

IMPACT OF RISING FUEL PRICES ON AUTO MOBILE SECTOR AND ENVIRONMENT IN INDIA

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ABSTRACT

Studies in the past have indicated that fluctuating petroleum prices and had impact on the world economy. Wars have been fought on account of this. Not only has the usage of petroleum products affected the economy but also impacted the natural environment. The automobile sector worldwide has, had a series of ups and downs and its fortunes have fluctuated mainly due to oil prices and government policies. In India also, the automobile sector is regulated by the Industrial policy and as such by taxes and duties imposed by the government on fuel and vehicles. The danger of environmental neglect has forced governments worldwide to look for more suitable alternatives to fossil fuels. Although India has started late compared to other nations, the government has geared itself by imposing taxes and duties on petrol and diesel vehicles while providing subsidies to electric and hybrid vehicles. A new section 80EEB in Income Tax Act has been introduced in India to encourage individuals to purchase electric vehicles through loans and avail deductions. Heading towards embracing eco-friendly, non-toxic, biodegradable vehicles and diminishing pollution. Though electric vehicle technology is at a nascent stage in India, definitely sees a long and bright future in environment friendly urban transportation by offering the best value and highest quality electric vehicles for city mobility. As a result, development of electric vehicles has gained acceptance worldwide. This study seeks to study the impact that, various legislations have on the automobile sector in India and its effects on the environment at large.

KEYWORDS: *Auto Mobile Sector, Electric and Hybrid Vehicle, Crude Oil, Fuel Price, Section 80EEB.*

Introduction

The term petroleum goes back to 19th century, gave rise in the discovery of the internal combustion engine. This was the major influence in the rise in the importance of petroleum from Paraffin oil to crude oil. "Bucharest became the first city in the world, illuminated entirely with distilled crude oil." Dated from 1859, consumption of petroleum was 2,000 barrels whereas, today amongst various zonal nations, United America, China and India consume fifty percent of the world's total consumption per day. India being ranked third amongst the world's biggest oil consumption countries even though there are notable fossil fuel resources, the country has become increasingly dependent on energy imports even on LPG products for domestic use. Its net oil imports have risen over 12 years, in 2000 from 1.3mbd to 2.6mbd in 2012. India's total oil production increased during this same period from 772,000bpd to 990,000bpd. In the year 2013 the country has proven oil reserves which was estimated at 5.48 billion barrels. India imports the majority of the crude oil from the Middle East and it has the fifth biggest refinery capacity in the world.

Shifting towards the various drawbacks on import of petroleum are oil spills, toxic gases released in the nature to refine the crude oil into usable form which has impacted dynamically on exhaustion in crude oil as well as on natural climatic changes in environment gauging the pollution, harmful human threat towards marine life is innumerable. It has not only impacted environment but nations, worldwide too.

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One of the current events which took place was between Iran and United America could be an evidence, which has brought many implications not only between these two nations but has also greatly impacted on cordial relationships with other nations as well, such as India, Greece, Italy, Japan, South Korea. In this regard, nations are rethinking on their policies towards auto sector.

Narrowing down towards India, the government has on July 5th 2019 proposed Union Budget for the year 2019 -2020 brought major significance on Auto mobile sectors, paving a way towards revolution of Electric and Hybrid Vehicles into the Indian Market. This implies that there is a shift towards curbing the use of vehicles powered by fossil fuels and move towards eco-friendly, non-toxic, electric and hybrid vehicles. Even though, the nation had a taste of electric vehicle, introduced by Mahindra in the years 2001 didn't serve its purpose to the public due to imposition of high excise duties causes REVA Electric Vehicle not to flourish in Indian Market.

Negligence in the economic growth of population and the upwards rise in auto mobile sector in India has cause major setback towards environmental change. Increase in pollution, numerous petroleum vehicles on roads and the various other factors has made Indian government to reimpose increase in additional excise duties on petrol and diesel vehicles while providing subsidies taxes on electric and hybrid vehicles. One of such provision is Section 80EEB in Income Tax Act which has be introduced in India. This section provides individuals to avail deduction of INR 1.5 lakhs per year on the interest paid on loan taken to purchase the electric vehicle from any financial institution, provided the loan is sanctioned between April 1, 2019 to March 31, 2023 which was formally proposed in this budget 2019. Implementation of a full transition to all electric passenger cars by 2030. The auto mobile sector has been imposed to formulate a comprehensive plan for this switch over from petroleum into lithium ion batteries, ethanol-based vehicles. Gearing for a positive move on two and three wheelers must go electric by 2025.

Literature Review

- Bettina Lis, Christian Neßler, Jan Retzmann presented a research paper on Oil and Cars: The Impact of Crude Oil Prices on the Stock Returns of Automotive Companies
- Maksim Belenkiy, presented a research paper on The Effect of Changes in World Crude oil prices on U.S. Automobile Exports
- Mansoureh Jeihani and Soheil Sibdari presented a research paper on the Impact of gas price trends on vehicle type choice.
- Benjamin Leard, Joshua Linn, and Virginia McConnell presented a research paper on Fuel Prices, New Vehicle Fuel Economy and Implications for Attribute-Based Standards

Objectives

- To study the impact of fuel prices on auto mobile sector.
- To study the government norms and policies with regard to auto sector in India.
- To study the impact of electric and hybrid vehicles in the environment.

Research Methodology

- Sources of data
- Secondary data

Scope

- The Data considered for the study is from the year 2015 – 2019.

Limitation of Study

- The study was conducted focusing on India only.
- The data was based on secondary resources.
- The period of study was short.

Data Analysis and Interpretation

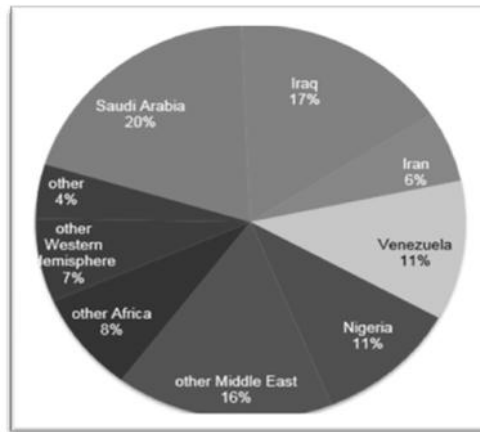
Crude Oil

Fuel prices in India are adapting to an increasing rate almost daily, after turbulence in the international oil market which has made an unexpected setback. Indian government faced many criticisms based on this issue causing displeasure, in the ruling party. The major fact is The United American, President has lifted waivers allowed earlier to eight allied countries which includes India, on import of oil from Iran. Reason being, Tehran has been alleged to state that sponsor terrorism therefore,

sanctions have been imposed on nations dealing with it. Serving an addition to India's proneing troubles which is the fact that crude oil prices have been rosined globally on account of supply cuts from the Organization of the Petroleum Exporting Countries (OPEC) and also the existing United America sanctions on Venezuela.

These consequences have led to fresh United American order curbing, India in importing crude oil from Iran. The President of America's fresh diktat on oil market, the international crude oil prices with rapidly jump to 80 – 85 dollar/ barrel in short term says Analysts. Disrupting import of oil needs for the non-oil producing countries the experts added. For instance, in comparison with the import of oil for the month of June were at \$74.51 per barrel with an increase of 37 percent hike from December 31,2018, price of \$54.57 per barrel. Expecting further raise of \$80 per barrel after May 2. Analysts in India has raised the development in concern amongst oil market, being Iran importing large part of its oil. Iran is one of the biggest crude oil exporters from Middle Eastern Country, where India has imported twenty-four million tonnes of crude oil in the financial year 2018-19. Narrowing and forcing India to import oil from various other nations such as Saudi Arabia, Kuwait, UAE, and Mexico to fulfil its oil requirements.

Figure: India Crude oil imports by source, 2015.



Data Interpretation

The above pie graph depicts the various sources Crude oil imports to Indian Market.

Figure: City wise for Diesel Price

City	Diesel Price	CHANGE
Bangalore	68.25 ₹/L	-0.11
Delhi	66.07 ₹/L	-0.11
Chennai	69.78 ₹/L	-0.12
Hyderabad	71.95 ₹/L	.012
Mumbai	69.25 ₹/L	-0.11

Figure: City wise for Petrol Price

City	Petrol price	Change
Bangalore	75.41 ₹/L	-0.15
Delhi	72.99 ₹/L	-0.15
Chennai	75.80 ₹/L	-0.16
Hyderabad	77.52 ₹/L	-0.16
Mumbai	78.61 ₹/L	-0.14

Data Interpretation

The above two diagrams indicate increase change in two crude oil which is diesel and petrol prices in cities such as Bangalore, Delhi, Chennai, Hyderabad and Mumbai as on July 29, 2019. Finance Minister Nirmala Sitharaman, proposed in Union Budget 2019 -20, raise in taxes on fuel affecting Petrol price hike by a minimum Rs 2.40 per litre and diesel by Rs 2.36 as well as on excise duties on road and

infrastructure cess. Cities such as petrol price in Delhi, has seen an increase by Rs 2.45 per litre to Rs 72.96. while Mumbai at Rs 2.42 to Rs 78.57 followed up by price in accordance with the notification issued by state owned Indian Oil Corp (IOC). In Chennai by Rs 2.57 to Rs 75.

Ahead without the tax increase Rs 17.98 per litre (Rs 2.98 basic excise duty, Rs 7 special additional excise duty and Rs 8 road and infrastructure cess) on total excise duty was attracted by petrol. Currently this tax has raised up to Rs 19.98 a litre. On diesel, the excise duty was Rs 13.83 per litre was charged (Rs 4.83 basic excise duty, Rs 1 special additional excise duty and Rs 8 road and infrastructure cess). Currently this excise duty has rosined up to Rs 15.83 per litre. VAT charges are added on top of these excise duties and taxes on oil. VAT at the rate of 27 % and 16.75 % on diesel has been levied in Delhi whereas in Mumbai, VAT of 26 % on petrol and 7.12 % on diesel has be levied, Sales tax of 24 % as in additional tax on diesel.

The transportation minister is in a move aiming to discourage petrol and diesel vehicles, disposal of old ones and promoting electric vehicles on road. A proposal has been drafted to notify to hike the fees on most categories of vehicles fuelling on conventional mode. The fee levied on two-wheelers for the new registration fee is Rs 1,000 against the current Rs 50 and renewal charges will be Rs 2,000. The fee levied on cabs for the registration is Rs 10,000 and renewal charges will be 20,000. The fee is also imposed on imported vehicles, fee ranges from Rs 5,000 to Rs 40,000, against the current value of Rs 2,500. On May 30, Government to lay "road bumps" for vehicles fuelling on conventional mode.

- **Impact of Fuel Prices on the Automobile Manufacturing**

According to the Society of Indian Automobile Manufacturers (SIAM) - the Industry body, they directly employ eight million people, for the productions and services sector including ownership. When one considers the extensional backward and forward connectivity that include others small investors, transporters and fuel pump attendants, the number grows to around 40 million people. These sectors afflict begun around September-October 2018 when a convergence of disparate events wavered the steady growth it had witnessed over the past few years. In contemplation of buoyant sales in period of the festival season auto manufacturer had forecasted on their production schedules.

The alarming crisis in the auto industry was contrasted with a "buoyant" domestic steel industry which, too, is encountering from augmented imports in reality, in the awake of worsening global trade war between the US and China. Moreover, it is suplicating for shielding through increased safeguard duties. It is in this environment of amplified risk disinclination that the auto sector was looking onward to proactive measures from the policymakers to aid revive economic demand.

In the last eight months sales in auto sector have been in a free fall despite heavy discounting. This sector has vested thousands of crores in uprising their products to comply with the BS-VI emission norms which have been made compulsory from April 1, 2020. In Europe, the auto manufacturers were given ten years for its advanced sector to switch from Euro-IV to Euro-VI in 2 stages whereas in India, manufacturers are obligatory to switch in just three years. Some senior policymakers narrated with mirth how they forced the auto manufacturer to progress the switch or face heavy consequences.

From April 1, 2020 the Government will be disallowing registration of non-BS-VI compliant vehicles therefore, auto manufacturer will be obliged to curb production of BS-IV vehicles from the start of Fiscal Year 2019-20. In an environment of slowing demand for vehicles, this switch will add a substantial 10 to 15 percent to the cost of vehicles. Similarly, large investments running into a few thousand crores have been made by Oil refiners for lowering sulphur content of fuel before the switch. The policymakers must consider on the geo-economic dangers rather, solely depend on an adversary like China as against scores of crude oil suppliers and greatly needs to be pondered on. The Union Budget has allowed paltry of incentives offered for electric vehicles that is Ten percent for two-wheelers and Three – Four percent for cars over five years

Whereas the cost differs, a similar-sized Integrated Circuit vehicle is comparatively more than double. The auto manufacturers have shut down their production to align with plummeting sales in the economy. These sector component industry body, The Automotive Component Manufacturers Association which employ five million people are frightened that massive job losses will be adhered. Indian Government have availed subsidies/incentives for self-determination to scrap out vehicles older than ten years and compulsion to scrap out vehicles older than fifteen years old would not only kick-start demand but also aid in the diminishing of air pollution.

The additional cess imposition of INR two rupee per litre on petrol and diesel have adhered to incline in the overall coast of operations for commutation sector and consumers farther aggravating the decline in the auto sector. There a minimal relief must be catered from these stiff implementations should be considered.

- **Decline in Production and Sales in Auto Sector**

Indian automobile manufacturers have lashed on production by eleven percent in the month of April – June, adhering to the sector facing the ill slowdown with sales declining month after month, conveyed by a rating agency's report. All the categories in vehicle have shown a pared by 60,85,406 units to 12.35% in the April-June period against the same period of last year which was 69,42,742 units. Automobile sector in domestic, sale volume pared by 12% in June 2019 comparing over the same month last year amid delays in the onset of monsoons showed up on weak consumer sentiments owing to the slowing economy.

The market leader Maruti Suzuki have also diminished production by fifteen percent followed by the pare in the sector to reduce inventory at the dealer level. Whereas in Hyundai Motor, the Personal vehicle average inventory pared to 30-35 days in June from 35-40 days in May claimed by the report. The company has cut down production by three percent over the month of April-June 2019. The two-wheeler inventory at retailer level has increased to 60-65 days in June up from 55-60 days in May. While, adding on to the Federation of Automobile Dealers Associations, the auto mobile sector was requested to curb retailer inventory of twenty-one days by September.

Therefore, production is being curbed which is likely to be continued in August 2019 as well, given the existing high inventory levels, it added. Personal vehicle sales volume has fallen by eighteen percent year over year in June adhering to the weak purchasing sentiment leading to the postponement of purchases. While, the Conventional Vehicle sales volume paced by twelve percent year over year in the previous months, due to the paced auto sector demand on account of tight liquidity conditions, amongst non-banking finance companies, modified axle load norms, and delayed buying due to weak customer sentiments was indicated by the rating agency. The two-wheelers sale also paced by twelve percent Year over Year in June on augmented insurance costs, higher interest rates and weak rural demand was added by the report.

Figure: Indian Auto Mobile Manufacturers from July 2018 – July 2019

Manufacturer Charts													
Manufacturers	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
Maruti	1,52,427	1,45,624	1,51,512	1,35,948	1,43,890	1,19,804	1,39,440	1,36,912	1,45,031	1,31,385	1,21,018	1,11,014	96,478
Hyundai	39,735	41,885	42,472	51,996	43,708	42,093	45,803	43,110	44,350	42,005	42,502	42,007	39,010
Mahindra	17,310	18,010	19,931	22,562	15,155	14,049	22,399	24,520	25,982	18,901	19,541	17,762	16,024
Tata	17,079	18,420	18,429	18,290	16,982	14,260	17,826	18,110	17,810	12,695	10,900	13,351	10,485
Toyota	13,677	14,136	12,512	12,606	10,721	11,836	11,221	11,760	12,818	10,112	12,138	10,603	10,423
Honda	19,970	17,020	14,866	14,187	13,006	13,139	18,261	13,527	17,202	11,272	11,442	10,314	10,250
Ford	7,816	8,042	8,239	9,044	6,375	5,840	7,700	6,669	8,271	6,515	6,361	5,333	6,284
Renault	6,217	6,557	6,434	7,066	6,134	7,263	5,825	6,241	7,127	6,256	5,949	5,400	3,660
Volkswagen	2,466	3,334	3,208	3,190	2,501	2,820	2,803	2,617	2,751	1,995	2,685	2,463	2,521
MG													1,508
Skoda	1,260	1,330	1,358	1,757	1,305	1,397	1,232	1,267	1,401	1,126	1,148	987	1,076
Datsun	2,249	2,578	2,801	2,848	2,246	2,141	1,646	1,985	1,925	1,509	1,382	1,132	991
Jeep	1,201	1,303	1,196	1,150	1,164	1,150	1,267	1,304	1,441	1,204	977	791	509
Nissan	553	530	426	315	202	224	1,500	774	977	518	476	401	313
Fiat	29	97	101	100	65	75	60	47	80	54	14	52	2
HM-Mitsubishi	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	2,81,989	2,78,866	2,83,485	2,81,059	2,63,454	2,36,091	2,76,983	2,68,843	2,87,166	2,45,547	2,36,533	2,21,610	1,99,534

Figure: Sales Trends of Manufacturer - Decline



• **Rise in Pollution Levels in Different States in India**

Global and national studies have reasoned out several repercussions such in the air, which has brought in health risk, pollution, weather change effecting wind pattern and expectancy of life for all living beings. Cities in India have been home for majority of the Worlds fourteen polluted cities, expressed by WHO as on 2018. These cities are Delhi, Gurgaon, Varanasi, Srinagar, Agra, Kanpur, Faridabad, Gaya, Patna, Lucknow, Muzaffarpur, Jaipur, Patiala and Jodhpur. In every cubic meter in air 2.5 micrograms particulate matter is amounted. Central Pollution Control Board says that the air quality has deteriorated from cities in North and South India, on the whole seventy Cities in India breathe excessively polluted air. Commuting in Urban have been one of the most energy and excessive pollution intensive activities in India causing a boost to greenhouse gas emission, said by the Centre for Science and Environment (CSE), a non-profit org based in Delhi.

Figure: Aerial view of Indian Map Indicating Air Pollution of each city.



Figure: List of Cities with Highest Air Pollution Level as on 2018

Position	Country	City/Town	Year	PM2.5	Temporal coverage	PM10	Temporal coverage	Database version (year)
1	India	Kanpur	2015	173	>75%	319	NA	2018
2	India	Fardababad	2015	172	>75%	315	NA	2018
3	India	Gaya	2015	149	50% -< /> 75%	275	NA	2018
4	India	Varanasi	2015	146	>75%	261	NA	2018
5	India	Patna	2015	144	>75%	261	NA	2018
6	India	Dehi	2015	143	>75%	292	NA	2018
7	India	Lucknow	2015	138	>75%	255	NA	2018
8	Cameroon	Lamenda	2012	132	NA	141	NA	2016
9	India	Agra	2015	131	>75%	194	NA	2018
10	India	Gurgaon	2015	120	50% -< /> 75%	124	NA	2018
11	India	Muzafferpur	2015	120	>75%	221	NA	2018

National Clean Air Programme (NCAP) formulated centre, dedicated programme to abate air pollution to fight thought long term strategy targeting to reduce thirty five percent in three years move to fifty percent in the next five years for the 100 cities identified.

Figure: Electric Vehicles in India – Policy Progression



Indian government aims to expound as a global manufacturing centre and a Research and development hub in the country, enabling the auto mobile sector to be at par with the globe, investing a total cost of US \$ 123 million under National Automotive Testing and Research and Development Infrastructure Project. The Ministry of Heavy Industries, Government of India has shortlisted eleven cities in the country has foreword on electric vehicles (EVs) in their public commute systems under the FAME (Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles in India) scheme. Incubation Centre to be introduced by government for start-ups working on electric vehicles space. In 2019, February Indian government agreed up the FAME-II scheme of Rs 10,000 crore (US\$ 1.39 billion) which was funded for Financial Years 2020 to 2022.The Delhi government has drafted on Delhi Electric Vehicle Policy 2018, aiming to adopt twenty-five percent of e-vehicles by 2023 amongst the new registrations.

National Electric Mobility Mission Plan (NEMMP) 2020 - is Aiming to deploy five to seven electric vehicles in the nation by 2020, giving a greater prominence of government incentives and co-ordination among industries and academia, aiming to implement 400000 passenger’s battery electric cars by 2020. Leading to a major avoidance of 120 million barrels of oil as well as 4 million tons of CO2, lowering of vehicular emissions by 1.3 percent by 2020.

- Audi, German carmaker has curbed petrol vehicles, switching to plug in Hybrids and electric vehicles in India, as the nation is gearing up to implement strict BS-VI emission norms from April 2020. The current sales have downsized and are aiming to increase its sales after BS-VI implementation in 2021. The company is moving to introduce its full electric vehicle SUV e-tron coming year in sync with the government’s implementation for electric mobility. In combination with electric vehicles and Plug in Hybrid Electric vehicle which is aiming to reduce emission in India. The company will bring in large volume of car, variety models, not only upper but also the bottom end of luxury. They announced in upcoming months they will test waters in India, if everything favours, they will establish local production.
- Mahindra & Mahindra, at its 73rd annual general meeting told there is a "tectonic shift" rising in the auto sector. The company is aiming for joint road-map, goals which is achievable and makes India the global hub for Electric Vehicles. Investing Rs 12,000 crore for next 3 years in addition of Rs 6,000 crore in its subsidiaries. In total, M&M is financing Rs 18,000 crore over next 3

years. M&M has already introduced its electric version of Verito sedan, currently 1,500-2,000 in the market, further bringing in three more e-four wheelers in few years. By this year end there will launch of electric KUV, S210, E- Aspire. The three wheelers electric are a 'low hanging fruit' the company says. The Goods and service tax of five percent reduction has eased business case for EVerito. Despite government policies, in the current environment where there is a huge job loss, happening in areas like OEMS, dealers, suppliers and unorganised sectors or service sector. 260 dealerships have been closed in the past six to nine months due to lack of affordability amid the downturn.

Cost of electric vehicle in India	
• Two-Wheeler	Cost Per Vehicle
- Bike, Scooter, Bicycle	
1. BattRE Electric Scooter	Rs. 70,450
2. Hero Electric Flash LA	Rs. 39,550
3. Ather 450	Rs. 1.27 Lakh
4. Okinawa Kaize	Rs. 42,328
5. Hero Electric Optima E5	Rs. 65,990
6. Okinawa Praise	Rs. 70,540 - 71,490
7. Okinawa, I Praise	Rs. 1.14 - 1.16 Lakh
8. Ampere Reo	Rs. 39,534 - 49,521
9. Hero Electric Photon 48V	Rs. 38,990
10. Lectro Glide Lady	Rs. 26,999
11. Palatino Spyker	Rs. 42,518
12. Lectro Essentia SST	Rs. 18,999
13. Ujaas eGO	Rs. 34,880
14. Komaki Super	Rs. 31,225
15. Hero Electric Optima Li	Rs. 57,900
16. Palatino Sunshine	Rs. 38,248
17. ZKymco iFlow	Rs. 90,000
18. Lectro Essentia SST	Rs. 18,999
19. Avan Trend E	Rs. 56,900 - 81,269
20. Li-ion Spock Electric Scooter	Rs. 72,052
21. Palatino Angel	Rs. 38,252
22. Komaki X2 Vogue	Rs. 49,749
23. Li-ion Spock Electric Scooter	Rs. 72,052
24. Komaki XGT KM	Rs. 44,000
25. Ampere Zeal	Rs. 76,892
26. Revolt RV400	Rs. 1 lakh - Rs. 1.3 Lakh
27. York T6X	Rs. 1.6 Lakh
• Four-wheeler	
- Car	
1. Hyundai Kona Electric	Rs. 23.72 - 23.92 lakh
2. Tata Tigor EV	
3. Mahindra e2oPlus	Rs. 7.34 - 8.10 lakh
4. Mahindra E Verito	Rs. 12.67 - 13.03 lakh
5. Mahindra eKuv100	Expected Price: Rs. 25 Lakh
6. MG eZS - Expected Price	Expected Price: Rs. 25 Lakh
• Three-wheeler	
- Autorickshaw	
1. E Rickshaw	Rs. 55000 - 2 lakhs.
2. 5-Seater Passenger Electric Rickshaw	Rs. 1.1 lakhs
• Four-Wheeler	
- Commercial - trucks, buses	
1. Croyance Automobile product	Rs. 7-7.5 lakh
2. Ashok Leyland - electric buses	Rs. 55 lakh to Rs. 1.50 crore.
3. FAME (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles) subsidy to electric buses (Public Private Partnership).	Rs. 17 million each

Electric two wheelers cost almost half of the price (or even lower) of petroleum based conventional two-wheelers, like KTM 200 Duke costs from 1.52 - 1.61 lakhs but its electronic alternative Okinawa Raise costs around 42,328. Contrary to two-wheelers, the four-wheeler electric vehicles cost more than their petroleum counterparts. Like the cost of Mahindra E Verito is almost four folds the cost of Maruti Alto. E-Rickshaws have lower cost than CNG based auto rickshaws but the difference in price is not as large as between electric and petroleum-based two-wheelers. Electric commercial vehicles (Trucks, Buses, etc.) usually cost much cheaper than conventional commercial vehicles.

Findings

- The oil trade war, fluctuating crude oil price in the Global Market has substantiated Indian Government to reconsider its imports. Adversely manifesting unsustainable conditions for auto manufacturers, investors, petrol pump owners, consumers as well as the government. These facts have affected the Union Budget 2019 highlighting the rise in fuel by Rs. Two per litre on petrol and Diesel, tax exemption under Section 80EEB on electric vehicles, subsidies for manufacturers.
- The rise in fuel prices has not only declined the production and sales but has taken a leap in mass lay off in auto sector due to lack of policies regime.
- FAME scheme of Rs 10,000 crore (US\$ 1.39 billion) which was funded for Financial Years 2020 to 2022, been a backbone to the Auto sector in availing subsidies and implementation of electric vehicles on road.
- This study shows that the price of petrol has correlation with the production and sales in auto sector. Whereas, production year over year crashed to 199534 units in July 2019 from 281989 units in July 2018 and Sales too showed a decline in trend.
- Policy regimes have made electric vehicles affordable to public in comparison with conventional vehicles such as incentives of 10% on two-wheeler and 3-4% on cars in five years.
- This study also reveals various environmental crisis due to high usage of internal combustion engine which has adversely affecting the Nature as well as for all living being therefore, Auto sector has vested crores in evolution for BS-VI vehicles.

Conclusion

India Auto Sector have to augment by converting conventional vehicle to Electric Vehicle at the earliest. Import of oil as well as the bill would be considerably reduced. Internal Combustion engines largely contribute to pollution and the replacement with Electric Vehicle will enhance air quality. Indian on roads have 170 million two-wheelers and more. Assuming, these vehicles consume half a litre of petrol per day or about 200 litres per year, it amounts to 34 billion litres in total. One may be saving Rs.1.2 lakh crores worth, assuming that 50% of imported crude oil if oil cost about 2.4 lakh crores in a year/ 70 per litre, which is ideally eventual zed in the next five to seven years This would however require innovations, a policy regime that encourages gateway to rearmost technologies and a collaborative force by the Indian auto sector in reaching global competition by acquiring the necessary measures and implementing cutting edge technology.

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