

ELECTRIC VEHICLES: LESSONS FROM PLASTIC AND PROS AND CONS TO COMBAT CLIMATE CHANGE

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The COP26 summit has set majestic goals to achieve in light of the global climate change that is felt all over the world. Some targets are realistic some are ambitious while others are ideal that need to be achieved, but is probably not humanly possible. Be that as it may, the pronouncement of unrealistic and unachievable targets indicates the intention of some countries to rein in components that bring about harmful changes to the climate. This realization is an acknowledgement of the lifestyle changes that are urgently needed to undertake to stop or minimize environmental degradation.

I had an occasion to be a part of the electric vehicle expo, last month, where I was able to experience first-hand the initiatives taken and progress made in the automobile sector to tackle fossil fuel pollution. The transportation of almost all the countries of the world is heavily, nay, exclusively dependent on fossil fuels. Apart from the fact that these fuels are finite in content, and they are absolutely going to deplete completely in the near future, the changes that they are bringing to the atmosphere are completely unacceptable. The kind of targets set by world leaders is definitely an indication that things are going to radically change in the years to come. The automobile industry has read the writing on the wall, and they seem to have embraced the change. They have decided to transition from fossil fuels to renewable energy sources.

There were big automobile companies that had participated in the expo and showcased their electric vehicles. All were fabulous. They had the wow factor and the test drive was just smooth. No noise, no pollution. The taste of the future was quite fascinating. However, there are reports, for safety reasons, electric cars will be fitted with sound-generating contraptions so that they just do not surprise the walkers and fellow road travellers by appearing from nowhere.

The major constraint that many users will face is the price component. The prices of these electric cars are high enough to discourage even those potential buyers who are sensitive to environmental upkeep. The other constraining factor is the charging of batteries. I was told it takes almost 5 hours of charging for the vehicle to ply about 100 km. The batteries cannot be replaced. Hence, there will be a waiting period of full charging, rendering the user immobile. The task of maintaining the battery will also be an important task that will have to be performed constantly and consistently. The disposal of lithium-ion batteries will also be quite a huge task. The litter that will be generated will be humungous, and piling it would do more harm than good.

A few decades back, plastic became popular, which replaced cotton bags within no time. The argument was that more land had to be brought under cotton cultivation, and it needed power and water disproportionate to its utility.



The plastics did not need water and land for their manufacture. Also, the multiple uses of plastics became apparent with every new technological advancements and innovation. However, during those initial years, nobody thought about how it was to be disposed of. It was just thrown away, and the plastic mountains began to pile up and up in and around major cities and towns. The best way to get rid of plastics was considered to be the oceans. All the litter started and continues to be thrown into the oceans, where it is harming the oceanic life forms. Country size plastic dumps are floating around in the oceans, and it is not a pretty sight. In fact, these are the death traps for the sea-dwelling flora and fauna.

We have now woken up to this very lethal danger and are trying ways and means to curb this menace. The same future can be foretold for lithium-ion batteries. Lithium is dangerous and is also in short supply. The lithium-ion battery is a device that moves the ions of lithium from one electrode to the other. The electric current is generated by a battery when the lithium ions get out of the electrode where these ions are stored, swimming through an electrolyte, and get chemically attached to the opposite cathode. The process is reversed during the recharging phase. The lithium ions are ripped out from the cathode and sent back to the storage electrode. This is such an easy process. The crux of the matter lies in this give and take of electrons and ions from electrode to cathode and vice versa. If the movement of the electrons and ions is slow and sluggish, it will take more time for total recharging. If the movement is quick and fast, through the electrolyte, then the recharging can happen in a jiffy. Efforts are now directed at how the flow rate can be increased. They are experimenting with a variety of electrolytes to quicken this pace. Once that magic potion is concocted, then the utility of electric vehicles can grow manifold. The best candidate available for this task right now is lithium iron phosphate, which has given encouraging results.

A range of studies is carried to bring down the dependence on fossil fuel and increase the use of renewable energy generating mechanisms. Lithium-ion battery costs have dropped by 97% in the 2020s since 1991. The research and innovations made by the government as well as private organizations helped the cause to a great extent. The intent and resolve to afford “affordability” to this device induced setting up better-manufacturing units, increase the efficiency of the distribution system that set in commercialization, helping reduce the user-end cost of the battery.

The shift to renewable forms of energy is the need of the hour. The grandiose plans envisaged in the coming years by the rich and poor countries alike need to be looked at critically. The developmental plans of the poor countries can go into disarray if they are barred from using fossil fuels. Their entire economy is based on its usage. The compensation offered by the rich countries in terms of financial help and technology transfer needs to come to fruition. At the same time, the energy generated by renewable sources has to be consumed in real-time. Else, the storage issue will come into the picture and will lead to more envisaged environmental issues. It will be the story of plastic all over again!

Using electric cars to replace diesel and gasoline-powered automobiles.

Shenzhen, China, for example, has shifted from diesel-powered public transportation to an electric bus fleet, which is predicted to reduce CO₂ emissions by 48 percent and reduce particulate matter by a substantial amount.

