

Review of Urban Transportation in India

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Abstract

Cities play a vital role in promoting economic growth and prosperity. The development of cities largely depends upon their physical, social, and institutional infrastructure. In this context, the importance of intraurban transportation is paramount. This article provides an overview of urban transport issues in India. Rather than covering every aspect of urban transportation, it primarily focuses on those areas that are important from a policy point of view. The article first reviews the trends of vehicular growth and availability of transport infrastructure in Indian cities. This is followed by a discussion on the nature and magnitude of urban transport problems such as congestion, pollution, and road accidents. Building on this background, the article proposes policy measures to improve urban transportation in India.

Indian cities cannot afford to cater only to private cars and two-wheelers and there has to be a general recognition that policy should be designed in such a way that it reduces the need to travel by personalized modes and boosts public transport system. This requires both an increase in quantity as well as quality of public transport and effective use of demand as well as supply-side management measures. At the same time, people should be encouraged to walk and cycle and government should support investments that make cycling and walking safer.

Introduction

The establishment of State Transport Undertakings (STUs)¹ in India in the 1960s and 1970s did an enormous service in linking towns and villages across the country, particularly in the western and southern parts. Even though the service may leave much to be desired in terms of quality, the importance of STUs lies in the fact that, unlike in most other developing countries, one can connect to almost every village in India. Urban areas in India, which include a wide range of megacities, cities, and towns, are not all that fortunate in terms of intracity transportation. Transport in this context has been a victim of ignorance, neglect, and confusion. As far as the public transport system in Indian cities is concerned, dedicated city bus services are known to operate in 17 cities only and rail transit exists only in 4 out of 35 cities with population in excess of one million.

Transport demand in most Indian cities has increased substantially, due to increases in population as a result of both natural increase and migration from rural areas and smaller towns.² Availability of motorized transport, increases in household income, and increases in commercial and industrial activities have further added to transport demand. In many cases, demand has outstripped road capacity. Greater congestion and delays are widespread in Indian cities and indicate the seriousness of transport problems. A high level of pollution is another undesirable feature of overloaded streets. The transport crisis also takes a human toll. Statistics indicate that traffic accidents are a primary cause of accidental deaths in Indian cities. The main reasons for these problems are the prevailing imbalance in modal split, inadequate transport infrastructure, and its suboptimal use. Public transport systems have not been able to keep pace with the rapid and substantial increases in demand over the past few decades. Bus services in particular have deteriorated, and their relative output has been further reduced as passengers have turned to personalized modes and intermediate public transport.

Individual cities cannot afford to cater only to private cars and two-wheelers. There must be a general recognition that without public transport cities would be even less viable. There is a need to encourage public transport instead of personal vehicles. This requires both an increase in quantity as well as quality of public transport and effective use of demand as well as supply-side management measures. People should also be encouraged to use nonmotorized transport and investments may be made to make it safer. Cities are the major contributors to economic growth, and movement in and between cities is crucial for improved quality of life.³

Vehicular Growth and Modal Split

In 2002, 58.8 million vehicles were plying on Indian roads (Table 1). According to statistics provided by the Ministry of Road Transport & Highways, Government of India, the annual rate of growth of motor vehicle population in India has been about 10 percent during the last decade. The basic problem is not the number of vehicles in the country but their concentration in a few selected cities, particularly in metropolitan cities (million plus). It is alarming to note that 32 percent of these vehicles are plying in metropolitan cities alone, which constitute about 11 percent of the total population. During the year 2000, more than 6.2 million vehicles were plying in megacities (Mumbai, Delhi, Kolkata, and Chennai) alone, which constitute more than 12.7 percent of all motor vehicles in the country (Table 2). Interestingly, Delhi, which contains 1.4 percent of the Indian population, accounts for nearly 7 percent of all motor vehicles in India.

Table 1. Total Number of Registered Motor Vehicles in India: 1951–2002 (in Thousands)

Year	All Vehicles	Two-Wheelers	Cars, Jeeps, and Taxis	Buses	Goods Vehicles	Others
1951	306	27	159	34	82	4
1961	665	88	310	57	168	42
1971	1865	576	682	94	343	170
1981	5391	2618	1160	162	554	897
1991	21374	14200	2954	331	1356	2533
1999	44875	31328	5556	540	2554	4897
2000	48857	34118	6143	562	2715	5319
2001 (P)	54991	38556	7058	634	2948	5795
2002 (P)	58863	41478	7571	669	3045	6100

Source: Transport Research Wing, Ministry of Road Transport & Highways, Government of India, New Delhi. Motor Transport Statistics of India. Various issues.

Note: P indicates provisional; Others include tractors, trailers, three-wheelers (passenger vehicles), and other miscellaneous vehicles that are not separately classified.

Table 2. Total Number of Registered Motor Vehicles in Selected Metropolitan Cities in India: 1995–2000 (Year as of March 31 and Number of Vehicles in Thousands)

Metropolitan Cities	1995	1996	1997	1998	1999	2000
Ahmedabad	510	572	631	686	739	799
Bangalore	796	900	972	1130	1332	1550
Chennai	768	812	890	975	1056	1150
Delhi	2432	2630	2848	3033	3277	3423
Hyderabad	557	764	769	887	951	N.A.
Jaipur	368	405	449	492	542	598
Kolkata	561	588	588	664	N.A.	N.A.
Mumbai	667	724	797	860	911	970
Nagpur	198	213	239	270	298	331
Pune	358	412	468	527	568	593

Source: Transport Research Wing, Ministry of Road Transport & Highways, Government of India, New Delhi. *Motor Transport Statistics of India*. Various issues.

Note: N.A. indicates unavailability of data.

Traffic composition in India is of a mixed nature. A wide variety of about a dozen types of both slow- and fast-moving vehicles exists. Two-wheelers⁴ and cars (including jeeps) account for more than 80 percent of the vehicle population in most large cities. Analysis of data presented in Table 3 reveals that, during the year 2000, personalized vehicle population share was more than 90 percent of the total vehicle population in 6 out of 13 sample cities. The share of buses is negligible in most Indian cities as compared to personalized vehicles. For example, two-wheelers and cars together constitute more than 95 percent in Kanpur and 90 percent in both Hyderabad and Nagpur, whereas in these cities buses constitute 0.1, 0.3, and 0.8 percent, respectively.

Table 3. Private and Public Transport Vehicles in Selected Metropolitan Cities in India (as of March 31, 2000)

Metropolitan Cities	Two-wheelers	Cars (including jeeps)	Taxis (including auto-rickshaws)	Buses	Others	Total
Ahmedabad	616738	104179	43865	14993	19316	799091
Bangalore	1164204	238374	77375	6380	63362	1549695
Chennai	848118	207860	45016	4409	44223	1149626
Delhi	2184581	869820	104747	37733	226593	3423474
Hyderabad	757684	99314	48898	2539	42189	950624
Jaipur	444889	76133	12513	14362	49760	597657
Kanpur	273208	323212	5252	882	23556	626110
Kolkata	298959	238560	41946	8586	75995	664046
Lucknow	344268	53069	15454	2816	26779	442386
Mumbai	407306	325473	156261	15414	65226	969680
Nagpur	272734	27573	10666	2788	17478	331239
Patna	184585	40357	16302	3785	30989	276018
Pune	443266	62885	44590	7827	34046	592614

Source: Transport Research Wing, Ministry of Road Transport & Highways, Government of India, New Delhi. *Motor Transport Statistics of India*. Various issues.

Note: Others include goods vehicles, tractors, trailers, and other miscellaneous vehicles that are not separately classified; figures for Hyderabad and Kolkata are for 1999 and 1998, respectively.

Table 4 presents the existing modal split in terms of percentage of trips made on different modes across Indian cities. When compared with the desirable level of modal split (Table 5), it was found that the share of mass transport is well below the desired range, whereas the share of personalized transport and paratransit is already above the optimal range in most Indian cities. Unfortunately, the modal split does not appear to be moving in the right direction. For example, share of mass transit in Delhi has stayed at the same level for the last two decades (Table 6).

Table 4. Existing Modal Split in Indian Cities (as a % of Total Trips)

City Population (in millions)	Walk	Mass Transport	IPT		Car	Two- wheeler	Bicycle	Total
			Fast	Slow				
0.10–0.25	37.1	16.4	10.4	20.1	3.3	24.1	25.7	100.0
0.25–0.50	37.8	20.6	8.9	17.2	2.6	29.8	20.9	100.0
0.50–1.0	30.7	25.4	8.2	12.0	9.5	29.1	15.9	100.0
1.0–2.0	29.6	30.6	6.4	8.1	3.3	39.6	12.1	100.0
2.0–5.0	28.7	42.3	4.9	3.0	5.0	28.9	15.9	100.0
5.0+	28.4	62.8	3.3	3.7	6.1	14.8	9.4	100.0

Source: Ministry of Urban Development, Government of India, New Delhi. 1998. *Traffic and Transportation Policies and Strategies in Urban Areas in India*. Final Report.

Note: IPT denotes intermediate public transport vehicles such as taxis and three-wheeler auto-rickshaws.

Table 5. Desirable Modal Split for Indian Cities (as a % of Total Trips)

City Population (in millions)	Mass Transport	Bicycle	Other Modes
0.1–0.5	30–40	30–40	25–35
0.5–1.0	40–50	25–35	20–30
1.0–2.0	50–60	20–30	15–25
2.0–5.0	60–70	15–25	10–20
5.0+	70–85	15–20	10–15

Source: Ministry of Urban Development, Government of India, New Delhi. 1998. *Traffic and Transportation Policies and Strategies in Urban Areas in India*. Final Report.

Table 6. Modal Split Trend in Delhi

Mode	Modal Split (in percent)			
	1969	1981	1986	1994
Bus	41	62	62	62.0
Car	59	38	38	6.9
Two-wheeler				17.6
Bicycle				6.6
Cycle rickshaw				3.5
Others				3.4

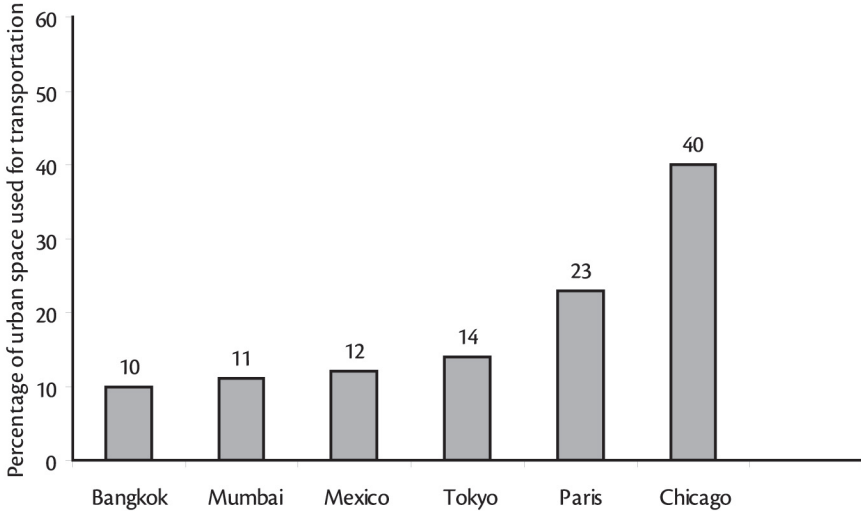
Source: Singal 2000.

Transport Infrastructure in Indian Cities

The area occupied by roads and streets in Class I cities (population more than 100,000) in India is only 16.1 percent of the total developed area, while the corresponding figure for the United States is 28.19 percent. Interestingly, even in Mumbai, the commercial capital of India, the percentage of space used for transportation is far less when viewed in comparison to its counterparts in the developed world (Figure 1). In general, the road space in Indian cities is grossly insufficient. To make the situation worse, most of the major roads and junctions in Indian cities are heavily encroached by parked vehicles, roadside hawkers, and pavement dwellers. As a consequence of these factors, the already deficient space for movement of vehicles is further reduced.

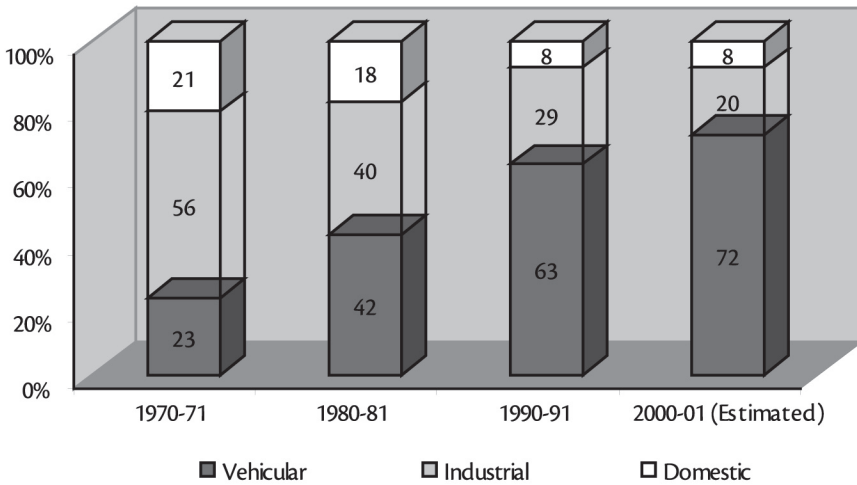
The present urban rail services in India are extremely limited. Only four cities (Mumbai, Delhi, Kolkata, and Chennai) are served by suburban rail systems. Rail services in these four main cities together carry more than 7 million trips per day. The Mumbai Suburban Rail System alone carries about 5.5 million trips per day. A few other cities also have limited suburban rail systems but they hardly meet the large transport demand existing in these cities.

Figure 1. Allocation of Urban Space for Transportation in City Centers



Source: Amsler 1996.

Figure 2. Air Pollution in Delhi by Sources



Source: Planning Department, Government of NCT of Delhi, March 2000.

A few metropolitan cities are served by well-organized bus services. Services are mostly run by publicly owned State Transport Undertakings (STUs). Private bus services operate mainly in Delhi and Kolkata. All passenger buses use the standard truck engine and chassis; hence, they are not economical for city use. There are virtually no buses in India specifically designed for urban conditions. Qualitatively, available urban mass transport services are overcrowded, unreliable, and involve long waiting periods. Overcrowding in the public transport system is more pronounced in large cities where buses, which are designed to carry 40 to 50 passengers generally, carry double the capacity during peak hours. As a result, there is a massive shift to personalized transport, especially two-wheelers, and proliferation of various types of intermediate public transport modes (three-wheeler auto-rickshaws and taxis).

Vehicular Emission, Congestion, and Road Safety Issues

The transport sector is the major contributor to air pollution in urban India. For example, 72 percent of air pollution in Delhi is caused by vehicular emission (Figure 2). According to studies by the Central Pollution Control Board (CPCB) of India, 76.2 percent of CO, 96.9 percent of hydrocarbons, and 48.6 percent of NO_x are caused by emissions from the transport sector in Delhi. The ambient air pollution in terms of Suspended Particulate Matter (SPM) in all metropolitan cities in India exceeds the limit set by the World Health Organization (WHO) (Sharma and Mishra 1998). For example, in Kolkata, the average annual emission of SPM is 394 microgrammes per cubic meter, while the WHO standard is 75. With deteriorating levels of mass transport services and increasing use of personalized modes, vehicular emission has reached an alarming level in most Indian cities.

Indian cities also face severe traffic congestion. Growing traffic and limited road space have reduced peak-hour speeds to 5 to 10 kms per hour in the central areas of many major cities. This also leads to higher levels of vehicular emission. According to the Centre for Science and Environment (CSE), the quantity of all three major air pollutants (namely, CO, hydrocarbons, and nitrogen oxides) drastically increases with reduction in motor vehicle speeds. For example, at a speed of 75 kmph, emission of CO is 6.4 gm/veh.-km, which increases by five times to 33.0 gm/veh.-km at a speed of 10 kmph. Similarly, emission of hydrocarbons, at the same speeds, increases by 4.8 times from 0.93 to 4.47 gm/veh.-km. Thus, prevalent traffic congestion in Indian cities, particularly during peak hours, not only increases the delay but also increases the pollution level.

India is also facing serious road accident problems. According to the Ministry of Road Transport & Highways, during 2001, nearly 80,000 people were killed in road accidents. In the last decade, road accidental deaths increased at a rate of 5 percent per year. Although annual rate of growth in road accidental deaths in Indian cities is a little less than 5 percent, these areas face serious road safety problems. For example, four Indian megacities constitute 5.4 percent of all road accident-related fatalities, whereas only 4.4 percent of India’s population lives in these areas. Table 7 presents road accidental casualties in selected metropolitan cities in India. In 1997, the latest year with available statistics, the number of accidents in 10 metropolitan cities was 74,073 with 6,293 fatalities. In the same year, the Delhi metropolitan region, where motor vehicle ownership reached 2.8 million, recorded nearly 11,000 traffic accidents, 21 percent of which were fatal. Analysis of data from a selected sample of cities shows that from 1990 to 1997, the number of fatalities is increasing at the rate of 4.1 percent per year—which is quite high by any standard. The accident severity index (number of fatalities per 100 accidents) was also found to be very high for all cities other than Ahmedabad, Bangalore, Kolkata, and Mumbai.

Table 7. Road Accidental Casualties in Selected Metropolitan Cities in India

Metropolitan Cities	1990			1997		
	Fatalities	Accidents	ASI	Fatalities	Accidents	ASI
Ahmedabad	195	2873	7	239	3229	7
Bangalore	562	6729	8	704	8722	8
Chennai	507	5877	9	749	5171	14
Delhi	1670	7697	22	2342	10957	21
Hyderabad	276	1412	20	377	2108	18
Jaipur	235	1062	22	303	2022	15
Kolkata	463	10911	4	471	10260	5
Mumbai	400	25331	2	401	27421	1
Nagpur	166	1139	15	387	1496	26
Pune	275	1387	20	320	2687	12

Source: Road Safety Cell, State Transport Authority, Cuttack, Orissa, India, March 2003. *Compendium on Road Accidents–2003.*

Note: ASI = accident severity index (defined as number of fatalities per 100 accidents).

Table 8 presents pedestrian and bicycle fatalities as a percentage of total road accident fatalities in selected countries and cities. This table clearly shows that pedestrians and bicyclists constitute a larger proportion of road crash victims in India than in any other sample countries. Because there is little provision of transport facilities to separate the motor vehicle traffic from cycle rickshaws, bicycles, and pedestrians, nonmotorized transport vehicles and pedestrians face a higher risk of traffic accidents in Indian cities. The urban poor, who are more likely to travel either on foot or by nonmotorized transport modes than the nonpoor, face higher traffic accident risks. A serious attempt must be made to either make public transport available to them through targeted subsidization or to make the road safer to cycle and walk.

Table 8. Pedestrian and Bicycle Fatalities as a Percentage of Total Road Accident Fatalities

City/Country	Pedestrian	Bicycle
Delhi, India (1994)	42	14
Bandung, Indonesia (1990)	33	7
Colombo, Sri Lanka (1991)	38	8
China (1994)	27	23
Australia (1990)	18	4
U.S.A. (1995)	13	2

Source: Mohan 2002.

Policy Measures to Improve Urban Transportation in India

Focusing on Bus Transport

Passenger mobility in urban India relies heavily on its roads. Although rail-based transport services are available in a few megacities, they hardly play any role in meeting the transport demand in other million plus cities. Considering the financial health of various levels of governments (central, state, and local) and the investment required to improve the rail-based mass transport system, it is evident that bus transport will have to play a major role in providing passenger transport services in Indian cities in the future. It is amply clear that among the various modes of road based passenger transport, bus occupies less road space and causes

less pollution per passenger-km than personalized modes (Table 9). Therefore, urban transport plans should emphasize bus transport.

Table 9. Pollution Rate and Congestion Effect of Private and Public Transport Vehicles

Type of Vehicle	Average Passenger per Vehicle	Pollution Load in gm/pass.-km	Congestion Effect in in PCU/Pass.
Two-stroke two-wheeler petrol engine	2	7.13	0.375
Four-stroke two-wheeler petrol engine	2	4.76	0.375
Car with catalytic converter petrol engine	4	0.93	0.25
Bus with diesel engine	40	1.00	0.075

Source: Agarwal 2001.

Note: PCU = Passenger Car Unit where 1 car = 1 PCU, 1 bus = 2.5 PCU, 1 scooter = 0.75 PCU, etc.

There is need for a great variety of bus transport services in Indian cities. Given the opportunity, people reveal widely divergent transport preferences, but in many places city authorities favor a basic standard of bus services. It is often thought to be inequalitarian to provide special services, such as guaranteed seats or express buses, in return for higher fares. In other words, variety is usually curbed. Government regulation and control have exacerbated the poor operational and financial performance of publicly owned urban transport undertakings, which are the main providers of bus transport services in Indian cities. As cost of operation rises, transport systems come under financial pressure to raise fares, but politicians are under pressure to keep fares at existing levels. Unless the system is subsidized, it has to eliminate some of its less profitable or loss-making services. In a democracy, politicians are bound to yield to pressures from those whose services are threatened and to insist on maintaining money-losing operations. Due to this, transport undertakings find it difficult to raise their revenue sufficiently enough to meet the cost of operation.⁵ In addition, they have to provide concessional travel facilities to various groups, such as freedom fighters, journalists, students, besides paying a high level of different kinds of taxes.⁶ It is becoming increasingly difficult for loss-making urban transport undertakings to augment and manage their fleet,

which in turn leads to poor operational performance and deterioration in quality of services.

With few exceptions, publicly owned urban transport undertakings in India operate at higher unit costs than comparable transport operations controlled by the private sector. Kolkata provides an opportunity to make a direct comparison between privately owned and publicly owned bus systems. Public buses are operated by the Calcutta State Transport Corporation (CSTC), with a fleet size of more than 1,250 buses and staffing ratio per operational bus of 11. CSTC has also been plagued by fare evasion estimated at more than 15 percent of revenue. As a result of low productivity and fare evasion, the system requires a huge subsidy since revenues cover less than half of the costs.⁷ On the other hand, there are 1,800 private buses in the city. These buses are operated mainly by small companies or individual owners grouped into a number of route associations. Fares for private and public bus services are the same. Despite the similarity in fare rates, private operators have been able to survive financially without any subsidy. Their success is attributed to high levels of productivity, which are reflected in low staffing ratios and high fleet availability. Private bus operators in Kolkata, who hold almost two-thirds of the market, play a major role in meeting the demand and thus substantially reduce the financial burden on the state government. Furthermore, publicly owned urban transport undertakings often lack the flexibility of organization, the ability to hire and fire staff, or the financial discretion needed to adapt to changing conditions. In such circumstances, a policy that encourages private participation in the provision of bus transport services should be welcomed. There is an urgent need for restructuring of the public transport system in Indian cities to enhance both quantity as well as quality of services.

Enhancing Transport Coordination

There is an urgent need for a transportation system that is seamlessly integrated across all modes. The various modes of public transport, including intermediate public transport, have to work in tandem. They should complement rather than involve themselves in cutthroat competition. Presently, different agencies, independent of each other, are operating different services in Indian cities. For example, in Delhi, metro rail is operated by Delhi Metro Rail Corporation Ltd, suburban rail service by Northern Railway, bus transport service by Delhi Transport Corporation, and taxi and auto-rickshaw by private operators. There is a lack of coordination among these agencies. Since the ultimate objective is to provide an adequate and efficient transport system, there is a need to have a coordinating

authority with the assigned role of coordinating the operations of various modes. This coordinating authority may be appointed by the central or state government and may have representatives from various stakeholders such as private taxi operators, bus operators, railways, and state government. The key objective should be to attain the integration of different modes of transport to improve the efficiency of service delivery and comfort for commuters. At the same time, a single-ticket system, where commuters can buy a transport ticket that is valid throughout the public transport network within the coordinating authority's jurisdiction, should also be developed and promoted.

Restraining the Use of Polluting Vehicles and Fuels

Most of the two- and three-wheelers in India operate with two-stroke engines, which emit a high volume of unburnt particles due to the incomplete combustion. Similarly, many new diesel cars have come up in the market, primarily because diesel is priced far less than petrol in India. Government encourages this price differential mainly to help farmers and bus and truck operators. This price benefit is not meant to be available for personal cars. Although diesel cars emit less greenhouse gases, there are serious concerns about the public health effects of their particulate matter (PM) emissions in densely populated metropolitan cities.

Government should use market-based instruments to promote cleaner technology and fuel. For example, a relatively high annual motor vehicle tax, which may be increasing with the age of vehicle, can be imposed on two-stroke two-wheelers and all vehicles that are more than 10 years old. Similarly, cars that use diesel could be discouraged in million-plus cities by levying tax on diesel in those cities. Congestion pricing, parking fees, fuel taxes, and other measures could be used to restrain the use of all personalized modes. Emphasis should be on the use of market-based instruments as opposed to a command-and-control regime.

Demand-Side Management Measures

In general, Indian cities have not made much progress in implementing demand-side management measures, such as congestion pricing and parking fees. Although policy measures that involve restraining the use of private cars and two-wheelers are likely to be unpopular, a gradualist approach of progressively introducing restraints on road use, while at the same time improving public transport, is more likely to lead to greater acceptance. Improved public transport and more efficient management of demand would help to combat the trend away from public transport vehicles and toward greater use of personalized modes.

Supply-Side Management Measures

Supply-side measures, such as one-way traffic, improvement of signals, traffic engineering improvements for road network and intersections, and bus priority lanes, should be introduced in all cities, especially in metropolitan cities, so that existing road capacity and road-user safety are increased. These may be considered short-term measures. Road infrastructure improvement measures, like new road alignments, hierarchy of roads, provision of service roads (e.g., bypasses, ring roads, bus bays, wide medians, intersection improvements, construction and repair of footpaths and roads, removal of encroachments, and good surface drainage) should also be introduced in million-plus cities. These can be considered medium-term measures. Besides short- and medium-term measures, there is a need to have long-term measures as well, involving technology upgrades and the introduction of high-speed, high-capacity public transport systems particularly along high-density traffic corridors.⁸

Encouraging “Green” Modes

An urban transport strategy should also encourage the need for developing “green” modes, such as bicycles, cycle rickshaws, and pedestrians. First of all, the safety concerns of cyclists and pedestrians have to be addressed adequately. For this purpose, there has to be a segregated right-of-way for bicycles and pedestrians. Apart from improving safety, this will help improve traffic flow, increase the average speed of traffic, and reduce emissions resulting from low speeds. To enable longer trip lengths on bicycles, bicycle technology should be improved. Lighter bicycles with gears and tubeless tires would be ideal for longer trips. The government can promote the development and commercialization of lighter, more efficient bicycles.

Need to Strengthen Urban Institutions

Most Indian cities have failed to address transportation problems effectively, mainly because they are not equipped with the appropriate institutional capacity and required financial resources. This is because functional responsibilities for urban transport are fragmented among central, state, and local level governments where no one entity is in charge of overall coordination. Management of urban areas is primarily a responsibility of the state governments in India. However, several key agencies play an important role in urban transport planning work under the central government, with no accountability to the state or local government. Central government is directly involved in the provision of suburban rail service through Indian Railways in four megacities. The Indian Ministry of Road Transport

& Highways is responsible for national highways, including the stretches within urban areas, and local governments have no role in the operation and management of these stretches though they are heavily used for urban transport.

State governments independently control local land-use policies, motor vehicle and sales tax rates, bus transport systems, and policies for private sector participation. Most of the local governments at the municipal level rely heavily on capital grants from the states for almost all infrastructure projects. Although Urban Local Bodies (ULBs) have been empowered by the Constitution (74th Amendment) Act of 1992 to assume responsibilities for development of urban transport, most of them do not have adequate power to raise financial resources.⁹ Their revenue comprises mainly intergovernmental transfer from the state, property tax revenues, and octroi. The first two are the major sources of revenue for most ULBs. However, octroi is a major source of revenue for some of the ULBs in the state of Gujarat, Maharashtra, Orissa, Punjab, and Manipur. ULB revenues are barely sufficient for salaries and current expenditures, and most capital investments are funded through borrowing, often from the state Urban Infrastructure Development Corporations (UIDCs). Revenues from user charges imposed on publicly provided infrastructure services are minimal.

Although the 74th Amendment aimed to provide administrative and fiscal decentralization at the local government level, progress in this regard has been slow primarily because local governments are still dependent on higher levels of governments for funding. They do not have the power to raise additional tax revenue and are still dependent on intergovernmental transfer arrangements. Since most of the state governments in India are currently in fiscal difficulty, and some even in crisis, urban transport financing has been affected by state fiscal difficulties. In addition, local governments lack the capacity to generate their own revenues. As long as this situation continues, most cities will not be able to improve their transport infrastructure. There is a pressing need to empower the ULBs to raise funds for developmental projects in urban areas on their own, rather than being dependent on the states. Also, they should be authorized, through legislation, for overall coordination of activities relating to the provision of transport infrastructure by various government agencies in their respective urban areas.

Conclusions

Transport systems are among the various factors affecting the quality of life and safety in a city. The urban transport situation in large cities in India is deteriorating. The deterioration is more prevalent in metropolitan cities where there is an excessive concentration of vehicles. Commuters in these cities are faced with acute road congestion, rising air pollution, and a high level of accident risk. These problems cannot be solved without a concise and cogent urban transport strategy. The main objective of such a strategy should be to provide and promote sustainable high-quality links for people by improving the efficiency and effectiveness of the city's transport systems. Policy should be designed in such a way as to reduce the need to travel by personalized modes and boost the public transport system. At the same time, demand-side as well as supply-side management measures should effectively be used. People should be encouraged to walk and cycle and government should support investments that make cycling and walking safer. Finally, there is a need to empower the Urban Local Bodies to raise finances and coordinate the activities of various agencies involved in the provision of transport infrastructure in urban areas.

Endnotes

¹ Publicly owned STUs in India provide bus transport services in almost every state of the country. During the year 2000–01, they operated with about 115,000 buses. As bus transportation is a state subject in India, they are owned and operated by respective state governments.

² The urban population in India has increased significantly from 62 million in 1951 to 285 million in 2001 and is increasing at a rate of 3 percent per year from last two decades. Consequently, the number of metropolitan cities with a population exceeding one million has increased from 5 in 1951 to 35 in 2001.

³ The role of cities in the national economy has been growing in importance, as the share of urban areas in Gross Domestic Product (GDP) has grown from 50 percent in the early 1990s to 60 percent in 2000. Fast-growing cities in India have nurtured business and industry and have provided jobs and higher incomes. Thus, it is important that cities function efficiently.

⁴ Two-wheelers include motorcycles, scooters, and mopeds. They are usually petrol-driven vehicles and available in both two- as well as four-stroke engines. Although engine capacity of two-wheelers in India varies from 60 cc for mopeds

to 535 cc for motorcycles, most of them operate with an engine capacity of about 100 cc.

⁵ During the year 2001–02, publicly owned urban bus transport undertakings in India incurred an accumulated loss of about Rs. 5310 million which is equivalent to a loss of Rs. 4.25 per bus-km.

⁶ During the year 2001–02, on average, every bus operated by urban bus transport undertakings in India paid Rs. 53,000 in the form of motor vehicle tax, passenger tax, etc.

⁷ CSTC incurred a total cost of Rs. 1498 million whereas its total revenue was around Rs. 627 million during the year 2001–02.

⁸ Capital-intensive projects should be considered if and only if they are absolutely necessary. In many cases, instead of building underground railways or elevated highways, the government would have done better to have increased the capacity of existing bus services. Careful appraisal of capital-intensive projects should be performed before implementing them.

⁹ States are expected to devolve adequate powers, responsibilities, and finances upon the ULBs so as to enable them to prepare plans and implement schemes for the development of urban areas. However, responsibility for giving it a practical shape rests with the states. States are expected to act in consonance with the spirit of the act for establishing a strong and viable system of local self-government.

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