

Impact of Growing City Traffic on Urban Environment of Patna M.C. Area

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Abstract :

Most of the Indian cities in the recent years have gone through a marked change in the nature of their urban transport and have witnessed an unprecedented growth in the volume of the vehicular traffic. Quite obviously, the ever increasing growth of city traffic has been causing an ever increasing pressure on the existing system of city transport on one hand; and has given rise to a series of problems related with the urban environment on the other. It has been found that the air pollution level has crossed the human endurance standard as specified by the WHO in most of our cities and in Patna as well. The findings of the Bihar State Pollution Control Board reveal the fact that in all of its sampling zones of Patna, the average noise level is higher than the WHO standard. The unchecked growth in the vehicular traffic added with the ill maintenance of transport modes and rampant violation of traffic rules is taken to be responsible for the environmental pollution in the urban centres. The study tries to establish a link between the vehicular growth with the degradation of urban environment of Patna and presents certain measurable variations at intercity level for the same.

Key words : Urban transport, vehicular traffic, environment degradation, pollution.

Context and Background : The urban centres of our country have been growing at a rapid rate : both in terms of their respective size as well as the urban population. Most of these cities and towns in the recent years have gone through a marked change in the nature of their urban transport and have witnessed an unprecedented increase in the volume of the vehicular traffic. Patna, the capital city of Bihar has been no exception in this particular regard. Quite obviously, the ever increasing

growth of city traffic has been causing an ever increasing pressure on the existing system of city transport on one hand; and has given rise to a series of problems on the other. One of the grey areas in this aspect undoubtedly has been a gradual but definite degradation of the urban environment in the Indian Cities and towns.

- Amid this existing Scenario the proposed study attempts
- (i) to co-relate the pattern of city transport and vehicular traffic existing the Patna M.C. Area with the present status of its urban environment;
 - (ii) to examine the role of traffic growth in environmental degradation of the study area at territorial/ intra-city level; and
 - (iii) to suggest certain remedial measures.

The methodology of the present study involves conceptual as well as the applied/ exploratory techniques of research. The study bases itself on secondary data drawn from relevant official records as well as primary data generated through field survey. For the purpose of generation of primary data, altogether 600 vehicle owners/ users (150 each from 4 circles of PMC Area) were personally interviewed on the basis of a structured questionnaire schedule.

The study area of the present research article is the Patna M.C., Area. Patna, the capital city of Bihar. It is the largest city of the state spreading over an area of 99.45 sq. km. The Patna Municipal Corporation Area has been divided into 72 wards, which have been further re-arranged into 4 Circles, namely- New Capital, Bankipur, Kankarbagh and Patna City respectively (District Gazette, 2007).

Pattern of the Vehicular Traffic

The vehicular population growth in the Patna M.C. Area has been quite high in the recent years. The number of registered vehicles at Patna swelled from 4,384 in 1931 to 294, 164 in 2001; an increase of 67 folds in a span of two decades (DTO, 2001). Incidentally this increase has been as much as 75 folds in the case of personalized mode of vehicles. As per the current records of District Transport Office, the number of registered vehicles in the city rose to as high as 516,000 (DTO, 2010). Every month around 7,000 vehicles are registered only at Patna itself. At the same time more than 50,000 driving licenses are issued every year (Choudhury, 2012). There has been a sharp spurt in the number of vehicles plying in the city, especially in the last three years. The data available with district transport office shows that 1.2 lakh commercial vehicles were registered in the last three years. Add to that the figure of private vehicles, and the total number increases astonishingly (Sinha, 2010).

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The roads of Patna present a distinct heterogeneity regarding the forms of vehicular traffic which range from slower modes like cycle rickshaws, 'thelas' and even bullock carts to zooming two-wheelers and most modern ranges of cars and other utility vehicles. The share of personalized modes of transport has been very high and public transport has been distinctively inadequate. The share of buses is negligible in Patna (only 01.4%) while two-wheelers and cars account for 80.1% of the total vehicle population (Ministry of Road Transport & Highways, 2010).

The trend in passenger vehicle ownership highlighted a gradual shift from slow modes to faster modes of city transport during the recent years. Moreover, the absence of adequate and proper public transport against the rising travel demand has caused more complications in the traffic system on the city roads. Due to high density of slow transport nodes as well as personalized faster vehicles on the roads on one hand, and the pedestrian traffic on the other; the vehicular movement on the city roads becomes disturbingly slow and disrupted. The existing road network of Patna is inadequate to cater to the ever increasing volume of vehicular traffic. In addition nearly all of the city roads and by-lanes have been highly encroached by unauthorized dwellings, parked vehicles, hawkers and roadside business. The inadequacy in city transport seriously affects the cities' economic growth by hindering the socio-economic activities of the people and when it is inefficient, it certainly influences the quality of life negatively (Adhikari, 2005).

Impact on Urban Environment :

Air pollution has doubled in the state capital in the last five years on account of a sharp rise in the number of vehicles in the city. It has been estimated that 60% of the urban air pollution has been caused by vehicular traffic flow (BSPCB, 2010-11). The increasing volume of heterogeneous traffic has outpaced the growth of road capacity in the city and introduced the perennial problems like congestion and pollution. (Chowdhury and Prasad, 2008).

Apart from concentration of vehicles in an urban centre like Patna, other reasons for increasing vehicular pollution are the types of engines used, age of vehicles, predominance of private vehicles especially cars and two wheelers (owing to unsatisfactory public transport systems), thereby causing higher idling emissions and congested traffic and poor road conditions. This leads to increased vehicle travel and fuel consumption. The problem is all the more aggravated due to adulteration of fuel and fuel products also due to the absence of mass rapid transport systems in the city. An increase in the number of high-rise buildings in

urban areas causes stagnation of the vehicular emissions to the ground level (Sood, 2012).

Vehicular exhaust, a by-product of fuel combustion contains potentially lethal chemical compounds such as carbon monoxide (CO), Oxides of nitrogen, Oxides of Sulphur and unburnt hydrocarbons. It has been found that the air pollution level has crossed the human endurance standard as specified by the WHO in most of our cities and in Patna as well. The BSPCB (Bihar State pollution Control Board) reports point out that the average SPM (Suspended Particulate Matter) values are distinctly higher than the standard set by WHO at all possible traffic junctions of Patna covered for air monitoring. It is alarming to know that the SPM levels at many of the traffic junctions in the city are found out to be more than double the safety limit set by WHO. To a considerable extent the growing fleet of vehicular traffic is responsible for this environmental menace. The owners and users of vehicles are unfortunately not much bothered to have regular pollution check ups and proper maintenance done for their respective vehicles. Sadly enough, the concerned authorities are not adequately alert regarding this particular matter either. The officials concerned have miserably failed to ensure enforcement of rules pertaining to curbing of vehicular pollution.

As per the reports furnished by the BSPCB, the presence of nitrogen oxide and RSPM (respirable suspended particulate matter)-tiny particles on which gravitational force does not act, making them easily reach the air packets in lungs-in air has doubled in last five years. During 1997-98, nitrogen oxide's presence in Patna was 32 mg/cubic mt which went up to 60.1 mg/cubic mt in 2009-10 in the highly polluted areas of the city. The level of RSPM went up from 70 mg/ cubic mt in 1997-98 to 121 mg/cubic mt in 2009-10 in less polluted areas. Consequently, health problems such as itching, redness of skin, mottling of teeth (appearance of white flecks or yellow / brown spots on the surface of teeth). yellowness of eyes, headache, respiratory tract irritation, cough and sore throat are on rise. Officials concerned have largely failed to enforce the requisite norms for pollution control certificates from designated testing centres at regular intervals, so that they do not pollute air beyond certain set level. A large number of vehicle owners, however, are not aware of this rule.

The findings of the BSPCS reveal the fact that in all of its sampling zones of Patna, the average noise level is higher than the WHO standard. The unchecked growth in the vehicular traffic added with the ill-maintenance of transport modes and rampant violation of traffic rules

is considered to be responsible for the environmental pollution in the urban centres. During peak hours on almost every roads and lanes of the city the unprecedented traffic congestions, idling vehicular emissions, constant blowing of homes and automobile high pitch noise make the matter worse. Neither the vehicle owners nor the concerned authorities are much bothered about adhering to the stipulated noise limits.

The result is that even at the sampling points located within the silence zones marked by the BSPCB, the average noise levels are found out to be distinctly higher than the normal. These points included the hospitals like PMCH (Patna Medical College and Hospital), IGIMS (Indira Gandhi Institute of Medical Science) and Holy Family Hospital; educational institutions like DAV School, BSEB Colony, Loyala High School, Patna Science College and A.N. College as well as the heritage sites like Patna High Court and Patna Museum campus (BSPCB, 2010-11). Quite understandably, the situation in the commercial zones of the city is all the more serious.

Environmental Degradation at Territorial Level

As far as the phenomenon of environmental degradation owing to unprecedented traffic growth in Patna is concerned, the largest share of respondents covered by the sample survey in every part of the city has agreed to it. However there have been certain territorial variations in the public opinion regarding the intensity of vehicular pollution. In Bankipur circle of PMC where one can find heavy concentration of commercial activities and vehicular traffic movement, more than 90% of respondents feel that the menace of vehicular pollution exists to its maximum. On the other hand, in Kankarbagh circle where still some respite is present from excessive congestion of vehicles, a little more than 60% of the respondents find serious vehicular pollution which 30% of them find it to some extent. In other parts of the city also about 80% of the respondents agree to have experienced vehicular emissions and consequent environmental degradation.

For the common mass and the vehicle users, the chief reasons behind the growing pollution on roads have been sharp growth in the number of vehicles, poor maintenance of vehicles, faulty traffic management and inadequate road network. In general the largest number of people under review has considered the unprecedented growth of vehicular population to be responsible for the growing menace of urban pollution in the city. In Kankarbagh area the poor maintenance of vehicles has emerged as the chief reason for pollution on roads; while quite understandably, in Patna City where the road network is marred by

narrow street patterns, heavy encroachment and dilapidation; nearly one third of people consider the inadequacy of roads to be the main reason behind the problem of pollution on roads.

Government Initiatives

There are many ways to prevent vehicular pollution. The Government of India has been instrumental in laying down norms to control vehicular emissions. Indian emission standards have been set for different categories of vehicles; and those are being Stringently followed in a number of big cities of our country. There have been several acts and rules laid down by the government to curb the vehicular emissions, in order to minimize the intensity of environmental degradation. According to the Moto Vehicle Act, 1989, the vehicles lacking PUC (Pollution Under Control) certificates are liable to be fined Rs. 1,000 each under Section 190(2). The cost of pollution check varies from Rs. 25 to Rs. 150 depending on the vehicle. At present there are 20 functional pollution control centres in the Patna M.C. Area to undertake tests and issue PUC certificate (BSPCB, 2012). But unfortunately, most of these are unable to function properly because very few vehicle owners turn up regularly for certification. It is a grave concern for environmentalists, government and for general public to accept the fact that more than half of the vehicle owners of Patna do not bother to get their vehicles checked for pollution levels.

To adhere to the stringent emission norms, it is imperative that both fuel specification and engine technologies go hand in hand. Fuel quality specifications have been laid down by the BIS (Bureau of Indian Standards) for gasoline and diesel run vehicles (CPCB, 2009). The Use of alternative fuels has been promoted in India both for energy security and emission reduction. The Indian auto Industry is working with the authorities to facilitate for introduction of the alternate fuels. India has also set-up a task force for preparing the Hydrogen road map. LPG has been introduced as an auto fuel and the oil industry has drawn up plans for setting up Auto LPG dispensing Stations in major cities (SIAM India, 2009).

Since 2005 the Government of Bihar has granted a license to Tarumitra, an environmentally oriented NGO run successfully by the Christian Missionaries to check vehicles and issue Pollution Under Control (PUC) certificates. A well- equipped vehicle (co-sponsored by Caritas, an international NGO) moves around the city of Patna to check the vehicles emitting pollutants with the active support of the Ministry of Transport. Students from the different schools learn to operate the

machines and help the Tarumitra team to organize the important work. To this date, the team has checked a total of 3500 vehicles for their pollution levels.

The Way Forward

The problem arising from the unprecedented growth of vehicular traffic has serious environmental consequences. Therefore there is an urgent need to adopt very effective preventive measures in order to check the vehicular emissions and minimizing the rate of pollution. The first and most important step towards emission control for the large in-use fleet of vehicles is the formulation of an I & M (inspection and maintenance) system. It is possible to reduce 30-40% pollution loads generated by vehicles through proper periodical inspections and maintenance of vehicles (CPCB, 2000). In India and especially in Bihar, the existing mechanism of I & M is inadequate and inefficient. Thus, there is a great need to establish effective periodic I & M programmes.

Some probable yet not so strictly adopted measures for vehicular pollution control could be exerting ban on commercial vehicles., which are more than 15 years old, ban on the registration of new auto-rickshaws with front engines; replacement of all pre 1990 auto-rickshaws and taxis with new vehicles, which use clean fuels; removal of 8 year old buses from the roads unless they use CNG or some other clean fuel; mandatory emission testing and issuing of PUC certificate for all vehicles at regular intervals; stringent checking of PUC certificates by the traffic controllers of duty; improving traffic management / flow of traffic on the roads, reducing emissions per vehicle kilometer traveled and enhancing urban mobility; involvement of NGOs and other corporate bodies for the process; and availability of improved and efficient public transport facilities. Most cities have improved the city bus services and a few have started developing metro networks. Patna is yet far behind to match their standard. Some of these measures are eagerly awaited by the residents of Patna at this moment of time.

Along with the government machinery and the concerned authorities; the common citizens, vehicle owners and the passenger traffic all have to come ahead with their respective shares of effort to ease the serious environmental consequences arising out of swelling growth of vehicular traffic. First and foremost the general public of Patna needs to behave and act like responsible and civilized citizens abiding by the existing laws and rules on one hand and showing adequate consideration for the others people on the other. Some effective yet very simple measures which every vehicle owner/user must adhere to

are : adopting and popularizing car-pooling System; using the public transport wherever and/ or whenever available; avoiding the congested roads and rush hours to the extent possible; regular cleaning of fuel / air /oil filters and silencers of their respective vehicles, maintaining recommended tyre pressure; reducing the temptation of unnecessary blowing horns; and encouraging and promoting plantation of trees/conservation of urban green. These sincere and honest efforts on the part of the common public would definitely prove to be effective and successful in minimizing the harm done to the urban environment.

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