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WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal providededicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

A STUDY ON AFFORDABILITY OF ELECTRIC VEHICLES IN INDIA: WITH REGARDS TO CLIMATE CHANGE:

AUTHORED BY - NIDHARSHANAA G

Introduction:

This paper mainly focuses on the climate change mitigation. The climate change has been a significant aspect to be noted with great care to protect the world and ensure a prosperous and sustainable world for the future. The Government has adopted to shift itself from diesel vehicles to electric vehicles where the country had to probe into many aspects one such is the problem concerning the burning and battery waste management, which still pose a threat to the nation. Pollution of environment is currently a global concern. Toxic substance emission from internal combustion engines add up as a major air pollutant. In order to mitigate the effects of fossil fuel emission and address environmental concerns (ECs), electric vehicles (EVs) are being promoted aggressively all over the world. Our Government has taken all the possible steps to promote the Electric vehicle by incentivizing the transition. Earlier studies had stated the major drawbacks like insufficient charging points, expensive electric car, and mileage acts as the impediments to consumer adoption. The Government of India has given a call for 'only Electric Vehicles' on Road by 2030. So, there is a requirement for the country to have deep insight into the battery swapping and Waste Management aspects that may still be a threat to polluting nation rather than mitigating management, rising greenhouse gases, rise in carbon emission and rise in oil prices are the thriving factors for the country to shift to Electric vehicle. Though Electric vehicle have many advantages it do have many operational issues to be resolved. It also explores the challenges and difficulties faced in their adoption, such as the high cost of infrastructure, scarcity of charging stations, limited range or range anxiety, and the performance of batteries. Government has undertaken all the necessary steps including proving subsidies to electric vehicle subsidies to promote the electric vehicle. The mission has eventually become an enormous

success that even after the Government had reduce the subsidies to a great extent it is still being in rise.¹

The Paris Agreement:

It is a legally binding International treaty on climate change, adopted by 196 nations of UN Climate Change Conference (COP21) in Paris, France on 12th December of 2015, which has come into force from 4.11.2016. The major objective of the conference was to keep average global temperature to be below 2 °C and pursue to keep them to 1.5 °C by the end of the century. Every country has undertaken its complete capability in reaching their stated objectives of 5 year cycle. Where every country submits their NDC (National Determined Contributions), every successive year the countries come up with ahead goals to reduce carbon footprints, and reduce greenhouse gases to make the world less carbon emitting as a whole.

Climate Change:

Sandip Mukherjee, adviser, Darjeeling Tea Association. Prices decreased 7.6% from 2022 to Rs 315 per kilogram, the lowest since 2015 when it was Rs 290 per kg. The escalating effects of climate change are particularly dangerous for regional economies and businesses like agriculture, tourism, and fisheries that rely on natural resources and favorable climate conditions. It is predicted that rising temperatures will decrease power generation efficiency while increasing energy needs, driving up the price of electricity.² The impacts of climate change beyond our borders are expected to increasingly affect our trade and economy, including import and export prices.³ Communities, government organisations and businesses are very firmly working towards zero carbon emission aiming to reduce risks from and costs associated with climate change by taking all required actions to reduce risks from and expenses associated with the implementation of various strategies in mitigating greenhouse gas. 90% of the Himalayan Mountains will face drought lasting a year if the temperature continues to be 3 degrees Celsius. The Government has undertaken various measures one such is the adoption of Electric vehicles.

¹ PIB,GOI,<https://pib.gov.in/PressReleasePage.aspx?PRID=1946361#:~:text=The%20government%20has%20reduced%20the,penetration%20of%20the%20EV%20market.,> (13.2.2024)

² Times Of India, <https://timesofindia.indiatimes.com/city/kolkata/2023-darjeeling-tea-output-set-to-be-lowest-in-50-years/articleshow/106587496.cms> , (13.2.2024)

Electric vehicle production in India:

TNGIM 2024:

In India, 70% of the total production of electric two vehicles come from the state of Tamil Nadu, 40% of four wheelers are produced in Tamil Nadu. Vin Fast maker of EV vehicles signed an agreement to set up its first manufacturing plant in India. The Vietnamese electric vehicle maker plans to invest up to 200 crores in Tamil Nadu. The EV maker has signed a MoU with the Tamil Nadu govt to establish an EV manufacturing plant in Thoothukudi. The Tamil Nadu plant is expected to deliver up to 150,000 vehicles annually, compared with 250,000 at its main plant in Vietnam³.

Benefits of Electric vehicles:

1. Electric vehicles do not tailpipe emission.
2. They reduce carbon footprints
3. Comparatively lower operating cost
4. Smooth and quiet operation
5. Convenient compared to conventional cars

FAME:

Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme, which was initially introduced as a two years project and is further extended as a five-year plan. FAME II is underway in operation from 2019 to 2024.

Green Credit Programme:

The Environment Ministry introduced the Green Credits Programme in October of this year in an attempt to develop a market-based reward for a variety of environmentally beneficial activities, not just the reduction of carbon emissions. The green credit scheme has advantages for both individuals and communities, in contrast to the carbon markets, which are primarily targeted at businesses and industry. In an attempt to establish a global market for green credits akin to the one that exists for

³ Times Of India, https://timesofindia.indiatimes.com/videos/toi-original/vietnamese-electric-vehicle-maker-vinfast-plans-to-invest-up-to-2-billion-in-india/videoshow/106601117.cms?utm_source=wa_channel&utm_medium=notification , (13.2.2024)

carbon credits, Prime Minister Modi presented the idea to the world at COP28.

Mission Life:

"To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for "LIFE" – "Lifestyle for Environment" as a key to combating climate change," is how India updated its Nationally Determined Contribution (NDC) on August 3, 2022, under the heading "Lifestyle for Environment."¹⁹ Mission LIFE aims to convert LIFE's vision into quantifiable effects. Its goal is to mobilize one billion Indians and other people around the world to take individual and group action between 2022 and 2028 in order to preserve and protect the environment. By 2028, at least 80% of India's villages and urban local governments want to be environmentally friendly.

Case laws:

Rajat Kapoor Advocate v Union of India⁴, petition was filed by the Petitioner after coming across two articles in the Times of India, dated 24-04-2022 titled "Hrs after buying e-scooter, man killed, 3 kin hurt in battery blast" and "After fires, Ola to recall faulty batches of EVs" which prompted him to file the instant PIL. The petition seeks directions to the respondent authorities to make the Insurance Cover of Electric Vehicles compulsory for 2 Wheelers Electric Scooters/ Bikes in the light of provisions of Section 146 of the Motor Vehicles Act. The petition also seeks a direction to the respondent authorities to make the wearing of Helmets compulsory for all types of Electric Bikes and 2-wheeler Electric Scooters irrespective of the wattage of the vehicle and to issue appropriate guidelines till appropriate legislation is made to ensure standardized manufacturing of reliable and long-lasting batteries which do not catch fire while being charged or otherwise. Thus, the Court held that no orders or directions are required to be passed as the relevant provisions of the MV Act and CMV Rules are already applicable to EVs, specifically pertaining to mandatory insurance cover, wearing of headgear on two-wheelers and penal provisions for noncompliance of the provisions. Similarly, as the Union of India has already prescribed standards to be followed by manufacturers for batteries to be used in battery operated vehicles/EVs, there is no need for any orders/directions to be passed by this Court in that regard as well.

⁴ 2023 SCC Online Del 5666, decided on 14-09-2023

The Supreme Court has requested the Union minister, Nitin Gadkari, to appear before it to discuss on transition from fuel based vehicles to electric vehicles. The bench comprised of Chief Justice S A Bobde, Justice B R Gavai, and Justice Surya Kant. To mainly discuss on government's standpoint on the topic, as the minister has been talking about the use of alternative fuel in public and private vehicles, and the court stated that it wanted to discuss the topic with the person in charge empowered to take decision⁵.

Problems for providing affordable electric vehicles:

The government has undertaken many steps to promote and facilitate the growth of production and affordability of electric vehicle to reduce pollution, greenhouse gases, and carbon footprints. The battery rate is continuously reducing and loans are being provided. But like a coin that has another side, electric vehicle too has another side, i.e. disadvantages. The major disadvantage being the duration, it has a short life span, the problem relating to battery swapping, the problem of recycling and disposal, Though the government has Battery waste management rules 2022, still the nation suffers from the effective way to be adopted to tackle the problem of battery waste disposal. The other problems are the mileage, the electric vehicle has a lower mileage compared to the fuel-based vehicle. The charging banks are not available like that of the fuels and diesel. India is importing Li-ion from China, which in turn makes the nation dependent on our neighboring country. There would be an increase in demand for Li-ion by 2030 were the nation has aimed for all roads electric vehicles, and the supply would lag behind. It is estimated that by 2030 India would be in need of 150 GWh of energy. The electric vehicle has many advantages when compared with fuel based vehicles. The carbon emission has a long-term hostile effect on public health and also lead to environment degradation. Electric vehicles can convert around 60% of electric energy from grid to power up their wheels, but in a fuel-based vehicles convert only 17-21% of the fuel to the wheels and at the same time they have zero tailpipe emissions.

EV Accidents:

In the recent time, there was a video that goes viral on social media of a horrifying scene of an electric car that burst into flames. They attract a significant attention when they do occur, though they are rare

⁵ Times Of India, <https://timesofindia.indiatimes.com/india/sc-can-nitin-gadkari-come-to-court-explain-ev-policy/articleshow/74217463.cms> , (13.2.2024)

in theory. These incidents are attributed to often high density of electric vehicle battery packs which primarily stores large amount of energy in a compact space and high voltage of lithium ion. There are chances where thermal runaway may take place because of the battery being damaged, an internal short circuit may take place, which generate high amount of heat leading to a fire. There is a need for them to manage the heat, i.e. proper management of heat to prevent any kind of noxious emission which had to be cooling the battery. When Volvo car⁶ worth Rs.63 lakhs was burnt into flames which had led people to question the reliability and safety of electric vehicles.

Conclusion:

A study conducted Emission Analytics stated that the electric vehicle produces 1850 times more carbon emission compared to fuel diesel because of their synthetic tyre. When in a diesel vehicle it is common for the owners to buy any spare parts from third-party vendors and fit to it, but it comes to electric vehicles there is a requirement that the owner to be on a safer side had to hold on to the company to protect himself from any kind of mishap. A study that was recently published in Nature, that was conducted along with Aramco and IIT Kanpur, that electric vehicle tend to cause more pollution than the Internal Combustion (IC) Engine. Where it shows India would benefit from short to medium term from hybrid vehicles. The future of electric vehicles seems very prosperous as it acts as an alternative to combat the problems of carbon foot printing, greenhouse gas emission and also a very significant role played by EV to achieve zero carbon. When Affordability and green energy are listed as seventh goal in sustainability development goal (SDG), the country is said to march towards the achievement of its goal. The Haryana Government had already introduced Haryana Electricity Vehicle Policy 2022, an initiative taken to achieve zero-carbon by 2030.⁷

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