



# An Analysis On The Role Played By Electric Scooters In Minimizing Urban Pollution

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**Abstract:** Production and consumption are the two major economic activities which have no end on this planet. As the people's wants are unlimited and endless, every day producers have to find the new ways of production as well as products to satisfy the needs of the mankind. In this process engineering also playing a greater role in production of goods and services directly or indirectly. Every producer and also consumer is aware of the value of inter-generational equity, they cannot bring that ideal into their production ideas and behave responsibly towards the future generations.

Urban population is increasing around the globe. Technology and transportation are the major pulling factors of the rural population to the urban areas. As fuel driven two wheelers are increasing there is a vast necessity to find ways to reduce pollution in urban areas. In that process the first and best innovation is electric scooters which can bring down the pollution caused by the fuel driven two wheelers due to their large-scale emissions like Carbon monoxide (CO).

Electric scooter innovation can pave the way for the reduction of different forms of pollution like air pollution and sound pollution. Air pollution is the major pollution causing the damage to the quality of oxygen and also availability of oxygen. The researcher wants to throw the light on the role of electric scooters in minimizing urban pollution and the need for more awareness in the modern generation about air pollution free transportation along with the necessity to improvement in engineering for future.

**Index Terms** – Urban-pollution, inter-generational equity, emissions and electric scooter

## **Introduction:**

As the population is increasing every day on the earth, there is a need for their survival by doing some kind of job or profession. Since more people are depending on the agriculture and other allied activities, those who are well educated, semi-educated and skilled labourers along with those who are well versed in trade and commerce migrating to urban areas. This popular migration is causing for the bulging of the cities and scarcity of the resources in urban areas. In the process of continuous effort to meet the needs of both urban population and rural population, production was forced to increase manifold. This production of various goods and services in large scale has led to the highest volume of pollution where not only manufacturing but also consumption of the goods have been causing for the huge pollution of the city and its resources.

Negative consumption externality like usage of petrol bikes, petrol cars etc are causing a major damage to the environment, in turn leading to the negative effect on the people's health and their lifespan.

The best innovation of recent times which is seen so far as the solution to urban pollution is innovation of electric scooter which doesn't need fuel and there are no emissions like carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), and hydrocarbons (HC). Even though there are other challenges with the electric scooters and their performance, regarding the controlling pollution is concerned electric scooter is the best solution to urban air pollution and sound pollution.

Cities in developing countries like India shows that there is a drastic rise in use of personal two wheelers and reduction in the mass transport facilities like bus, train, metro etc. It is impossible to control the pollution which is a big threat for the future of the earth due to high volume of production and migration of the rural population to urban areas in search of employment and business opportunities.

### **The following are the SDGS which are the base for research topic:**

SDG 11. Sustainable cities and communities

“Making cities and settlements inclusive, safe, resilient and sustainable”

SDG.13 Climate action

“Take immediate action to combat climate change and its effects”

SDG.15 Life on land

“Protect, restore and promote the sustainable use of terrestrial ecosystems, manage forests sustainably combat desertification and reverse land degradation and half biodiversity loss”

### **Meaning of the Electric Scooter**

Electric scooters are typically personal two wheelers it is also known as Personal Electric Vehicle (PEV) it runs with the energy from one or two motors that are powered by battery which can be recharged. The electric scooters are available with different configuration along with different capacity to fulfil various needs of the customers

### **Meaning of Pollution**

Introduction or addition of any foreign particles or pollutants to the existing environment or nature that may cause for the deterioration of the quality of that particular aspect and lead to negative impact on the life which is associated with it.

Example: Due to emission of Carbon monoxide into the air, the quality of air is getting damaged and also the life associated with it i.e. human beings, animals, birds, plants are affected negatively

### **Meaning of Urban areas**

Urban areas are those areas which are densely populated and also huge concentration of trade and commerce along with production and commerce is visible with certainly high economic quality of life compared to suburban and rural areas.

### **Objectives of the Study**

1. To highlight the level of air pollution caused by the petrol two wheelers in urban areas.
2. To analyse level of existing pollution that can be curbed by the electric scooters.
3. To understand the growing threat of pollution to all the urban areas due to petrol two wheelers.
4. To make a comparative analysis between the pollution level caused by the petrol two wheelers and electric two wheelers.
5. To list some suggestions for the urban authorities regarding the minimizing air pollution by promoting the electric two wheelers.

### **Research Problem**

Electric scooters can bring down the level of air pollution and sound pollution in urban areas.

Is there a relation between the usage of electric scooters and reduction of pollution in urban areas?

### **Need for the Study**

1. Urban areas are highly polluted with the emissions of two wheelers and other vehicles.
2. There is a necessity to investigate into the positive contribution of electric scooters to the urban environment.
3. Electric vehicles are very minimal in sales compared to petrol vehicles.
4. There is an emergency to create some awareness about the electric vehicles to all the urban population.
5. There is a requirement of giving some strong recommendations to the governing authorities of urban areas regarding the need to promote electric scooters instead of petrol scooters.

## Review of the literature

F.H. Huang (2002) gave a great explanation about the mobile application that can track the level of reduction of the pollution due to replacement of traditional petrol two wheelers with the electric two wheelers may encourage more people to get knowledge about how electric scooters are contributing for the reduction of pollution, in turn it will help to increase the sales of electric scooters.

L.T.Silva (2015) have highlighted the healthy noise level of cities and also gave clarity about the level of environmental quality of cities in accordance with the WHO recommendations. In his article he has also mentioned about both domestic and road transportation emissions how they are causing for the degradation of the air quality in urban areas.

Kucera (1995) has explained about the direct and indirect air pollution effects on materials and monuments. Systematic laboratory tests were conducted to identify the level of damage caused by the pollutants to various monuments.

Amin Al-Habaibeh (2024) has provided a clear explanation about the importance of the developing smart transport solutions to reduce carbon emissions by using the clean energy to drive the innovation cities in cities across the globe.

## Scope of the Study

This research is completely focused on the air quality of urban areas, how usage of electric scooters can contribute to drastically bring down the pollution in urban areas?

Throughout the research an investigation has been done on the relationship between the number of electric scooters is being used and the level of air pollution in various urban areas particularly in India.

The study is very much strictly focused on the two-wheeler-based emissions and damage caused to air quality along with the environment conditions in urban areas only.

Electric vehicles mean in this study only electric scooters and electric two wheelers only.

## Research Findings:

- 1.Urban pollution is caused at large by the petrol and diesel using two wheelers, three wheelers and four wheelers.
- 2.Urban pollution is not only caused by vehicle emissions but also production activities.
- 3.Urban pollution also caused by the service industry with too much of usage of workstations and air conditioners.
- 4.A report by the Confederation of Indian Industries (CII) in 2023 indicates that India has to install 400000 EV chargers annually to cater the growing demand for electric vehicles.
- 5.Hyunbdai plans to invest in Tamilnadu US\$2.45 billion in Tamilnadu over the next ten years to meet their electric vehicles initiatives in India.
- 6.There is more urban population is still not much aware of the electric scooters.
- 7.Lack of reliability on electric scooters makes the people to go for petrol two wheelers.
- 8.Thjere is no much campaign about the electric scooters in India.
- 9.People are traditional in nature and it take some time to change for the better facilities and advanced ideas.
- 10.People are not much aware of the threat of air pollution and sound pollution.
- 11.People are not discussing about the advantages of the electric vehicles.
- 12.People has got so many questions on the weather adaptability of the electric scooters because of the recent accidents reported regarding the blast and fire of the electric scooters.
- 13.In the opinion of the people it is too early to accept to change to electric scooters, there needs to be more advancement and quality improvement has to be done.
- 14.In some of the age groups there is complete ignorance about the electric scooters.
- 15.Women awareness about the electric vehicles is very much negligible.
- 16.Price and down payment for the electric vehicles is far higher compared to the other two wheelers.
- 17.Air pollution and sound pollution can be definitely minimized by using the electric scooters.
- 18.Electric scooters are still seen as the product manufactured for educated and those who wants to have a light weight two wheelers.
- 19.There is no particular government policy to promote the electric two wheelers.
- 20.Electric scooters are the beginning step for protection of air quality in urban areas.

**Solutions:**

1. Government must have a constructive approach and a policy initiative to make more people to use the electric scooters and create awareness too.
2. Producers must work on bringing down the price of the product, so that electric scooters will be affordable to many people.
3. Electric scooters and their features must be campaigned by both government organisations and also non-government organisations, to create knowledge about their role in minimizing the urban air pollution.
4. Electric scooters must be offered with some kind of encouraging subsidy schemes from the government agencies.
5. Through electronic and print media there must be awareness drive in all the age groups of the people.
6. There must be data presentation in all the possible public announcement systems about the quality of the air going down and necessary measures from people side to take to make sure quality of the air in urban areas is protected for a better environment quality.

**Limitations of the Study:**

1. This study is completely based on the secondary data analysis.
2. The focus is completely about the electric scooters only.
3. The area is limited urban areas.
4. There is no systematic observation is done on cities, but random observation through literature and data already available in various sources.

**Conclusion:**

Electric scooters are the best way to bring down the air pollution and also sound pollution in urban areas. More people have to go for the electric scooters and create awareness about the urban pollution and its reasons for those who are no way concerned about the falling standards of the quality of environment in urban areas. As the existing millions of petrol two wheelers are replaced by electric scooters, it will help to reduce the fuel consumption and also the emissions of the fuel based two wheelers. If women also can become the part of this pollution minimizing process by doing their best, definitely there will be a great change in urban areas and their air pollution levels. It is observed from various reports most of the two-wheeler and four-wheeler companies are going to invest huge amount in production and marketing of electrical vehicles. People must play active part of this great drive to see the present and future generations safeguarded from the negative effects of air pollution and sound pollution. There is a largescale requirement for the research and also analysis by all the social, political, engineering, trade, commerce, educational institutions to take the knowledge about the electric scooters to all the corners of the world and make it a grand success by creating urban areas without pollution.

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