted with support from Saibal Sengupta of Assam Don Bosco University; Abhijit Das of the Wildlife Institute of India; Rajeev Basumatary and Samrat Sengupta of D.R. College in eastern Assam's Golaghat; Jaydev Mandal of Madhab Choudhury College in western Assam's Barpeta; Jayaditya Purkayastha of Guwahati-based Help Earth; Jayanta Kumar Roy of Aaranyak; and Sushmita Kar of the Turtle Survival Alliance.

Reptiles and amphibians, collectively called



The striped caecilian. SPECIAL ARRANGEMENT

herpetofauna, are the least studied but most vulnerable to climate change. "Caecilians are limbless amphibians that spend most of their lives burrowed under soil. They are, therefore, the least studied of the amphibian species. As they are an ancient species, their presence holds critical linkages to evolution and intercontinental speciation," a statement issued by the Kaziranga authorities said.

The diverse ecosystem of Kaziranga, comprising flood plains, wetlands,

grasslands, and hill tracts on the periphery, provides an ideal habitat for herpetofauna. The tiger reserve houses 24 species of amphibians and 74 species of reptiles. It is also home to 21 of the 29 species of tortoises and freshwater turtles found in India.

Kaziranga's Director, Sonali Ghosh, said, "a training and sensitisation programme was held to enhance the skills of forest personnel in herpetofauna identification and conservation for ensuring better management and protection of these vital species."

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The Hindu- GS2-Governance/GS 3/Economy

Karnataka govt. clears Centre's proposal on reviving gold mining at Kolar Gold Fields

The Hindu Bureau
BENGALURU

The Karnataka government on Thursday cleared a proposal of the Centre for reviving gold mining and auctioning of 13 tailing dumps spread over 1,003.4 acres at the Kolar Gold Fields (KGF) by the Bharat Gold Mines Ltd. (BGML).

The mines located at the KGF are owned by BGML, a PSU, which was established in 1972, under the Department of Mines with its office at the KGF. As much as 33 million tonnes of tailing dumps (extraction waste) is estimated to be lying at the 13 tailing dumps at the KGF. It is esti-



As much as 33 million tonnes of extraction waste is estimated to be lying at the 13 tailing dumps at the KGF. K. BHAGYA PRAKASH

mated that one tonne of dump yields one gram of gold on processing.

A Cabinet meeting presided over by Chief Minister Siddaramaiah cleared the proposal submitted to

the State by the Centre under column 17 of the Mines and Minerals Development and Regulation Act, 1957, seeking the State's consent for reviving gold mining at the KGF.

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The Hindu—Science and Tech (GSIII)

IIT-Delhi's project wins joint 2nd prize in global competition

The Hindu Bureau
CHENNAI

A project by the Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), has won the joint second prize in Trinity Challenge's second competition, on tackling the escalating threat of antimicrobial resistance (AMR), a press release said.

The Trinity Challenge is a charity supporting the creation of data-driven solutions to help protect against global health threats.

The project, 'AMRSense: Empowering communities with a proactive one health ecosystem', was led by Tavpritesh Sethi of the IIIT-Delhi in collaboration with CHRI-PATH, Img.com, and the Indian Council of Medical Research (ICMR).

In India, where over 9,00,000 ASHA workers face limited awareness, insufficient training, and low motivation, there is a significant gap in community-

The prize-winning project is on tackling the escalating threat of antimicrobial resistance

level AMR data collection and evidence-based management. AMRSense tackles these issues through four major components: community engagement by empowering CHWs with AI-assisted data recording tools for accurate and simplified data collection; data integration by creating a unified AMR data ecosystem through the integration of antibiotic sales, consumption, and WHONet-compliant surveillance data using open-source tools and APIs; predictive analytics by using federated analytics across the OneHealth ecosystem for integrative insights on AMR; and the AMRaura Scorecard for monitoring and evaluating AMR trends.

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The project, 'AMRSense: Empowering Communities with a Proactive One Health Ecosystem, AMRSense addresses the challenges of engaging, motivating, and training community health workers (CHWs) in AMR surveillance and management, compounded by the lack of a comprehensive data ecosystem and analytics capabilities

HEADLINES OF THE DAY



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HOOCH

The name for cheap, home-made alcohol is derived from Hoochinoo, an Alaska tribe known for its potent liquor

AT LEAST 280 people have died, and around 100 others are hospitalised after consuming hooch in Tamil Nadu's Kollam district.

What is hooch?

Unlike branded liquor, which is produced in factories with sophisticated equipment and rigorous quality control, hooch is made in roadside settings. It may be diagnosed as someone's taste buds, and is simply meant to intoxicate. But when prepared improperly, it can kill.



A typical setup to produce hooch. (M. Sankar / Corbis)

How is hooch made?

All alcohol is produced using two basic processes: fermentation and distillation.

FERMENTATION: When heated, yeast reacts with sugar (from grain, fruit, sugarcane, etc.) to produce alcohol in a process called fermentation. Beverages like beer and wine are made using this process. But there is a basic limit on the alcohol produced in toxic to the yeast. Thus, fermentation stops when the mixture is roughly 15% alcohol by volume.

DISTILLATION: This process physically separates alcohol from the fermented mixture by taking advantage of the differing boiling points of the mixture's various constituents. Distilled beverages, such as, are far more potent than fermented beverages.

Hooch is produced by distilling fermented mixtures, generally of local by available yeast, and sugar or fruit (often fruit skins). Also, often, multiple rounds of distillation are carried out to produce more potent alcohol.

Why is hooch so dangerous?

Hooch production uses a very rudimentary distilling setup, often just a big pot on the mixture, a pipe that captures and carries the alcohol vapours, and another pot where concentrated alcoholic condenses. There is no temperature control mechanism, and the alcohol is not pure.

This is done with an inherent risk. Fermentation does not only produce consumable ethanol (alcohol). It also produces methanol, an industrial alcohol that is highly toxic for human beings. Distillation helps concentrate both ethanol and methanol.

ARJUN SENGUPTA

What is hooch?

- Hooch is a commonly used term for poor quality alcohol, derived from Hoochinoo, a native Alaskan tribe that was known to produce very strong liquor. Unlike branded liquor which is produced in factories with sophisticated equipment and rigorous quality control, hooch is made in much more crude settings.
 - To put it simply, hooch is alcohol meant to intoxicate. But if prepared incorrectly, it can kill. Unfortunately, it is near impossible to tell whether hooch is safe to consume without actually drinking it.
 - All alcohol is produced using two basic processes: fermentation and distillation.
 - Non-distilled alcoholic beverages like wine contain relatively harmless trace amounts of methanol. But during the distillation, both ethanol and methanol are concentrated.
- Methanol or methyl alcohol can cause impaired vision, high toxicity and metabolic acidosis, a condition in which the body produces excessive acid that cannot be flushed out by kidneys.

HEADLINES OF THE DAY

PIB –Science and Tech(GSIII)

Ministry of Communications

DoT held 1st Networking Event of Sangam-Digital Twin Initiative at IIT Delhi

The Event brought out comprehensive blueprints for Digital Twin-enabled solutions, addressing challenges and leveraging diverse data sources

Secretary (T) Dr Neeraj Mittal highlights the importance of harnessing data to solve real-world problems by collaboration amongst participants



- The first Networking Event of the Department of Telecommunications (DoT)'s Sangam - Digital Twin initiative, was successfully hosted by IIT Delh
- The Sangam initiative, aims at revolutionizing infrastructure planning and design through the utilization of cutting-edge technologies and collective intelligence, has garnered significant attention since its unveiling. It represents a collaborative effort to harness the power of technology and collective intelligence for sustainable and efficient infrastructure solution.

HEADLINES OF THE DAY



PIB –Science and Tech(GSIII)

Ministry of Science & Technology

A new freshwater diatom genus discovered from the Eastern and Western Ghats

Posted On: 20 JUN 2024 3:32PM by PIB Delhi

- Researchers have discovered a new genus of the Gomphonemoid diatom found in the clean water river of the Eastern Ghats. The genus which has an interesting suite of features, distinguishing it from the other members in the group Gomphonemoid in terms of valve symmetry and other certain valve features, has been named *Indiconema* to value its restricted distribution in the country. The research underlines the importance of diatoms in shaping the biodiversity of India's diverse landscapes.
- Diatoms are microscopic algae that play a crucial role in our everyday lives by producing 25 per cent of global oxygen, approximately every fourth breath of oxygen we inhale. They serve as a base of the aquatic food chain. Due to their sensitivity towards any water chemistry changes, they are excellent indicators of aquatic health.
- Diatoms are the first recorded microorganisms in India, with Ehrenberg's first report dating back to 1845 in his voluminous publication *Mikrogeologie*.
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