IMPACT OF TRANSPORTATION ON ENVIRONMENT

Mr.Vaibhav Chaturvedi [1], Dr.P.K Agrawal [2], Er.Gurpreet Singh [3], Mr.Mayank[1], Mr.Vansh Gupta[1]
[1] Student, Department of Civil Engineering, Shaheed Bhagat Singh State Technical Campus, Firozpur, Punjab, India
[2] Professor, Department Professor of Civil Engineering, Maulana Azad National Institute of Technology, Bhopal, M.P, India
[3] Assistant Professor , Department of Civil Engineering, Shaheed Bhagat Singh State Technical Campus, Firozpur, Punjab, India

Abstract: In this present study, major effect of transportation on environment is investigated. The work is performed in order to find influence of transportation on rural, urban community and ecosystem globally. As per recent survey according to GOI, significant had been increased in vehicle all over India. It had been seen that rate of increase of vehicles day by day is proportional to level of pollution. There is no effective substitute that had been made to overcome these harmful pollutants generated while transportation in these days. Therefore, in this study, focus is made on effect of pollution on environment with increments of vehicles. This creates air pollution, including nitrous oxides and particulates which is a significant subscriber to global warming through emission of carbon dioxide. This contamination lead to increase in the toxic gases in atmosphere which directly results an impact on ozone layer depletion.

Keywords- **Environment , Emission, Pollution, Transportation**

Introduction-

India has the second most sizably voluminous population in the world with 1,231,990,000 (over than 1.2 billion). India's population is 17.3% of the entire world population. India secure 3rd rank in pollution all over the world. Fourteen out of the world's 15 most contaminated cities are in India, said by WHO. As the population of country is increasing day by day it directly results in increment of pollution in the country. In the present era, transportation provides people with a way to carry goods from places to places. It is betokened for people to preserve their times. The conveyance system had developed so well that people now rely on the system every single day. Transportation is a double-edged sword as it benefits our society but it also damages the environment. Now a day's transportation is one of the major factors in increment of the percentage ratio of pollution. The more important atmospheric pollutants emitted from motor vehicles are carbon monoxide (CO) and carbon dioxide (CO2), oxides of nitrogen (NOx), especially nitric oxide (NO) and nitrogen dioxide (NO2), particulate matter, especially PM10, and volatile organic compounds(VOCs), including hydrocarbons (HCs) such as benzene[1].Due to these toxic gases which are emitting from vehicle per day in huge amount cause some major problem like acid rain, human health effects, global warming. Burning of fossil fuels are increasing the atmospheric concentration of these greenhouse gases which also lead an increase in the average temperature of earth. The average surface temperature of earth has increase 0.8 degree Celsius since the early 20th century [2]. Carbon dioxide is the most significant anthropogenic gas affecting the climate. Transport is the greatest source of both nitrogen oxides and volatile organic substances. Emissions of nitrogen oxides (NOx) and volatile organic substances (VOC), primarily certain types of hydrocarbons, interact under the influence of sunlight to create ozone and other oxidants in the air. High levels of ground-level ozone damage plants and material as well as impact on, human health, from reducing the life of technical material or inhibiting crop harvests [3]. These hazardous gases also have a greater effect on human body. When the polluted toxic air is inhaled by a human body, it increases the risk of getting cancer and other related diseases. These toxic gases contain some of heavy metals which cause asthma and skin allergy. Road traffic is thought to cause at least half of the particle emissions in our urban areas and up to 90 per cent of those occurring at street level. Many countries are now focusing on the small inhalable particles (PM 10, PM 2.5) and which exist in diesel exhaust emissions and studies are underway into both the mechanisms and the effects as well as into formation and methods of measurement [3]. The amount of motor vehicles is increasing day by day in India. The total number of registered motor vehicles in India was 210023289 as on 31.03. 2015. There were 7 states having more than 10000000 registered motor vehicles viz. Maharashtra, Tamil Nadu, Uttar Pradesh, Gujarat, Karnataka, Rajasthan and Madhya Pradesh as on 31.03. 2015 [4].

States	**Number of Registered Vehicles**	**% of Registered Vehicles**
Maharashtra	25562175	12.17
Tamil Nadu	22518669	10.72
Uttar Pradesh	21635531	10.3
Gujarat	18720567	8.91
Karnataka	14784961	7.04

Rajasthan	12378929	5.89
Madhya Pradesh	11141127	5.3
Delhi	8850720	4.21
Other	74430610	35.46

Table 1

Total Registered Motor vehicle in India was 210023289 as on 31/03/2015 according to Govt. of India [4]

Objective of The Study may be summarized as follows: To increase the quality of air in atmosphere and decrease emissions, To reduce carbon di oxide and other toxic gases in atmosphere.To improve safety for passenger on roads and reduce accidents.To minimize the impact of harmful gases on human health. To minimize the travel cost as well as travel time. To increase use of other type of energy which is friendly to environment.

Literature Review-

A literature review was carried out .some of the important finding from the literature review are as follows
Wasfi et al. (2016) used longitudinal data from National Population Health Survey of Canada over 12 years of follow-up. They indicated moving to high-walkable neighbourhood decreased BMI trajectories for men by approximately 1kg/m2. Moving to a low-walkable neighborhood increased BMI for men by approximately 0.45kg/m2. However, they did not find any associations among women [5].**Verroen et al., (1990),** recommends that activities attracting many people per square metre (employees, visitors) should be located in the more central parts of the city. This allows a high portion of those traveling to these activities to reach them by other modes of transport than private car. Following from this, in order to minimize car dependency and road traffic in the urban region, the most central areas should be developed with high densities in order to give room for many workplaces and other activities in the areas that are most accessible by other modes that car [6].**Gordon-Larsen et al. (2005)** applies a descriptive analysis to explore the association between modes of travel, physical activity, and weight status. Using 10,771 observations extracted from The National Longitudinal Study of Adolescent to Adult Health, they revealed a statistically equal share of public transit among non-overweight and overweight US participants [7].**Martin et al. (2015)** explored the impact of switching from private car to active modes of travel and transit on BMI. Analysing 4056 individuals extracted from the British Household Panel Survey, they indicated this shift causes a 0.32 kg/m2 decline in self-reported BMI throughout the sample [8].

METHODOLGOY-
In the present era, road transport has become a major contributor towards air pollution. A recent report from the World Health Organization, drawing on quantifications and calculations as of 2016 from air monitoring stations in 4,300 cities, establishes clearly that air pollution is a global problem. In the present era, road transport has become a major contributor towards air pollution. A recent report from the World Health Organization, drawing on quantifications and calculations as of 2016 from air monitoring stations in 4,300 cities, establishes clearly that air pollution is a global problem. A whopping nine in 10 people on Earth breathe highly polluted air, and more than 80 percent of urban dwellers have to endure alfresco pollution that exceeds health standards, according to the WHO's World Global Ambient Air Quality Database. When you look at the database's ranking of particulate pollution in cities, 11 of the 12 cities with the highest levels are located in India.

Country	City	Particulate Matter (PM) 2.5 (ug/m^3)
India	Kanpur	173
India	Faridabad	172
India	Varanasi	151
India	Gaya	149
India	Patna	144
India	Delhi	143
India	Lucknow	138
Cameroon	Bamenda	132
India	Agra	131
India	Muzaffarpur	120

India	Srinagar	113
India	Gurugram	113
Pakistan	Peshawar	111
Pakistan	Rawalpindi	107
India	Jaipur	105

Table -2

(World Health Organization)

The database classifies air pollution in two ways: by PM 2.5, particles smaller than 2.5 microns in diameter, and by PM 10, particles that are 10 microns in diameter.

Looking these survey data base, some methods must be adopted to reduce greenhouse emission and to create a sustainable environment.

1) **Vehicle Configuration-**

A) Effective hydrogen fuel cells techniques must be used as alternative fuels for vehicle. This technology used uses hydrogen gas to create electricity. The electricity is then converted to mechanical energy in an electric motor to run engine. The only emission from the cell is water, which is clean enough and do not pollute environment.

B) Biofuels techniques is a fuel that is produced through contemporary biological processes, such as agriculture and anaerobic digestion. Biofuels can be derived directly from plants or indirectly from agricultural waste and industrial waste. The Karnataka State Road Transport Corporation has launched India's first bio-diesel passenger bus. In diesel vehicles you can see lot of smoke emission. But when bio-diesel is used there isn't much emission as well it doesn't even affect the performance of vehicle.

C) Use of bicycle for short distance is also one method through which these harmful emissions can be reduced in environment.

2) **Traffic Method-**

A. Odd or even method- In this method vehicles will be allowed to run across the city based on their registration numbers. For example, if a vehicle's registration number ends with an odd digit, it will be allowed on the road on January 1, while that ending with an even number can be driven on the second.

B. Car pool system- Carpooling is car-sharing, ride-sharing and lift-sharing**.** In this system more than one-person travels in a car, and prevents the need for others to have to drive to a location themselves. More people using same vehicle can reduce travel cost as well as maintenance cost for vehicles. Carpooling is also a more environmentally friendly and reduces air pollution, carbon emissions and global warming.

C. Public transportation – Public transport vehicles carry a large number of people in a single vehicle. In addition, they are cheap and easily accessible. As public transportation is facilitated by the government, hopefully, appropriate green transportation measures must have been taken.

3) **Road Side Accessories** –

A. Trees Plantation - Trees should be planted on the side of the road as it helps in control air pollution and environmental safety. Air pollutants, ozone depletion and greenhouse effect can be reduced by planting trees.

B. Air pollution control devices- A series of devices that work to prevent a variety of different pollutants, both gaseous and solid, from entering the atmosphere primarily out of industries . These control devices can be separated into two broad categories - devices that control the amount of particulate matter escaping into the environment and devices that control gas emissions.

Conclusions-

Some of the important conclusions are drawn from the study are as follows The study focused an impact of transport sector on environment. Study have identified as the demand of vehicles is increasing with rapid increase of population in India is accounting a pressure on environment. This pressure on environment are developed by increasing concentration of CO2, CO and NO2 and some other harmful gases produced by transportation. Ozone layer depletion, Global warming, Climate change and major number of disease is cause by these gases. As this degradation of the atmosphere continue there will arise situation when these concentration of gases will be more than life living gases and the future population will have to suffer from very serious cause which are unpredictable. By using traffic method such as odd or even method, carpool system and public transportation method is very much helpful in reducing the emission of CO2 and other gases. Biofuel techniques is eco-friendly fuel which not only reduce impact of harmful gases but with that it also reduce travel cost. Road side accessories such as trees plantation will be very helpful to overcome these harmful gases in present era as well as in upcoming era. Using non fuel vehicle for short distance such as bicycle, is very much helpful in maintaining public health and also reduce some of the major health issues and help in maintaining eco friendly environment. Public awareness with government policy and administration have to play a major role to avoid and overcome these present as well future arising problems.

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