ZYKLUS IS AN ONLINE CYCLE RENTING PLATFORM DEVELOPED FOR BOTH WEB AND ANDROID

MOTIVATION

Abstract

Air pollution is a problem that is only growing with time and it also imposes some serious health hazards for people living in India, especially metropolitan cities. Now a major contributor towards it is the pollution caused by vehicles. The growing number of automobiles in the recent decades has led to increased vehicular air pollution. For example, Delhi is one such city to face such a problem. The Delhi Statistical Handbook 2014-15, a report by Directorate of Economics and Statistics, Delhi Government, reveals that there are 88.27 lakh-registered vehicles in Delhi as on 31 March 2015. It is home to about twenty percent of the total vehicles in the country (Ministry of Environment and Forests- Government of India, 2009). This has become an issue of concern since the city is made up of about fifteen hundred square kilometers (Government of NCT of Delhi, 2010). In this proposal, we aim to discuss the current problem, the plans taken by the government to reduce it and finally our proposal to help curb the problem of vehicular pollution in Delhi.

Problem Description

The problem is clear that due to growing traffic, vehicular pollution has increased substantially. The main pollutants emitted from these vehicles are hydrocarbons, lead/benzene, carbon monoxide, sulphur dioxide, nitrogen dioxide and particulate matter (PM2.5 and PM10). Delhi has more vehicles than Mumbai, Kolkata and Chennai put together. Road length per vehicle had gone down from 0.69km in 1988 to 0.23km in 2004. This has led to congestion of roads and thus, mismanagement of traffic. Share of vehicular pollution in Delhi has increased from 23% in 1970-71 to 72% in 2000-01. Figure 1.1 clearly illustrates the rate at which vehicular pollution has increased over time. The detailed problem is discussed in the next section.

THE REAL PROBLEM ?

CAUSES

Statistics show that about 7-8 million vehicles are produced annually in the country. With such a high supply, there’s an equal demand as well. Automobiles are the primary source of air pollution in the major cities of India. The transport sector of India emits over 250 tones of carbon dioxide, out of which 94.5% is contributed by the road transport. The major pollutants that cause this pollution have been already discussed in the previous section. The chief sources of emission in automobiles are:

Exhaust System

Fuel tank and carburetor

Crankcase

Exhaust system

Automotive exhaust is the major source constituting about 60% of the total emission. Automobile exhaust consists of wide range of pollutants from simple to carcinogenic substances such as (1) Hydrocarbons (Unburnt), (2) Carbon monoxide, (3) Oxides of nitrogen (NOx), (4) Lead oxides, (5) Particulate matters e.g. lead, carbon, alkaline earth compounds, iron oxide, tar, oil, mist (6) Traces of aldehydes, esters, ethers, sulphur dioxide, peroxides, ketones benzene (C6H6), 1, 3 butadiene, Poly Aromatic Hydrocarbons (PAH), metal dust, asbestos fibre, dioxin, furon, ammonia, organic acids , chlorofluorocarbons (CFCs) etc.

Fuel tank and carburetor

Evaporation from fuel tank goes on constantly due to volatile nature of petrol, causing emission of hydrocarbons. The evaporation through carburettor occurs when engine is stopped and heat builds up, and as much as 12 to 40 ml of fuel is lost during each long stop causing emission of hydrocarbons.

Crankcase Emission

Crankcase Emission (also called running loss emissions) is unburnt or partially burned fuel components that, under pressure, escape from the combustion chamber, pass the pistons and enter the crankcase. This mixture is called blow-by. The main constituent of blow-by emission is HCs. If uncontrolled, it may constitute 13– 25% of total emissions. Since diesel engines compress only air, blow-by contain very low levels of pollutants.

EFFECTS OF AUTOMOBILE POLLUTION

Prolonged exposure to hydrocarbons contributes to asthma, liver disease, and cancer, overexposure of carbon monoxide poisoning may be fatal. NOx is a precursor to smog and acid rain. NOx is a mixture of NO and NO2. NO2 destroys resistance to respiratory infection. Particulate matter causes negative health effects, including but not limited to respiratory disease. Oil, petroleum products and other toxins from automobiles kill fish, plants, aquatic life and even people. One quart of oil will contaminate thousands of gallons of water because it doesn’t dissolve. These toxins as well as trace metals and degreasing agents used on automobiles contaminate drinking water and can cause major illness. Some of these toxins and metals are absorbed in various sea life and cause medical problems to people when eaten. Phosphorus and nitrogen cause explosive growth of algae, which depletes water of oxygen, killing fish and aquatic life.

STEPS TAKEN BY THE GOVERNMENT TO REDUCE AIR POLLUTION

The Delhi Government has made various rules and regulations to curb the present problem of air pollution . Like the private vehicles bearing odd and even registration numbers have to travel on odd and even days respectively . The directions have been given to shut down the badarpur Thermal power station . The National Green Tribunal have been asked to close the Dadri power plant in Uttar Pradesh. Trucks are only allowed to move after 11 PM in the NCR region . Also The transport department have deployed various Mobile Enforcement teams on the regular basis for the prosecution of the polluting vehicles and the vehicles which does not have PUC certificates. The government have also started various public awareness campaigns to raise social consciousness on the issue and to educate the motorist about the health hazards, statutory provisions and control measures viz. engine tuning and maintenance. The Mass Rapid Transport System is being constructed with the objective to place a non-polluting, efficient and affordable rail based mass rapid transit system for NCT of Delhi, duly integrated with other modes of transport. The government has also banned more than 15 years old commercial/ transport vehicles , Autos & Taxis driven on conventional fuels as well as Diesel driven city buses. Through the enforcement teams the government has ensured effective applications of these rules and regulations take place . The Govt. of Delhi has provided fiscal incentives by way of sales tax exemption and interest subsidy on loans for purchase of new replacement vehicles. Ministry of Road Transport and Highways, Government of India has tightened the emission level of CO and introduced the measurement of HC emissions in petrol vehicles. In respect of Diesel vehicles, Oil temperature & RPM measurement has been included in the test procedure. In compliance with the Gazette notification all the pollution checking Centre’s have been directed to get their equipment upgraded/modified/replaced with the new 4-gas analyzer and wherever they have failed to do so their authorization has been cancelled.

HOW OUR PROJECT WILL CURB POLLUTION IN DELHI

As we all know cycles are smoke-free vehicles, using cycles for up to 5kms can reduce a great amount of pollution and traffic in Delhi. Our project focuses on “on demand availability” scheme making the user interested in using cycles. The procedures and rules that we follow in the project are very simple and user friendly which are capable of creating a cycling civilization in the society. Also we are providing free cycle for up to first 30 mins as an initiative to encourage people to use cycles more. As we are trying to make cycling as a culture in the city when more and more people will get involved in it ,It would benefit the environment to a large scale apart from improvements in health and lifestyle of the people. Also it would make cycling a safe transport. Presently the central government has announced the building of cycle tracks around different cities. Hence Our initiative is add on to the government's program and will provide an interface to a safe cycling. Also the Delhi government has implemented odd even rule which will restrict many people from using their cars on odd or even days. Hence our project will come to the rescue in such situations since people can readily use cycles to travel around. Hence our project is a supplement to the odd even scheme. Hence with government’s present schemes and our project policies, the project comes as an effect of reducing pollution. We further look to expand our project to reach out at every locality in Delhi, which will reduce the pollution to a large extent and make a Delhi a better and the cleaner place to live.









