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REVIEW ARTICLE

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A Study on the Role of National Highways Authority of India

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INTRODUCTION

The National Highways Authority of India (NHAI) is the authority responsible for the development, maintenance and management of National Highways entrusted to it. The NHAI is undertaking the developmental activities under National Highways Development Project (NHDP) in 5 phases. The NHAI is also responsible for implementing other projects on National Highways, primarily road connectivity to major ports in India.

As of June 2012, under Phase I, II, III and V of India's national effort has already finished and put in use about 18,000 kilometres of 4/6 lane highways. The country is in process of building an additional 33,441 kilometres of 4 to 6 lanes, international quality highways throughout India. Of this target, about 13,700 kilometres of modern highways were under implementation in June 2012, and about 18,000 kilometres of highways have been identified for contract award.[6] India road building rate has accelerated in recent years and averaged about 11 kilometers per day in second half of 2011. The country targets to build 600 kilometers of modern roads every month through 2014.

National Highway classification

Lanes	Length (km)	Percentage
Single Lane / Intermediate lane	18,350	26%
Double lane	36031	51%
Four Lane/Six lane/Eight Lane	16,553	23%
Total	70,934	100%

State Highways

NH7 – section of NSEW Corridor highway in South India

Bandra Worli Sea Link, Mumbai Maharashtra

A state road in Andhra Pradesh

A busy street in Kolkata

ROLE OF NHAI

Indian democracy is a federal form of government. Power to enact and implement laws, such as those relating to infrastructure, are distributed between the central government and the state governments. State Governments, thus have the authority and responsibility to build road networks and state highways. Independent of the national highways and NHDP program described above, several state governments have been implementing a number of state highway projects since 2000. By 2010, state highway projects worth $1.7 billion had been completed, and an additional $11.4 billion worth of projects were under implementation.

The State Highways provide linkages with the National Highways, district headquarters, important towns, tourist centres and minor ports and carry the traffic along major centers within the state. These arterial routes provides connectivity to important towns and cities within the state with National Highways or State Highways of the neighboring states. Their total length is about 137,712 km.

The Ministry of State for Surface Transport in India administers the national highway system, and state highways and other state roads are maintained by state public works departments. The central and state governments share responsibilities for road building and maintaining Indian roads.

The main roads in India are under huge pressure and in great need of modernization in order to handle the increased requirements of the Indian economy. In addition to maintenance, the expansion of the network and widening of existing roads is becoming increasingly important. This would then enable the roads to handle increased traffic, and also allow for a corresponding increase in the average movement speed on India's roads.

In 2009, lane capacity was low and only about 16% of India's roads were four lanes or above. A 2007 study found that the congestion on India's highways reduced average truck and bus speeds to 30–40 km/h (19–25 mph); road maintenance was under-funded, and some 40 percent of villages in India lacked access to all-weather roads. While the PMGSY rural road program mentioned above has, by 2011, connected 90 percent of villages identified in 2005 as without access, many remote villages in India were still without access to a single lane, paved road as of May 2011.

The World Health Organization compilation of road network safety data for major economies found India to have the highest number of road fatalities in the World, with 105,000 road-accident caused deaths in 2006. However, adjusted for India's larger population, the accident and fatalities rates are similar to major economies. Over 2004–2007, India had a road fatality rate of 132 deaths per million citizens, compared to 131 deaths per million citizens in the United States. Non-fatal accident rates reported on Indian roads was 429 accidents per million citizens, compared to 412 accidents per million citizens in China, and 1101 accidents per million citizens in the United States. The report notes that not all accidents in India and China are reported and recorded.

The low road densities per 1000 people has created significant congestion and slow speeds on existing roads inside cities. Because of the congestion, the fuel efficiency of the vehicles in India is very low. This increases the overall fuel consumption per equivalent kilometer travelled, besides resulting in heavy pollution since the engines run very inefficiently at such low speeds. Pollutants from poor road network and resultant poor fuel efficiencies include hydrocarbons, NOx, SOx, methane, carbon monoxide and carbon dioxide – all of which cause health problems, adverse climate effects and related environmental damage.

Due to rising prices of petroleum, a non-renewable resource, some have urged the Indian government to focus instead on improving public transport like the Indian Railways and rapid transit systems. Many cities have proposed, or are implementing metros and mass transit systems.

India's recent efforts to build modern highways and improve its road network has made a significant difference in trucking logistics. According to DHL, a global logistics company, the average time to truck shipments from New Delhi to Bengaluru (Bangalore), a 2000+ kilometre journey, had dropped in 2008, to about five days. By 2010, the average time to complete a road trip from New Delhi to Mumbai, a 1400+ kilometer journey, had dropped to about 35 hours. In contrast, a similar journey takes about half the time in China, and one third in European Union countries.

In a 2010 report, KPMG – one of the world's largest audit and advisory services company – noted marked improvements in Indian road network and logistics efficiencies in recent years.[45] The report also

identified the competitive challenges faced by India. Some findings of this report include:

- The average road speed in India has increased to 30–40 kilometers per hour. The worldwide average road speed, which includes China, ranges between 60–80 kilometers per hour.

- Four lane road network in India has increased to 7,000 kilometers. China, in comparison, has 34,000 kilometers of equivalent quality four lane roads.

- Average surface freight costs have dropped to US$0.07 per kilometer. Japan, in comparison, has average surface freight costs of US$0.037 per kilometer.

The evaluation of the impact of mobility on air pollution is a multi-criteria task. Indeed, speaking of a "*sustainable mobility*", a compromise should be made between simultaneous achievement of several goals. These goals include: providing sufficient transport services and accessibility to match the mobility demand in the urban area, reasonable travel time from origin to destination, travelling comfort and safety for both - those in a vehicle, and those on the road, and last but not least, acceptable emissions level from road transport. The last two issues (safety and emissions) are linked directly when we speak about damage to human health, which is the case of local emissions causing immediate impact on people in urban areas.

Restoring mobility by only decreasing the road traffic congestion, that is, trying to suppress the traffic bottlenecks, increasing the capacity of the main road networks, creating new parking lots or implementing sophisticated techniques of traffic management, is no longer a realistic strategy in the long term. These are the answers that have been applied for years with only one objective: increase the flow and fluidity of automobile traffic. They are responsible for their own inefficiency because any possibility of an increase in mobility is used by residential and economic players to increase even further their demand of automobile travel.

Experience has shown that in any city where measures were taken to increase the fluidity of traffic, the initial problems reappear some years later in an even more acute form. Indeed, in cities where road networks are very congested this approach only results in a slight shift of the thresholds and a slight postponement of the critical point. It enables a management of the situation in the short term, but does not modify the fundamental causes of the problem. In any case, it does not contribute to creating the new conditions required for a sustainable development of cities. In the case of Brussels, it would be particularly harmful as it would favour the centrifugal powers that would empty it of its substance because of the Region's small area (*Duchâteau, 2008*).

As a possible way to find solutions to this problem, an integrated approach to modeling urban development, mobility and its environmental impacts is proposed and discussed within recent paper. As a first step in its implementation, we have designed a mobility model that allows spatial assessment of the road traffic contribution to air pollutant emissions on a network flow model.

In particular, the comparison of two scenarios for the year 2005 have been demonstrated, based on statistical trends, and major considerations for possible actions in the future in order to increase accessibility in the city, reduce demand for mobility and favour modal shift from private cars to public transport. The general modeling results approve that these policies also lead to abatement of air pollution. However, it is important to realise, that implementation of such scenarios would require, above all, serious behavioral changes in mobility patterns and modal choice. Stimulation of the use of LPG-driven vehicles is also seen by authors as a possible way to reduction of emissions.

Further development of the described system of models and of methods used for environmental impact assessment is recently underway within ongoing continuation of this study at the CEESE-ULB in co-operation with the Brussels-Capital region administration.

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