

Don't Hold Your Breath, Electrify

- *Amitabh Kant**

The World Air Quality Report (2023) paints a dire picture for New Delhi, ranking it first among capital cities for poor air quality. India barely fares better, ranked among the top three countries with the highest PM2.5 levels and home to 42 cities among the top 50 with the worst air quality.

According to the WHO, this poor air quality has far-reaching consequences, causing a 3% GDP loss amounting to \$100 billion due to disruptions in economic activities, lost workdays, premature deaths, and morbidity. This situation also reduces the life expectancy of Indian citizens by 6.3 years.

Several studies identify the major contributors to this severe air pollution, including the use of biomass for heating and cooking, seasonal crop-residue burning, industrial activities, and power plants reliant on fossil fuels. Additionally, transportation emissions play a significant role, accounting for 14% of energy-related CO2 emissions in India and heavily contributing to PM2.5, PM10, and NOx emissions.

According to the Lawrence Berkeley National Lab, the clean energy transition requires a significant overhaul of our energy mix. We need to expand our solar, onshore, and offshore wind capacity by approximately 30 times from current levels. More crucially, the transportation sector must undergo a radical shift to reduce oil dependence, as road transport accounts for 50% of crude oil imports. With 100% electrification of road transport by 2030, we could save up to \$10 billion by 2030 and over \$80 billion by 2050.

Although Electric Vehicle (EV) adoption in India is accelerating, it remains slower compared to other major markets. About 5.0 million EVs were sold globally in Q4 2024, with China leading with a ~60% share, followed by Europe at 25%, and the US at 10%. In contrast, India lags at 1%, with EVs accounting for only 5% of total vehicle sales in FY2024.

There is a need to develop a new overarching strategy for road transport that can help accelerate the EV transition by 2030. This transition should focus on electrifying India's fifty most polluted cities by 2030.

The first step is to electrify two-wheelers, three-wheelers, light commercial vehicles, and buses, as they are key contributors to tailpipe emissions. These cities alone account for over 40% of the nation's vehicle registrations. If these cities achieve 100%

electrification in new vehicle sales by 2030, India will be well on its way to sharply reducing its oil needs.

The conditions for rapid EV adoption are emerging. The EV market in India is presently valued at \$5.61 billion (2023) and is projected to reach \$50 billion by 2030, potentially creating at least 5 million direct and up to 50 million indirect jobs. Technological advances have driven down costs for batteries and EV technologies. Original equipment manufacturers (OEMs) have committed over \$6 billion to EV technologies and manufacturing plants, resulting in more than 200 e-2/3-wheeler models. Battery manufacturers are expected to reach a 50 GWh capacity by 2030. Start-ups are also booming, with EV-related start-ups growing from a mere 15 in 2012 to 1,883 in 2023. These trends suggest that the supply side will be ready to meet aggressive electrification targets if demand signals are clear.

Secondly, supply-side preparedness must be matched by bold actions from states and cities. We must phase out old, polluting vehicle stock with urgency. Within the next 24 months, these fifty cities should retire or retrofit old internal combustion engine (ICE) vehicles—two-wheelers, autos, taxis, and light goods carriers. In Delhi alone, this could create demand for 2 million EVs. Furthermore, stringent pollution checks and penalties for polluting vehicles should be enforced, and taxes levied on commercial ICE vehicles to incentivise cleaner alternatives. States must mandate zero-emission vehicles for all new registrations of autos, LCVs, taxis, and last-mile delivery vehicles over the next two years.

Thirdly, bulk procurement tenders should be pushed as they significantly drive down prices. Recent CESL tenders have demonstrated that bulk procurement of e-buses can yield prices lower than those for diesel buses. A similar mission-mode effort for school buses, private buses, airport taxis, auto-rickshaws, and two-wheelers for government and institutional employees in these cities can accelerate price discovery and ensure that economies of scale are achieved for these EVs. A clear mandate on fully electrifying the government fleet will ensure robust demand for EVs is created, and at the same time, the government sets a model that can be replicated by private and industrial sectors. This will be financially beneficial for the exchequer.

Finally, fiscal incentives will be crucial for both purchasing new EVs and retrofitting existing vehicles, as mitigating the upfront price difference between EVs and ICE vehicles is an important factor. Extending FAME and state EV policies with predictability and consistency for the next 5 years, along with providing concessional finance and creating innovative risk-sharing instruments, will support this transition. Financial institutions must introduce EV financing schemes, offering favourable rates

to NBFCs and leveraging partnerships with philanthropic foundations and multilateral development banks to mitigate risks.

A mission-mode effort is essential to accelerate EV adoption in India's 50 most polluting cities. A significant demand-side push supported by new-age interoperable charging infrastructure is critical.

This transition is India's opportunity to become a global leader in manufacturing new-age EVs, maintaining its position as a powerhouse in two-wheeler, three-wheeler, and commercial vehicle manufacturing. The domestic demand will boost industry readiness, investments, and technology, setting the stage for export markets and ensuring that India becomes an export hub of Electric Vehicles for the global market. The cascading impact of such a shift will transform our environment, economy, and society, shaping the future of transportation globally. Ultimately, this will lead to dramatically improved air quality, reducing pollution levels and enhancing the health and well-being of millions across the nation.

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