

## PROSPECTS & GROWTH OF EVs IN INDIA- A STUDY

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### ABSTRACT

*Of all the clean energy alternatives, electric is indeed for real. The world is so scared about global warming and its consequences, there is a talk as to grow more trees, cut down the consumption of fossil fuels, banning the use of plastic, reducing the size of nuclear weapons , so on and so forth ..... to save the planet earth from pollution and global warming. Moreover the government of India is very much concerned about increasing pollution levels, import bills and economic growth and decided to move ahead with electric switch (ES) and Electric Vehicles (EVs) in the Auto Industry. Indian government also plans to build EV ecosystem from charging infra to battery manufacturing. EV's most expensive item is battery, India is nowhere close to global leaders South Korea and Japan or even China, when it comes to cell manufacturing. It will be far good to import cells and make them accessible to equipment manufacturers. With China securing a big chunk of Lithium-Cobalt mines globally, is India taking unnecessary risks – A big question to ponder. The man behind "ES" is none other than the minister of road transport & Highways, Mr.Nitin Gadkari, who is in a hurry to set up stiff EV deadlines. The present study is an attempt to examine the prospects and growth of EVs in India.*

**KEYWORDS:** *Electric Vehicles, Electric Switch, Batteries, Cells, Pollution, Global Warming.*

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### Introduction

The budget 2019 has kick-started the process of ushering in radical changes in various sectors to make India a pollution-free, healthy and self-sufficient country as it charts its way to realize the aspiration of becoming a \$5-trillion economy in the near future.

On the other hand Auto Industry has its own problems of worst sales slowdowns in its history because of Covid 19 and other problems and moving to BS -VI Norms already poses challenges, including Rs.70,000 crore investment. FAME2 (Phase 2 – Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) just set out an EV road map so a stiff deadline for EV 2 & 3 wheeler is uncalled for. Pollution concerns have nudged government to adopt carrot & stick policy to push EVs. ChetanMaini, cofounder and vice-chairman, of sun mobility says, "we need to build our EV ecosystem. There is a big gap between government's statements and implementation"



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EVs can be driven for about 100 km on one full charge but manufacturers were asked to upgrade for more than 350 km since charging points are not available in many places. Customer surveys have indicated that single charge range for the electric car should be at least more than 200 km.

The road transport corporation is running 40 electric buses in the city (Hyderabad) right now and has plans to deploy at least 1000 e-vehicles within a year. The charging points are in RTC depots. Most of the popular automobile manufacturers have announced their intent to sell only electric vehicles by 2030. Tata Motors sells the Tigor EV, Mahindra & Mahindra has 6 variants of its e-verito and 3 variants of e20 plus.

### **EV's Scenario in India**

Indian government wants all 4-wheelers, 3 – wheelers and 2-wheelers to run on electricity by 2025. One of the major concern in India to adopt EVs is lack of power but government is emphasizing to scale up electric 2 wheeler from one lakh to 20 million in next 5 years. Indian Government is worried about climate change, surging pollution and crude import bill and energy security. Smart Entrepreneurs, lured by government incentives, thus eye a business opportunity.

India's auto industry should also realize the power games are fast shifting away from OEMs (original equipment manufacturers) towards battery manufacturers. However unsettling this reality may be, unless Indian automakers adapt, they will ossify. Simply arguing about their self-imposed high emission standards of BS VI that kick in from next year (2021) - a global benchmark indeed – will simply not electrify India's collective imagination.

Many PSUs are exploring opportunities in EV ecosystem. IOC, for example, has partnered with Fortum India to set up charging stations. Seasoned entrepreneurs such as Reva founder ChetanMaini and Micromax's Rahul Sharma have shifted focus to EV. Several business houses like Sahara group and Greaves Cotton, are rolling out electric models.

Despite continuous falling car sales, Hyundai, the South Korean automaker launched its first all-electric model the Kona Electric SUV priced at Rs. 25 lakh at pan India showroom. The price includes 12 % GST, the Kona is powered by a 136hp electric motor and gets a 39.2kwh lithium-ion battery with a claimed 452 km range per full charge. Further, ASSOCHAM (The Associated Chambers of Commerce and Industry of India) suggested that the government should give additional tax incentives to the electrical vehicles sector, by giving weighted deduction on the capital expenditure, weighted deduction on research and development (R&D) expenditure and leveraging SEZs (Special Economic Zone) by extending the sunset period beyond April 2020. Actually, ASSOCHAM seeks abolition of MAT (Minimum Alternate Tax), cut in corporate tax rate and incentives for EVs.

Hyundai is also planning to drive in RS.10-lakh electric car in India and will spend over Rs.2000 crore to develop the vehicle that will be manufactured at its Chennai factory. While Tata Motors and Mahindra plan to increase product offerings, others such as Maruti, Toyota and Hyundai are planning new vehicles.

Homegrown auto major Mahindra & Mahindra's EV sales grew over two-and-a-half times to 10276 units in 2018-19, riding on the second phase of orders for electric cars from state-owned EESL. M&M along with rival Tata Motors had bagged orders from Energy Efficiency Services (EESL), which had floated tenders for supply of 10000 electric sedans for usage by government departments.

India's first ethanol-powered motorcycle was unveiled (2019), so too an electric car by an international manufacturer based in India while a new electric scooter also hit the market. Electric Vehicles are clearly gaining traction, but not at a rate that could possibly meet the overambitious conversions target set by NitiAayog, which said most recently that 2023 and 2025 should be the cut-off dates for three-wheelers and two-wheelers under 150cc to go electric.

### **Future Prospects**

Indian government's initiative on EV's will take India to commanding heights, the main problem faced by India is huge import bill which is not good for the economy, our imports are more than exports which is leading to trade deficit (\$176 billion, During 2018-19) and hampering our growth prospects. One positive note estimated by using EV's in near future will be reduction of import bill by 4.10 lakh Crore within a span of one year and it sounds quite interesting.

**Table 1: Future Prospects**

S.No	Description	Figures
1.	Reduction of import bill in one year by using EVs	4.10 Lakh Cr
2.	If EVs are easily accessible by 2030, carbon levels can be reduced to the extent of	37%
3.	Estimated jobs generated by EV manufacturers by 2026	7.5 Cr
4.	Reduction in CO2 Levels in one year by using one electrical bike	350 Kgs

Source: autopage @eenadu.in, 2020

Some serious aspects the nation being faced today is global warming and pollution. These two dangerous aspects can be curbed by using EV's, there is an estimation that by 2030 the carbon footprints can be reduced by 37%, which is considered as a boon to the nation environs and by using one electric bike the reduction of carbon dioxide levels is 350 Kgs, and at the same time EV's manufacturers can generate employment opportunities to Indian youth to the extent of 7.5 crore jobs by 2026.

### Global Scenario

Automakers like Honda and Hyundai say that even Hydrogen is equally path-breaking, although fledgling at the moment. China is leading the world with 1.3 million EV sales in 2018, Shenzhen – based BYD Auto Co., Ltd( Build Your Dreams ) is world's biggest EV maker, new companies like Tesla and BYD are changing the status quo in the century-old auto industry. A TechSci research report forecasts China market to grow at a compounded annual growth rate of over 28% from \$74 billion in 2018 to \$ 330 billion by 2024. Countries such as Norway, Germany, Japan and China which are serious about switchover get maximum state support to build any infrastructure, hardware or it might be in the form of subsidies.

Meanwhile, Renault SA (July, 2020) delivered a little subcompact electric car at 32000 euros (\$37000) which is believed to be an ideal second car for families that wouldn't warm the planet.

Renault's new electric version is coming out soon and it holds lots of surprises in the second half of the year.

While the covid-19 pandemic did for a time reduce traffic but street congestion is building back again.

Let's hope for the best !!!!

### Tech Innovations

Work is on to develop solid state Lithium batteries, grapheme batteries, Nanotech batteries. These will be lighter, offer faster charging and long range per charge. Cost-effective alternatives to Lithium batteries like foam batteries, sand batteries, nickel zinc batteries, dual carbon batteries and sodium ion batteries promise improved life and faster charging. As part of aggressive plans in the electric space, Hyundai is also looking at having an electric battery facility in India- on lines of one developed by Suzuki and Toyota in Gujarat.

### Sops

Finance minister, NirmalaSitharaman proposed to extend income tax benefits of Rs.1.5 lakh to the interest paid on loans for buying EVs. According to an ET Intelligence (ETIG analysis), on a loan of Rs.10 lakh for an EV with a 5 year tenure, the buyer will pay an interest of Rs.1.2 lakh. This will lead to income-tax savings of Rs.36000 per year for an individual. She also said the government has urged the GST council to reduce the tax rate on EVs to 5% from 12%. Internal combustion engine vehicles are taxed at the highest tax slab of 28% and also attract cess that ranges from 1% to 15%. To bring down EV costs and encourage local manufacturing, the government further proposed to reduce customs duty on several required components, including lithium- ion cells. Sops to the housing sector, start-ups and electric vehicles, with reduction in corporate tax is also likely to boost growth. The incentives for electric vehicles would promote adoption of electric mobility and contribute to a cleaner environment.

**Table 2: Sops By Indian Government**

S.No	Description	Figures
1.	Interest paid on loans	1.5 Lakh
2.	GST Rates on EV's	5%
3.	Installation of Charging Stations	Planning Stage

Source: DC,2020

- Additional income tax deduction of Rs. 1.5 lakh on the interest paid on loans taken to purchase e-vehicles.
- The budget gave a boost to popularize electric vehicles or EVs by lowering the GST rate on EVs from 12 % to 5%
- Government to install charging stations which support DC adapters which can charge vehicles within 90 minutes, AC adapters may take up to 6.5 hours
- Government to work out subsidy on registration charges, parking fee for 4 and 2 wheeler EVs.

### Challenges

Limited availability of charging infrastructure seems to be a major impediment to increased adoption of electric vehicles in India, as the market share of EVs grows with increasing availability of charging points. Time taken for completely charge EVs is another major impediment. Even fast chargers can take around half an hour while slow chargers could take even 8 hours.

Indian Government is working on some projects worth Rs.15 lakh crore, including 22 green expressways and projects worth Rs.50000 crore related to EVs in Delhi alone. India is about to adopt EVs in the natural course-be it electric rickshaws, electric cars, trucks or buses and even electric highways. This will help India to reduce imports and tackle the pollution problem.

When Indian government was talking about electric buses, people were laughing at the government initiative. Now hundreds of electric buses are plying in many cities. There are 150 electric buses in Pune. There are a thousand buses in Nagpur, bio waste is being converted to CNG to fuel buses. This Republic day (2019), our fighter jets and helicopters were run on biofuels. Biofuel was also used to power a spice jet aircraft. This is just a beginning.

A battery – run four-wheeler vehicle costs between Rs.11 lakh and Rs.25 lakh depending on the brand and manufacturer.

Limited availability of charging infrastructure seems to be a major impediment to increased adoption of electric vehicles in India, as the market share of EVs grows with increasing availability of charging points. Lifetime ownership costs of EVs needs to be lowered by making India a manufacturing hub, appropriate policy measures are required to make them an attractive alternative to conventional vehicles and curb pollution while reducing import of crude oil.

Indian government also plans to build EV ecosystem from charging infra to battery manufacturing. EV's most expensive item is battery, India is nowhere close to global leaders like South Korea and Japan or even China, when it comes to cell manufacturing. It will be far good to import cells and make them accessible to equipment manufacturers. With China securing a big chunk of Lithium-Cobalt mines globally, India is taking unnecessary risks – A big question to ponder !!!!!

The tax incentive proposals for EVs contained in the budget were not that substantive as to see customers queue up. The country has a long way to go in setting up a nationwide recharging infrastructure, which will make electric mobility practical even as technology develops more compact batteries as well as quicker charging.

### Conclusion

The shift towards EVs has taken off and it will be the mode of transport for the future. There is a dearth of charging stations in India. EVs are a two-sided market with charging and battery infrastructure on one side and sustainability on another. There should be charging points available at every interval. Promotion of EVs and allied infrastructure is set to transform the economy and logistics sector. The government should set up charging stations in large numbers rather than granting subsidy for greater adoption of electric vehicles. In India, the limited availability of charging infrastructure seems to be a major impediment to increased adoption of electric vehicles and development of appropriate battery technologies that can function efficiently in the high temperature conditions needs to be given utmost importance. As government lowers GST levy on electric cars and offers income tax incentives for those buying them, auto companies are increasingly eyeing the segment.

### Teaching Note

The EV's are considered as a big opportunity for Indian manufacturers and they should look at not only producing such models for domestic market but also look for exports. Some serious aspects the nation being faced today is global warming and pollution. These two dangerous aspects can be curbed

by using EV's, there is an estimation that by 2030 the carbon footprints can be reduced by 37%, which is considered as a boon to the nation environs and by using one electric bike the reduction of carbon dioxide levels is 350 Kgs and at the same time EV's manufacturers can generate employment opportunities to Indian youth to the extent of 7.5 crore jobs by 2026. The study aims to examine the prospects and growth of EV's in India and it helps to various category of people including students (Target group – under graduate, post graduate ), Executives, Industrialists and Indian Government as well. So, there is a need to Explore and bring out some insights in the new era of Electric Vehicles for the betterment of India and the world at large.

#### Questions

- With China securing a big chunk of Lithium-Cobalt mines globally, India is taking unnecessary risks. Discuss
- Limited availability of charging infrastructure seems to be a major impediment to increased adoption of electric vehicles in India. Explain
- India is about to adopt EVs in the natural course-be it electric rickshaws, electric cars, trucks or buses and even electric highways. How it will help India to reduce imports and tackle the pollution problem?

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