

Theme 1

Growth Prospect of Indian Economy during the 12th Plan and after

**Urbanisation and Urban Public Transport:
Towards Faster, Sustainable and More Inclusive Growth**

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1. Introduction

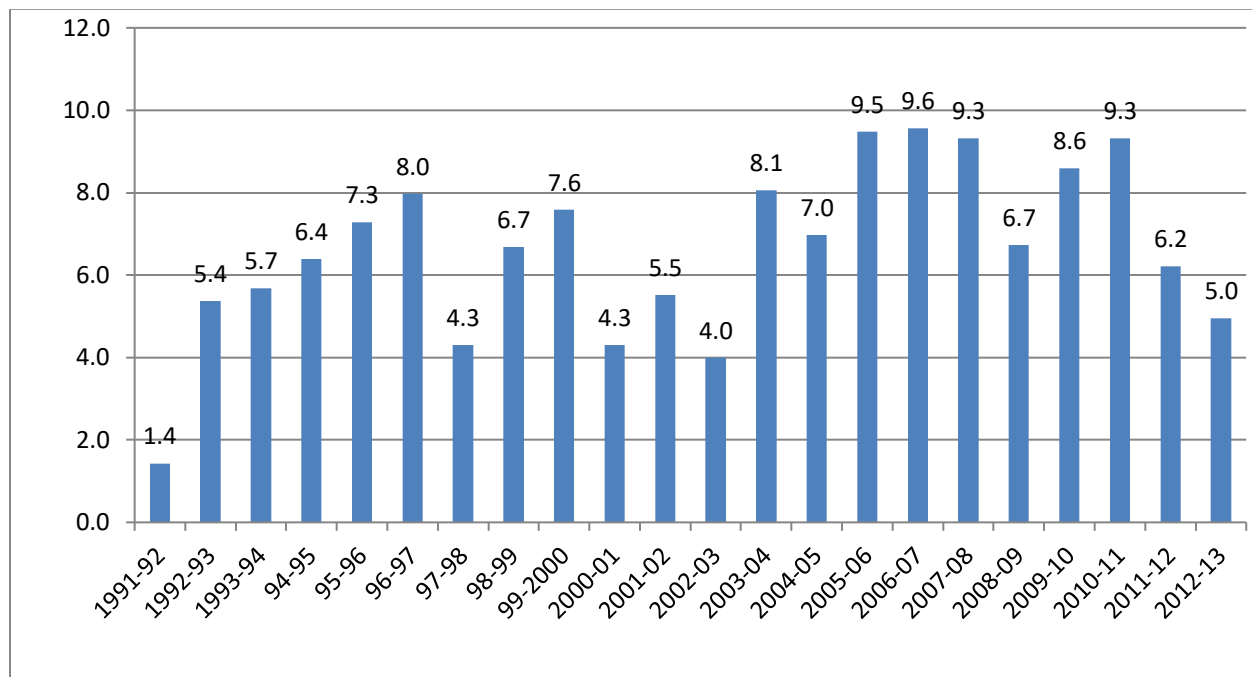
Widespread urbanization globally is a recent phenomenon. While in 1900 only 15% of the world was urban – presently more than 50% of the world's population lives in cities and it is anticipated that 70% will by 2050¹. In the Indian context, urbanisation presently stands at a little over 31% with a population of about 377 million according to the 2011 Census Report and the Twelfth Plan Report has projected that by 2031, population of urban India will add up to 600 million – an increase of over 200 million in just two decades.

India's Gross Domestic Product (GDP) which was growing at a substantial average rate of 8.5% between 2005 and 2010, slipped to 6.2% in 2011-12 and subsequently to under 5% - in 2012-13 after an average growth rate of 7.6% and 8% in the Tenth and Eleventh Five Year Plan (Refer Figure 1). Further, a forecast by Dun & Bradstreet states that India's GDP will cross the US \$ 5 trillion mark by 2020. It was estimated that urban share of GDP in 2009-10 stood at 62-63%, and by 2031 it will account to about 70%.² A report published by Indian Institute of Human Settlements (IIHS) – 'Urban India 2011: Evidence', throws light on the fact that the top 100 cities account for 16% of the population, produce 43% of India's total output and occupy only 0.26% of the land. With the strong association being linked to urbanization and economic growth – it is envisaged that to take India on to a higher growth trajectory, it is imperative to develop certain pertinent urban strategies which would unquestioningly be central to India's approach of achieving faster, more sustainable and inclusive growth.

¹ Retrieved from -<http://www.fao.org/news/story/en/item/35571/>

² Recommendations of Working Group on Urban Transport for 12th Five Year Plan – Retrieved from-
http://planningcommission.nic.in/aboutus/committee/wrkgrp12/hud/wg_%20urban%20Transport.pdf

Figure 1- GDP Growth Rate in India (%)



Source: Author compiled from various issues of Economic Survey of India.

As a matter of fact, no country has reached middle income status without a significant population shift into the cities. It is recognized as fundamental to the multidimensional structural transformation that low-income rural societies undergo to modernize and to join the ranks of middle- and high-income countries. Lucas's (1998, 2004, 2007), recognizes the connection between urban and national economic growth and was inspired by the endogenous growth models. He explicitly considers how urbanization affects the growth process primarily through the enhanced flow of ideas and knowledge attributable to agglomeration in cities. In this regard, the twelfth five year plan stresses that agglomeration stimulates economic efficiencies and provides more opportunities for earning livelihoods.

The paper focuses the attention on India's urbanization process and the importance of urban public transportation (bus transport) which will provide impetus for GDP growth and nation building. The paper has been divided into four sections – section 1 gives a brief introduction, section 2 addresses questions such as why urban, section 3 explains the profile and the state of

urban transport in India and followed by recommendations and conclusions in the final section 4 of the paper.

2. Why Urban?

It is a different matter that while analysis suggest that the process of urbanization in India is sluggish (31.2%) when compared with the rest of the emerging or even over neighboring economies like (Brazil 84.6%, South Korea 83.2%, Mexico 78.1%, Russia 73.8%, Malaysia 72.8%, South Africa 62%, World 52% - (2011) – China 50.6%, Nigeria 49.6%, Philippines 48.8% and Pakistan 36.2%) which are far more urbanized than India, but it is for the first time in the Census Report – 2011 wherein the increase in urban population (91 million) exceeded that of rural population (90.4 million). This is coupled with the rise in the number of urban agglomerates (UA) i.e., 475 places with 981 Out Growths (OGs) have been identified as UA in 2011 as against 384 UAs with 962 OGs in 2001 Census (Refer to Table 1).³ While the number of Class I⁴ towns have increased from 394 in 2001 to 468 numbers in the latest Census accounting for 70% of the population or 264.9 mn persons.

³Urban Agglomeration (UA): An urban agglomeration is a continuous urban spread constituting a town and its adjoining outgrowths (OGs), or two or more physically contiguous towns together with or without outgrowths of such towns. An Urban Agglomeration must consist of at least a statutory town and its total population (i.e. all the constituents put together) should not be less than 20,000 as per the 2001 Census. In varying local conditions, there were similar other combinations which have been treated as urban agglomerations satisfying the basic condition of contiguity.

Examples: Greater Mumbai UA, Delhi UA, etc

Out Growths (OG): An Out Growth (OG) is a viable unit such as a village or a hamlet or an enumeration block made up of such village or hamlet and clearly identifiable in terms of its boundaries and location. Some of the examples are railway colony, university campus, port area, military camps, etc., which have come up near a statutory town outside its statutory limits but within the revenue limits of a village or villages contiguous to the town. While determining the outgrowth of a town, it has been ensured that it possesses the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system for disposal of waste water etc. educational institutions, post offices, medical facilities, banks etc. and physically contiguous with the core town of the UA. Examples: Central Railway Colony (OG), Triveni Nagar (N.E.C.S.W.) (OG), etc. Each such town together with its outgrowth(s) is treated as an integrated urban area and is designated as an 'urban agglomeration'.

⁴ UAs/Towns which have at least 1,00,000 persons as population are categorised as Class I UA/Town

Table 1: Increase in towns, statutory towns and census towns

Types of Towns/UAs/OG	2001	2011	Increased by
i) Statutory Towns	3,799	4,041	242
ii) Census Towns	1,362	3,894	2532
Towns (i+ ii)	5161	7935	2774
Urban Agglomeration (UAs)	384	475	91
Out Growth	962	981	19

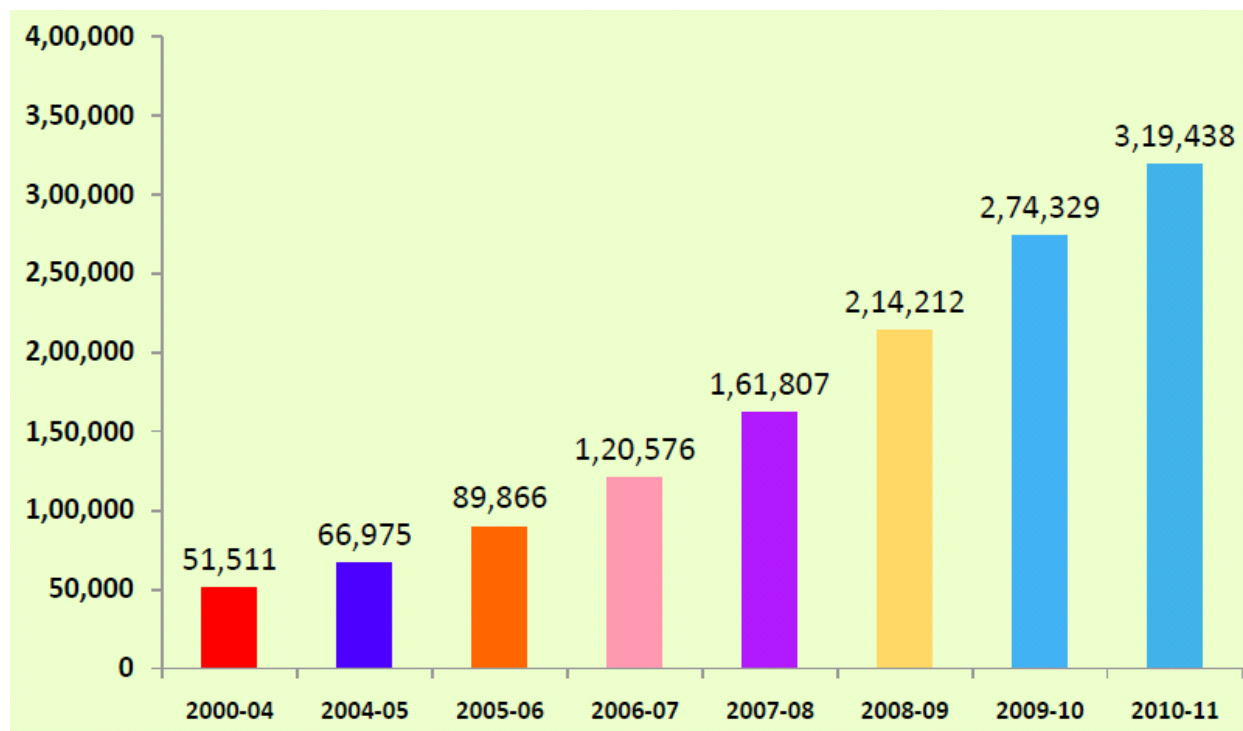
Source: Census Report 2011

A study by Unchida and Nelson (2008) based on the 2001 Census, that 42.9% of India lives within an hour of at least a Class I Town and 52% live within an hour of at least Class II Town⁵. This is in contrast with the official urbanization rate being 28.7%. In their paper ‘Agglomeration Index: Towards a new Measure of Urban Concentration’ – they proposed a new agglomeration index according to which 52% of India’s population as per 2001 Census data could be regarded as urbanized, while the 2011 Census data reveals only 31.2 % as urbanized. Hence, according to this method India was more urbanized than China (36%) in 2001.

Chandrasekhar’s (2011) study uncovers that large number of people living in rural areas (8.05 mn) i.e., rural non-agricultural workers commute to urban areas as per NSS 2009-10 data. This is further supported by the fact that rural India is even more connected than ever before as fifteen years ago there were no four lane highways – but as of April 2011, 15,000 kms. is four laned and 10,000 kms is under implementation. This is indicative that road infrastructure has made cities more accessible and has resulted in enhanced urban connectivity.

⁵ Class II: 50,000 -1,00,000 population

Figure 2: Prime Minister's Rural Road Programme



Source: Mukhopadhyaya (2012) Presentation at the India China Institute Sept 2012

Mukhopadhyaya's (Sept, 2012) study, highlights the fact that India is much more urban than what the Census data reveals – and this is due to certain limitations of the definition of urban in India⁶. His study discloses that 28.1 mn people in 2375 settlements met the urban test in 2001, but were not classified as urban by the census report. ⁷ While a report by IIHS brings to light the 'grey zone' between Class IV to VI towns (<5,000 -20,000) and the large fraction of rural population who live in villages that have more than 5,000 people and have an increasing urban

⁶ Definition of Urban in India - • Urban Unit (or Town):

• All places with a municipality, corporation, cantonment board or notified town area committee, etc. (known as Statutory Town)

• All other places which satisfied the following criteria (known as Census Town):

□ A minimum population of 5,000;

□ At least 75 per cent of the male main workers engaged in non-agricultural pursuits; and

□ A density of population of at least 400 per sq. km.

⁷Mukhopadhyaya (2012)'Subaltern Urbanization in India? Movement of People Transformation of Place' – Presentation at India China Institute.

character and accounting for nearly 80 – 140 mn people living in this zone – implying a rise in the level of urbanization to 40% or more. Further, – a study of population growth in large cities point to the fact that growth is happening around the large cities- leading to urban sprawl.

Table 2: Population Growth in Large Cities

City	Population (UA) mn.	2011	Core Growth (% p.a)	Peripheral Growth (% p.a)	Peripheral District
Mumbai*	18.4		0.4	3.6	Thane
Delhi	16.3		2.1	7.4	Gurgaon
Kolkata	14.1		1.3	1.8	South 24 Parganas
Chennai	8.7		0.8	3.9	Kancheepuram
Bengaluru	8.5		4.7	1.6	Bengaluru Rural
Hyderabad	7.7		1.6	4.8	Rangareddi
Ahmedabad	6.4		2.1	1.2	Gandhinagar
Pune	5.0		3.4	3.0	Pune

*Mumbai includes Mumbai and Mumbai (Suburban)

Source: Mukhopadhyaya (2012) Presentation at the India China Institute Sept 2012

Another aspect to drawing attention is that while in 1951 - 41% of urban population was in settlements of more than 100,000 this number inched up to 62% in 2001 and 70% in 2011. In cities over 500,000 – the share rose from 18.5% in 1951 to 50.5% in 2011. Thus the arguments placed in this section maintain that: i) India is more urban than what the Census data reveals ii) A large part of the urban population is concentrated in the Class I cities and has been a major contributor to the nation’s economic growth, and iii) the peripheral growth happening around large cities is leading to urban sprawl.

Taking this line of reasoning forward, the paper works on the premise that urbanization and its inevitability would lead to more economic production (as illustrated above). This would translate into more mobility needs (inter-city and intra-city), and thereby poses a question as to how can we make this mobility needs more inclusive, sustainable and effective. One such growth driver

as identified by the twelfth plan relates to urban public transport (especially bus transport) and its related infrastructure and governance.

3. The Present State of Urban Transport in India

A broad understanding of the urban transport system is one which provides access and mobility for people and goods, linking origins and destinations both internal and external to the urban area. Urban transport in Indian cities includes i) Public transport (collective transport - Bus, Bus Rapid Transport System⁸)ii) intermediate public transport (IPT) which includes taxi and auto rickshaw, cycle rickshaws, etc. iii) Non-motorised transport (NMT - pedestrians, cyclists) (iv) Freight and business traffic v) Motorized private traffic and vi) Urban rail transport (suburban railway, metro system, monorail system and Trams⁹). These transport services in combination cover a range of important social and economic activities: i) leisure tripsii) business journeys iii) commuting iv) shopping v) trips to places of education vi) freight distribution.

The targeted objectives for urban transport are to fulfill: i) the demand for accessibility with an efficient and quality service, ii) to promote sustainable patterns and levels of traffic that take account of economic, social, environmental and safety concerns iii) to provide economic and social opportunities and benefits that result in positive multiplier effects. All of this will naturally result in better accessibility to markets, employment and additional investments. On the other hand deficient transport systems in terms of capacity or reliability, come with an economic cost and results in reduced or missed opportunities.

India's future growth will largely come from the secondary and tertiary sector of the economy and economic activity in these sectors are urban centric. With the urban population as mentioned earlier is poised to increase to 600 mn in 2031, it is crucial that cities not only meet the mobility needs of the current population but also provide for the needs of those yet to join the urban population (National Urban Transport Policy, 2006). While the present transport system of India comprising of several modes of transport¹⁰, contributes 4.5 % in India's GDP but has exhibited the slowest growth of just 5 % over a decade as per the Central Statistical Organization

⁸The City of Pune was the first to introduce the BTRS in December 2006

⁹ Presently Kolkata tram is the only public tram in India

¹⁰ Including rail, road, coastal shipping, air transport, etc

(CSO)2013 report, the twelfth plan has earmarked a total investment of Rs.3,88,308crores towards achieving a set of identified goals for urban transport.

As the focus of the paper remains on public transport (bus and BRTS) in large cities of more than 5 lac population¹¹, it is imperative to understand the existing modal share of urban transport in India as it gives a clear analysis of the type of travel behavior of the city. Table 3, helps in comparing the modal share in large Indian and select global cities - indicative of strategies required to be adopted for providing efficient urban transport.

Table 3: Modal share in Major Indian and selected global cities

City	Population (in persons)	Walki ng	Cyclin g	NMV/N MT	Public Transp ort	Private Motor Vehicle	Para transit (IPT)	Year
Indian Cities								
Delhi	16,314,838	21	12	33	42	19	6	2008*- 2011
Mumbai	18,414,288	27	6	33	45	15	7	2008*- 2011
Ahmedaba d	6,240,201	22	14	36	16	42	6	2011
Bangalore	8,499,399	26	7	33	35	25	7	2011
Chennai	8,696,010	22	9	31	35	38		2011
Kolkata	14,112,536	19	11	30	54	16		2008*
Pune	5,049,968	22	11	33	12	Car 12% + Two wheelers 35%= 47	7	
Hyderabad	7,749,334	22	9	31	35	34		2008

¹¹There are 87 cities as per Census 2011.

Global Cities								
City	Population (in millions)	Walking	Cycling	NMV/NMT	Public Transport	Private Motor Vehicle	Paratransit (IPT)	Year
Beijing	20.18	21	32	53	21	20		2011
Berlin	3.52	29	13	43	26	32		2010
Bogota	7.155	15	2	17	Bus & BRTS = 62	15		2008
Curitiba	1.765	21	5	26	Bus & BRTS = 45	28		
Hong Kong	7.072				55	11		2011
London	8.174	30	2	32	Bus and Tram = 15	40		2011
New York	8.245	39		39	10	33		2009
Paris	2.234	4	1		62	32		2008
Seoul	10.58				28	26		2009
Shanghai	23.47	27	10	37	33	20		2009
Singapore	5.184	22	1	23	25	29		2011
Tokyo	13.23	23	14	37	3	12		2008

*2008 – MOUD

2011 – Census of India

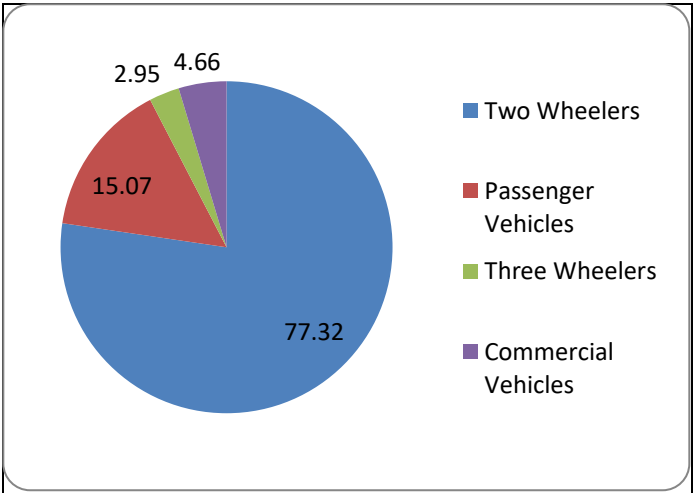
Source: Indian cities: Report of Working Group on Urban Transport for 12th Five Year Plan

Global Cities: Passenger Travel Mode Shares in World Cities.

The modal analysis as given in the above throws light on the fact that while Delhi and Mumbai enjoy large share of public and para transit 48% and 52 % respectively, and relatively low share of private transport 19% and 15% - these cities are often known to be plagued by traffic jams, and congestion. While comparing the same with large global cities Tokyo 12% and Hong Kong 11% experience the lowest modal share for private transport, on the other hand Bogota 66%, Paris 62% and Hong Kong 55% enjoy the highest modal share for public transport. New York one of the most developed city enjoys the highest modal share for walking at 39% –and the same indicator for the Indian cities fall within the range of 19% – 27%. With reference to the city of Ahmedabad, despite being known for operating one of the best BRTS systems in the country – the city displays 42% modal share for private transport while Pune’s share being even higher at 47%. Therefore this data does not reveal much.

A study of the domestic share of vehicles reveals that two wheelers at 77.32% followed by cars at 15.07 % -together account for 92.39% of the total vehicles in India, while the share of commercial vehicles and three wheelers which are segments capable of contributing to sustainable public transport together account for only 7.61% (Figure 3). This brings to light the fact that the share of personal motorized transport has inched up, adding to the urban transport woes like congestion, traffic jams, acceptable pollution levels in cities being breached besides loss of safety and high risk involved in city travel.

Figure 3: Domestic Share of Vehicles 2011-12 (%)



Source: SIAM INDIA

Supporting the above argument is the fact that the registered number of two wheelers, cars, jeeps and taxis have increased from 61% of registered vehicles in 1951 to 85% in 2011. Whereas the share of Buses as a percentage of all vehicles registered has declined from 11.1% in 1951 to a paltry 1.1% in 2011. Further, the share of public sector buses has slipped to 7.6% from a level of 43% of the total buses in the country in 1981 (Appendix -Table 5).

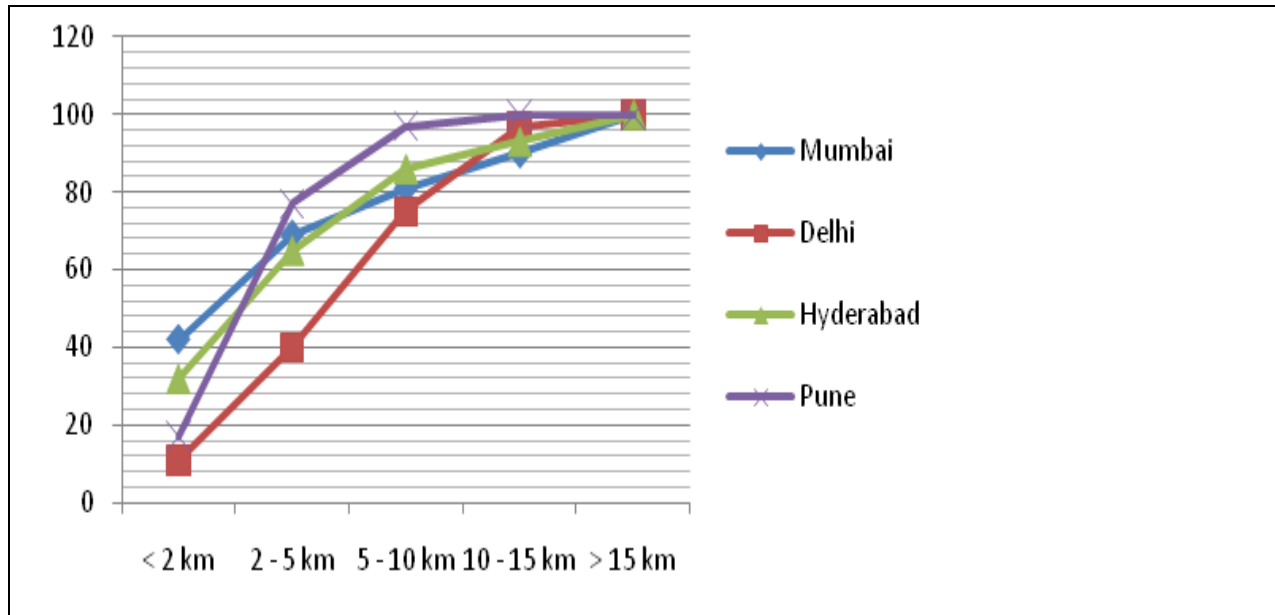
A global analysis of the per capita total passenger cars and vehicles per 1000 persons – reveals that only Philippines has a figure of 8 Cars and 67 vehicles per 1000 persons which is lower than India's 13 passenger cars and 117 vehicles per 1000 persons (Appendix - Table 6).

Another important feature of Indian cities as discussed by Tiwari (2012) is the mixed land use structure with substantial informal settlements comprising of 15-60% of slum population. This has resulted in short length trips irrespective of the size of the city. Hyderabad and Mumbai 80% of the length of the trip is less than 10 kms, whereas 97% of the trips are less than 10 kms in Pune, while the average trip length in medium and small size cities is less than 5 kms. Further, Tiwari brings to light the fact that the share of public transport is more than 40% in cities with more than 5 million population¹² (mostly organized bus systems). Coupled with the above analysis is another study of 87 cities in 2010 by the Ministry of Urban Development (MOUD) which has estimated that in the next 20 years the expected journey of speed of major corridors in many cities would fall from 26-17 kmph to 8-6 kmph¹³.

Figure 4: Trip lengths in selected Indian cities

¹²Mumbai, Delhi, Kolkata, Chennai, Bangalore, Ahmedabad and Pune are the Urban agglomerates with a + 5 million population as per Census 2011.

¹³<http://www.slideshare.net/PlanComIndia/urbanisation-in-india-12th-plan-2012-2017>



Source: Tiwari (2011)

The study in Section 3 is indicative of the fact that the modal shares in India are comparable with those in some of the large global cities while the vehicle population per 1000 persons being lower in India compared with other emerging and developing nations. This is compounded with the analysis that average trip lengths in Indian cities are less than 10 kms. It is therefore imperative that cities prepare a blue print of their mobility plan – and rationally allocate high modal share for public transport (especially buses and BRTS) and non-motorised transport to meet their mobility challenges. This would entail adequate planning, investment and committed encouragement towards the same and also ensuring that its related infrastructure and governance issues are addressed.

4. Conclusions

At present, car-based mobility solutions disproportionately dominate transport agendas and investments in Indian cities, mocking statements, intentions and policy goals on sustainability, resource management and social inclusion. When they are put forward, sustainable transport proposals are centered on capital-intensive systems like heavy rail, metro, monorail, etc. which on the one hand involve a long period of time in realization of these projects and on the other may not have many funding opportunities. To add to the transport woes of urban dwellers - the transport modes used by the majority of people in the cities – mainly walking, cycling and

microbuses – receive far less attention. While the 2008 study by MOUD revealed that public transport accounted for only 27% of the urban transport in India - The National Urban Transport Policy 2006 made a strong case for increasing the share of public transport in the cities from 22% to 60%.

The Twelfth Plan Recommendations of the Working Group on Urban Transport admits that the present state of urban transport scenario in Indian cities is neither desirable nor sustainable and therefore needs proactively reworked on a priority basis. In this regard the twelfth plan has made a number of recommendations and has earmarked a total of Rs3, 88,308 crores for urban transport – with Rs 2,02,628 crores being allocated for public transport – Rs 13,759 is specifically for buses and Rs 29,603 crores for the BRTS, with almost 35% of the funding being envisaged by the private sector. Further, the Government of India has also prescribed specific norm of 40 buses per lakh population for cities with population of 0.5 to 4.00 million and 50 buses per lakh population for megacities with population of 4 million plus.

The researcher therefore envisages that if this investment is rightly applied it would arm the Urban Local Bodies managing the cities to reap the benefit of: i) revenue generation from urban congestion tax which can be justifiably levied (putting a cap on private vehicles) ii) charge high parking fees iii) advertisement revenue and iv) commercial exploitation. This should be supported by ensuring the availability of clean fuel, appropriate pricing strategy which should not result in crowding out people towards two wheelers or small cars – leading to exclusion and may be inefficient resource utilization (buses would not run to capacity) and hence result in the mode of transport being financially unsustainable.

While traditionally owned and operated public utility – the nationalized variety have underperformed – but in its present state public transport is slowly moving to a paradigm shift in the form of public and private partnership model. The researcher anticipates that with the emergence of public-private partnership approach – a new governance model will emerge enhancing efficiency, accessibility and being spatially and environmentally sustainable.

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Appendix

Table 4							
Total Number of Registered Vehicles in India: 1951-2011							
(In Thousands)							
Year as on March 31st	All Vehicles	Two Wheelers	Cars, Jeeps and Taxis	Buses	Goods Vehicles	Others	% of Buses to All Vehicles
1951	306	27	159	34	82	7	11.1
1961	665	88	310	57	168	42	8.6
1971	1865	576	682	94	343	170	5.0
1981	5391	2618	1160	162	554	897	3.0
1991	21374	14200	2954	331	1356	2533	1.5
2001	54991	38556	7058	634	2948	5795	1.2
2011	141866	101865	19231	1604	7064	12102	1.1

Source: Road Transport Year Book (2009-10 & 2010-11)

Table 5				
Number of Buses Owned by the Public and Private Sector in India (In Thousands)				
Year as on March 31st	Public Sector	Private Sector	Total	% of Public Sector of Total
1961	18	38.8	56.8	31.7
1981	69.6	92.3	161.9	43.0
1991	106.1	225	331.1	32.0
2001	115	518.9	633.9*	18.1
2011	122.3	1481.5	1603.8*	7.6

*Includes Omni – buses

Source: Road Transport Year Book (2009-10 & 2010-11)

Table 6 Select Countries: Vehicle Fleet Ratios per 1,000 (2009)		
Country	Passenger Cars per 1000 Persons	Total Vehicles per 1000 Persons @
Brazil	165	275
China	34	119
France	496	654
Germany	510	610
India #	13	117
Japan	454	617
Korea Republic	267	393
Malaysia	313	675
Mexico	191	288
Philippines	8	67
Russian Federation	233	271
South Africa	110	170
United Kingdom	460	544
USA	439	828
# Data Relates to 2011 & Vehicle data to 2008		
@Total Vehicle Population includes passenger cars, buses+ coaches, vans + lorries and two wheelers		

Source: Road Transport Year Book (2009-10 & 2010-11)