Chapter 6
Urban Transportation Planning and Investment in India: Emerging Challenges

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Abstract

The capacity of the transport system and the low cost and dependability of the transport services has enabled an increasing number of people to seek the economic, social and cultural opportunities that urban living ideally provides. But paradoxically, metropolitan cities have now grown to the point where they threaten to strangle the transportation that made them possible …… with the technical ability to solve its transport problem well in hand, the modern city is confronted by transportation problems more complex than ever before. Despite all the methods of movement, the problem in cities is how to move. (Owen 1987)

6.1 Introduction

The above-mentioned quotation adequately sums up the current situation in cities across the world in regard to mobility. While transport or transportation (used interchangeably in this paper) has a major role in influencing the location of cities, it has had an even more significant role in defining (and be defined by) city shapes and sizes. The concentration of population, employment and activities in urban areas is, in fact, to a great extent very much due to transportation. Accordingly, movement of men and material became a significant feature. However, over the years, movement has been made increasingly difficult both due to factors within and outside the system, which provide for movement. In other words, a major emerging problem in urban areas concerns urban transport. Paradoxically, the cities have outgrown themselves and reached a stage when the transport system is hindered in its effective functioning.

Most of the cities in India have been facing urban transport problems for the last many decades, affecting the mobility of people and material and thereby the economic growth of urban areas. These problems are due to prevailing imbalance in modal split, inadequate transport infrastructure and its suboptimal use, no proper integration between land use and transport planning and no improvement or little

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improvement (or in most cases a worsening) in city bus services, which encourage a shift to personalised modes. Consequently, many cities in the country are facing serious problems, including significant levels of traffic congestion, air pollution from transport sources, high rates of traffic accidents and even inadequate access to basic transport facilities by poor and vulnerable groups including people with disabilities. The deteriorating urban environment threatens the 'liveability' and productivity of many cities. In many of the major cities, such as Mumbai, Chennai, Kolkata and New Delhi, the situation is so severe that the efficiency of their urban economy is being adversely affected, as is the health and welfare of the people living in them.

It is against this background that an attempt is made, in this paper, to propose an appropriate policy framework that needs to be in place to initiate and encourage useful solutions to tackle the urban transport problem in the Indian context. We make no attempt to outline the urbanisation process in India since it has been dealt with adequately elsewhere and also do not present a description of the recent urban transport scenario in terms of the transport sector characteristics since this can be found in a recent study (WSA 2008). This means that, in the next section, we spell out issues that are emerging as challenges on the urban mobility front. We then move on to an attempt to review in some depth current policies and interventions which, in turn, provide us a basis for our approach towards a new urban transport policy framework in the country.

6.2 Urban Mobility Challenges

As cities grow exponentially, an effective and sustainable transport system for people and goods movement is a prerequisite for sustainable economic growth. However, urban transport systems in most cities of the developing world like India are underdeveloped, and their transport capacity has been found to be grossly inadequate. Thus, residents are unable to fully exploit economic opportunities and lack the mobility needed to support economic growth.

Urban transport systems in most cities suffer from major constraints as insufficient financial resources, inefficient regulatory frameworks, poor allocation of road space, inadequate traffic management systems, institutional weaknesses and undeveloped public transport systems. Currently, these systems also rarely integrate social concerns and the specific needs of vulnerable groups, thereby rendering such systems ineffective in relation to poverty reduction. Drastic increases in the number of vehicles have strained our urban road networks, resulting in congestion for most of the day. Most of these factors disproportionately affect the urban poor in terms of limited accessibility to affordable transport services, ill health from pollution and road safety concerns.

In most cities, road networks, developed in an unplanned ad hoc fashion and without proper adherence to quality standards, are severely deficient in meeting developmental demand. Residential areas have few and inadequate tertiary or access

roads and limited provisions for pedestrians, cyclists, etc. In addition, road networks have missing links, forcing the overuse of existing road sections and lack of circumferential roads resulting in congestion from traffic. Meanwhile, increases in the number and uses of vehicles surpass the capacity of road space, adding to congestion and air pollution. As a result, transport conditions in cities are characterised by severe congestion and aggravated by the poor discipline among drivers, incoherent enforcement of traffic laws and an eclectic mix of vehicles. A failure to respond promptly to rapid motorisation and the resultant congestion along with weak enforcement of vehicle emission standards results in degradation of the environment and stunts cities' growth potential.

Rapid urbanisation has also increased the number of urban poor. Efficient systems do contribute to urban economic growth thereby raising incomes and decreasing urban poverty. However, current urban transport systems, which do not fully integrate the specific needs of the poor, have worsened the perverse distributional effects of urbanisation. Overstrained public transport systems restrict urban residents, particularly the urban poor from actively participating in economic activities. The social exclusion engendered by urban transport makes it more difficult for the disabled to access jobs and services. As a result, the poor find it hard to break out of poverty. In addition, the poor are disproportionately exposed to the risks of polluted air. Moreover, the risks they face when they travel are higher than those of the non-poor because of the few safety provisions for pedestrians and cyclists at street crossings and slack enforcement of pedestrian crossing facilities. There is a definite need for urban transport policies and programmes to take the needs of the poor into account.

Poor traffic management, one of the biggest issues in many cities, is a combination of many factors: lack of coordination and overlapping responsibilities among various agencies, insufficient traffic police and traffic signals, flaws in traffic marking and ineffective enforcement of traffic rules and regulations. Accidents are common due to poor traffic management on the one hand and undisciplined use of the road by many types of vehicles using the roads on the other. Ineffective traffic management is also the result of encroachment by parked vehicles and commercial activity on roads thereby reducing road capacity and causing inadequate public transport services. Good traffic management cannot only improve the flow of traffic but can reduce negative environment impact. The need for efficient traffic management systems is therefore acute. Such systems will require (1) an appropriate transport policy framework under which governments can manage travel demand and (2) strategic plans that cover junction operations, enforcement, road use, driver re-education, public transport, parking, traffic signals, vehicle restrictions and circulation plan, pavement markings, vehicle condition and equitable allocation of road space.

While a large portion of the urban population relies heavily on public transport for its daily activities, public transport systems in most cities are not adequately developed, and investments have been severely limited. Bus and paratransit services, the predominant public transport services, are often exclusively operated by the private sector. The unregulated operation of private buses, particularly with

regard to the allocation of routes and schedules, has spawned excessive competition, and as a result, the financial performance of public transport and the quality of service have deteriorated, negating the benefits derived in road construction. Improving the efficiency of public transport should not only lower costs but result in a flexible framework which makes public transport more accessible to the poor. To this end, solid institutional and regulatory structures are required that will help create efficient public transport systems that poor users can afford and that give incentives for proper maintenance, investment and service expansion.

Governments' weak capacities lead to low institutional coordination and an inefficient institutional framework. Government agencies have overlapping or poorly delineated responsibilities, planning and programming are chronically fragmented and largely ad hoc, and institutional arrangements for policy implementation are usually incoherent. Rapidly increasing urban populations require efficient use of limited land resources to support economic growth; however, planning for land use, urban development and transport management is loosely integrated, thereby constraining cities' growth potential, competitiveness and efficiency.

Private sector involvement in urban transport is generally limited to the provision of public transport services, including buses and taxis, auto rickshaws, etc. Despite growing recognition of the burden that investments in major roads, bye-passes, etc. place on municipal budgets, private sector participation in maintenance and construction is limited. Public mass transit systems require substantial investment and careful commercial management to ensure their financial viability for which private sector participation is crucial particularly in big cities. Planning and regulatory arrangements for private participation in urban transport must therefore be established.

Experience indicates that piecemeal approaches to sustainable urban transport development are likely to fail and that capital investments needed to be supported by policy, legal, regulatory and institutional reforms. More policy attention must be focused on building capacity in urban transport administration, on enhancing the role and quality of affordable public transport, on financing mechanisms and on needs of pedestrians and users of nonmotorised transport.

6.3 Current Policies and Interventions

6.3.1 The Policy Framework

The Government of India attempted to comprehensively address urban transport issues in the country by formulating a *National Urban Transport Policy* (NUTP) framework in 2006 (GOI 2006). While recognising the problem of increasing urban road congestion and its associated air pollution, the strategy puts primary emphasis on the need to increase the efficiency of use of road space by favouring public transport and by the use of traffic management instruments to improve traffic performance and by restraining the growth of private vehicular traffic. Complementing

this is a strategy to reduce vehicle emissions by technological improvements in vehicles and fuels. The Government of India's proposed strategy is in many respects along the lines of international thinking on the approach to the urban transport problem. For example, the World Bank completed an Urban Transport Strategy review 'Cities on the Move' (World Bank 2002) after consultation with major stakeholders in client countries, including governments, transport operators and nongovernmental organisations, as well as with representatives of other international institutions. That review linked urban development and transport sector strategies with a strong poverty focus. It noted that sprawling cities are making the journey to work excessively long and costly and that throughout the per capita motor vehicle ownership continues to grow with adverse impacts on traffic congestion and air pollution. Public transport was being stifled by this congestion, and its relative performance tended to decline in comparison with the private modes. So the vicious circle of congestion and the decline of public transport were perpetuated. The safety and security of urban travellers were also major emerging problems worldwide.

The NUTP document begins with a basic contention that the mobility problem in our cities is a very formidable one and that it was not just hampering better growth possibilities but also threatening the basis for a reasonable standard of living. Accordingly, it was envisaged in the vision statement that liveability of our cities would be highlighted and emphasised with the basic objective of this policy being to ensure safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education, recreation and such other needs within our cities. With the states as the main facilitators in the process, the role of the central government, it was felt, would be to hasten it with the necessary financial support and technical expertise. We now look at the specifics.

6.3.2 Its Elements

6.3.2.1 Basic Guidelines

The issue of integrating land use and transport planning was taken up first. The connection between transportation and land use is a fundamental concept in transportation. Transportation and land use are inexorably connected. Everything that happens to land use has transportation implications, and every transportation action affects land use. Policymakers are required to help shape land use by providing infrastructure to improve accessibility and mobility. Accessibility can be measured by the number of travel opportunities or destinations within a particular travel radius, measured in terms of either travel time or distance. On the other hand, mobility is a measure of the ability to move efficiently between origins and these destinations. Thus, mobility is directly influenced by the layout of the transportation network and the level of service it offers. Land development generates travel, and travel generates the need for new facilities which, in turn, increases accessibility and attracts further development. The question of whether transportation influences

development or whether land use dictates transportation has been a matter of ongoing concern among transportation professionals. Transportation's most significant impact on land development occurs when access is provided to land. Increased access to land raises its potential for development, and more development generates additional travel. Once access has been provided, land patterns begin to change over a period of time. In recent decades, concerns about urban sprawl have arisen. Several factors can be identified as contributing to sprawl, including the movement of jobs to suburbs, lower transportation costs versus lower housing costs, preference of many people to live in remote areas away from the problems of the city and the desire for larger lots. The concern about sprawl and transportation has led to a new debate about the relationship between transportation and urban sprawl.

The policy document recognises that a combination of transportation and land use measures is needed to address the transport problem. Both need to be developed together in a manner that serves the entire population and yet minimises travel needs. From a sector perspective, 'transport plans should, therefore, enable a city to take an urban form that best suits the geographical constraints of its location and also one that best supports the key social and economic activities of its residents. Unfortunately, however, transport planning has not received the extent of attention it should have in drawing up strategic development and land use plans' (GOI 2006, p. 5). And this is especially so in regard to the size of the urban area, its form and their interactions with the transport system. We now examine these aspects in some detail.

6.3.2.1.1 The Urban Size and Form and Its Interaction with Transport

While there are differences among various cities due to a variety of factors, the general pattern of urbanisation has been characterised by high population growth, the dominant emerging problem being the excessive growth of large cities especially metropolitan ones. This pattern is expected to prevail in the future as the basic economic and social forces, which encourage the growth of these cities, continue to dominate. Several times in the past, there has arisen an argument for policies to contain urbanisation (especially excessive growth) and thereby the size of cities. More specifically, the relevant question that has been (and continues to be) raised is: Is it not possible to restrict growth of cities to an optimum size? The concept of an optimal city is based on comparison of costs and benefits associated with city size (population measured on the horizontal axis). Adopting the common assumption of an S-shaped benefit curve and a U-shaped cost curve, it is expected that net benefits would become zero at some finite city size. Hence, this could indicate the optimal city size.

However, it is not easy as that since a bewildering set of optima can be identified. Moreover, the meaning of benefits and curves is rather obscure. The economic and social benefits of large relative to small cities appear stronger in developing than in developed economies. Furthermore, the social costs probably remain lower in developing countries despite increase in pollution, congestion, etc. Thus, there has

been a basis for arguing that the hypothetical critical city size that provides maximum net benefits, if these could be measured, would be greater in developing countries (Richardson 1977). The question that arises then would be: how much more greater?

It must be recognised that the urbanisation process is very often accompanied by rapid growth in income and employment, and there is a commonly held view that it might not be in the interest of the concerned countries to stop economic growth of cities like Mumbai. Further, it is increasingly being realised that it is impossible to stop or arrest migration into cities even though it may be desirable to do so. It is more likely that it is possible to influence the growth pattern of urban areas in a desirable manner by a reorientation of land use policies in such a way that the city grows into an organic and vital agglomeration node.

The links between urban form and transport have been discussed by Thomson (1977), Owen (1998) and many others. The term 'urban form' is used broadly to refer to the various patterns of location, character and intensity of urban land uses and activities in an urban area. Transport patterns and infrastructure influence the urban form that evolves in any particular city, and, conversely, the urban form of a city influences its transport patterns and further infrastructure investments. The normally predicted generation of trips from particular land uses in any particular city is the basis for most modelling in transport planning. The effects of transport patterns and investments on the distribution of land uses are less predictable but are clearly significant over the long term. Transport appears in one form or another in all of the main theories which attempt to explain the spatial distribution of activities within regions, such as the variants of location theory and central place theory.

Historically, land use planning has been an important component of the urban planning process. However, in the traditional framework of policy making (based on standard economic theory), there are assumptions which no longer hold. Firstly, it is assumed that there is absence of space, as a result of which households, firms and governments choose only one location with the result that the role of land use planning has often been underplayed if not overlooked completely. But it is well recognised that space is not only an input in production, but it is also an important element for location planning of economic agents and also an important source of local authorities to finance city development. Land use decisions invariably introduce strong convexities in consumer preferences and production technologies. Secondly, the essence of urban areas is that there is an agglomeration of many people and firms in close quarters. This introduces an element of non-price competition which complicates the operation of the free-market process. Further, high densities of population, traffic congestion and provision of public services involve externalities. Besides, existence of space between locations means that producers of local goods (both public and private sectors) can be monopolies. All these problems suggest that urbanisation issues are complex and that an approach different from the past needs to be adopted to provide meaningful solutions.

To overcome this problem, it is stated that the Central Government would provide up to 50 % of the cost for the preparations of such integrated plans provided the local authorities demonstrate their willingness to act in accordance with these plans.

The issue is: how has and to what extent has this element been taken forward? Though studies have come with such approaches being recommended as part of their recommendations, there is very little evidence of attempting to examine these approaches and implementing them to the extent possible (MMRDA 2006).

6.3.2.2 The Need to Encourage Public Transport

The second significant element of the policy framework is the need to encourage public transport in a much bigger way. In fact, the emphasis is on 'priority' to such a system. Beginning with the issue of current position of inequitable allocation of road space in our cities, the key phrase is 'movement of people rather than vehicles'. The importance of public transport to pollution and congestion reduction, poverty alleviation and economic empowerment cannot be overstated. In metropolitan areas where the distribution of land and social amenities mirrors high levels of income inequality, placing the poor furthest from economic opportunity and critical services, effective public transport provision is a critical element of development policy. Here, decades of persistent underinvestment in public transport, accompanied by sustained infrastructure spending in support of private car use, have resulted in a profoundly dualistic land passenger transport system which contributes significantly to the continuing economic and social exclusion of many. People whose mobility is constrained cannot exercise the other widely accepted human rights. Lack of mobility in low-income households is often a major factor in their economic and social exclusion. It can prevent the acceptance of employment, lead to failure in securing health appointments and severely reduce the ability to participate in daily activities. Most people who require these services are often the ones who are situated furthest from such services and are in most cases the ones who lack the necessary means to get to them. Over the past decade, driven by ongoing migration to cities, a period of strong economic growth, and the fact that the majority of new housing development programmes have been located in the suburbs, demand for passenger transport in metropolitan areas has increased sharply. As the standard and capacity of state-sponsored public transport systems have remained largely unchanged (in many middle- or lower-order cities they hardly exist), increased demand has been met predominantly by taxis and private cars. At the urban level, it is well recognised that responding to the inequality between core areas and periphery areas is difficult, but not impossible. The key is to bring back to life the vitality of struggling neighbourhoods and re-establish them as complements to the city. It takes knowledgeable foresight by city officials as well as action through the entire community to accomplish this. Each situation may require a different course of action whether it is a radical change (by introducing new public transport systems) or only a slight nudge in the right direction (reforming the existing ones). The emphasis on public transport cannot be made any clearer than what has been incorporated into the policy document. The question is: has this been taken seriously enough in the efforts that have been undertaken subsequently especially in the past 3 or 4 years? More specifically, we need to examine the extent to which measures

outlined have been encouraged such as more allocation of road space for bus transport or, more generally, the priority given to public transport.

Equally important would be the aspect related to pricing. In this context, a very basic issue is whether there is an attempt by the policy document to encourage tariff reforms at all. While some indication relating to tariff fixation based on price discrimination is given, the basic question that remains refers to the sustainability of such pricing systems in the absence of an emphasis on norms of efficiency which serve as the basis for an understanding of effective provision of services.

6.3.2.3 Public–Private Partnerships in Bus Transport

The promotion of public–private partnerships (PPPs) has been an underlying objective of policy statements related to the transport sector that the central and state governments in India have been putting forward since the 1990s from time to time. However, in recent years, vigorous efforts have been made to promote the concept in the context of bus transport as part of the implementation of the National Urban Transport Policy (GOI 2006) while incorporating it as part of the central government-funded Jawaharlal Nehru National Urban Mission (JNNURM) that has prescribed model guidelines to the state governments and local governments. The emphasis has been on the need to promote public transport systems with a more directed initiative to promote the bus mode in the different cities for which funds for bus procurement are being liberally given within the framework of PPPs. JNNURM proposed to provide 50 % of the funds required to buy the buses for city transport to 63 cities if they adhere to those guidelines. As for the balance fund required, the state government would have to put in 20 % of the amount, and the balance 30 % of the amount would have to come from city municipal corporations or city transport corporations or a private party by way of a PPP.

6.3.2.4 Environmental Considerations

An overriding feature of the policy document appears to be the emphasis on the 'green' aspect of development of the urban transport system in terms of cleaner and more efficient technology and a more significant role for nonmotorised movement. Aimed at protecting the environment, these elements are today a necessary part of the policy framework worldwide with the EU countries leading the way in incorporating them in a very systematic way.

6.3.2.5 Institutional Capacity Building

The need for capacity building to handle urban transport related issues is also prominently put across not only in terms of institutional capabilities but also individual ones. The latter becomes significant in the face of efforts being attempted to

promote public–private partnerships in which an individual or a few individuals are expected to play crucial roles in developing the concept of such a partnership and taking it forward to its logical end. However, the basic underlying issue in this regard is the proper understanding of the distinct roles of the public and private sectors and perspective of the general public regarding these roles.

6.3.2.6 Regulatory Framework

Above all, the emphasis on a unified metropolitan authority is significant. However, the details of such an authority especially in its role of a regulator have not been spelt out explicitly. We now turn to an approach to new urban transport policy framework which begins with a critique of some of the important above-mentioned elements of the current policy document.

6.4 Some Elements of a New Urban Transport Policy Framework

6.4.1 A Critique of Existing Policies

On the issue of integration of land use and transport policies, a good deal has already been said on the lack of such an integration or even an attempt towards this today especially in the context of developing countries. Fundamentally, it is well recognised that this move towards integration is very difficult since any economy is in a dynamic state all the time. The trouble is that it has not been possible to construct a comprehensive theory which fully reflects all the linkages in this interaction. The basic problem is that transport and land use changes are ongoing modification to the spatial economy. 'There are continual cycles of cause and effect, and it is impossible to decide upon a point where it is sensible to break into this continuum of change. Consequently, from a pragmatic standpoint, one has to make a rather careful judgment whether to treat land-use as influenced by transport or vice-versa' (Button 1993, p. 19). Historically, the practice was to accept a given land use pattern and attempt to provide least cost methods of providing transport services within this limitation. For example, Kain (1964) adopted this approach to travel decisions taken in a sequential type of framework which when considered closely involve assumptions which are very analogous to the ceteris paribus assumptions of conventional partial equilibrium microeconomics. While it is recognised that this approach suffers from the same limitations, they do provide a reasonable framework within which useful analysis can be conducted. However, over a period of time, this simplistic way of emphasising the causal link from land use to transport, i.e. where land use is predetermined, was found to be no longer useful in the presence of several dynamic elements relating to the economy. Accordingly, feedbacks from transport

to land use began to be incorporated explicitly in models so that a more realistic picture emerged. However, it was found that the data requirements were enormous as a result of which a number of assumptions regarding parameters were made. Moreover, calibration of such models was complicated. The situation has not improved very much despite the use of information technology because data limitations continue to haunt planners and policymakers even in developed economies. Today, efforts at incorporating feedback effects are minimal with the sequential type of framework continuing to be used quite extensively. These can be effectively incorporated by developing limited realistic scenarios and planning accordingly.

The policy document touches only the generalities associated with integration of land use and transport planning in our urban areas. Transport and patterns of urban land use are so interconnected that all cities must make sure to plan their transport in harmony with the realities of their city's actual form. New land use trends associated with motorisation have begun to threaten the accessible and travel-minimising features of some Asian cities. Real estate developers increasingly build new developments with segregated land uses and in locations that are accessible only by private vehicle, even if this leaves them inaccessible by public transport and nonmotorised transport. New high-speed, high-capacity roads in some places have encouraged haphazard development in long corridors, resulting in longer trip distances for residents. No doubt, there is very little to say as far as transport planning practices go in most of our cities. On the other hand, the new trend in the West is to encourage more mixing together of different activities because it encourages more walking, cycling and convenience for residents and workers. The indication that central government support would be available to broad base current efforts is a welcome statement. It may be adequate for an urban area to prepare a long-term plan and also plan its transport facilities. Such plans are being made out in the bigger urban agglomerations. But even today, appropriate accessibility and mobility objectives are not well considered and defined in land development with the result that the current development themes tend to lengthen trips and lead to increased congestion. Further, there are no serious attempts to follow them. This weakness has been the single most limiting factor in our objective towards better transport facilities. Violation of zone laws is more often the rule than an exception which often results in a different land use pattern emerging and having an impact nowhere near the one that was expected as an outcome. Even with specialised agencies to deal with these issues, we have failed miserably on this count due to irrelevant considerations. A far more enlightened national- and state-level leadership is needed to help city governments integrate accessibility and mobility objectives and thereby land use and transport into urban development. The document is silent about the ways by which the central government as well as the state governments can play this role more effectively. Moreover, the role of the user in the planning process is almost nonexistent. Inclusive 'bottom-up' participatory approaches that incorporate community consultation and wide participation by all social groups including women and other disadvantaged groups can greatly enhance sustainable urban transport development. They are also more likely to win public support, especially when questions of difficult policy choices and public actions arise, for example, in the

case of urban transport demand management. It has been observed that integrated approaches are based on methodologies that develop a broad-based consensus on an achievable vision of the future and clearly articulate the means by which the visions can be realised. A fundamental institutional change in the planning process is required to incorporate participatory approaches in decision-making and to seek interdisciplinary solutions to urban transportation problems. While the ways in which the involvement of all social groups is organised may be open to debate, its justification cannot be undermined.

The emphasis on the role of public transport has many dimensions. High-density cities are unsuited to high rates of private car use. It is physically impossible for a dense city to have a high level of road capacity per person. Cars take up a huge amount of space when in motion and for parking. In dense cities, space is a valuable commodity. Congestion and parking problems can therefore become very serious in dense cities even when only a few percent of people own cars. However, the failings of public transportation have become one of the major challenges faced by many cities. Dissatisfaction with the level and quality of public transportation services leads those people who can afford it to turn to private modes of transport. Another common problem in many cities is that women, people with disabilities and other disadvantaged groups have poor access to public transport services and that it is found difficult to meet their basic mobility needs. Historically, state transport undertakings (bus companies) have been the prime providers of public transport services in most Indian cities. Fares have traditionally been kept low by state authorities to permit travel by low-income citizens, especially those covering long distances. The chronic uncertainty regarding subsidisation of concessions by the state interacting with inefficiencies on the supply side stemming from the nature of public monopolies has resulted in public transport services being characterised by a low level of service necessarily operating at a low-priced equilibrium. A traditional and irrational focus on production rather than service, rigidities regarding staff levels and remuneration and low financial capacity to expand services have created almost an insurmountable barrier to change. While this approach is acceptable while a great majority of passengers are captive riders, interested mainly in low fares, it is no longer the case anymore especially with an increased affordability of motorised vehicles that resulted in a large loss of public transport passengers.

The solution to the complex urban transport problem thus lies in the development of an efficient and affordable public transport system. This has long been recognised by policymakers and transport planners and emphasised in every transport policy statement. But real actions have been far from adequate. In the early 1990s, public transport generally benefited from bus enterprise reform, increased investment in fleet capacity and implementation of some bus priority schemes, as well as urban population growth that helps maintain strong demand. Many cities have witnessed gains in both ridership and operating efficiency during the second half of the 1990s. These gains have disappeared due to the rapidly growing road congestion and the continuing shift to private cars. Most cities have failed to guide transit-oriented

land use development. Peripheral-urban land development has not been planned in a way that could create a market for public transport. The road network—instead of the public transport network—is commonly used in urban master plans as an instrument to shape the urban land use structure. Bus operations and the future guided mass transit systems are given little consideration in road design. There are serious concerns regarding availability of road space especially for bus transport for smooth movement. Only one or two serious attempts have been made to provide more road capacity for bus systems in the Indian context. Others have been lackadaisical in their approach as a result of which such systems collapsed even before they had taken off properly due to lack of discipline on the part of road users. The policy suggests certain provisions in the Motor Vehicles Act to facilitate enforce such discipline. It is common knowledge that provisions in the absence of an effective implementation do not serve the purpose. Public transport, walking and cycling are very much more space efficient than private vehicles, especially cars. The most successful urban transport systems in Asia are those that have encouraged walking and cycling. The policy guideline assures support for such nonmotorised movement with an emphasis on the need to consider seriously the larger public perception regarding design and use of facilities for such movement. There is need for percolation of these ideas to the city level not only to merely gain the financial support being offered as incentive but also to convince the masses on the point that public transportation along with nonmotorised movement is most sustainable on economic, financial, social and environmental grounds.

The fare issue is yet to be tackled as a strategic matter in any urban area. Proposals to increase fares of public transport systems have always been made but never seriously taken let alone implemented. Moreover, these arguments for doing so were limited to the finances of public transport operators. A far more seasoned and mature argument would necessarily has to allow a full range of options to be considered, not just in the fare and service quality dimension but also regarding the regulatory framework and the approach to provision of explicit subsidies. The policy framework attempts to sideline this issue by considering only implicit subsidies which the operators themselves would have to provide. Also, in a world that is moving towards cash transfers, direct financial assistance to poor travellers may be a better option than keeping fares low. No doubt, it would be difficult to pursue this line of action since demand-related data are so inadequate and the relevant technical skills are in short supply in the state and local institutions (World Bank 2005).

An essential remaining question is this: can the current regulatory arrangement, a public sector monopoly, with an outsourcing complement, produce the cost efficiency and service levels to make this mode competitive with individually owned motor vehicles? A clear and promising option is to move towards a market-based arrangement, by separating regulatory and service planning functions from the provision of operations, organising the latter through the medium of competitively awarded service contracts.

6.4.2 Some Underlying Current Issues

Few cities have taken concrete steps to reform the sector structure as a basis for the development of even a viable mass transit industry. Consider, for example, the initiatives taken to promote bus transport under the JNNURM (a brief account of some experience is given in the next section). While incentives are being provided, very little attempt has been made to insist on tariff reforms which are badly required as far as many bus systems are concerned especially in the public sector. Mere insistence on recovery of costs through a process of implicit subsidies (price discrimination) is inadequate. This approach needs to be supplemented by effective benchmarking norms for provision of explicit subsidies—a need that arises in the case of most urban transit systems. According to Sivaramakrishnan (2010), it is quite likely that the bus purchase component of the JNNURM will not have the desired impact on the metropolitan cities. Hopefully, as JNNURM-assisted buses come on the streets, the contestation for allocation of road space for public transport will become more pressing. The issue is whether city and state governments would then be forced to intervene to resolve the conflict which they have avoided for long. This is doubtful since the new buses are by and large a replacement of the existing fleet and may not signify a meaningful addition to public transport capacity. Further, it is pointed out that one of the objectives of central government funding under the scheme was to enable some leveraging of funds by states and local bodies. It is now recognised that liberal provision of central funds can lead to crowding out of other sources which are normally expected to make up for the balance of the funds requirements. Local governments also have faced serious legal and capacity constraints on forming partnerships with the private sector. According to the policy document, 'the Central Government would encourage the State Governments to involve the private sector in providing public transport services, but under well structured procurement contracts' (GOI 2006, p. 19). The initiative taken under the JNNURM has been half-hearted with the government considering the venture as something beyond its monitoring and control (except for the start-up process) and the larger public considering it as purely private activity.

A common problem is fragmented responsibility for transportation between many agencies. Reflecting the state/local split, no city has vested the prime responsibility for all aspects of urban/metropolitan transport in one institution. Pieces of decision authority, control over resources and accountability are spread widely between state governments, local governments and state and national parastatals. It is readily acknowledged that some fragmentation is both necessary and unavoidable. But, at any given level of fragmentation, there should be stable umbrella arrangements to coordinate various institutions. This tends to encourage a sect oral approach to planning. Plans are prepared with different financing and implementation arrangements and lack effective institutional mechanisms to examine their mutual compatibility or interrelationships. Because of this unarticulated approach, urban transport development in many cities confronts serious difficulties, including delays in project implementation, wasteful investment and so on, and in many cases,

transport interventions do not produce the desired effect. The presence of a unified metropolitan transport authority (UMTA) could solve many of these issues. But progress has been tardy, and in cases the authority has been set up such as Delhi, Bangalore, and Mumbai, it has been established by an executive order except in Hyderabad where it has been constituted under a special enactment. All UMTAs are essentially recommendatory since the thinking is that all coordination bodies must not be implementing agencies. They are only expected to be excellent platforms for coordinated thinking and planning.

The presence and growth of the spillover effects from the urban economies justifies a reconsideration of the present role of the central government in urban transport which is still confined to a few dimensions. At the local level, most large cities are able to make decisions and implement them. But they may not have the right incentives to make strategic decisions that do not compromise the long-term interests of the cities and the nation. Moreover, there need to be adequate checks and balances that would make sure a good strategic plan gets implemented. The responsibilities of the central government even under the NUTP are limited to the support of preparation of urban master plans and large urban transport investment projects, setting technical standards, giving some policy guidance, providing some financial incentives and maybe promoting knowledge exchange and facilitating capacity building. But under current decentralised arrangements, the state and municipal governments take primary responsibilities—both functional and fiscal—for urban infrastructure, including urban transport. Central monitoring and supervision are limited at the local level where planning and policy implementation is carried out. To a great extent, this situation has created an institutional gap in addressing the spill over effects of urban transport problems which is also reflected in the slow transfer of powers and resources from states to local governments. Further, the political constituencies of state and local institutions being different, the continuing dominance by the state produces transport policies, and investments are not properly aligned with local interests. Equally significant is the problem of proliferation of state and local institutions and parastatals which has been unusually high, resulting in diluted regulatory and funding authority and accountability for urban transport matters. Cities have not developed capacity for public transport regulation. The policy framework must provide specific guidelines on the institutional mechanism that is required for regulatory purposes especially when the paradigm of development of infrastructure and services is no longer the same as in the past.

Traditionally, the approach has been supply oriented, and traffic growth biased, and continues to be so. The resulting policy orientations and decisions on how to spend available funds have left large economic and spatial segments poorly served and have not been as effective as they could have to make these cities competitive. In the short term, it neglects the mobility of low-income and poor travellers, especially the nonmotorised ones. It does not involve any use of traffic restraint tools and hence leaves street-based public transport services to the mercy of unrestrained competition from individual motor vehicles. Moreover, it favours the most capital-intensive public transport modes (metros and other urban railways) which may not be warranted by either traffic density or passengers' ability to pay or their budget

capacity to pay subsidies in perpetuity. In the longer term, the emphasis on increasing road capacity encourages car-based urban development patterns. The actual policies, as opposed to the statements in principle, thus appear to be both socially regressive and financially unsustainable. There is a conflict with the guidelines enunciated in the urban transport policy statement in a number of ways. In the short term, it neglects the mobility of low-income and poor travellers, especially the non-motorised ones. It does not involve any use of traffic restraint tools and hence leaves street-based public transport services to the mercy of unrestrained competition from individual motor vehicles. Moreover, it favours the most capital-intensive public transport modes (metros and other urban railways) which may not be warranted by either the traffic density or passengers' ability to pay or their budget capacity to pay subsidies in perpetuity. In the longer term the emphasis on increasing road capacity encourages car-based urban development patterns. The actual policies, as opposed to the statements in principle, thus appear to be both socially regressive and financially unsustainable.

Another aspect that is missing in the policy document, one which is a characteristic feature of urban transport systems, relates to a dedicated fund that needs to be made available for the purpose. According to World Bank (2005), the problem of underfunding is an inherent one due to the reduced link between what is paid by users and the funds brought back to bear on the local transport system. There are several ways to do this. The most common way is to escape budget funding and create a closed loop from road user fees via dedicated funds to cities. A less common way, highly successful where it has been implemented, is to introduce local road charging systems, aiming for both revenue generation as well as demand management. Either way, the challenge is to create not merely urban road funds but urban transport funds. Private sector funding has a potential to be a complement, but the prime source of funds should be public which should enable a crowding in of capital local.

6.5 Some Experiences with Elements Under the Current Policy Framework: JNNURM and Public Private Partnerships (PPPs)

6.5.1 The Vadodara (Baroda) Experience

Vadodara Municipal Corporation (VMSS) took up the initiative of organising a city bus service on the basis of public–private partnership. As the lead implementing agency, it defined the bus routes, bus stops and fare structure and also the quality of service in terms of frequency. It had to follow guidelines for city bus services as per urban development and urban housing development department, was responsible to get NOC (No Objection Certificate) from GSRTC for stoppage of current services with the RTA being responsible for sanction of stage carriage permits under

Motor Vehicles Act. The bus stops were made by VMSS on a build–operate–transfer (BOT) basis. In lieu of the rights given to the operators for collecting fare, VMSS got a premium on a yearly basis from the operators. On the other hand, the private partner procured, owned and maintained buses: took care of expenditure on rolling stock and operation and maintenance (including cost of driver and conductor, supervision, fuel). It also provided uniforms to drivers and conductors. Another private party built and operated 124 pick-up stands to give support to the bus services on basis of advertisements.

To begin with, 41 routes were operated with 100 buses. VMSS income increased from bus operations as also from bus stands. This income was to be used for the infrastructure development of the city. The success of this venture was due to:

1. Quick approvals from state government
2. Quick decisions regarding tariffs, routes and frequency
3. Overall monitoring by VMSS
4. Transparent selections of the operator
5. Continuous consultation with stakeholders—public, police, etc.
6. Provision of plots for setting up workshop and fuel station. Parking, cleaning, etc. on a token payment of Rs. 1 per square metre

VMSS has encountered several challenges in terms of the phenomenal growth of three wheelers and personalised vehicles (two wheelers and cars) which have created difficulties in bus movement. A move towards heavy occupancy vehicle lanes and then towards bus rapid transit system could pave the way for an improved system to emerge.

6.5.2 The Jalgaon Experience

The motivation behind the application of the PPP model in Jalgaon was provided by the poor services that the then existing public operator, Maharashtra State Road Transport Corporation (MSRTC), was providing. MSRTC sustained continued losses from the business, and its demand for compensation from the Jalgaon Municipal Corporation did not receive any response. As a result, operations were discontinued in August 2009. The municipal corporation wanted to provide bus services but had neither the resources nor the requisite expertise to do so, and hence there was no option but to go in for the PPP model.

A special purpose vehicle (SPV), JNTU, was formed for this purpose. The SPV floated the tender for bus services which then received one response from Prasanna bus links (PBL). 'ECOBUS' thus began operations with the fleet of buses fitted with EURO III diesel engines with rates being Rs. 3 for the first 2 km and Rs. 0.60 per km thereafter. This system adopted E-enabled measures such as GPRS fleet tracking system, electronic ticketing system, LED and LCD displays in buses and stops and smart card passes. The frequency on all routes was 15 min. As a result, the

carrying capacity increased by 400 %, while average occupancy rose to 55 and a revenue increase of 500 %. All these were achieved due to sustained marketing efforts, more revenue from advertising and motivation of manpower, thereby providing high-quality services and above all achieving high level of operational efficiency.

However, a little more than a year later, the services have been withdrawn due to a number of reasons significant among them being the lack of infrastructure provision as provided in the agreement between the public and private partners. Noncooperation on the part of the MSRTC did not permit use of a terminal that has been lying unused ever since MSRTC stopped city operations. The absence of a bus terminus and depot space resulted in significant additional expenditure on diesel for bus turn around on every trip and empty movement at the start and close of the day. While the tendering process had specified 15 routes to be bid for only five were offered and the remaining not being offered at the instance of the MSRTC. It is our understanding that even the routes that were proposed were never planned which meant there is need for rationalisation of routes based on a comprehensive study that needs to be undertaken to examine origin–destination movements and also to categorise routes as trunks and feeder routes. This is a vital part of the urban planning and development department (or town and country) which is currently not being given any particular attention. Further, it is being realised that in the absence of model concession agreement prepared by the central government for use specifically for bus operations in urban areas (as was done for roads, ports, airports), there are no clear signals to the operators on what is expected from them. Addressing these issues of institutional weakness and the capacity-building constraints of urban local governments needs much more serious attention from national policymakers than what has been outlined in the policy framework.

6.6 Concluding Remarks

The central government has, no doubt, attempted to strengthen its role in urban transport under the NUTP to provide useful policy directions and reward good practices. However, since these attempts are advisory by nature, it is essential to realign the incentives of municipal governments in a far more strategic way so that the long-term objective interests of the cities and the nation are appropriately considered and incorporated into the local decision-making process. In relation to the incentives created by the central government, an urban transport performance benchmarking and evaluation system should be developed to monitor how cities are performing in city development including urban transport. It is well known that the absence of such benchmarking efforts has resulted in a decline of bus transport services in our cities especially those of public sector transport undertakings, almost all of which reflected most inefficient practices. More recently, the Ministry of Urban Development, Government of India, has attempted to provide comprehensive guidelines on service benchmarks (MOUD 2008). The crucial issue is whether these would ever be used in practice to encourage improvements.

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