

CARBON NEUTRALITY AND AUTOMOBILE INDUSTRY: A CRITICAL EXPLORATION TOWARDS A SUSTAINABLE WORLD

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DOI: 10.46609/IJSSER.2021.v06i10.005 URL: <https://doi.org/10.46609/IJSSER.2021.v06i10.005>

ABSTRACT

CO2 emissions from automobiles have been a cause of significant pollutions and global warming. There is an urgent need to review the situation and take steps towards mitigation measures to reduce emissions and attain a carbon-neutral world. The Climate conventions have made norms for the same, which is to be achieved by 2050. However, automobile manufacturers and end-users need to take urgent steps to reach carbon neutrality. The research paper “Carbon Neutrality and Automobile industry: A Critical Exploration towards a Sustainable World” critically explore the role of the automobile industry in achieving this target, though the paper seeks to explain how along with the automobile industry, there is a need for legal initiatives and taxation norms by the government as well as education and consciousness of the end-users to take up green steps in maintaining their cars as well as in choosing eco-cars. Moreover, along with the automobile industry, which is already taking up climate change norms and implementing them in their manufacturing, the other sectors also need to gear up to attain a carbon-neutral world.

Keywords: Automobile industry, Carbon neutrality, CO2 Emissions, Consumers/car users, Ecosystem, Environment, Global warming, Sustainable Development, Vehicular Pollution.

Introduction

Carbon neutrality has been a concern worldwide in the rise of environmental pollution and global warming. “Global warming is caused by anthropogenic greenhouse gases (GHGs), with CO2 is

playing the most prominent role” (Price Waterhouse Coopers, 2007: 13). Ecocritical thought process¹ and its gaining currency.

In different domains of human beings’ lives has been a welcome trend to conserve and preserve whatever little is left of our environment and ecosystem. We are all aware that the supposed human progress has already affected the ecosystem and human lives adversely, leading to many national governments and international bodies taking measures to control further environmental degradation and looking forward to sustainable development. Vehicular pollution is a significant concern worldwide. The automobile industry is also trying to evolve ways to sustain their production and make lesser polluting vehicles to the ecosystem. Since 1992, the UN has sustained efforts to bring down the emission level and work towards a sustainable future by ascertaining norms to deal with climate change and attain carbon neutrality.² According to the Paris Climate Convention, it has been decided that CO₂ emissions in the automobile industry are to be brought down by 90 per cent by 2050. There is a need for the automobile industry to take up and meet the norms of the climate conventions seriously. However, this is not the only means through which the carbon-neutrality related to vehicles can be attained. There need to be proper legal provisions from the respective governments of the nations to ensure that the norms of climate conventions are met. Consumers also need to be sensitized and taxed proportionate to their use of vehicles.

¹Eco-Criticism can be defined as a philosophical and political theory and a movement that combines ecological concerns and a social, political, and cultural development agenda to attain sustainable development. Climate change has been one of the world’s greatest threats in present-day circumstances, and we all are victims of the same. Global warming has reached alarming proportions, and we cannot contain it in the fashion we should have. Carbon footprints are at their most, but we have not yet reached a state where the developed and developing countries are doing their bit for a sustainable world. We need to be much more conscious of our ways, and there is a need for taking up greener ways in every sphere of life which we are yet to imbibe in true spirit (Bauer, 2007).

²The United Nations and its member states have been engaged in addressing climate change at a global level through the United Nations Framework Convention on Climate Change (UNFCCC), an international environmental agreement produced at the United Nations Conference on Environment and Development (UNCED), held and opened for signature in Rio de Janeiro in 1992 (Clayton and Bass, 2002). The agreement is on reducing emissions of GHGs to combat global warming. It entered into force in 1994. The Kyoto Protocol, was adopted in December 1997 in Kyoto, Japan. The Kyoto Protocol entered into force on February 16, 2005, and targets legally binding reductions in GHG emissions of an average of 5% below 1990 levels in the years 2008 to 2012. The Paris Agreement, adopted in 2015, sets three overall objectives – (a) to limit the average global temperature increase to well below two °C and (b) to pursue efforts to limit the average global temperature increase to 1.5 °C, and (c) increase the ability to adapt to the adverse impacts of climate change and promote climate resilience and low carbon development; and to make financial flows consistent with resilient and low carbon development trajectories (Capgemini, 2020).

Worldwide there is a need for a much-concerted effort to look for ways by which carbon-neutrality can be achieved and a world fit enough for human beings and other living beings to sustain. There has been a time when human beings lived in harmony with nature. The ecosystem sustained their livelihood, lives, and provided them with the joy of life. But with industrialization, modernization and scientific progress, human beings tended to rule over nature, disregarding the fact that they are harming their habitat and it is not sustainable. It took time for humans to realize that humans will suffer and lead to extinction due to ecological imbalance.

Ecocritical thought has been a significant force in defining the current standards of the automobile industry as without being environmentally conscious and adopting sustainable approaches, it is difficult for the automobile industry to attain social and ethical sanctions. As customers are getting educated about taking up environmental issues, they often choose vehicles that meet the environmental safeguards. Furthermore, it is also an ethical duty of the automobile industry to foster and implement strategies that align with the ecologically safer norms.

In recent times, some of the automobile industry's concerns are energy use, energy-related CO2 emissions, energy cost, energy security, and renewable energy sources in final energy use. Therefore "renewable energy sources combined with other energy and CO2 reduction activities makes the ultimate target of carbon-neutral plants a reasonable target to be reached" (Despeisse, 2009). Transport is Europe's most significant source of CO2 (Price Waterhouse Coopers, 2007; Transport and Environment, 2018), and it is so even worldwide. Transport, thus, can be responsible for the emission of more than a quarter of greenhouse gases. It has been a significant source of worry for the world and the climate goals set to be brought down. It has been decided that to meet the 2050 Paris climate commitments, cars and vans must be decarbonized entirely. To achieve this, the sales of cars with an internal combustion engine has to end by 2035. According to Price Waterhouse Coopers (2007) report, various technological options contribute to CO2 emission reduction. They can primarily be categorized into three main areas: engine concepts, alternative fuels and beyond engine technology (16).

But along with the changes in the manufacturing process, there is also a need to change how customers own vehicles and how they are taxed and maintain and drive their vehicles. "New car CO2 regulations have delivered only about a 10% reduction in on-road emissions in the 20 years since the first Voluntary Agreement was established in 1998" (Transport and Environment). In other words, carbon neutrality is yet a distant goal for the transport industry. However, different car brands are already working towards meeting the climate conventions. For example, an April 29, 2021 statement by Toyota Motor Corporation states, "Toyota Motor Corporation (Toyota) supports the Paris Agreement, and will continue to do its utmost to take on the challenge of achieving carbon neutrality by 2050." Actions are now required to match up with words. Each

car making brand's research and development wing needs to work in a more eco-sustainable manner to bring about eco-engines that can work on renewable energy sources and not harm the environment.

A significant cause of worry is how the demand for SUV sales is increasing day by day. The steep increase of SUVs has rocketed from 4% in 2001 to 26% in 2016. It is also a significant cause of worry as the average SUV has emissions of 132gCO₂/km compared to 118gCO₂/km for a medium segment car (Transport and Environment). In India, too, there has been a recent upsurge in the sales of SUVs compared to sedans and hatchbacks. As the lifestyle parameters increase and set to increase, further sales of SUVs will increase, leading to a more problematic environmental threat. What is required is not just to increase the manufacturing process of the SUVs to meet the demand, but a national and international level policy decision of ways in which one can own an SUV. The taxation regime of SUVs also needs to be reworked upon so that people using SUVs are taxed accordingly.

Though the sale of diesel cars has come down significantly and a shifting trend to alternative fuel, much remains to be done. For example, in Delhi in India, there has been a regulation according to which a diesel car's life in Delhi roads is for ten years and that of a petrol car is for 15 years. This has changed the way people preferred cars. However, at the same time, it is also true that it has not created a significant difference in terms of its environmental impact. The requirement is not just to make stringent laws but also to implement and follow them stringently so that the requirements are met, and the environmental pollution and its consequent impacts can be dealt with.

Another effective option for the carmakers is to use fuel-efficient technologies in the manufacturing process where the battery-operated and plug-in hybrid vehicles engine cars are being popularised in a sustained manner. Though alternative fuel has been a choice in many Western nations, it is not taken up in a major way in India because of certain lacks. Though carmakers can change to the alternative fuel to achieve carbon neutrality, the lack of availability of charging stations often makes the car owners not feel comfortable switching to battery-operated cars. Along with the car makers, the governments of the respective nations and states should also make adequate provisions for charging stations and similar setups. The customers prefer to buy battery-operated cars rather than petrol or diesel cars.

The onus of conserving and preserving the environment is not just with the carmakers, but similarly so with the car owners, the government and the regulatory bodies. Carmakers are only one side of the coin. The car owners are also responsible. The government authorities are in-between looking after how the deal with the car owners and makers can be facilitated, not

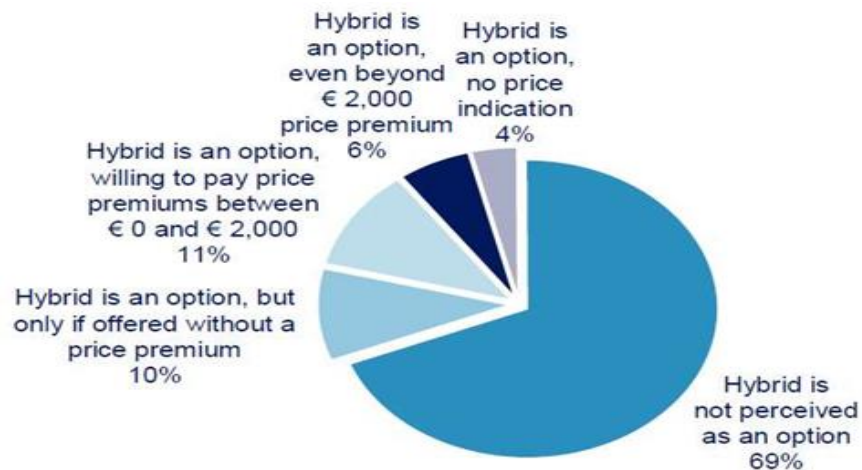
harming the environment. Not just emission norms are to be set, which the carmakers need to follow. However, norms for owning cars and adequate provisions for the availability of alternative fuels should be made. So to tax the carmakers with a fine for not following the standards is not a just option. The requirement is to think of a better way of dealing with the issue of carbon-neutrality more comprehensively.

In other words, to meet the goals of carbon-neutrality in the automobile sector as decided by the Paris agreement, transport emissions must be reduced by more than ninety per cent by 2050. "Such a radical change cannot be achieved through incremental improvements to existing vehicles, a shift to fossil gas, or advanced biofuels and synthetic fuels that cannot be produced in the volumes needed to power all mobility" (Transport and Environment, 2018). The need of the hour is to think and design future cars which are run by electric and chargeable in minutes with ranges of 500 km or more and powered from smart renewable grids (Transport and Environment, 2018). Governmental initiatives in providing tax subsidies can also be a significant factor in propelling car buyers to shift towards alternative fuel.

Working towards making eco-cars following the emission norms of the Climate Conventions has to be supplemented with the concern for a greater emphasis on changing the consumer behaviour and preferences. The requirement is also to educate the consumers to take adequate measures to keep their engines working at an optimal level with regular maintenance service of their car engines to less pollute the environment. Availability of eco-cars or green-cars may take few years to come. However, there will be more significant damage done to the world's air quality and rising temperature by that time. Thus, if carmakers are to be made to follow the stringent laws of manufacturing eco-friendly vehicles, then it is also the need of the hour to make the car users be sensitized to the proper maintenance of their respective vehicles.

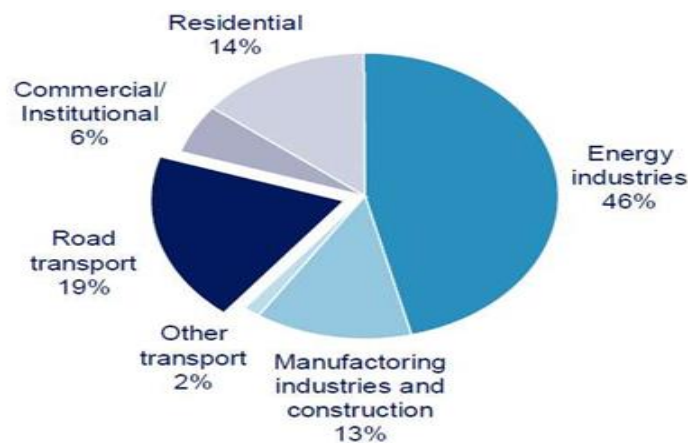
Furthermore, car manufacturers making eco-friendly vehicles is not the only way; the consumers also need to buy these vehicles (Price Waterhouse Coopers, 2007: 13). The preference of the consumers also needs to be changed. Some may suggest that when there are no other preferences, the consumers will naturally choose the eco-cars and damage the environment. When one argues in this fashion to attain a world of carbon-neutrality, one is putting the responsibility of saving the world from CO₂ emissions from vehicles only to the car manufacturers, which is but a biased way of thinking. For example, when Price Waterhouse Coopers surveyed the information and willingness to buy hybrid cars in September 2007, the following is the response of the participants With this kind of sensitivity towards eco-initiatives, the world towards carbon neutrality seems to be a distant dream. Yet, it must be achieved; otherwise, we are driving towards our doom. The realization of the need for an eco-sustainable future has to percolate to the masses along with the carmaker brands. The norms of the Climate

Conventions need not just be a document in paper and a dream to realize but should be implemented by the respective governments. Each government has its developmental measures according to which they tend to make legal provisions and taxation norms. However, for the sustainable development of the world and preservation and conservation of the environment, steps towards carbon-neutrality must be taken urgently. Only when the norms set by the government are stringent both in its conception and implementation, the manufacturing units and the masses abide by them (Clayton and Bass, 2002).



Source: Price Waterhouse Coopers, September 2007: 15.

Yet to blame the automobile industry is not the only way out. As per the Price Waterhouse Coopers report, the following is the CO₂ emissions according to its sector wise division.



Source: Price Waterhouse Coopers, 2007: 28.

Though the energy industry is the most significant factor towards CO2 Emissions, the Automobile industry is not far behind. So, instead of only the automobile industries being responsible for environmental pollution and global warming, there needs to be a sector-specific approach to reduce emissions. The automobile industry (manufacturing) is already implementing means through which they are trying to abide by climate change norms. The Capgemini report (2020) states so –



Carbon neutrality and sustainable development cannot be achieved only by regulating the norms of the automobile industries, and there is a need for a greater emphasis on other sectors as well (Global Carbon Project, 2020). Fragmented initiatives will not help (Capgemini, 2020). An all-inclusive, wide-ranging, comprehensive policy that the Paris Climate Convention has already initiated needs to be followed at its best spirit by each sector, along with the automobile industry and the people worldwide. It is only with such a concerted effort that we could save our environment, our ecosystem and ourselves from the onslaught of pollution and global warming that we have harped on ourselves. “The shift to electric vehicles, and electrification paired with renewable energy generation, will be a key component of our (City of Cincinnati) transition to sustainability”, states Oliver Kroner, Sustainability Coordinator for City of Cincinnati, Ohio (Capgemini, 2020). Such a mindset needs to be there not just in administrators, policymakers and industrial experts and manufacturers, but also amongst the people, which can lead to the achievement of the target of the Paris Climate Convention much before 2050 and a dream of a carbon- neutral world can be a possibility.

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