

Are Electric Vehicles Truly Sustainable?



Several recent studies say that electric vehicles (EVs) are no less harmful to the environment than conventional fuel-based vehicles. In fact, many experts have equivocally reiterated that EVs are probably worse for the environment than their diesel counterparts, in terms of carbon footprint. The reason for this is not the fuel itself but the way electric car batteries are manufactured and the process through they are charged.

The mining and processing of lithium, cobalt, manganese and indispensable raw materials required in the battery manufacturing process are humongous energy guzzlers. In fact, manufacturing an electric car itself needs twice the amount of energy required to manufacture a regular car. Reason? The batteries. A recent study, carried out by Christoph Buchal of the University of Cologne, went as far as to conclude that, electric vehicles have "significantly higher CO₂ emissions than diesel cars."

To put things in perspective, let us look at the numbers. A study conducted by the IVL Swedish Environmental Research Institute states that manufacturing an electric car battery requires around 350 to 650 Megajoule of energy per kWh and a regular battery pack of an EV can generate 80 to 90 grams of CO₂. Add to that, the emissions from power plants that produces the electricity to power such vehicles.

While it cannot be discounted that the air pollution levels in major cities across the country have reached alarming proportions, putting people at the risk of contracting severe respiratory disorders, EVs are not the ideal solution to this problem as they are not an ideal environmentally sustainable alternative.

While we know that electric vehicles do not emit perilous greenhouse gases and nitric oxide, they run on electricity that are generated by combusting dirty fossil fuels, hence there is actually no clear benefit to the environment. If we take into consideration the aggregate carbon footprint, it is the same for a battery-powered EV and a traditional fuel based vehicle.

However, the good news is that there are viable alternatives that exists in this space. For example, as per researchers, methane-powered gasoline engines or hydrogen motors can lower CO2 emissions by one-third and completely do away with diesel motors in the long run, if deployed holistically.

Another aspect to consider is that EVs are not very economically viable and a majority of such vehicles currently plying the roads lack appeal, as far as consumer interest is concerned. The current battery technology available in the market is largely responsible for this exorbitant cost, if we draw a parallel with conventional cars. It is important to note that batteries contribute to half the cost of an electricity-powered car. Even though, over the years, the cost of batteries has plummeted significantly, it is still very expensive. Battery manufacturers across the world are struggling with negative operating margins and dearth of adequate cash flow.

Owing to the aforementioned factors, EVs are registering limited proliferation and adoption and laggard advancement in battery technology can be held responsible for this scenario. While on one hand, the prices of raw materials used in battery manufacturing such as cobalt and lithium are falling due to straggling demand, the cost of batteries is expected to inflate by 20 percent over the coming years, analysts opine. Adequate progress in battery technology can lower the costs of EVs by 30 percent to 40 percent, as per a report by Goldman Sachs. Even then, increased adoption can only be witnessed if adequate subsidies and purchase incentives are extended to consumers.

The trend is diametrically different if we talk of two-wheelers, essentially a personal mobility product that has a large consumer base in rural India. As cost is a significant determinant here and employment opportunities are scarce, transition to environmentally sustainable transport option will be much slower. In rural India, two-wheelers are fundamentally, instruments of progress—an affordable alternative mobility solution, heralding a truly inclusive transportation ecosystem. Two-wheelers are the only available and emission efficient mode of transport in regions where there are no public transport system in place.

Two-wheelers consume much less fuel per passenger, per kilometre and once BS VI norms are implemented, India's emission norms for two wheelers and passenger vehicles will be at an equal footing with some of the most developed countries across the globe.

Researchers across the world are also looking at cheaper zero-emission fuel cell tech, which they believe has the potential to replace gas engine vehicles in the future. The technology is much cheaper when compared traditional gasoline engines and can bring down vehicle prices, once commercial mass production begins to take place. The fuel cell tech ensure continuous flow of electricity and are highly durable.

The environmental sustainability of fuel cell tech can be established from the fact that they generate electricity by making oxygen and hydrogen chemically react. Though it is not expensive, they offer durability and a performance index that is at par with existing alternatives. If introduced, they are expected to bring down unit costs to a large extent and may also become a more economical solution, than batteries as well as conventional engines. Therefore, the point that needs immediate attention is how electricity is being generated. To be energy efficient in the true sense of the term, sustainable energy generation is the need of the hour.

Reference:

<http://www.forbesindia.com/blog/technology/are-electric-vehicles-truly-sustainable/>