

AVOIDING AN URBAN NIGHTMARE: TIME TO GET PLANNING RIGHT

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The dark side of Dhaka's urbanisation

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The number of registered motorised vehicles stands at 1,255,402 as of April 2018, an increase from 303,215 in 2003 (a fourfold increase in 15 years). More than 36 percent of all registered vehicles are in Dhaka (a total of 3,419,884 in Bangladesh) (BRTA 2012, 2018).

During this period the percentage of buses and minibuses has remained almost the same; private vehicles, particularly the number of cars and motorcycles, have almost tripled. Public transport such as buses and minibuses has grown at a very insignificant rate even though the demand for public transport services is increasing. Motorcycles and cars constitute around

But unfortunately, the implementation of the components of STP or RSTP does not reflect the intention to mitigate transport problems of the masses. Ignoring the needs of non-motorised travellers and pedestrians, recent policies at all levels of the decision-making processes have focused mostly on trying to lessen the travel time for the motorised elite of the city by putting preference on the construction of numerous grade-separated flyovers, overpasses and interchanges (e.g. Jatrabari-Gulistan flyover, Kuril interchange, Banani overpass, expressways, etc).

The rapid motorisation and heavy infrastructural development which

future for Dhaka too. Hence, for transportation equity and accessibility, not only is public transit necessary but so is MRT (e.g. subway, BRT, LRT etc) and we hope that the ongoing projects of MRT and BRT will help ease the present horrendous situation.

CHOKED TO DEATH BY AIR POLLUTION

Dhaka has been historically infamous for being heavily polluted. It was termed as the most polluted city when the presence of lead (Pb) in the air was reported to be higher than in the atmosphere of any other place in the world back in 1997. Pollution from traffic and brick kilns has been identified as two of the most significant factors by

and industries (especially brick kilns). The most important pollutants have been identified as carbon monoxide, sulfur dioxide, lead, nitrogen oxides, ozone, hydrocarbons, suspended particulate matter and last but not least, particulate matter with an aerodynamic diameter of less than or equal to 10µm (PM10 and PM2.5). Observations show that the concentration of sulfur dioxide, ozone, carbon monoxide and nitrogen oxides goes up in the dry season significantly. The same is true for PM2.5 and PM10.

The estimated PM emissions from different modes indicate that around 54 percent emission contribution is from buses/minibuses, followed by

hotel roundabout, Farmgate intersection and Moghbazar intersection. The calculation of nitrogen oxides indicated that buses and minibuses (diesel operated) and motor cars have a significant contribution of nitrogen oxides (30 percent), followed by heavy-duty vehicles (trucks and tankers) (28 percent). The situation has gotten much worse now after 20 years, as there have been no visible steps to improve the situation.

Researchers found that nitrogen oxide and sulfur oxide emissions from transportation systems in national pollution averaged 34 percent and 47 percent, respectively. In case of sulfur dioxide in Dhaka, the contribution mainly comes from high sulfur content in the diesel fuel. It was estimated that buses powered by diesel fuel contribute 58 percent sulfur dioxide emission followed by trucks and tankers at 34 percent.

At present, air pollution in metropolitan Dhaka has been increasing at a steady rate for more than three decades. Annual average increases of 6.5 percent in nitrogen oxides, 5.8 percent in hydrocarbons, 5.9 percent in carbon monoxide, 5.6% in PM and 6 percent in sulfur oxide emissions were observed from 1981 to 1996. These rates have certainly not gone down, as the number of motorised vehicles is rapidly increasing, which results in chronic congestion almost at every intersection, resulting in more and more emissions.

It is proven that the impact of policy decisions (e.g. banning of two-stroke engines and leaded gasoline, introduction of CNG, etc.) can have far-reaching effects in a positive way. The ever-increasing amount of PM2.5 and PM10 is getting out of hand, and making the city one of the most polluted in the world. If we do not take proper effective measures to mitigate the problem now, we will face grave consequences.

Dhaka is probably one of the very few megacities in the world without any properly planned design or guideline for expansion of the mass transit system. There are few others like us such as Lagos, Karachi and Kinshasa, but none of them has a population density of about 50,000 people per square kilometre. According to some projections, approximately 24 million and 35 million people will reside in Dhaka by 2030 and 2050 respectively. So, if Dhaka is to survive the juggernaut called "development" and "urbanisation", it must have a proper plan not only to provide guidelines on paper but also for implementation in reality—and there is little scope for mistakes.

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Buses and minibuses (diesel-operated) and motor cars have a significant contribution of nitrogen oxides to the air. Air quality in Dhaka has reached a terrible condition and there have been no visible steps to improve the situation.

PHOTO: AMRAN HOSSAIN

54 percent and 26 percent of total motorised vehicles respectively.

To improve the current situation and reorganise the existing traffic system methodically, the government prepared the Strategic Transport Plan (STP) for Dhaka (2005) which has been recently revised (it has now become Revised Strategic Transport Plan, RSTP since 2015). It recommended a package of comprehensive programmes for the development of transport infrastructure over a 20-year period. This strategy includes various types of development agendas, such as three Bus Rapid Transit (BRT) and Mass Rapid Transit (MRT) (Metrorail) routes, more than 50 highway projects, expressways, flyovers, etc.

promote cars come with the depletion of transportation equity in a city. For example, from an environmental and equity perspective, major concerns exist regarding the unwanted increase of motorised two-wheelers. Some have even characterised the motorcycle as likely the "most challenging" transport problem that Asia will face in the next decade. The rise of private transport and current prevalence of NMT (Non Motorised Traffic, mostly rickshaws) are not a sustainable solution although they may help to increase mobility in the short term. Already authorities tried to and have been successful in banning NMT from some parts of the city. So, like other developing cities around the world, NMT will be restricted in near

studies. In the late 1990s and early 2000s, in order to improve the severe situation, the authorities took some important decisions (e.g. banning two-stroke engines, introducing Compressed Natural Gas (CNG), etc). But other than numerous sporadic studies and projects, there has been little systematic research or successful project implementation on air pollution in the city. Unless the situation becomes extremely hazardous or almost uninhabitable, what the authorities usually do is adopt the "do nothing" approach.

The main culprits for air pollution are large numbers of high-polluting vehicles, impure fuel, inefficient land use, overall poor traffic management,

trucks and tankers (26 percent). The black spot areas for PM were located in the intercity routes and the major bus terminals. The bus terminals (Gabtoli and Sayedabad) showed average estimated values above 110 µg/m³ of PM. Locations with highest concentrations of PM are Sheraton, Farmgate, Sonargaon, Mohakhali-Gulshan intersection and Banglamotor.

When a team of researchers performed field studies in the 90s, to measure ambient NO₂ concentration in 51 street locations, one residential area and four personal exposures, 35 of them were identified as black spots. Most polluted locations of nitrogen oxides were Sayedabad bus stand, Sheraton hotel roundabout, Sonargaon

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