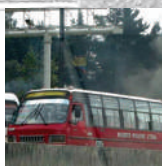


Formulating an Urban Transport Policy

Choosing Between Options



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FOREWORD

More than half the world's population now lives in its cities. The urban population continues to grow, especially in developing countries. As a result, the demands on the transport system are also growing, often at a faster pace than the population. Unfortunately, the increasing demand for travel has had adverse consequences on the health and well-being of the people and the economic efficiency of cities. Severe congestion, air pollution, traffic accidents and a fast rising energy bill have become serious concerns for public policy. Greenhouse gas (GHG) emissions from the urban transport sector have risen rapidly with adverse impacts on climate change. There has been an explosive growth in the consumption of non-renewable petroleum fuels. Nearly 1.2 million people are killed in road accidents every year. And the increasing difficulty of accessing jobs, education and healthcare has had adverse effects for the urban poor.

Unfortunately, urban transport planning is very complex and, to be effective, urban mobility solutions need to be multi-dimensional. Planning for urban mobility is not just about good construction of facilities, but also needs to integrate numerous aspects, among others land use planning, traffic management, human behavior, safety, gender, disability, affordability, and the impact on jobs. A comprehensive and holistic approach is needed, requiring a combination of both supply side and demand side measures. Most importantly, it must accommodate the needs of the poor.

All of these require a supporting policy framework that seeks to maximize the travel demand it can accommodate while minimizing the resources needed to do so. Such a framework would take into account optimal land use patterns and energy efficiency in transport systems. Few countries have so far formulated such policies and, in the absence of such a guiding policy, inappropriate interventions continue to be made.

It is in this context that this guidebook has been developed by the World Bank as a possible support to formulating policies for urban transport. It highlights the key policy issues that need to be considered, the options that exist and the factors that influence a choice between the options. It recognizes that situations differ from country to country and even from city to city. Choices depend on the local context and so a "one size fits all" cannot apply. Recognizing this diversity, it refrains from making prescriptions. Its target audience is senior policy makers and recognizing their time constraints, it is short and crisp and also keeps the discussion simple. It is also useful to students of transportation and public policy as it helps highlight fundamental issues for policy makers.

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This guidebook follows up on an earlier paper of November 2012 that was written jointly by the World Bank and the Asian Development Bank for the G-20. The previous paper was reviewed by several colleagues within the World Bank and the Asian Development Bank, who gave very useful comments. The Organisation for Economic Co-operation and Development and the International Transport Forum (ITF) also gave very valuable feedback. The authors wish to thank Ajay Kumar, Arturo Ardila Gomez, and Thierry Desclos, all from the World Bank; Zhi Liu, Lincoln Institute of Land Policy (ex-World Bank); Alexis Robert, OECD; and Jose Viegas, Mary Crass, Steve Perkins, and Phillipe Crist, all from the ITF.

This follow-up effort was able to incorporate several suggestions received from the reviewers at that time that could not be incorporate into the November 2012 version due to time constraints. This version of the guidebook has received additional comments from three practitioners with several years of experience in formulating and implementing policies. These have been extremely useful, as these individuals were able to contribute the perspective of those for whom this guidebook is primarily intended. Thanks are due to Anil Baijal, I.P. Gautam, and Ramon Arevalo for these comments.

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ABBREVIATIONS AND ACRONYMS

BRT	Bus Rapid Transit
CNG	Compressed Natural Gas
FAR	Floor Area Ratio
GHG	Greenhouse Gases
ITF	International Transport Forum
LAMATA	Lagos Metropolitan Transport Authority
LRT	Light Rapid Transit
LTA	Land Transport Authority (Singapore)
M2W	Motorized two-wheelers
NMT	Nonmotorized transport
OECD	Organization for Economic Co-operation and Development
P/ha	Persons per hectare
STIF	Syndicat des Transports Îles-de-France (Paris)
TOD	Transit-Oriented Development
TfL	Transport for London
WHO	World Health Organization

All dollar amounts are U.S. dollars unless otherwise indicated.

EXECUTIVE SUMMARY

As the developing world urbanizes, the demands on transport systems grow—often at a faster pace than the population does. This increasing demand for travel has had adverse consequences on the economic efficiency of cities as well as the health and well-being of the people who live in them. Severe congestion, air pollution, greenhouse gas emissions, traffic accidents, and a fast-rising energy bill have become serious public policy concerns. The primary reason for this trend is the increasing dependence on personal motor vehicles, necessitated by longer travel distances and made affordable by rising income levels.

Jurisdictions looking to reverse this trend must start by setting policies that lay out the guiding principles for more detailed downstream planning. Merely building facilities and adding to infrastructure capacity is rarely an adequate or durable response to the growing demands for mobility; it has to be complemented by several other interventions that channel demand in a desired direction simultaneously. Policy is what guides those interventions in the right direction.

The guide addresses broad topics, such as:

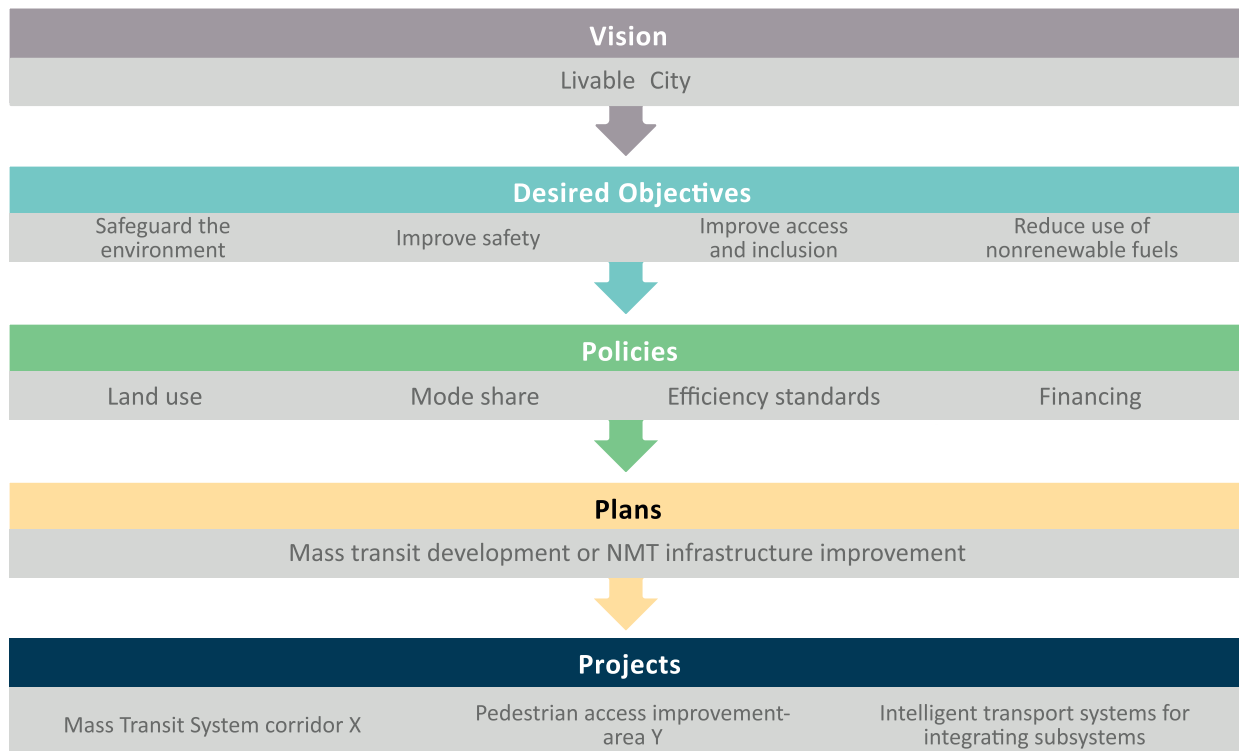
- What is policy and how is it different from a plan?
- Why and how should the government be involved in urban mobility?
- How can policy makers balance the issues of land use and transport? Of supply (expanding capacity) versus demand (reducing demand)?
- What modes of travel would be best?
- Who should bear the costs of urban transport systems — for example, just the bus passengers, or also the car drivers who benefit from less congestion on the road?
- What instruments can a jurisdiction use to implement its policies?

It also delves deeper into specific aspects of transport, such as:

- What are the pros and cons of motorbike use and what role they should have in the overall transport system in a city?
- What are para-transit and non-motorized modes, and how can they be integrated into a city's overall transport system?

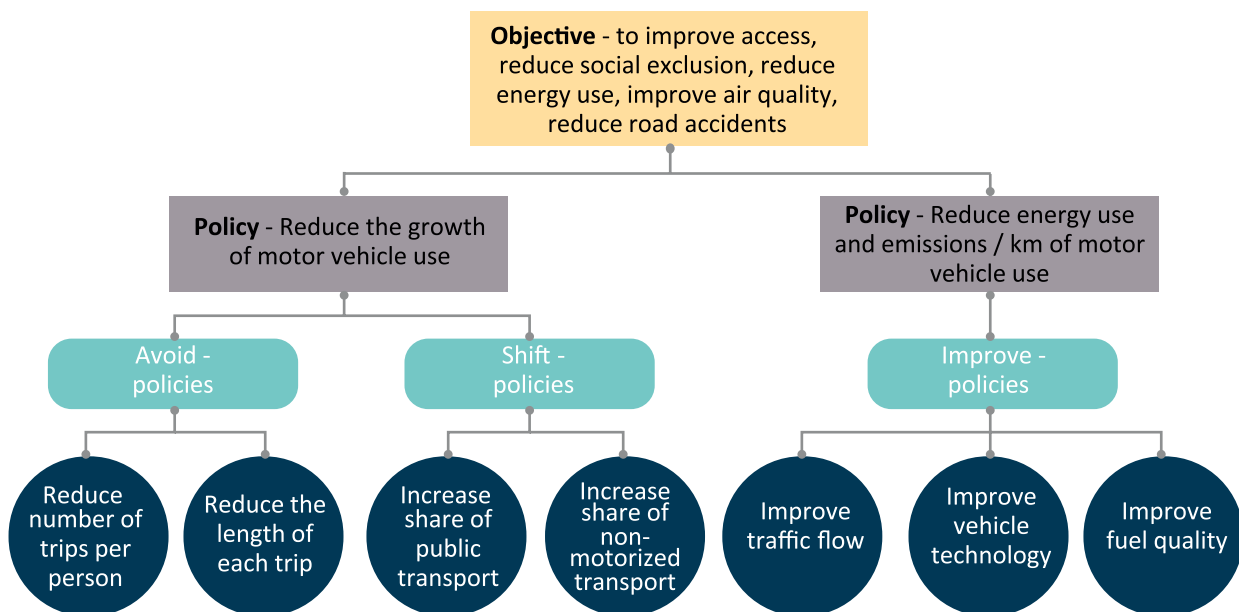
The first two sections of this guide—the Introduction and Comprehensive Framework—establish the background of what a policy is and how policies and subpolicies work together. The figure below, explored further as figure 1 in the Introduction, is a roadmap displaying how a vision leads to objectives, policies, plans, and, ultimately, projects.

THE ROADMAP—FROM VISION TO POLICY TO PROJECTS



The more detailed diagram of the policy level is shown below and explored as figure 3 in the Comprehensive Framework section.

COMPREHENSIVE FRAMEWORK OF POLICIES



This shows the relationships between policies and subpolicies, including the three clusters of “Avoid,” “Shift,” and “Improve” policies. It is in this context that this guidebook seeks to be a support to countries, provinces, regions, and cities in formulating their urban transport policies.

The lessons learned in the other sections of the guidebook are summarized below. Users will note that the longest two sections—Personal Motor Vehicles and Public Transport—are devoted to the two most important pieces of urban transport systems. Policies that affect these two components of urban transport will greatly affect the overall system, so it is important that jurisdictions understand what makes them run and how they are intertwined. The guidebook concludes with some suggestions for how to formulate and implement an urban transport policy.

GOVERNANCE

Given the complexity of urban transport, market forces will not necessarily lead to the best solutions for society; therefore, government has a very important role to play. Governance-related policies should address these three issues:

- Which level of government should be responsible for urban transport: national, provincial, metropolitan, or local?
- Which government sector should take overall responsibility for urban transport: urban planning, transport, or construction?
- What kind of institution is needed to coordinate all efforts?

The choice of level of government depends on the current structure of the government, and functions may have to be shared across different levels. In general, in large countries with several levels of government, the national level could focus on functions such as national policies and standardizing regulations and practices. Provincial and lower levels could focus on aspects like strategic planning, route network design, and enforcement.

The overall responsibility may change as urbanization progresses. At early stages of urbanization, the construction sector could lead, as the dominant issues relate to the construction of facilities and infrastructure. At slightly more advanced stages, the linkages between land use and transport become important, and so the land use planning sector could take the lead. At more mature levels—where land use plans are virtually frozen—the technical complexities of a transport system become important, and so the transport sector could take the lead.

The key issues that arise when considering a coordinating institution are (1) the agency's scope of responsibilities (i.e., comprehensive, limited to managing the public transport system alone, or limited to strategic planning only); (2) how the agency should be empowered (i.e., dedicated legislation, generic statute, executive order, or agreement); and (3) how the agency is financed (i.e., public subsidies, dedicated taxes, or authorization to collect taxes and raise revenue from commercial exploitation of property). Again, a choice depends to a large extent on the current constitutional philosophy and inter-governmental fiscal relationships.

LAND USE AND TRANSPORT

The pattern of land use has a strong influence on travel demand. Compact cities have shorter trip lengths and, therefore, lower travel demand, especially for motorized travel. On the other hand, sprawling cities may allow larger landholdings and bigger homes, but travel distances increase and necessitate a greater reliance on motorized travel. The key question for public policy, therefore, is:

- **Is there a need for specific interventions to control sprawl, or can a city be allowed to grow as per demand?**

Land-rich developed countries, where urbanization rates are already very high, may be able to allow market forces to determine the city's growth. However, in land-poor cities, and those at relatively lower levels of urbanization, there will be a need to accommodate a much larger urban population in the years to come. Therefore, public policy interventions will need to channel the growth in a socially optimal manner, promoting more sustainable modes of transportation. The thrust of the efforts would therefore be toward reducing the length of trips and maximizing the use of public transport and non-motorized modes.

There are three main policy instruments available to channel growth in the desired direction. Standards for floor area ratio can be relaxed to allow more intensive land use, or tightened, leading to more sprawl. Mixed-use planning "or transit-oriented development" can be used to intersperse living and working locations and therefore shorten travel distances. Finally, defining urban-growth boundaries, such as by having wide green or no-development zones just

outside the boundary, helps make development more contiguous and compact.

MODES OF TRANSPORT

People use several modes of transport to meet their travel needs. On a per-passenger basis, public transport and non-motorized modes require less urban space for their right of way, emit less pollutant, and consume less fuel compared with personal motor vehicles.

However, non-motorized modes are not suitable for long trips, and public transport is viable only in areas where there is relatively high demand. The key questions for an urban transport policy are:

- Should all modes of travel be allowed for use as preferred by their users, or should specific modes of travel be promoted, through targeted incentives and disincentives?
- If only specific modes of travel are promoted, how should they be chosen?

Individual preferences often tend to conflict with the public good, leaning toward the convenience of personal motor vehicles (cars or motorbikes), without regard for the disproportionate use of road space, energy consumed, and emissions when compared with public transport. Which mode to promote depends largely on the level of demand for transport services and the travel distances involved. For short travel distances, non-motorized modes would seem to be a better option; for high-density routes, it would be public transport. However, in low-demand areas with long travel distances, there may be no alternative to personal motor vehicles.

PERSONAL MOTOR VEHICLES

Primarily, rapid motorization in urban areas has taken place due to the growth in use of personal motor vehicles. Public policy should determine:

- Whether such growth can be allowed to take place unhindered or whether it should be restrained in some way, and if it should be restrained, then to what extent.

- Whether personal motor vehicles that consume large amounts of fuel need to be discouraged by public policy or whether such a choice can be left to user preference.

Land-rich cities that have often grown in a sprawling manner may have no option but to accommodate personal motor vehicles liberally. If alternative modes of travel are adequate and acceptable, then cities can afford to restrain personal motor vehicles in some way. But if land is scarce, then strong restraints are inevitable.

In terms of vehicle size and fuel consumption standards, dense cities with limited space will prefer their residents to own smaller vehicles that need less space to park and use. Similarly, cities that import a lot of their fuel and have concerns about energy security will prefer fuel-efficient vehicles. Areas without serious space constraints and those that produce fuel may not feel the adverse impacts of large-sized and high-fuel-consuming vehicles.

Motorized two-wheelers, typically motorbikes, are a special field within the broader category of personal motor vehicles. They are convenient and affordable, but unsafe. They also use more road space and cause more pollution than buses, even if they are, generally, preferable to cars on these factors. The policy question, therefore, is the kind of role that should be defined for them within a city's overall transport system. The options are to:

- Mitigate the negative externalities of motorbikes and allow them to be used freely thereafter.
- Limit their use to only some areas of the city.
- Mitigate the negative externalities and then allow use in some limited areas only.

Mitigation can be achieved by setting safety standards such as helmet laws or environmental standards. But if negative impacts, such as safety and pollution, are very severe, then there may be a case for banning use in some parts of a city, especially where public transportation is readily available. On the other hand, their use may be difficult to ban if they are the predominant mode of personal transport for income or access reasons.

PUBLIC TRANSPORT

Public transport remains a very important component of the greater transport system in a city, especially larger cities. For cities in the developing world, in particular, it is the backbone of the transport system. Important public policy issues are:

- **Pricing.**

The main pricing issue is the extent to which the costs of public transport need to be recovered from fares. An additional concern is whether a case can be made for nonusers to pay some part of the costs, because they too benefit from public transport. The most commonly chosen option is the one where costs are shared. Typically, several cities aim to cover capital costs through the public budget, whereas the operating costs are met from user fees.

- **Quality vs. cost trade-offs.**

If a very high share of the population is already using public transport, then increasing costs would adversely impact many who value affordability. But if the current share is not very high, or is sharply declining, then improving quality will be a good way to attract those who use personal motor vehicles or to slow the declining trend in public transport use. To attract car users, public transport may need different classes of service, where one class is subsidized as a basic service and the other is fully paid for by the user as a premium service.

- **Coverage and reach of the public transport system,** in terms of both space and time.

Generally, coverage issues relate to how much geographical area of a city should have easy access to public transport and how frequently services should be provided. In the core city area, access to



public transport within 500 meters would be desirable for the entire population because these areas have limited space and tend to be already congested. However, as one moves out toward the fringes of the city, space limitations as well as congestion are less severe and cost implications of increasing coverage go up. Therefore, access standards could be higher and frequency of service standards lower.

- **Which technology to choose.**

A variety of public transport technologies exist, with varying flexibility, cost, and capacity. The choice is usually determined by level of demand and carrying capacity required, as well the capital and operating costs, but spatial patterns of a city and its growth projections are also relevant. Cities that are linear, with relatively long travel distances, may prefer metro rail systems that have a high carrying capacity; however sprawling cities may need a wide bus-based network. Cities sensitive to aesthetics may prefer underground systems or bus systems. Cities with tall building bylines and narrow streets usually prefer underground systems or monorail systems, as the right of way on the roads would be a constraint.

- **Capacity considerations.**

Should capacity requirements be based on current requirements or on future projections? Because the future is uncertain, there is a risk of wasteful investment if projections are made too far in advance; however, economies of scale may warrant higher investments today to obviate a much higher investment tomorrow. Growth trends and cost differences between expanding now or in the future must be studied.

- **Industry structure and regulatory rigor.**

There are three broad industry structures for public transport. In the Unified Public Model, a monolithic public entity owns and operates public transport services in the city. This model tends to be expensive and requires a high level of public subsidy. In the Loosely Supervised Private Model, there is no centralized or coordinated planning and there are multiple independent operators, which may lead to oversupply or undersupply. The Closely Supervised Private Model, planning is done by a public entity and services are provided by a separate entity based on struc-

tured contracts with the public entity. This model seems to have emerged as a viable intermediary and is the current global trend.

PARA-TRANSIT

As the name implies, para-transit (or intermediate public transport) refers to the set of transport services that fall between a city's structured and formal public transport system and the personal transport that people use. Typically, the vehicles are not used exclusively by the owners and are available to others for use, for a fee; their routes are flexible and change based on demand. The key public policy question is how should para-transit be positioned within a city's overall transport system? The options are:

- As a complement to the current public transport system.
- As an independent system to serve a high-cost and high-quality market.
- As an independent system to serve a unique clientele.

Urban transport plans should work toward positioning para-transit as a complement to public transport, not as a competitor. Options for accomplishing this include limiting para-transit vehicles in areas that are congested and already served by public transport; controlling the number of para-transit vehicles licensed to operate in any area; and developing a fare structure that would not create competition with public transit, yet allow for affordable service in places not reached by public transportation.

NON-MOTORIZED TRANSPORT (NMT)

Non-motorized modes are the most fundamental of transport modes and the most sustainable. They are also an important method of transport for the poor. But increasing travel distances and increasing affordability of personal motor vehicles are driving their share down. The choices for public policy makers to consider are:

- Should this declining trend be allowed to continue?
- Should policy seek to contain, or aggressively reverse, the decline?

If policy makers promote NMT, this will require improved infrastructure and therefore incur a cost. That cost would be worthwhile,

especially in cities that are compact, already have high NMT use, and have lower-income populations who cannot afford other modes of transport.

PARKING

Parking is an essential component of any urban transport system, but the questions before public policy are:

- How much parking needs to be provided? Should supply match demand, or should it be limited to try to restrain the use of personal motor vehicles?
- Who should pay for parking—public agencies, users, or a combination of both?

The basic principle is that parking is needed, but restricting parking availability is a good tool to discourage the use of personal motor vehicles. Furthermore, charging for parking is a fair policy, given that it uses up valuable urban space. However, in areas where alternatives (i.e., public transport systems) do not exist, such restraints will adversely impact accessibility, and some users cannot take public transport and must use personal vehicles. Therefore, public policy needs to balance these conflicting needs: the need to restrain the use of personal motor vehicles with the need to accommodate those travelers and those areas that lack other options.

SUPPLY VS. DEMAND MANAGEMENT

Two ways of matching the supply and demand for transport are to increase infrastructure capacity to meet demand or to reduce the demand to levels that the current capacity can accommodate. Policy makers must decide whether to focus on:

- Increasing supply by increasing infrastructure capacity
- Reducing travel demand by reducing the average length and number of trips that people make
- A combination of supply and demand measures

A key determinant seems to be the level of urbanization. At early stages of urbanization, cities need to build capacity, as the population is expected to grow many times over. Therefore, supply-side

measures ensure a basic level of infrastructure capacity. The key demand-side measure at this stage of development will be in spatial planning that emphasizes a compact city and mixed land use. However, as urbanization reaches a higher level of maturity, there will be a case to slow down the supply-side measures and use demand-side measures that seek to more actively reduce the number of motorized trips. It is expected that supply-side measures would, by this stage, have added adequate capacity, and demand-side measures should work toward a more optimal use of this capacity.

ALTERNATIVE FUELS

Concerns such as air quality and import bills for petroleum fuels can be addressed through the use of alternative fuels, but there are significant costs to doing so. Energy security concerns regarding petroleum fuels could make higher-cost alternatives attractive for strategic reasons. Fuel alternatives are at various stages of development and require investment in infrastructure. Public policy, therefore, needs to decide whether to:

- Take no action and let fuel choices be determined by the market.
- Make a concerted effort to shift to an alternative.

The choice depends on how important and urgent the use of the alternative fuel has become. If a gradual shift is adequate, then a provision of incentives would be adequate to let the market make the shift happen; if there are more urgent needs, then legal enforcement or stiff penalties may become necessary.

FINANCING

Urban transport needs huge investments, for both one-time capital expenses and annual operating expenses. A key public policy question is who is responsible for these expenses:

- Should expenses be paid only by users of the systems?
- Should expenses be paid by all beneficiaries? And who are the beneficiaries? Are they only the users of a system, or do some nonusers also benefit?

In some cases—for example, a parking facility—the only beneficiaries are the users. But in other cases, nonusers also benefit—a bus system

benefits riders and also nonusers who drive on less-congested roads. Nonusers could be within the city or within a larger jurisdiction, such as the region, the country, or even the world. Therefore, it is appropriate for all users to pay for these costs. Generally, payment from users would be recovered via fares and user fees; payment from nonusers is recovered via generic taxes or specific levies. Generic taxes are appropriate when the beneficiaries are not clearly identifiable, but when they can be identified, specific levies—on only them—are more appropriate.

ROLE OF THE PRIVATE SECTOR

Transport services can be offered by the public sector or the private sector. Services that can be provided in a competitive market and are profitable will attract the private sector; services that are not profitable will have to remain a public sector responsibility, but the public sector can contract the private sector on terms that would attract them. A key issue for public policy is the extent to which the private sector should be involved. The options for an urban transport system are:

- Services are provided by the public sector with assets it owns.
- Services are provided by the private sector with assets owned by the public sector.
- Services are provided by public–private partnerships.
- Services are provided by the private sector with assets it owns.

The private sector can bring in performance efficiencies that reduce the cost of transport services. Often the private sector has financial resources that can supplement public budgets. So, win-win opportunities need to be structured: the private sector makes profits, and the public sector secures “public value.” There is usually a trade-off between the public value of the service and the level of return it can offer to an investor. High public value and low returns would be a case for public provision, whereas good returns and limited public value would be a case for services to be in the private sector. A country’s political ideology and historical factors can have a strong influence on the choice.

PROCESS AND IMPLEMENTATION

Any policy, once formulated, needs to be acceptable to all stakeholders if it is to be successfully implemented. To ensure such buy-in, exhaustive participatory practices and processes must take place during policy formulation. These include the following:

- Prepare an initial policy draft.
- Invite suggestions, concerns, and feedback from the public and key stakeholders.
- Decide the policy’s form.

Typically, an initial draft is prepared by specialists tasked to do this. This draft needs to be so simple that any citizen can understand its implications. Further, it is important to ensure, at the drafting stage itself, that the policy choices are both practical and doable.

A good consultation process is essential in order to get valuable feedback to improve the draft and make it more applicable, to explain why certain choices were made and thereby secure greater acceptance, and recruit key champions.

Once the final draft is ready, it is important to decide the policy’s form. The options are (1) formal legislation or decree; (2) a policy document that also spells out the incentives for abiding by the policy; and (3) a policy document or a white paper, with no statement of incentives but with a statement of the government’s intent. The choice depends on the degree of importance the government intends to give to the policy implementation. Legislation is certainly the most powerful option, but it runs the risk of a drawn-out process—both in its first promulgation and in any later changes. A policy document with financial incentives could be equally powerful and less cumbersome, but it cannot penalize noncompliance. Besides, inadequate financial incentives will not attract interest. A policy document without a statement of available incentives is a good way of conveying a government’s preference, but it cannot ensure compliance.

The choice will ultimately depend on the specifics of each situation. If the current problems are acute and urgent mitigation essential, then legislation or financial incentives are crucial. If the problems are foreseen for the future and the objective is only to set the right direction, then a policy statement could meet the objectives.

INTRODUCTION

THE PROBLEM

As the developing world rapidly urbanizes, the demands on transport systems also grow—often at a faster pace than the population. Unfortunately, the increasing demand for travel has had adverse effects on the health and well-being of the people and the economic efficiency of cities. Severe congestion, air pollution, GHG emissions, traffic accidents, and a fast-rising energy bill have become serious concerns for public policy. Congestion has led to travel speeds diminishing considerably. The air we breathe has become more polluted, adversely affecting our health. Rapidly rising GHG emissions from the urban transport sector have adversely affected global climate change, and we have seen an explosive growth in the consumption of energy, especially nonrenewable petroleum fuels. All of these issues have led to serious concerns about the sustainability of our planet. The increasing difficulty in accessing jobs, education, and health care has affected the urban poor most adversely.

The primary reason for these problems is the growing dependence on personal motor vehicles, necessitated by longer travel distances and made affordable by rising income levels. As a result, many developing countries have seen a rapid growth in the number of motor vehicles. China has seen a 224% growth in the number of motor vehicles in the short period between 2003 and 2009. Turkey, India, Mexico and Malaysia have seen growths of 69%, 66%, 47% and 44% during the same period. Most other developing countries have also seen considerable growth. Reversing this trend requires a systematic and well-coordinated plan of action. A policy (or a set of converging policies) for dealing with these problems would offer a much-needed guiding framework for developing plans of action—plans that not only provide the required capacity to meet the growing travel demand but do so in a manner that is equitable, sustainable, affordable, safe and energy efficient.

THE MULTIDIMENSIONALITY OF URBAN TRANSPORT

Because cities are complex and multifaceted, urban mobility planning needs to be multidimensional. Though this approach is intricate, it is not difficult. It simply calls for more holistic thinking and comprehensive planning. In other words, construction of mass transit systems need to be backed up by complementary transit-oriented development, the right kind of feeder systems, pricing signals that discourage personal motor vehicles, and public awareness campaigns. Further, transport infrastructure and services need to be provided in an integrated manner so that seamless travel—across different modes—becomes possible. They need to be affordable for the poor and at the same time be financially sustainable; they need to be designed to accommodate the needs of women, children, the elderly, the disabled, and other vulnerable populations. Thus, they need to be universally accessible.

Rarely is building facilities and adding to infrastructure capacity an adequate or durable response to the growing demands for mobility. It has to be complemented by several other interventions that simultaneously channel demand in a desired direction. Without this cohesion, additions in infrastructure capacity will not result in the desired outcomes.

The comprehensive and holistic planning approach requires a combination of supply-side and demand-side measures. It must consider land use planning, urban geography, environment, human behavior, local culture, economics, finance, public policy, political economy, governance, health, safety, gender, disability, affordability, livelihoods, communication, information technology (IT), and a host of other things. It is important to fully understand the links between the different dimensions in order to secure the best outcomes. Often the most obvious remedies are not the most appropriate ones. For

transport, principles for pricing transport services, rules and incentives for engaging the private sector, and a host of others items that would converge to reach the desired objectives. Thus, policies could, for example, promote the following:

- Land use plans that work toward the growth of compact cities, with higher “floor area ratios,” mixed use, and greater convenience in using public transport
- Investments in improving public transport rather than in increasing road capacity for all motorized vehicles
- Investments in safer walking and cycling areas
- Preference for renewable fuels
- Financial support for clean fuels in order to help them grow to commercial scale and compete with traditional fuels
- Measures to curtail the use to personal motor vehicles
- Preference for using the private sector to operate service.
- Use of nontraditional means to raise finances, especially those that get all beneficiaries to pay for facilities and services that they may not even use (for example, the owner of a property close to a metro station even if he or she does not use the metro system)
- A well laid-out policy helps a planner to choose among multiple options and to develop plans that are well coordinated and focused.

So far, few jurisdictions have formulated such guiding policies. In their absence, uncoordinated, unfocused, and short-term interventions tend to be made. Therefore, urban transport policies need to be formulated by countries, regions and cities. It is with a view to support the formulation of such policies for urban mobility that this guidebook has been written. It has focused primarily on policy issues relating to passenger transport rather than freight transport. However, for some of the issues, such as governance, alternative fuels, and role of the private sector, the options presented would apply to freight transport as well. The focus on passenger transport has been largely because it is this segment that accounts for a large part of the congestion, pollution and energy consumption problems that we see today. This is evident from the fact that the number of passenger vehicles has been growing faster than the number of freight vehicles.

Investment plans of governments are also focused more on meeting the rapidly growing needs of passenger transport. Subsequent versions of this document may, however, like to look at freight transport issues as well.

It is hoped that formulating a comprehensive urban transport policy will facilitate the development of well-integrated plans for making travel within cities safe, clean, convenient, quick, affordable and efficient in terms of the energy consumed.

WHAT IS A POLICY?

The word “policy” tends to be used in many contexts. This document has been written with the understanding that a “policy” lays out the guiding principles for more detailed downstream planning. A “plan”, on the other hand, is a set of specific interventions derived from the “policy”. A policy helps one choose among multiple approaches that can be taken to achieve a desired objective.

A desired objective may be to reduce nonrenewable and imported fuel consumption; a policy may be to do so by securing a shift to the use of public transport and nonmotorized modes. The plan would contain a set of actions that together would achieve the objective. Examples include enhancing mass transit capacity, levying of road user fees or higher fuel taxes on personal vehicle users, or allocating a higher degree of road space to pedestrians and cyclists. Another objective may be to make access to employment and education affordable for the poor. Associated policies may require public transport services to be priced below their cost of production and the gaps paid for by nonuser beneficiaries.

Another way of looking at it is that policies do not have a universal right choice: the choice varies from situation to situation. For example, a public transport system may be operated by the public sector or the private sector. Neither can be considered the universal right choice; however, a jurisdiction would make a policy decision on this issue in the larger local context, such as the political ideology, private sector capacity, market structure, potential for competition, and regulatory capacity of public administration. Once this decision is made, it guides future action. Similarly, one city may fix public transport fares very low and provide subsidies from the public budget; others may prefer higher fares to enable higher cost recovery

from users. This choice would depend on the general income levels, the emphasis proposed to be given to the use of public transport, the affordability of subsidies from public revenues, and so forth.

Thus, a policy is a higher-level set of principles that the operational or design levels take into account in planning their actions. (see **Figure 1**)

OBJECTIVES OF AN URBAN TRANSPORT POLICY

As noted earlier, there are several negative consequences in satisfying the urban travel demand. As more people move, travel longer distances, and use personal motor vehicles, the available road space is choked, slowing everyone down and hampering mobility in the process.

The increased use of motor vehicles has led to environmental degradation in cities. Poor air quality has had adverse impacts on people's health, and GHG emissions have contributed to climate change. Because the poor are most exposed to motor vehicle exhaust, they are particularly vulnerable to these adverse impacts.

Road safety is also a serious challenge. According to World Health Organization (WHO) estimates (**Figure 2**), about 1.24 million people die every year on the world's roads, and another 20 to 50 million sustain nonfatal injuries as a result of road traffic crashes (compared with an estimated 1.8 million AIDS-related deaths in 2008, an esti-

mated 1.3 million tuberculosis-related deaths in 2007, and 1 million malaria-related deaths in 2008). Road accidents can have a serious impact on families, driving them into poverty for up to three generations (The Economist, 2014). Thus, road accident deaths are a serious problem worldwide.

A city's transport system needs to meet several very important social objectives. Most significant is universal access—meaning that the system should be available to everyone. People need transport to help them access jobs, education, health care, and other day-to-day needs. Lack of access to transport can lead to exclusion from economic and social opportunities. Integrating the social dimensions into urban transport planning—to benefit all users—requires that three main aspects be considered:

- **Affordability:** Can users afford to use the system and pay the fares?
- **Accessibility:** Can users access the services and rely on them to be available when needed?
- **Quality and personal security:** Are the transport services of reasonable quality, and are they safe to use?

These transport systems also need energy, with the predominant fuels today being nonrenewable. In addition, several countries need to import this fuel and often fall victim to price fluctuations over which they have little or no control. This instability threatens their energy security so policies need to address this challenge.

Photos: Sam Zimmerman



FIGURE 1 THE ROADMAP—FROM VISION TO POLICY TO PROJECTS

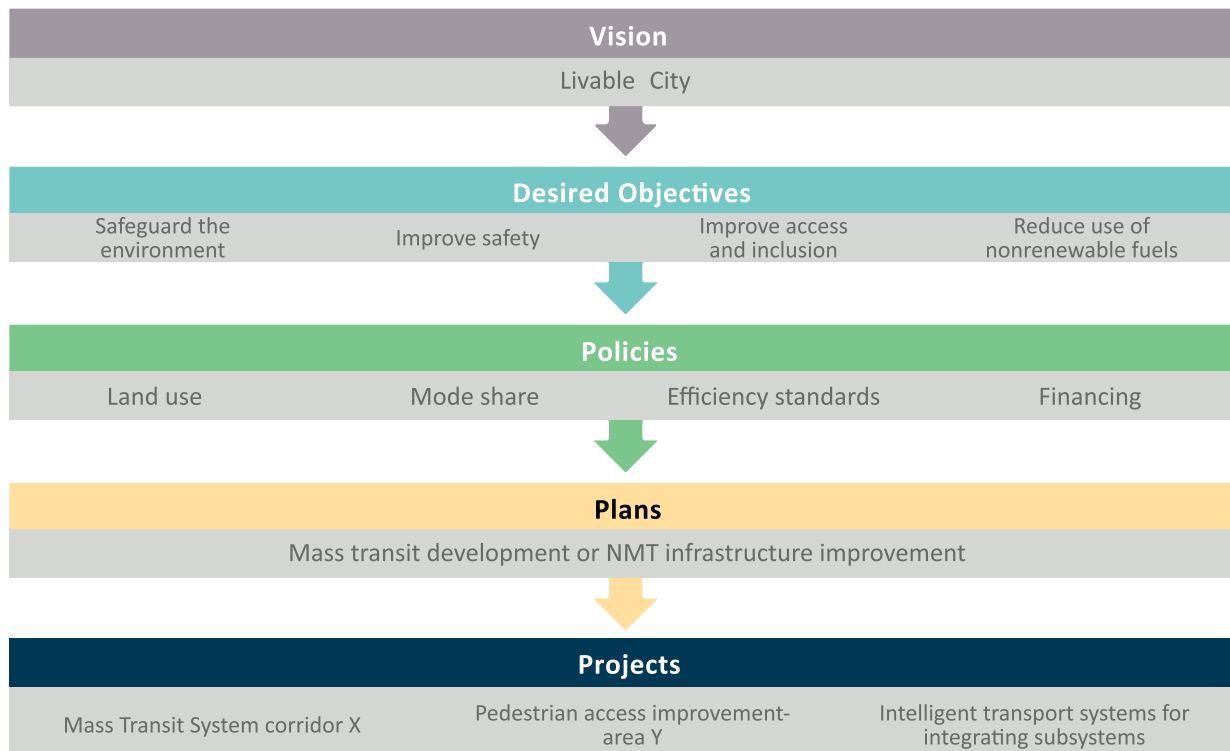
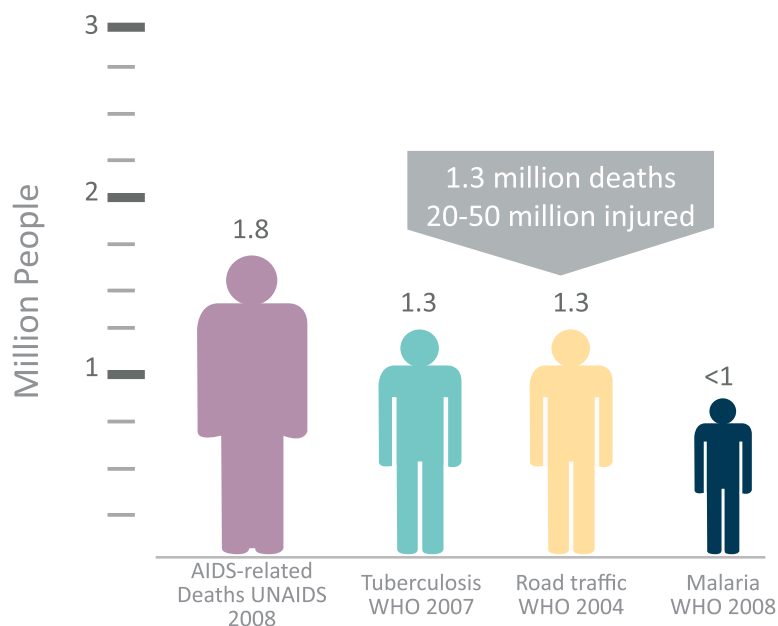


FIGURE 2 NUMBER OF PEOPLE KILLED BY DIFFERENT CAUSES



Thus, improvement of mobility, environmental quality, universal access, safety, and energy security are fundamental objectives of any urban transport policy. Although each country or jurisdiction may adopt a different approach, based on the local context, they will need to work toward the above objectives.

PURPOSE OF THIS GUIDEBOOK

This guidebook is intended to be a practical support for formulating urban transport policies at the national, provincial, and local levels. To this end, it highlights some of the important issues that arise when creating an urban transport policy. For each of issue, the guidebook presents the existing options and suggests the factors that need to be taken into account when choosing between those options. The guidebook will also be useful to students of public policy, because it presents a relevant framework—for many sectors—of policy issues, options, and factors that influence decisions.

It must be recognized that urban transport policies are usually needed at multiple levels—national, provincial, regional, and local—each with its own areas of responsibility. For example, national levels will be responsible for setting fuel and vehicle standards, and a framework for the national government’s financial support for investments. Provincial levels would be involved with taxation policies and those relating to investment financing, and could be involved with regulatory issues and safety standards. Regional and/or local levels would be involved with formulating policies on land use, mode share, and parking, among others. There is no hard and fast rule about this allocation of responsibilities between the different levels of government, and it would vary from country to country based on constitutional provisions and political philosophies. Further, such urban transport policies are best formulated within the ambit of a larger policy for urban development—one that encompasses land use, housing, jobs, and so forth.

It also needs to be recognized that a very large number of policy issues come up as one delves deeper into the process. For example, policy choices may be made at a higher level to decide between the rail and road options for mass transit systems. However, at a deeper level, policy choices would have to be made with regard to the gauge of metro rail systems, the floor height of

buses, the fuel to be used, and scores of similar issues. Though these concerns are more technical in nature, they do involve larger policy issues (see **Box 2** for an example). The scope of this guidebook does not permit going into such detailed levels of policy choice. In the interest of being practical and useful, we have limited discussion to the higher-level policy issues in the expectation that more detailed issues, which tend to be comparatively technical, would be easier to decide on once the broader policy issues are settled.

Further, we realize that guidebooks like this one will have to evolve and go through multiple updates as new knowledge becomes available. Wider consultation and review will help enrich them further, and so this guidebook will have to be an ongoing exercise. In fact, this current document itself is an upgrade; while its predecessor had the benefit of extensive comments from colleagues within the World Bank, the Asian Development Bank, the OECD, and the International Transport Forum, this newer version has benefited from an additional review by practitioners who have had years of valuable experience in how policies function at an implementation level.

TARGET AUDIENCE AND PRESENTATION STYLE

The target audience for this guidebook is those charged with the responsibility of developing an urban transport POLICY (NOT a PLAN) for a country, province, region, or city.

Because we recognize that senior policy makers lack the time to read long documents, we have written this guidebook in a style that is brief, crisp, simple, and yet comprehensive. It seeks to be a practical guide to policy making in urban transport; it is NOT a guide to the more detailed planning exercises that typically happen downstream.

This book contains several sections. Each addresses one important policy issue that generally comes up in policy making. It briefly presents the problem, the key question to be answered, and the choices that exist. Then it goes on to suggest the factors that can be taken into account in making a decision, without being prescriptive. It recognizes that policy makers know their respective situations better than the authors do, and so are better placed to make the right choices.

STRUCTURE

Following this introductory section, section 2 presents a framework of possible actions, highlighting the “Avoid—Shift—Improve” classification that has become common in professional practice. Section 3 talks about the governance of urban transport: which level of government should be responsible for it, which sector should lead it, and how different aspects should be coordinated. Section 4 highlights policies relating to land use planning and the benefits of integrating them with transport planning. Section 5 discusses the different modes of transport and whether there is a need for policies to promote any particular mode in preference to others. Section 6 delves into issues relating to personal motor vehicles and, more particularly, the extent to which policies should accommodate the car within the overall transport system. This section also goes deeper into motorized two-wheelers, which are fast becoming the dominant mode of transport in many developing countries. It looks at the benefits and problems of increased motorbike use and tries to help define a role for them. Sections 7 and 8 present policy options relating to public transport and para-transit, covering issues relating to pricing, coverage, technologies, etc. Section 9 presents options relating to nonmotorized modes. Section 10 presents issues relating to parking, and section 11 suggests a balancing of supply-side measures and measures to contain demand. Section 12 highlights options relating to alternative fuels. Sections 13 and 14 cover the financing of urban transport and the role of the private sector. Finally, section 15 covers issues relating to the process for formulating such policies, and options for their implementation.

BOX 2: GAUGE FOR METRO RAIL SYSTEMS

A policy on the gauge for the metro rail systems in India was discussed at length. While one view was that metro systems in India should adopt the broad gauge, which was the dominant gauge for the long-distance Indian railway system, another view was that there was no possibility of any integration between the urban metro systems and the long-distance railway systems. So, the standard gauge should be preferred, being the dominant gauge in metro systems worldwide. Issues as diverse as safety certification, easy availability of rolling stock, ease in aligning the routes with the road network, capital and operating costs, carrying capacity, national interest, possibility of domestic manufacture, and extent of rehabilitation needs came up in making a decision on this rather technical issue.



COMPREHENSIVE FRAMEWORK

As stated earlier, the problems of urban transport are multidimensional and require action on several fronts. Therefore, it would be useful to understand a comprehensive framework of policies and sub-policies, including their mutual relationships. Such a framework presents a simple way of looking at the different types of interventions in a comprehensive manner and understanding how they link with each other.

Urban transport policies primarily seek to enable people and goods to meet their travel demands but by imposing the least negative externalities on society. Broadly, the policies fall into three clusters: (1) Avoid, (2) Shift, and (3) Improve.

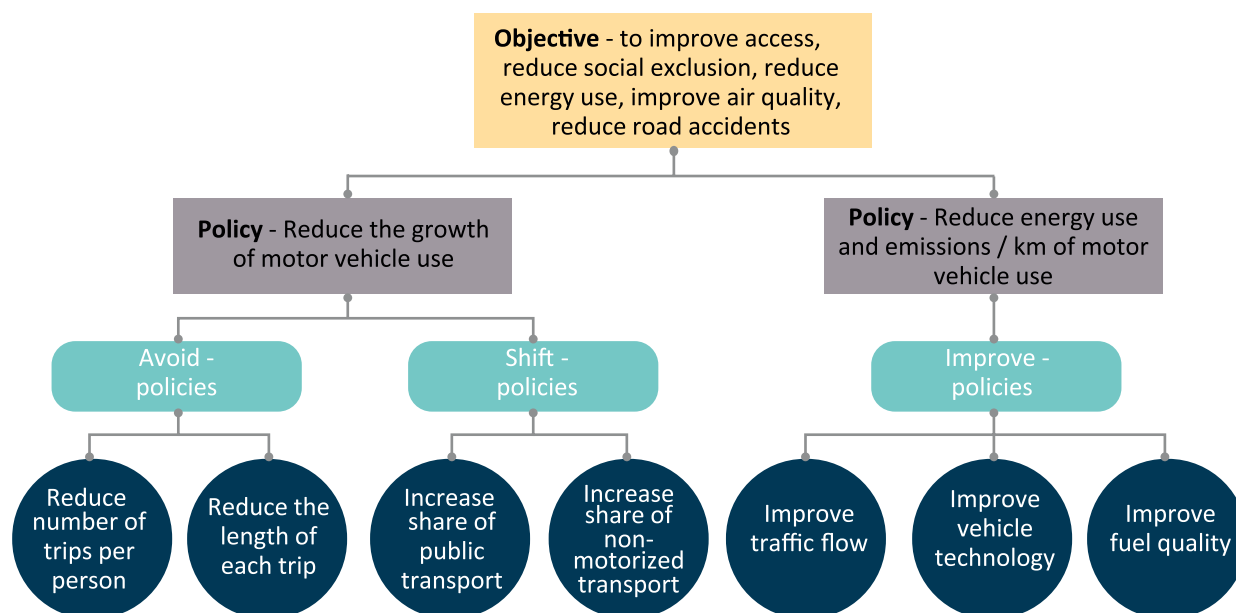
“Avoid” policies focus on reducing the demand for travel, especially by motorized modes. This could mean reducing the number of required trips or reducing the length of each trip, or a combination of both. Reducing the number of trips can happen, for example, if poli-

cies that encourage telecommuting or a reduced number of workdays can be put into place. Reducing the length of each trip typically takes place when cities are designed to be more compact and have mixed land use.

“Shift” policies aim at getting people to shift to more sustainable modes of travel, like public transport and non-motorized modes. This could happen through a combination of investments in improved public transport, safer infrastructure for non-motorized modes, and disincentives for the use of personal motor vehicles.

“Improve” policies seek to reduce the negative effects of motor vehicle use, such as fuel consumed or pollutants emitted, per unit of travel. This could be either through improving/expanding road capacity to allow improved traffic flow or through improving vehicle and fuel quality so that they pollute less and are more energy efficient.

FIGURE 3 COMPREHENSIVE FRAMEWORK OF POLICIES



In general, a combination of approaches is adopted, as each intervention has its positives and negatives. **Box 3** gives some relevant examples. Policy makers should understand the trade-offs so that the net impact of these positive and negative influences are appropriately balanced to secure a net positive outcome.

BOX 3: POSITIVE AND NEGATIVE INFLUENCE OF SOME INTERVENTIONS

- Road widening helps to improve traffic flow (at least in the short run) and thereby reduce emissions, but it encourages the use of personal motor vehicles.
- Using alternative-fuel buses improves air quality, but if the buses are more expensive, then the number of buses that can be deployed is reduced, thereby reducing public transport supply.
- Improving sidewalks enhance safety for pedestrians but take space away from the road and reduce its carrying capacity.
- Adding parking spaces will reduce the time spent finding parking, thereby improving air quality, but it will encourage the use of personal motor vehicles.
- Increasing fares will make public transport financially sustainable, but it will make it unaffordable to the poor.
- Using bus-only lanes and high-occupancy lanes will promote a better use of motorized vehicles, but it will worsen traffic flow for the vehicles that use the regular lanes and thereby add to emissions.
- Increasing fuel prices will discourage personal motor vehicles but will make public transport more expensive.



GOVERNANCE

BACKGROUND

There are four major reasons for the government to be involved in the provision of urban transport services:

1. There are several negative externalities to meeting the travel demand. Because individual travel preferences can have a harmful impact on society, it must be regulated. Just one example: people who use personal motor vehicles impose a cost on others using the available road space by adding to congestion, and so they should pay for it. Similarly, the vehicles cause pollution and deplete a nonrenewable source of energy. Governments need to get involved to ensure that such negative externalities are controlled.
2. Access to jobs, education, health care, and other social needs should be available to all residents, regardless of where they live, at all times of day. Public transport services are often necessary to meet the needs of those who cannot afford or cannot use personal motor vehicles (children, the elderly, the disabled, and so on). Because the private sector is motivated by profit, it is difficult to entice it to providing public transport services in low-demand areas and at low-demand times. This is where the government needs to step in to ensure that services are available universally, either by offering incentives that are attractive enough to private entities or by operating such services through public agencies.
3. There are strong economies of scale in several urban transport services. For example, there would be economies of scale if only a few operators providing mass transit services, like metro rail, in a city (per unit inventory requirements will be lower, administrative costs will be amortized over a larger number of users, etc.). However, with only a few operators there is a likelihood of monopoly power being abused. This scenario needs to be controlled or regulated by a public agency.

4. Urban transport infrastructure needs land, which is often very difficult to get in urban areas. It is usually the government that is best placed to assemble this land. Furthermore, strong links between land use planning and transport planning exist, and because the government is responsible for land use planning, it would be best placed to undertake transport planning also.

Public policy questions that usually arise include:

- Which level of government should be responsible for urban transport?
- Which sector should lead the effort?
- What kind of institution is best placed for coordinating the diverse actions?

The sections below address each question.

WHICH LEVEL OF GOVERNMENT?

For the purpose of this paper, we consider government to be organized at up to four levels: national, provincial, regional/metropolitan, and city. The actual pattern varies from country to country. In some cases, such as Singapore, there is only a national government; in other places, like the United Kingdom, there is a national government and a city government. In yet others, like the United States, China, Russia, and India, there are national, provincial, and city. In some areas, two or more cities are aggregated to form an intermediate (metropolitan/regional) level between the province and the city.

It is also important to recognize that responsibility for urban transport means responsibility for several actions, such as:

- Strategic planning, which involves policy making as well as long-term planning, say, with a 15- to 20-year time horizon;

- Investment planning and procurement, which involves short-term planning, say, with a four-to-five-year time horizon, identification of specific projects to be taken up, related procurement, and so on;
- Setting standards for safety, fuel quality, vehicles, road design, and so on;
- Formulating the regulatory laws for licensing, fare fixation, and so on;
- Service planning and procurement for the design on routes and operation of services;
- Operation of facilities, such as depots, terminals, parking facilities, and so on;
- Operation of services, such as public transport services;
- Enforcement of regulations and penalization of offenders;
- Financing of the capital and operational costs; and
- Capacity building.

So, which level of government should be responsible for urban transport?

It may not be possible for all the functions to be performed by the same level of government; these functions may have to be distributed, or shared, across multiple levels. For example, it may not be practical for each city to set fuel or vehicle standards, so it may be necessary to do this at the national level to create a uniform standard for the entire country. Strategic plans may be best prepared at the metropolitan level, especially if municipal areas are small and their boundaries contiguous. Regulatory laws may also be best if they are uniform for the entire country. Financing may have to come from multiple levels, especially for the capital investments.

The important factors in determining which level of government should be responsible for each action follow:

- Each country has its own political philosophy of which level of government should be the most empowered. Some countries have a strong national government; others prefer to delegate a significant share of the responsibilities to subordinate jurisdictions. The diverse reasons behind the current allocation of

responsibilities could be based on historical reasons, the size of the country, the diversity and dispersal of cities and provinces, ethnic and linguistic diversity of the citizens, and so on. Mutual relationships, as enshrined in the respective constitutions, will not be changed for the purposes of transport alone, and so decisions will need to be made within the framework of the existing power structures.

- The geographic boundary of the jurisdiction responsible for urban transport should ideally coincide with the geographic boundary of the benefits and costs of transport policies. If a larger jurisdiction benefits from urban transport actions, then that jurisdiction should take responsibility; however, if the benefits accrue only to the city, then only the city should be responsible for it.
- Economies of scale also become relevant. Some functions should be uniform for all cities. For example, vehicle design standards would apply to all cities in the country—perhaps they would also be common to several cities around the world. Fuel standards will also be common to all cities in a country, as it would be uneconomic for oil refineries to produce fuel of different specifications for different cities. On the other hand, certain functions—like strategic planning or infrastructure planning and procurement—would be specific to each metropolitan region or city and need not be uniform in all metropolitan regions or cities within a country.
- Availability of technical skills is another factor. If the skill requirements are highly specialized and not easy to get, then it makes sense to house such skills in one center in order to use it optimally for all cities. In this model, skill sharing becomes possible.

As an example, in large countries with several levels of government, national governments could focus on:

- National policies and programs for the transport sector;
- Integration of transport sector with wider economic, social, and environmental policies;
- Standardization of regulations and practices;
- Capital financing and sharing the cost of large capital investments;
- Research and development; and
- Capacity building and knowledge exchange.

The responsibilities at the provincial and subordinate levels would depend on the extent to which responsibilities were delegated to them, and this can vary significantly. For example, they could include:

- Strategic planning;
- Investment planning and procurement;
- Public transport route network design and service planning;
- Operation of public transport services; and
- Enforcement.

WHICH SECTOR SHOULD LEAD THE RESPONSIBILITY?

A question often asked is whether urban transport is “more urban or more transport.” Urban transport encompasses several dimensions, and therefore several government agencies are involved. Land use planning, public works, and transport are perhaps the most important among them. Transport might house the technical skills and legal authority to regulate and manage the transport systems, but land use determines the demand on the transport system and the shape it needs to take. In some cases, transport leads land use decisions, such as in Copenhagen’s five-finger plan. In most others, it follows land use plans. Public works houses the capability for procuring and constructing infrastructure facilities needed in urban areas. Therefore, a logical question that arises is which sector should lead the urban transport function.



The pattern varies from country to country. In some, like India, it is led by the ministry of urban development in the national government, but the pattern varies at the provincial level. In China it is led by the ministry of construction. In Vietnam, South Africa, Ghana, Russia, and several other countries, it is the ministry of transport that leads the effort.

So, what is the best option?

Perhaps, an answer lies in the level of urbanization. At relatively early stages of urbanization, when the primary focus is on the construction of roads, sidewalks, drainage systems, and so on, the construction function would play a leading role. However, at slightly more advanced stages, when urban population growth tends to rise sharply and systematic planning for the urban form and land use becomes important, the land use function would have a significant link to or influence on the shape of the transport system. At more mature levels of urbanization, when land use plans are locked in and not subject to much change, the technical skills of managing the transport system become more influential in transport-related decision making. Therefore, the stage of urbanization influences which agency will take the leading role. There is no precise definition of the three stages of urbanization and how the shift in leadership role should take place. Decisions will need to be made in the local context and will vary from country to country and from city to city. However, the broad principles could be as those given in **Table 1**.

NATURE OF THE LEAD AGENCY

Because transport is such a complex issue with so many different agencies involved, it is essential that there be a lead agency responsible for bringing all stakeholders together. Three major questions arise in setting up such an agency (see World Bank’s *Institutional Labyrinth*, 2013):

- What should be its scope of responsibilities?
- How should it be empowered to carry out its functions?
- How should it be financed?

With regard to the scope of responsibilities, there are three broad models of such institutions around the world:

- Only a strategic planning entity that also sets investment priorities but has a limited role in regulation and operations. Thus, the lead agency would only draw up long-term investment plans and set priorities; it would then leave it to other agencies to implement these plans. The long-term plans become a basis for securing investment approval. Examples of this model are the metropolitan planning organizations in the United States.
- Only an entity responsible for managing the public transport system but not the physical infrastructure, like roads and bridges. Even here, it does not operate the public transport system but only regulates it. Typically, the local municipality is responsible for the fixed infrastructure. An example of this model is STIF (Syndicat des Transports Îles-de-France) in Paris, France.
- An entity with a comprehensive responsibility for urban transport that oversees and directs the public transport system and also has a responsibility toward planning, construction, maintenance, and management of the physical infrastructure, like roads, sidewalks, and parking. Examples are Transport for London (TfL) in the United Kingdom and the Land Transport Authority (LTA) in Singapore. The Lagos Metropolitan Transport Authority (LAMATA) would also fall in this category, though its responsibilities do not extend to the entire public transport system or to the entire road network. However, it does have a responsibility for strategic planning.

TABLE 1 WHICH SECTOR SHOULD LEAD THE EFFORT?

Sector that would lead the responsibility for urban transport	Possible determining factor
Construction / public works agencies	Dominant focus is on construction of roads, sidewalks, drains, and so on—typically at very early stages of urbanization
Land use agencies	When rapid urbanization is projected and land use decisions would dictate the shape of the transport system
Transport agencies	Relatively mature stage of urbanization, when land use patterns have more or less stabilized and the technical skills of transport planning become dominant

A choice among these options also tends to, again, lie in the level of urbanization. At relatively early stages, fewer agencies are involved, and the negative effects of urban transport have generally not manifested themselves. Therefore, the need for inter-institutional coordination may not be as important. But as urbanization progresses, the city needs to develop a vision and work toward it. This is the critical stage when there is a need for stronger coordination between different sectors working together toward a common goal. At more mature levels, these agencies could even be separated for day-to-day operational functions, and coordination at a strategic level alone would be adequate. However, it is important to recognize that coordination needs to be across all transport modes. For example, leaving transit with one agency and parking with another would be a recipe for ineffectiveness, as parking policies can have a strong influence on public transport ridership.

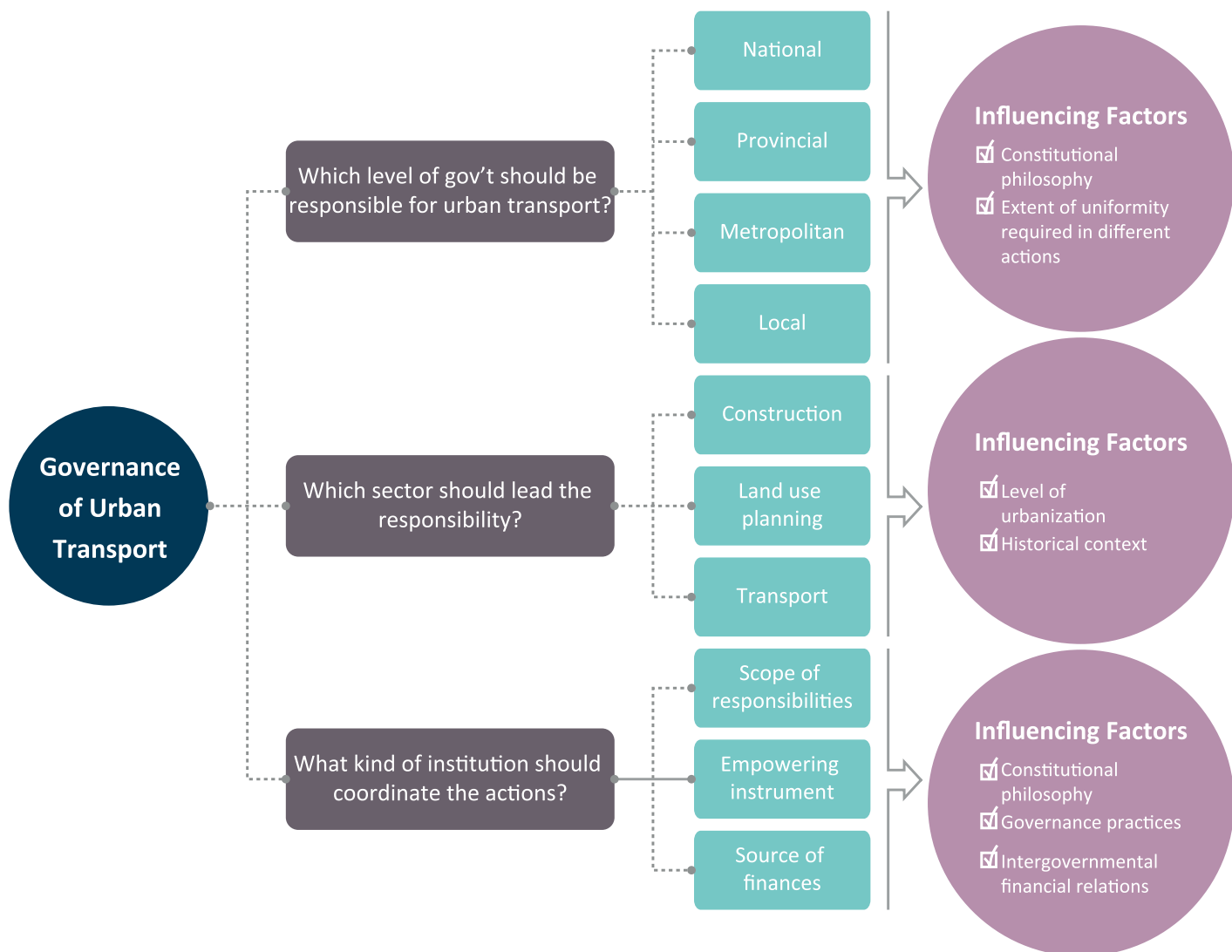
- The agency is set up under a special statute and draws legal authority from it. The statute generally spells out its responsibilities as well as the powers to discharge these responsibilities. Examples are TfL in London, LTA in Singapore, and TransLink in Vancouver, Canada.
- The agency is set up under a generic law that governs similar entities across the country. The listing of responsibilities and powers would not be specific to that agency alone but to all agencies of a similar nature in the jurisdiction covered under the law. Examples are the Indore City Transport Services Ltd in India and lead agencies in various cities in France, other than Paris, that have been set up under a framework law that empowers the establishment of “Organizing Authorities for Public Transport” in the country.

In terms of financing, there are three broad models. Financing could be (1) entirely from the public budget, by way of annual subventions, or (2) by way of taxes and fees collected by a public agency but dedicated to the lead agency, or (3) taxes and fees allowed to be collected by the lead agency itself and used by it. Tfl and LTA get significant funds from the public budget, whereas STIF gets the proceeds of a transport tax collected from employers. TransLink has been allowed to collect specific taxes for its use. **Table 2** below details the sources of funding for some of the well-known lead institutions around the world.

Figure 4 summarizes the key policy issues that come up.

City	Lead Agency	Source of Funds
Lagos	LAMATA	State budget; license fees (hackney permit, road taxes, license plate registration, and vehicle registration); bus concession fees
London	TfL	Congestion charges; central and local government general revenue
Paris	STIF	Dedicated employer tax; local, regional, and department general revenue
Singapore	LTA	National (local) government general revenue (derived from auto registration, gas tax, parking, congestion charges)
Vancouver	TransLink	Dedicated gasoline, property tax, parking tax

FIGURE 4 KEY POLICY ISSUES RELATING TO THE GOVERNANCE OF URBAN TRANSPORT



RELATIONSHIP BETWEEN LAND USE AND TRANSPORT

Each type of city generates a unique demand pattern for transport services. The variations tend to be in terms of the distance that people need to travel as well as the modal choice for such travel. This has implications on the energy consumed in meeting the travel needs. Low-density and sprawling cities require longer travel distances, which, in turn, necessitate a larger share of motorized travel, and higher energy consumption. The low density also means that the demand on any origin–destination pair tends to be low and therefore not viable for public transport. As a result, the use of personal motor vehicles tends to dominate the share of motorized travel.

Higher-density and more compact cities, on the other hand, require shorter trip lengths and, therefore, a lower dependence on motorized modes, and lower energy needs. Even within the motorized trips, public transport tends to have a higher share than in low-density cities. **Figures 6 and 7** show how the share of public transport

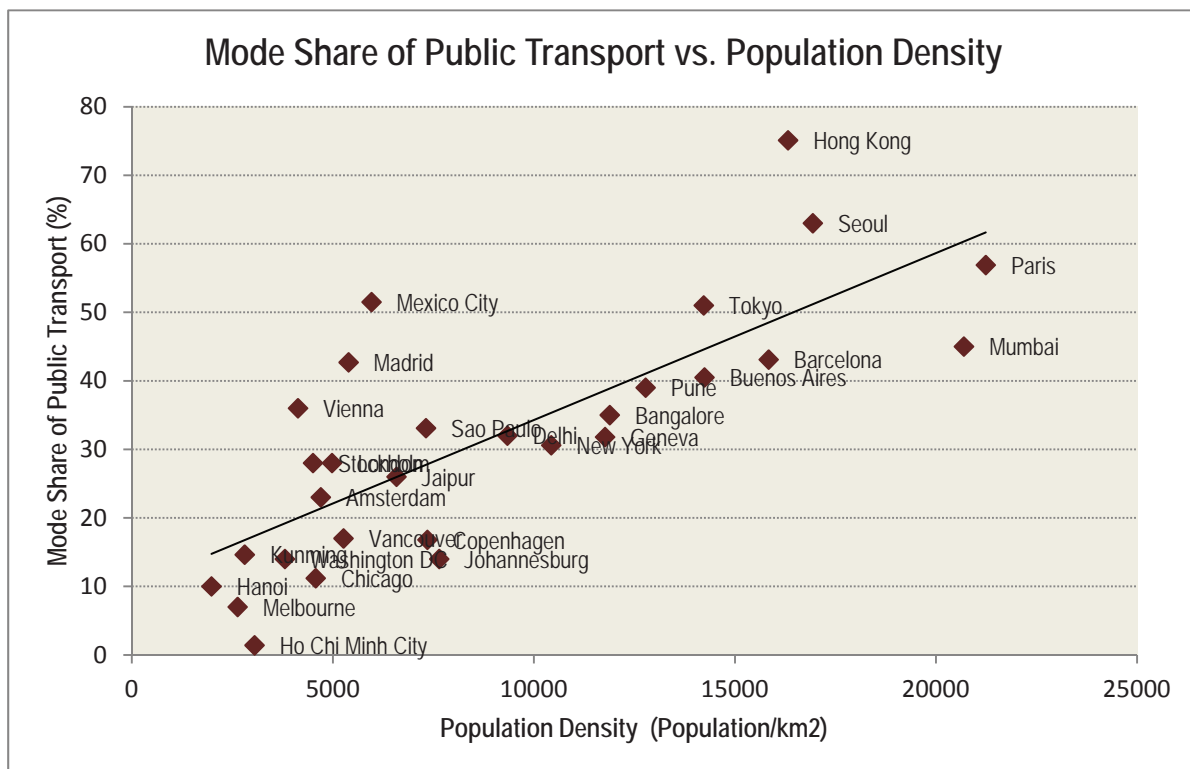
and non-motorized modes go up as the density of cities goes up.

Figure 8 shows how the per-capita energy consumed comes down as density increases.

KEY QUESTIONS FOR PUBLIC POLICY AND THE OPTIONS AVAILABLE

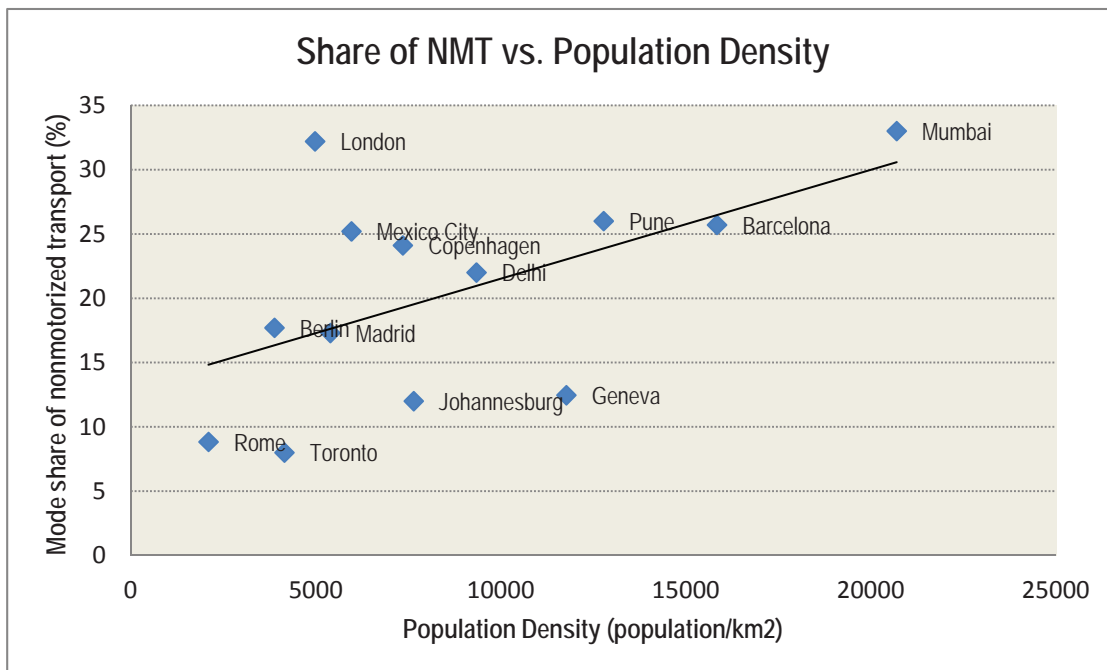
From a policy perspective, it is important to note that the urban land and real estate market, on their own, would develop at a lower density than is socially optimal (residents of low-density and sprawled development tend to generate more congestion and pollution externalities than do the residents of more compact communities). While experts have advocated containing this growth and developing compact cities with higher density, studies have found that this has not occurred in the 120 cities that were studied (Angel, 2011). Therefore, containing growth would be desirable but there could be challenges in implementation.

FIGURE 6 RELATIONSHIP BETWEEN POPULATION DENSITY AND MODE SHARE OF PUBLIC TRANSPORT



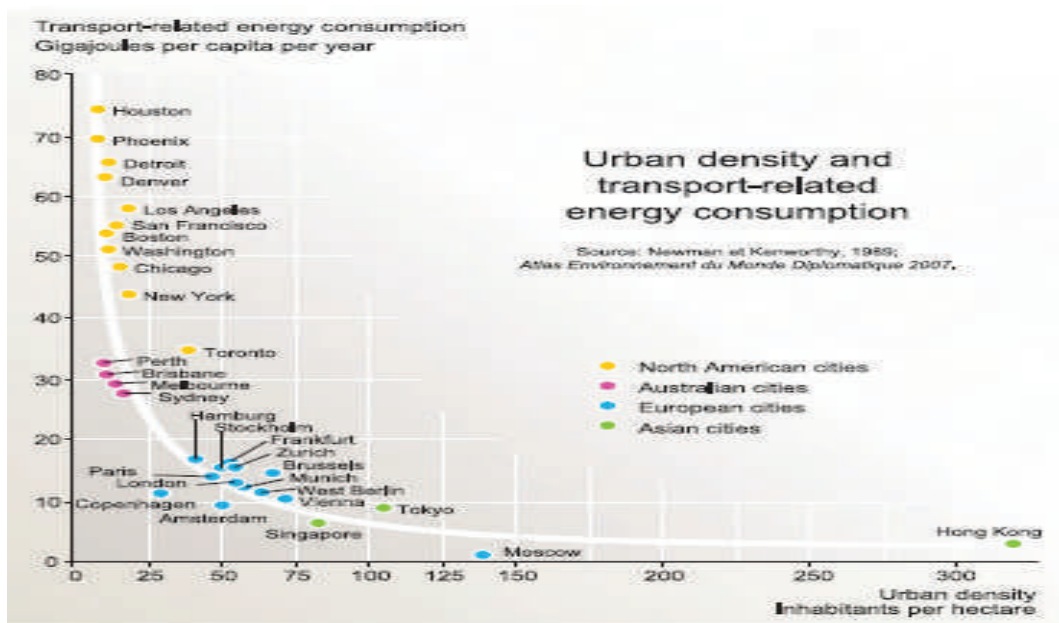
Source: World Bank calculations using data from Urban Transport Data Analysis Tool.

FIGURE 7 RELATIONSHIP BETWEEN POPULATION DENSITY AND SHARE OF NMT



Source: World Bank calculations using data from Urban Transport Data Analysis Tool.

FIGURE 8 RELATIONSHIP BETWEEN POPULATION DENSITY AND PER CAPITA ENERGY CONSUMPTION



Source: Newman and Kenworthy, 1989

The key question for public policy is whether any conscious effort is necessary to contain such sprawl or whether an expansion in the city boundary can be accepted. If an expansion can be accepted, then should market forces be allowed to determine the directions in which it grows, or should such growth be accommodated in certain pre-determined directions?

The most important determining factor in making a choice between the above options is the availability of land and the future projections of urban growth. Land-rich developed countries, where urbanization rates are already very high, may be able to allow market forces to determine the city's growth. This is because there will not be too much growth and there would be enough land to support the growth. However, in land-poor cities, and those at relatively lower levels of urbanization there will a need to accommodate a much larger urban population in the years to come. Therefore, public policy will need to intervene in a manner that channels the growth in a socially optimal manner—implying that increases in travel demand do not necessitate very rapid motorization and, instead, promotes more sustainable modes of travel. The thrust of the efforts would therefore be toward reducing the length of trips and maximizing the use of public transport and non-motorized modes.

This decision can also be influenced by historical and cultural factors as well as soil conditions and vulnerability to natural calamities. In certain cases, urban aesthetics—especially in cities with significant heritage value—dictate that buildings be low-rise. In others, there may be cultural and social barriers to rich households being located very close to poor households that obstruct densification. In yet others, people may want to live close to their workplace; this would make a strong case for mixed-use planning. However, large manufacturing plants may have to be segregated from residential areas because of noise and air pollution impacts, making a case against mixed-use planning. Policy makers need to think about all of these aspects when making policy choices.

INSTRUMENTS FOR IMPLEMENTATION

Three main policy instruments can be used to enable the kind of spatial growth that is desired. One is densification by permitting a more intensive use of the land. This can be done either by relaxing the floor area ratio (FAR) standards that most cities have, or by limiting holding sizes. Both would encourage compact city development and shorter trip lengths. Low FARs and large holdings will lead to sprawl and longer trip lengths that necessitate a greater reliance on personal motor vehicles.

The second is mixed land use planning, which allows travel distances to be shorter as living and working locations are interspersed and, therefore, closer to one another. This often allows trips to be undertaken on foot or on bicycles. On the other hand, segregated land use planning increases trip lengths and enhances the need for personal motor vehicle use. It also heightens social exclusion.

Further, “transit-oriented development” (TOD) can support city development around a public transit corridor. Transit stations become centers of local commercial activity, regrouping shopping and recreational facilities within or around them. As population density and economic activity increase around the corridor, public transport services become commercially viable and easier to use. Reliance on cars is reduced.

Finally, the third is defining urban growth boundaries, which helps to make development more contiguous and compact. This could be done either by having wide green or no-development zones just outside the boundary or by providing utility services only within these boundaries.

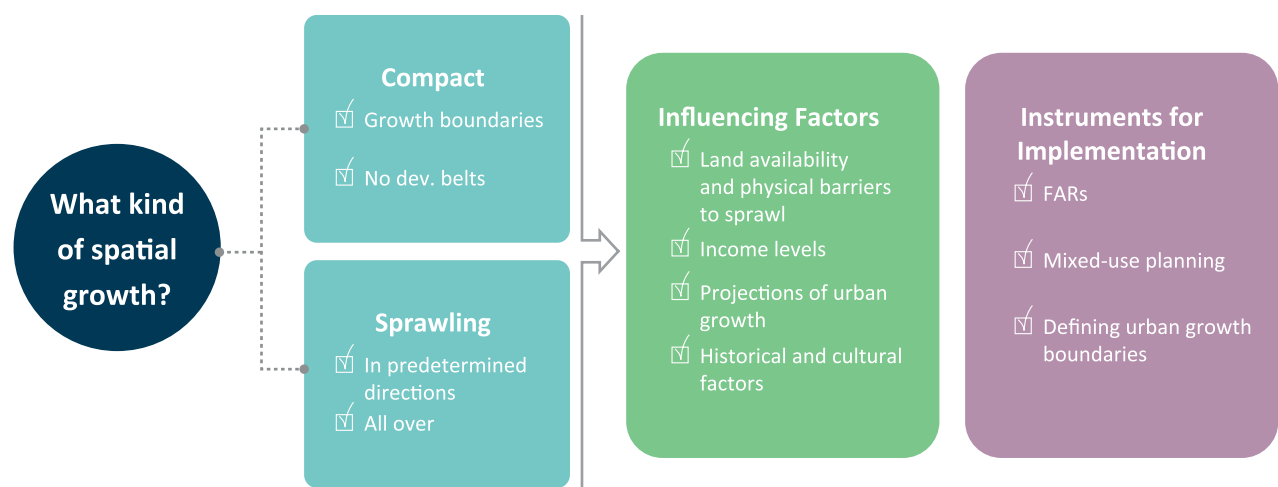
Regardless, it is also important to ensure that adequate land is set aside from meeting transport needs (typically about 15 to 20 percent of the total area) at early stages of development because retrofitting a city at a later stage is extremely difficult.

Figure 9 summarizes the key policy issues related to land use and transport, the existing options, the influencing factors, and the instruments that can be used to implement the policies.



Photo: Sam Zimmerman.

FIGURE 9 ISSUES AND OPTIONS RELATING TO LAND USE AND TRANSPORT





MODES OF TRANSPORT

BACKGROUND

People can use several modes to meet their travel needs. These modes can be classified into two broad categories: motorized and non-motorized. Motorized modes can be further classified into personal transport and public transport. A number of other sub-classifications exist, as **Figure 10** shows.

Each mode has unique characteristics in terms of the kind of travel demand it can best serve, the extent of land it requires, the pollution it causes, the amount and kind of energy it consumes, the number of people it can transport, and the capital and operating costs it requires.

Table 3 highlights some of the main features of each of these modes.

FIGURE 10 TRANSPORT MODES COMMONLY USED TO MEET TRAVEL NEEDS

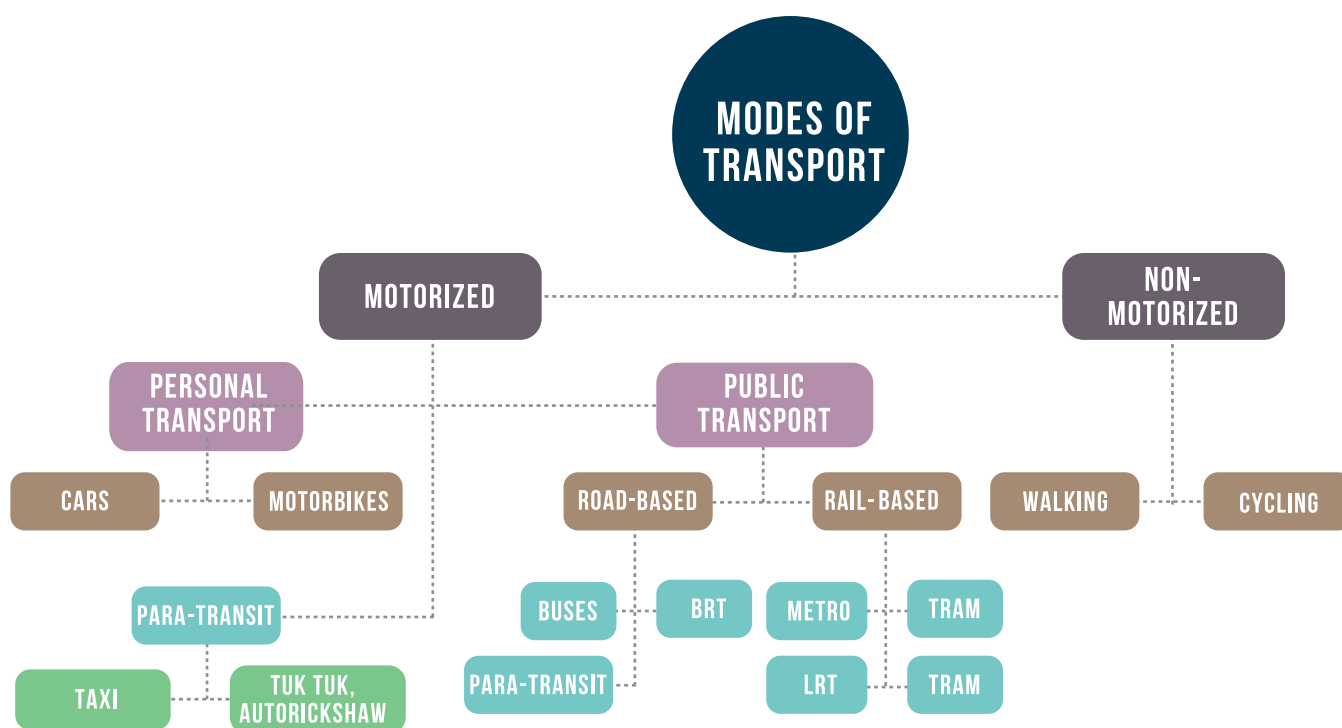




Photo: Sam Zimmerman

TABLE 3 KEY FEATURES OF DIFFERENT TRANSPORT MODES

		Car	Motor-bikes	Para-transit	Public buses	Bus Rapid Transit	Light Rail	Tram	Metro	Cycling	Walking
Capital Cost	To Gov't	M*	M*	M*	L	M	M-H	M	H	L	L
	To User	H	M	Nil	Nil	Nil	Nil	Nil	Nil	L	Nil
Usage cost	To Gov't	L*	L*	L*	L	L-M	M-H	M	H	L	L
	To User	M	L	H	L	L	L	L	M	Nil**	Nil
Capacity		L	L	L	L-M	M-H	M-H	L-M	H	L	L
Route flexibility		H	H	H	M	L	L	L	L	H	H
Coverable distance		H	H	H	H	H	H	M	H	L	L
Extent of urban space used		H	M	H	M	M	L	L	L	L	L
Door-to-door connectivity		H	H	H	M	L	L	L	L	H	H
Congestion impact		H	M-H	H	L	L	L	M	L	L	L
Emissions impact		H	H	H	M	M	L	L	L	Nil	Nil
Fuel consumption impact		H	M-H	H	L	L	L	L	L	Nil	Nil
Negative safety impact		H	H	H	L	L	L	L	L	M-H	H

H = High, M = Medium, L = Low

* This refers to the capital and maintenance cost of providing the required road space.

** There is a marginal maintenance cost for the bicycle, but it is so low that it is shown as Nil.

Generally, personal motor vehicles are smaller than public transport buses, and they consume less fuel; however, they also carry far fewer people. As a result, on a per-passenger basis, personal motor vehicles need more road space, consume more fuel, and emit more pollutants. Therefore, they are said to have higher negative externalities. Very precise comparisons are difficult, because the relative differences in road space occupied and fuel consumed depend on traffic flow conditions. In any case, **Table 4** gives a rough indication of how they compare.

The key question for an urban transport policy is whether any particular mode of travel needs to be actively promoted or whether all the different modes can be allowed for use as preferred by their users. When a particular mode is to be encouraged, which one should that be? The options are either to encourage specific modes of travel through targeted incentives and disincentives or to allow all modes to be used with no biases introduced as a public policy measure.

such choices mean disproportionate use of road space, energy consumed, and emissions when compared with public transport. Besides, not everyone can afford or use personal vehicles; those citizens would get excluded from social and economic activities in the absence of suitable public transport. Fortunately, these preferences are changing in some countries towards higher densities and public transport. This is the direction that public policy needs to encourage elsewhere too.

Clearly, public transport and non-motorized modes would be preferred over personal motor vehicles when it comes to energy efficiency, lower pollution, and lower requirement of urban land; however, non-motorized modes have limits on the travel distances they can serve, and public transport would not make sense if the demand were low. Therefore, in low-demand areas, personal vehicles would be a better option than public transport.

TABLE 4 COMPARATIVE CONGESTION, FUEL CONSUMPTION, AND POLLUTION IMPACTS OF DIFFERENT VEHICLES

PCU: Passenger Car Unit – This is the average area occupied by a car and is used to compare the relative congestion effects of different types of vehicles



Photo: Roberta Franchuk, The Pembina Institute

Social and cultural factors also influence the choice. In some countries, public transport has a very negative social image and so there is a strong preference for personal vehicles among those who can afford them. Countries with relatively higher income levels would also have a greater

preference for personal vehicles. Adequate availability of land may also encourage a higher allocation of space for transportation needs.

INSTRUMENTS FOR IMPLEMENTATION

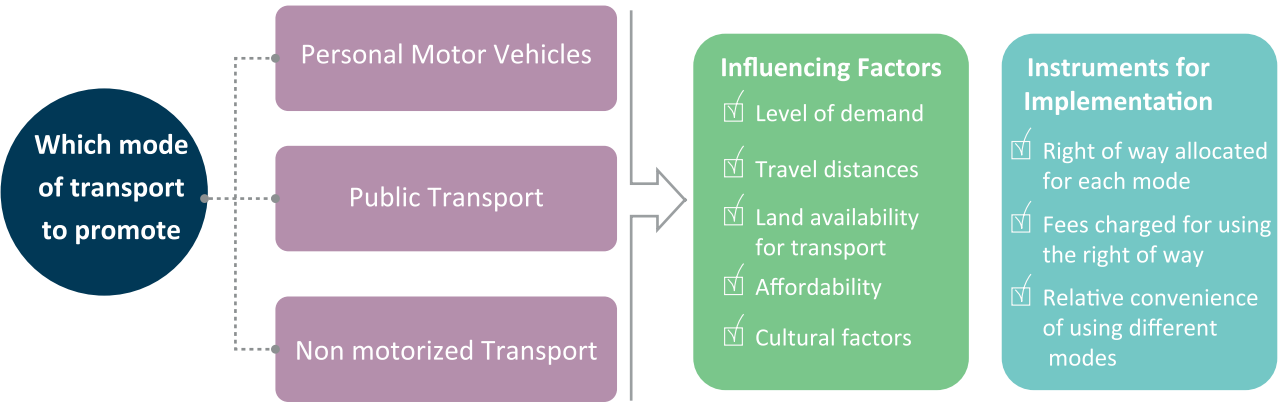
Three major instruments can be deployed to give effect to policies for encouraging a particular mode of transport:

1. The right of way allocated for that mode;
2. The fees charged for using the right of way; and
3. The extent of convenience in using the mode vis-à-vis competing modes.

Thus, good sidewalks, cycle tracks, and narrower road width for cars encourage nonmotorized modes. High parking fees or limited parking availability of space discourages use of personal motor vehicles. Tolls also discourage car use. For many users, high-quality public transport with a dedicated right of way, low fares, high frequency of service, good coverage, reliable service, a safe environment, and comfortable seating makes the mode more convenient than personal vehicles.

Figure 11 summarizes the policy issues, options, and influencing factors related to modes of transport.

FIGURE 11 POLICY ISSUES RELATING TO MODES OF TRANSPORT TO BE PROMOTED



PERSONAL MOTOR VEHICLES

BACKGROUND

Typically, personal motor vehicles are of two types: four-wheelers and two-wheelers. They are a very convenient form of mobility, allowing safe, quick, and comfortable door-to-door travel. Though ownership was relatively expensive some decades ago, it has become increasingly affordable over the past 20 years. Therefore, urban residents in developing countries have taken to these personal motor vehicles in a big way. **Table 5** shows the growth in these vehicles' use in a few countries around the world, and **Table 6** shows the growth in some cities of India between 2002 and 2011. It is this rapid

growth of the use of personal motor vehicles that has been largely responsible for the problems faced in urban transport systems. In countries like China, motorization has been dominated by the growth in car use. In others like India, Indonesia, and Vietnam, it has been motorbike-led growth. In fact, motorbikes are making their presence felt in several countries in Latin America and Africa as well. A big concern is that cities in the developing world will continue to grow and the situation will worsen.

TABLE 5 GROWTH OF MOTOR VEHICLES IN SELECT COUNTRIES

Country	Total Number of Motor Vehicles (thousands) 2003	Total Number of Motor Vehicles (thousands) 2009	Percent Increase 2003–2009
Australia	12,812	15,074	18
Canada	18,435	20,472	11
Chile	2,159	2,956	37
China	19,326	62,569	224
France	36,972	38,692	5
Germany	47,539	46,193	–3
Greece	4,993	6,882	38
India	13,125	21,838	66
Jordan	516	911	76
Malaysia	6,770	9,726	44
Mexico	21,935	32,177	47
Romania	3,845	4,940	28
Turkey	6,000	10,116	69
United Kingdom	29,545	32,327	9
United States	230,926	246,031	7

Source: World Bank, World Development Indicators Database.

TABLE 6

	Total number of regis- tered motor vehicles, 2002 (thousands)	Total number of registered motor vehicles, 2011 (thousands)	Percent increase in registered motor vehicles, (2002–2011)
Bangalore	1680	3791	126
Bhopal	333	755	127
Chennai	1356	3456	155
Coimbatore	448	1241	177
Delhi	3699	7228	95
Greater Mumbai	1069	1870	75
Hyderabad	1241	3033	144
Indore	550	1213	121
Jaipur	693	1051	52
Kanpur	385	1002	160
Kochi	152	409	169
Lucknow	556	1211	118
Madurai	240	603	151
Nagpur	459	1157	152
Patna	313	658	110
Pune	658	2094	218
Visakhapatnam	364	617	70

Source: http://mospi.nic.in/mospi_new/upload/SYB2013/ch20.html.

In such a scenario, the key question for public policy is the extent to which personal motor vehicles should be accommodated within the transport system: Should they be accommodated unhindered, or should they be restrained in some manner? And if they are to be restrained, then should such restraints be only on vehicle use, or should they also extend to ownership? Also, should there be a preference for vehicles of a certain size and fuel consumption standard, or should this matter be left to people's preferences. (see **Figure 12**)

Unhindered motorization growth will place corresponding demands on roads and, consequently, the land required for transportation purposes.

With regard to how much personal motor vehicles can be accommodated, the important determining factors would be:

- Whether the city has enough land to allow a continued supply of it for increasing road capacity;



Photo: O.P. Agarwal

- How the city is laid out; and
- Whether alternative modes are adequate and acceptable in quality.

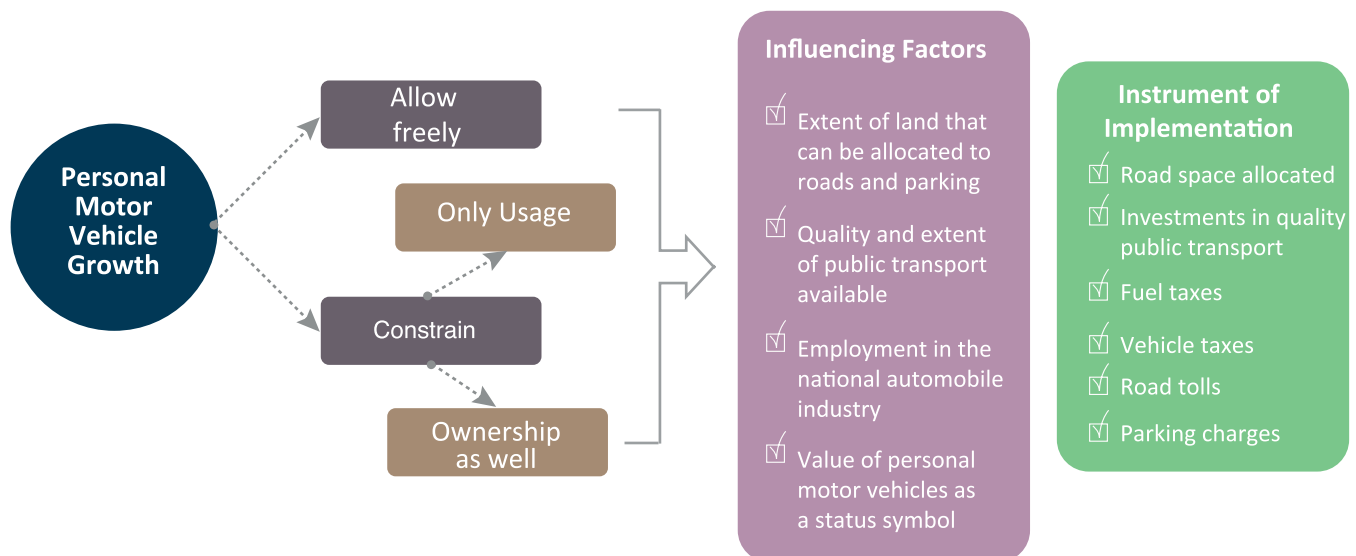
Land-rich cities that have often grown in a sprawling manner may have no option but to accommodate personal motor vehicles liberally. If alternative modes of travel are adequate and acceptable, then

In terms of whether restraints should be placed only on the use of personal vehicles or whether restraints should extend to their ownership, these factors become important:

- In such cases, it would not be wise to take any policy measures that discourage ownership. However, it may be feasible to discourage ownership and instead encourage the use of publicly provided transportation services if there are severe limitations in the availability of land, even for parking purposes; good-quality public transport is available; no large auto manufacturing industry would be adversely impacted; and people do not particularly treat personal motor vehicle ownership as a status symbol.

- High fuel taxes;
- Road tolls;
- Limits to road space;
- Physical restraints on parking and high parking fees;
- Car-free days; and
- High-occupancy vehicle lanes (lanes that only vehicles with a set number of riders can use) and car sharing.

- Limitations/restraints to purchase of personal motor vehicles, such as requiring an authorization;
- Requirement to prove ownership of parking space before a person can buy a personal motor vehicle;
- High vehicle taxes; and
- High registration fees.



In terms of vehicle size and fuel consumption standards, size affects both the space required for the vehicle as well as the amount of fuel it consumes. Fuel consumption standards, on the other hand, affect only the amount of fuel the vehicle consumes. The need to actively promote a certain size and standard would depend on the severity of the negative externalities in any city. Dense cities with limited space will prefer their residents to own smaller vehicles that need less space to park and use. Similarly, cities that import a lot of their fuel and have concerns about energy security will prefer fuel-efficient vehicles. Those areas without serious space constraints and those that produce fuel may not feel the adverse impacts of large-sized and high-fuel-consuming vehicles.

MOTORIZED TWO-WHEELERS (M2W)

Certain special policy issues relate specifically to M2W. The rapid rise of motorbikes as a mode of transport has been a common phenomenon in many cities of the developing world. In Vietnam, motorbikes constitute almost 75 percent of the daily motorized trips; in several Indian cities, they comprise almost 65 percent of the total vehicle fleet. Their numbers are growing in Africa and Latin America as well.

Because motorbikes provide very efficient transport at relatively low cost, they are becoming very popular. In fact, they are the predomi-

nant mode of transport in some cities. However, they are unsafe. Besides, if they use the 2-stroke technology, they are polluting. Policy makers must ask, “What should be done about motorbikes—are they beneficial or damaging to a city?”

THE POSITIVES

The rise of motorbikes as a popular mode of transport is directly associated with their affordability. Today, a 50-cc motorbike can cost as little as \$500. Additionally, their low fuel consumption makes their daily use fairly inexpensive—often cheaper than taking a city bus in terms of the marginal cost. **Table 7** compares the cost of using a motorbike with the cost of using a bus for a 10-km journey in some cities in India and elsewhere in Asia.

Further, M2W enable riders to go from almost place in the city to any other at any time, without being limited by public transport routes and schedules. Because motorbikes can negotiate congestion better than cars can, they are often faster than cars. And they can be parked almost anywhere. Workers can take shifts that start early in the morning or end late at night and know that they can get to work or make it home in good time. They can even take a second job, making it swiftly from one place of work to another, and commuters can take a quick detour on their way home to pick up some groceries or other household needs. Generally, users can link trips with ease, like going to the bank or the doctor after work, and then picking up a child

TABLE 7 MARGINAL COST OF A 10-KM JOURNEY BY MOTORBIKE AND BY BUS

	*Petrol price / liter	**Fuel efficiency (km/ liter)	*Cost of riding a motorcycle for a distance of 1 km	*Cost for a motorcycle for a distance of 10 km	*Bus fare for 10-km journey on regular bus
Delhi	73.2	60	1.22	12.2	15
Bangalore	80.2	60	1.34	13.4	16
Chennai	76.5	60	1.27	12.8	8
Pune	82.5	60	1.38	13.8	12
Mumbai	82.1	60	1.37	13.7	16
Kolkata	81.0	60	1.35	13.5	9
Ho Chi Minh City	23,830	60	397.17	3,971.7	5,000
Hanoi	25,400	60	423.33	4,233.3	7,000
Bangkok	49.0	60	0.82	8.2	12
Manila	54.3	60	0.9	9.0	19.25

* All prices and costs are in the local currency. ** Taken as average of some popular brands, from the manufacturer websites.



Photo: O.P. Agarwal

from school. Motorbikes also allow for greater personal safety: riders are not exposed to having their wallets stolen in a crowded bus, or being groped by strangers. In all, owning a motorbike can be very liberating and empowering, creating a remarkably positive impact on the general welfare of owners. The bikes also occupy less road space and consume less fuel than does a car. Thus, they seem to be beneficial.

THE NEGATIVES

The biggest concern with increased motorbike use, however, is their safety. Unlike cars, motorbikes lack a shell to protect riders in case of an accident. Instead, their bodies are exposed to collisions, or they can be catapulted for meters on impact and suffer severe head injuries. Aggravating the situation are such practices as the swerving and squeezing between cars that many motorbike riders attempt, and carrying more than two passengers on a single motorbike—often, they are little children who cannot hold tightly to an adult. As a result, motorbike riders are among the most vulnerable to road accident fatalities. Lack of capacity to implement safety standards makes the situation worse. **Table 8** shows the share of road accident fatalities of M2W users in the total road accident fatalities of some countries.

Several M2Ws use two-stroke engines, which create high levels of pollution; the carbon in the fuel is not fully burnt in a two-stroke cycle and gets emitted as particulate matter. This has a serious negative impact on the local air quality and the health of the people.



Photo: World Bank

Further, motorbikes occupy more road space, consume more fuel, and emit more pollutants than does public transport on a per-passenger basis. Yet they are strong competitors to public transport and easily draw passengers away from that mode. As seen in **Table 7**, on a marginal cost basis M2W are often cheaper than buses. So, someone who already owns a motorbike will find it cheaper to use than riding a bus. M2W ease of use has also attracted bicycle users and pedestrians.

TABLE 8 PERCENTAGE OF ROAD ACCIDENT FATALITIES, BY TYPE OF VEHICLE

Country	Percentage of 2–3-wheeler fatalities in total fatalities
India	32
Brazil	25
Cambodia	67
China	35
Colombia	39
Dominican Rep	58
Indonesia	36
Laos	74
Malaysia	59
Paraguay	41
Korea, Rep	20
Thailand	74

Source: WHO (2013).

Yet another problem with a predominance of motorcycles is that it enables low density growth and thereby promotes life-style choices which make it very difficult to support public transport.

The most important negative feature of motorbikes that needs to be addressed is its poor safety record. The key to this is to ensure safer driving practices and mandatory use of safety equipment, like helmets.

DEFINING A ROLE

What kind of role can be defined for motorbikes? The options seem to be:

- Do nothing and let them operate freely as one of the forms of motorized transport;
- Mitigate the negative externalities of motorbikes and allow them to be used freely thereafter;
- Limit their use to certain areas of the city;
- Mitigate the negative externalities and then allow use in some limited areas only; or
- Ban their use entirely.

The choice really depends on the seriousness of the negative impacts in any city. The options above are a progression of choices that can be made as a situation worsens. Given M2W's negative impacts, the first option would not be desirable. Similarly, given the mobility enhancement features of motorbikes, banning their use completely would also not be desirable. The best choices seem to lie among the remaining three options.

A choice among the remaining three options really depends on:

- The severity of their negative impacts—if negative impacts, such as safety and pollution, are very severe, then there may be a case for banning use in some parts of the city;

- The extent to which they are the predominant mode of travel today—if they are the predominant mode of personal transport, then it may be difficult to ban them in any part of a city, but efforts could focus on minimizing their negative impacts;
- Income levels and the affordability of alternative modes of personal transport—if income levels are relatively low, a large section of the population may be unable to afford cars and so motorbikes may become the dominant mode and, again, difficult to ban in any area; and
- Availability of good-quality public transport—the availability of good-quality public transport may justify restricting the use of motorbikes in areas that are well served by public transport.
- Capacity to implement and enforce safety standards

Some policies that could be considered for each of these negative impacts are given in **Table 9**.

If policies seek to limit motorbike use to some areas, the following choices could apply:

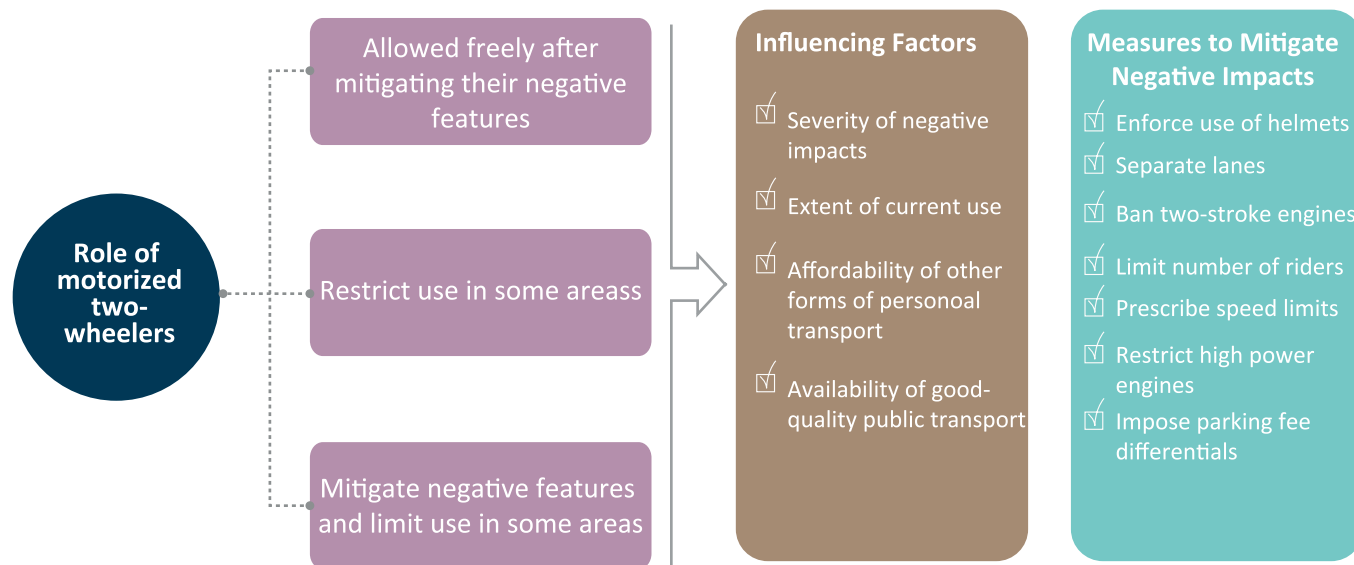
- Restrict their use in the core city areas that may be well served by public transport;
- Restrict their use during peak periods so that people do not use them for daily work trips, only for non-work trips that are less frequent in nature or for multi-stop trips; and
- Design facilities that allow them to be used conveniently as feeders to mass transit.

Figure 13 summarizes the key policy issues, options, and influencing factors.

TABLE 9 MITIGATION MEASURES FOR THE NEGATIVE EXTERNALITIES OF MOTORBIKES

Negative externality	Mitigation measures
Safety	<ul style="list-style-type: none"> ● Require the use of helmets ● Limit the number of riders that can use them ● Discourage high engine power, to limit high speeds, with higher taxes ● Prescribe speed limits ● Use separate lanes for motorbikes
Pollution effects	<ul style="list-style-type: none"> ● Restrict or ban production and sale of two-stroke engines ● Discourage high engine power, to limit fuel consumption, with higher taxes
Noise	<ul style="list-style-type: none"> ● Discourage high engine power, to limit noise, with higher taxes
Drawing people away from public transport	<ul style="list-style-type: none"> ● Link to public transport so that it offers a complementary service ● Raise fuel prices ● Raise parking fees in areas served by public transport and free parking when linked to public transport as a complementary service

FIGURE 13 ROLE OF MOTORIZED TWO-WHEELERS





TRG BANA
JOSIPA JELAČIĆA

- 9 Ljubljana
- 18 Zgodnji
kolodvor
- 6 Črnomerec
- 11 Črnomerec
- 12 Ljubljana
- 13 Žitnjak
- 14 Zaprudje
- 17 Prečko

12

208

TER



PUBLIC TRANSPORT

BACKGROUND

Public transport is an extremely important component of the transport system in most large cities, especially in the developing world. In many cities, public transport carries a significant share of the travel demand, as **Figure 14** shows.

The importance of public transport stems largely from the following issues:

- As cities grow, travel distances increase, and a large share of the travel need can no longer be met by walking and cycling; however, not everyone can afford a personal motor vehicle, and those individuals need a low-cost mode of motorized travel.
- Public transport occupies less road space per passenger carried than a car or a motorcycle and thereby helps ease congestion. Similarly, public transport uses less energy per passenger carried compared with personal motor vehicles and thereby emits fewer pollutants and GHGs.

In the past, public transport planning largely focused on keeping the services available and affordable, because it was needed mostly by those who could not afford personal vehicles. But in recent years, it has become increasingly important for public transport to draw people away from personal motor vehicles in order to mitigate the negative impacts of rapid motorization. This shift compels public transport to serve a very different market as well—a market where quality of service outweighs affordability. Therefore, the plans need not only to provide an affordable service to those with no other option but also to make it the mode of choice for those who do own personal motor vehicles. This shift implies a need for superior quality in terms of convenience, safety, comfort, cleanliness, and so on—qualities that would attract even those who can afford personal vehicles.

Some key issues that arise when formulating public transport policies in this new environment are:

- Pricing—who should pay for public transport;
- Quality versus cost trade-offs;
- Coverage and reach of the public transport system, both in space and time;
- Which technology to choose;
- Capacity considerations; and
- Industry structure for the provision of public transport services and regulatory rigor for making it safe and affordable.

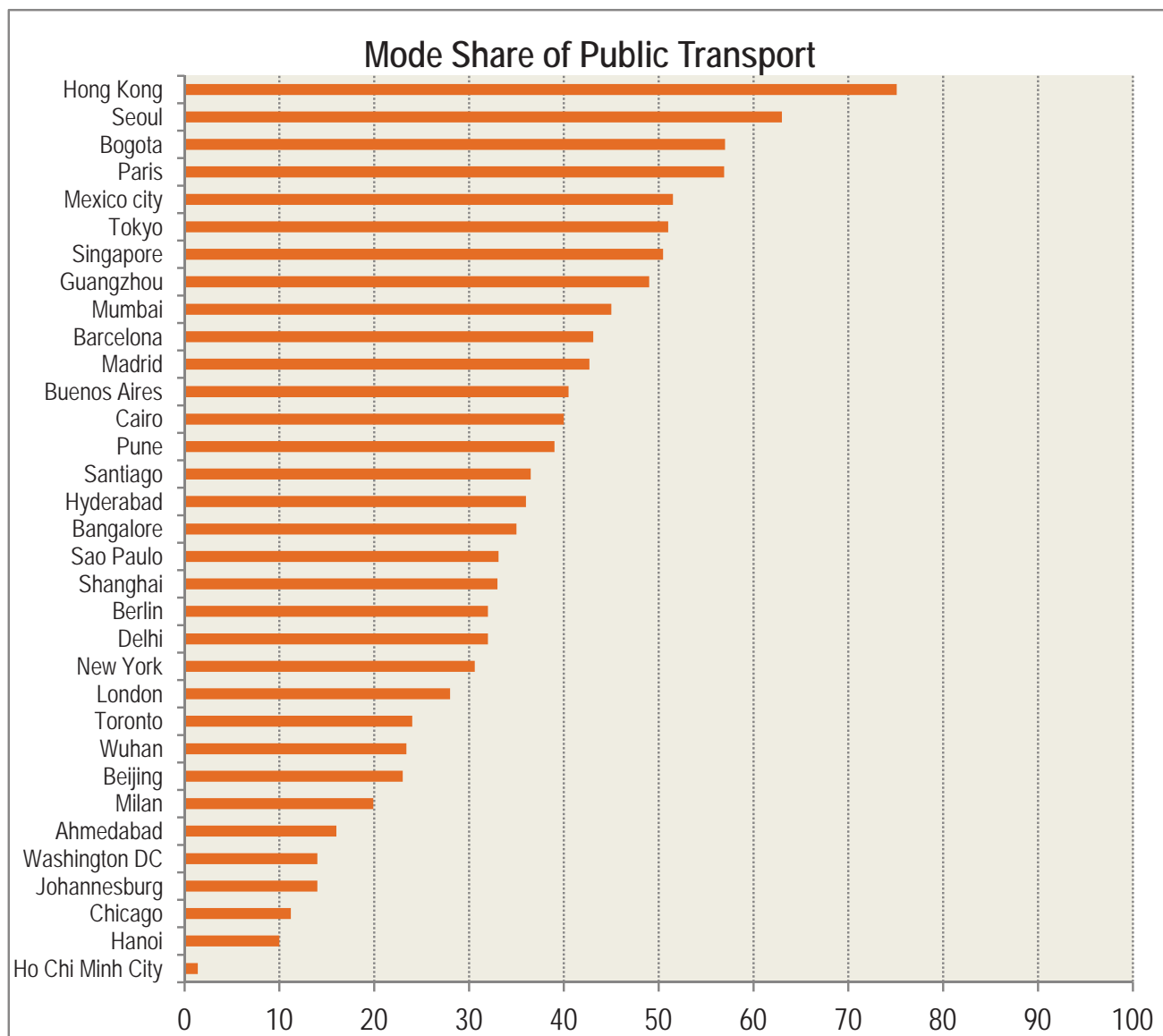
PRICING

Public transport systems cost significant amounts to build and operate. Yet, the people who use them come from the poorer sections and cannot afford personal motor vehicles. Therefore, an important policy issue relates to how much they should pay for it. Should it be the full cost of the services or only a partial cost? In other words, at what level should public transport be priced?

The options are that the full cost, namely the capital and operating costs, be:

- Recovered fully from the users of the system, implying that fares be set high enough to recover these costs entirely from them;
- Recovered only partially from the users:
 - Fares only recover part of the cost—for example, the operating costs but not the capital cost

FIGURE 14 MODE SHARE OF PUBLIC TRANSPORT



Source: World Bank calculations from the Urban Transport Data Analysis Tool.

- Some users receive targeted subsidies and so pay lower fares, while the rest pay the full fare
- Paid for fully or largely from the public budget, implying that the fares are set very low or the services are free.

The most commonly chosen option is the one where costs are shared, though the other two options are used in certain cases. Typically, several cities aim to cover capital costs through the public budget, whereas the operating costs are met from user fees. The Transmilenio in Bogota, the metro system in Singapore, and the National Urban

Transport Policy in India have all adopted this principle, but it is not always possible to implement it everywhere. Very often, fares cannot be fixed at a level that is adequate to cover the operating costs, so the gap needs to be covered from other sources.

The most important factors that influence a pricing decision are:

- Affordability—how much the users can afford to pay; and
- Public value—how much value the service has for the larger society as a whole.

In terms of who pays the component not recovered from users and how this is collected, there are several possibilities. These possibili-

Figure 15 summarizes the key policy issue, options, and influencing factors related to pricing public transport.

	Low Affordability	High Affordability
High Public Value	High public subsidy—low or zero fares	Pricing helps to recover only partial costs – such operating costs but not capital costs
Low Public Value	Pricing helps to recover only partial costs – such operating costs but not capital costs	Full cost recovery from the user—high fares

	Low Affordability	High Affordability
High Public Value	<ul style="list-style-type: none"> ● School buses ● Services for the disabled ● Basic level of public transport services ● Basic services to carry lower- income employees 	<ul style="list-style-type: none"> ● Premium public transport services, such as high-quality buses (air conditioned, seating only) ● Special services to railway stations ● Shuttle services from parking locations
Low Public Value		<ul style="list-style-type: none"> ● High-quality express services to the airport ● Premium bus services to carry senior-level executives ● Luxury services for tourists

```
graph LR; Q((At what level should public transport prices be set?)) -.-> H[High - to recover cost of capital and operating costs from fares]; Q -.-> M[Medium - so that costs are only partially recovered from fares]; Q -.-> L[Low - so that only a small part of the costs are recovered from fares]; H --> IF[Influencing Factors]; M --> IF; L --> IF; IF --- IF_L["✓ Affordability / Equity  
✓ Public Value"]
```

The diagram illustrates the relationship between public transport pricing levels and influencing factors. It starts with a central question: "At what level should public transport prices be set?". This question branches into three possible pricing levels: High, Medium, and Low. Each level is defined by its goal: High aims to recover the full cost of capital and operating costs; Medium aims for partial cost recovery; and Low aims for only a small part of cost recovery. All three pricing levels then lead to a set of "Influencing Factors", which are identified as Affordability / Equity and Public Value.

At what level should public transport prices be set?

- High** - to recover cost of capital and operating costs from fares
- Medium** - so that costs are only partially recovered from fares
- Low** - so that only a small part of the costs are recovered from fares

Influencing Factors

- ✓ Affordability / Equity
- ✓ Public Value

QUALITY-VERSUS-COST TRADE-OFFS

As stated earlier, public transport is becoming increasingly important for its ability to help reduce congestion, air pollution, and energy consumption by drawing people away from personal vehicles. For this shift to take place, public transport's quality needs to be adequately enhanced to attract users of personal motor vehicles. However, improved quality means increased costs, which adversely affect fares and affordability. Thus, a conflict arises between the needs of those who do not own personal vehicles and those who do. Those who do not own a personal motor vehicle are the ones who need an affordable service and have no other options; therefore, they tend to be willing to compromise on quality in exchange for an affordable service. On the other hand, personal motor vehicle owners can afford a higher fare but typically require improved quality (reduced crowding, air-conditioning, reduced number of stops, more comfortable seating, and so on). Public policy needs to address this conflict.

Possible options are:

- Focus on quality even if it means a higher cost and higher user fees;
- Compromise on quality to keep user fees low;
- Improve quality but subsidize user fees – either for all users or for targeted users;
- Have two levels of service and charge different user fees for each level.

The key influencing factors are:

- What is the current mode share for public transport? If a very high share of the population is already using public transport, then increasing costs would adversely impact many who value affordability. But if the current share is not very high, or is sharply declining, then improving quality will be a good way to attract those who use personal motor vehicles or to slow the declining trend in public transport use.
- How much more expensive would it be for the services to be brought to a level that is attractive to personal motor vehicle users? If the target group is motorbike users, then this may not be much and may largely require better routing, improved cover-



Photo: O.P. Agarwal

age, and higher frequency of stops. But if the target group is car users, then it may mean better seating and air-conditioning. These additional costs would be an important factor in determining which options should be adopted. To attract car users, public transport may need different classes of service, where one class is subsidized as a basic service and the other is fully paid for by the user as a premium service.

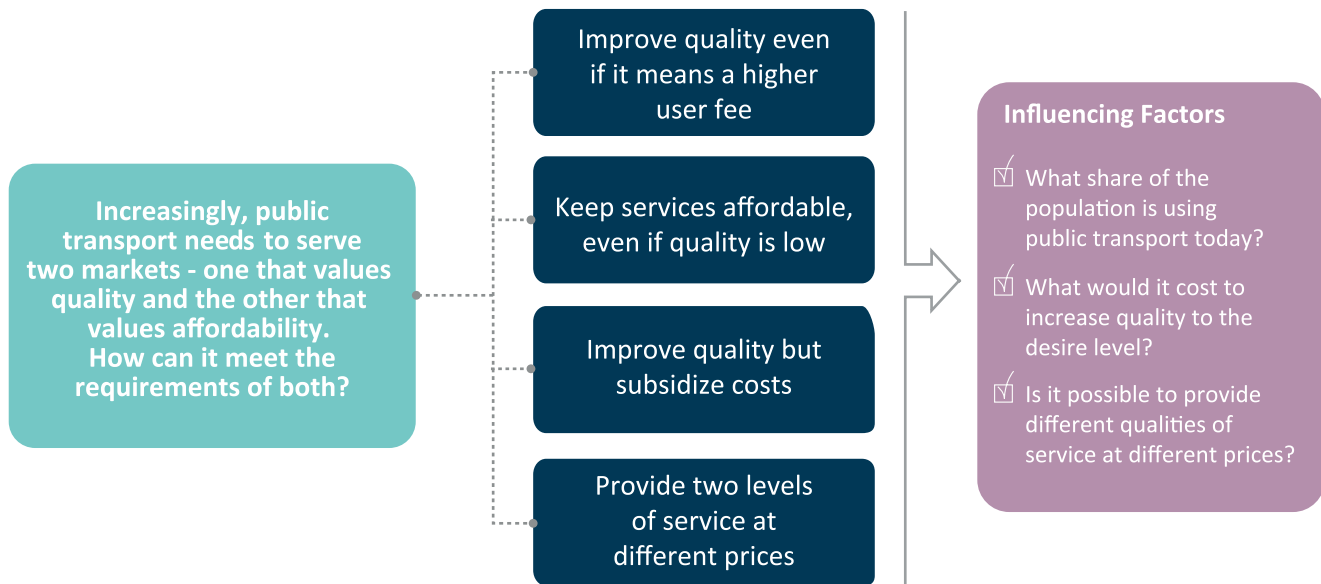
- Is it possible to provide different kinds of service at different prices? Examples include first-class and ordinary coaches on metro systems, premium and ordinary bus services, special bus services for airline passengers and business executives, and so on.

Figure 16 summarizes the key quality-versus-cost trade-offs related to public transport and the options that exist.

TECHNOLOGY

Several technologies for public transport exist. At one end of the spectrum are buses operating on a shared right of way; at the other end of the spectrum are heavy rail underground metro systems. Buses on a shared right of way are generally the backbone of the public transport system, but higher-capacity systems are often needed on high-demand corridors. While buses on a shared right of way cost the least amount and have a high degree of flexibility in the routes they serve, they have a limited carrying capacity. Underground metro rail systems, on the other hand have a very high carrying capacity but no flexibility with regard to the routes they serve. They

FIGURE 16 QUALITY-VERSUS-COST ISSUES RELATING TO PUBLIC TRANSPORT



also cost many times more than bus systems. Within these extremes are a range of technologies with varying carrying capacities, costs, and route-flexibility characteristics. This range of commonly used technologies is:

- Buses on a shared right of way;
- Trolley buses;
- Buses with a “high level of service”;
- Dedicated bus ways;
- BRT systems;
- Monorail systems;
- Trams;
- Light rail transit systems; and
- Metro rail transit systems.

Essentially, the choices can be classified into high-capacity/low-flexibility and low-capacity/high-flexibility systems. **Table 12** gives some of the broad features of each of the well-known technologies.

A choice depends on the likely demand on the corridor to be served, the shape and size of the city, the terrain, the weather, investment capacity, users’ ability to pay, ease and speed of construction, among other factors. In many cities, it makes sense to use more than one of these technologies to cover different parts of its terrain. A “Hierarchically Integrated Transport System” (HITS) is what a city needs.

Cities that are linear and have relatively long travel distances, with limited alternative roads, may prefer metro rail systems that have a high carrying capacity; however, cities that are sprawling may need a wide network but with a relatively moderate capacity on any one



Photo: World Bank

TABLE 12 SOME IMPORTANT FEATURES OF ALTERNATIVE MASS TRANSIT TECHNOLOGIES

	Capital cost/km	Carrying capacity (PHPDT)	Requirement of urban land
Buses on a shared right of way	L	L	L
Trolley buses	L – M	L	M
Bus with high level of service	L – M	L – M	M
Dedicated bus way	L	L – M	M
Bus rapid transit	L – M	M – H	M
Monorail	M	M	L
Tram	M	M	L
Light rapid transit	M – H	M – H	L
Metro rail	H	H	L

L = Low, M = Medium, H = High; PHPDT = Peak Hour Peak Direction Trips

segment. In such cases, bus-based systems would be better. Cities sensitive to their aesthetic appeal may prefer systems that do not create visual clutter through overhead wires or elevated viaducts; they would prefer underground systems or bus systems. Cities with difficult terrain, especially with severe gradients, tend to prefer bus systems because rail systems would have difficulty negotiating steep gradients. Cities with tall building bylines and narrow streets usually prefer underground systems or monorail systems, as the right of way on the roads would be a constraint. Thus, a choice between the options is a complex one, requiring a consideration of several variables.

Some of the influencing factors are:

- **Corridor volume**—the travel demand on a particular corridor is the most important factor that determines the choice of mass transit technologies.
- **Spatial pattern**—typically, linear cities would have a small number of very high-demand corridors, whereas cities with a more radial-grid pattern would have a larger number of medium-demand corridors.
- **Costs**—the capital cost and the annual operating cost of the different technologies are important factors.
- **Growth projections**—cities that are expecting a high level of growth would prefer to invest in systems that offer sufficient capacity for future demand and thus may prefer high-capacity

systems; those with lower growth projections may prefer lower-capacity systems.

- **Other factors** that influence the choice, though to a lesser extent, are:
- Preferred fuel—for those who import a large part of the petroleum fuel, reduced import burden may require a preference for electrical energy. In particular, for those with considerable amounts of hydro power, electrical energy would be preferred even from a pollution point of view. However, those with significant petroleum reserves of their own may prefer the traditional fuel, namely diesel.
- Environmental sensitivity—areas that are environmentally sensitive may prefer electrical energy to petroleum fuels.
- Land use policies—cities that are willing to adopt land use policies that promote densification along pre-identified corridors (see **Box 4**) would prefer high-capacity systems along such corridors. However, those who adopt policies favoring a more uniform density across a larger area would prefer low/medium capacity systems with greater route flexibility.

BOX 4: COPENHAGEN'S FINGER PLAN

Copenhagen is famous for its urban planning concept, which has promoted sustainable lifestyles and sustainable modes of mobility. **The Finger Plan** for Greater Copenhagen was introduced in 1947, when a group of town planners realized that Greater Copenhagen was beginning to spread uncontrollably.

Greater Copenhagen is a vast area consisting of 34 municipalities. The spreading of the area created difficulties for the public transport system, which was in danger of reaching its capacity. It was necessary to control urban growth and develop a citywide network of railways and arterial roads. The idea of the plan was to concentrate urban development of Greater Copenhagen in the urban “fingers” created around the railway network.

At the same time, green wedges between the fingers would remain undeveloped. Greater Copenhagen resembles a hand, where the city of Copenhagen covers the palm and five larger cities and their railway routes represent the fingers. Since 1947, the plan has been the main guiding principle of city planning in Copenhagen.

In 1989, the planners for Greater Copenhagen implemented a “Close to Station” structure, where areas for additional building developments were limited to within 1 kilometer of a railway station. Buildings would thus be concentrated around the 25 large railway stations in Greater Copenhagen. The aim was to favor public transport at the expense of private car use. This “Close to Station” structure allowed for sustainable lifestyles and minimized environmental impact, because transportation and developments were concentrated in conveniently accessible areas.

In 2007, the Danish Ministry of the Environment created Finger Plan 2007, where this proven concept was written into national law and had judicial binding over Greater Copenhagen and its planning initiatives.

Source: <http://www.norden.org/en/theme/theme-2012/rio-20-1/sustainable-consumption-and-production/sustainable-lifestyles/city-planning-denmark>.

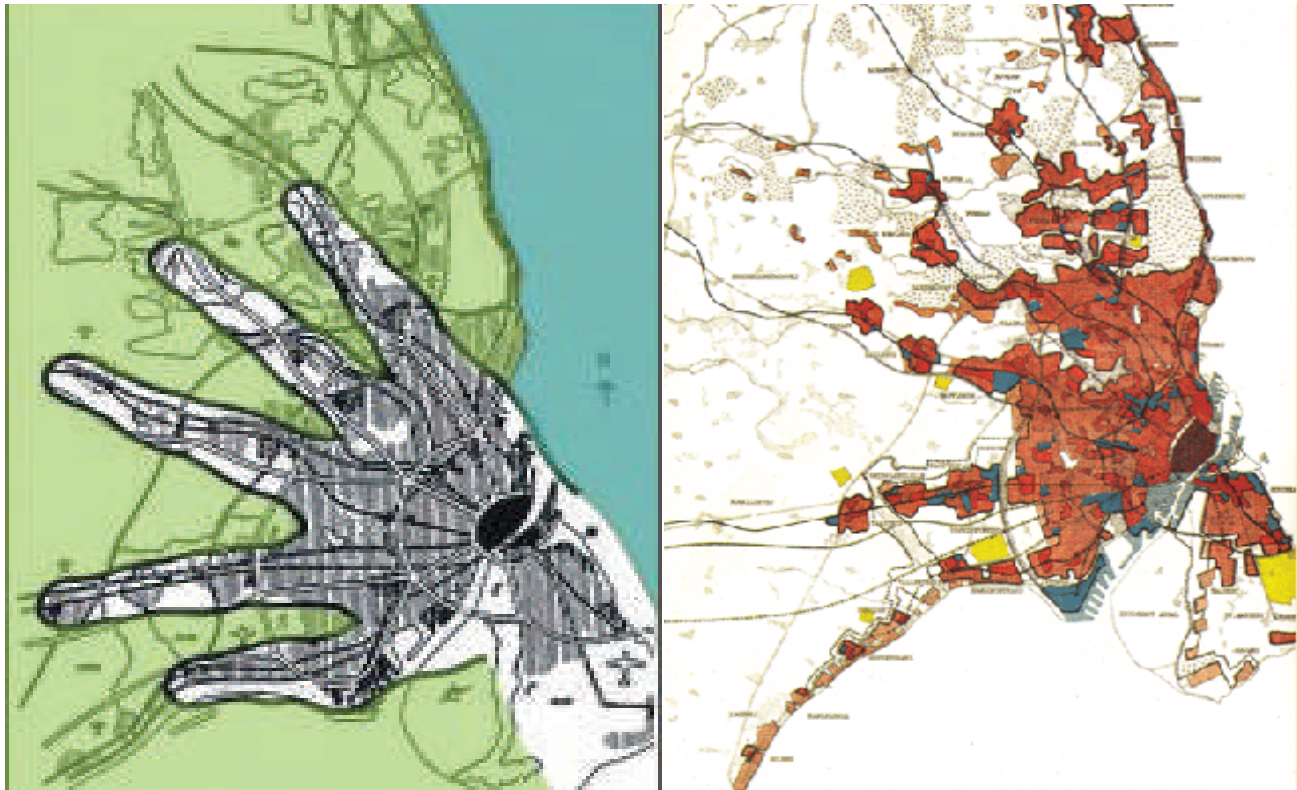
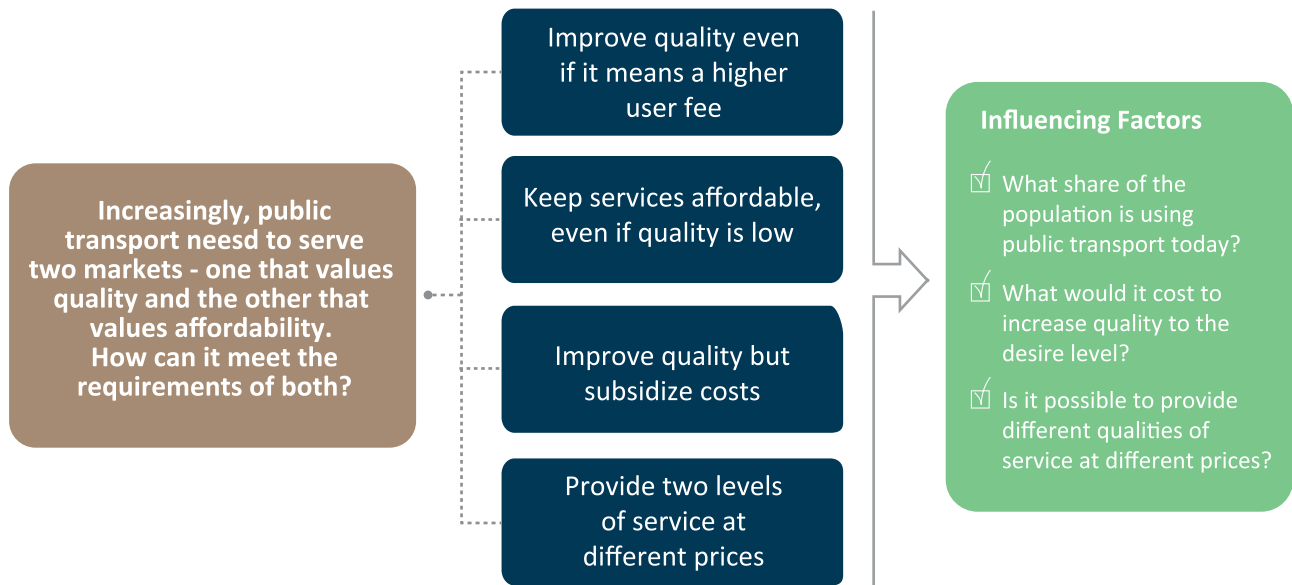


Figure 17 summarizes the key issues related to choosing a technology for public transport and the factors that influence a choice between options.

FIGURE 17 POLICY ISSUES AND OPTIONS RELATING TO PUBLIC TRANSPORT TECHNOLOGIES



COVERAGE

One important policy issue relates to how much of the city area should be served by public transport and the frequency of service that should be provided at different times of the day. It is generally believed that people do not like to walk more than about 500 meters to reach public transport stations. However, this figure will vary from city to city, with weather, terrain, sense of safety, kind of activity along the walking route, and similar factors playing a part. Better coverage of the city area will mean a higher proportion of the households can reach public transport within the acceptable walking distance; however, this has cost implications, as higher coverage means a larger network and more vehicles. Thus, there is a trade-off between cost and coverage (quality).

Similarly, people prefer more frequent service over service with larger time gaps. This gives them greater flexibility in timing their trips. It also allows people to accept jobs that involve travel early in the morning or later at night, if a reasonable frequency of service can be provided at those times. However, higher frequency requires more

vehicles and, therefore, a higher cost. So, there is again a trade-off between cost and frequency of service (quality).

Given this situation, the question for public policy is what share of the city's population should have access to public transport within a reasonable distance and at a reasonable frequency of service. Associated questions are:

- What is a reasonable standard for access distance and frequency of service?
- Will this standard be the same throughout the city and at all times of the day?
- Should this standard extend to the suburbs and satellite cities as well or be limited to the main city only?

As seen above, there are cost implications and trade-offs involved. The key is in thinking of a well-integrated multimodal system that allows low-density areas to be fed by low-cost and flexible systems and high-density areas by higher-cost and high-capacity systems.

Choices are exercised based on how many people really benefit from the improved coverage and the extent to which they take advantage of it vis-à-vis the additional costs involved. In the core city area, access to public transport within 500 meters would be desirable for the entire population. This is because the core city areas have limited space and tend to be already congested. Therefore, limiting personal motor vehicles in such areas is desirable. However, as one moves out toward the fringes of the city, space limitations as well as congestion are less severe and cost implications of increasing coverage go up. Therefore, the access standards could be higher and frequency of service standards lower.

Formal and informal feeder systems may have to serve the last mile connectivity needs via either motorized or non-motorized modes. The needs could also be met via personal vehicles or publicly provided services. The provision of good parking facilities would encourage those who have personal vehicles to use them only for the last mile connectivity instead of for the entire trip. Also, feeder services with lower-capacity public transport modes, like minivans, would be good last mile connectivity for all mass transit users. Safe and sheltered sidewalks are good last mile connectors for those who live within walking distance but hesitate to walk because of unsafe walking environments or poor weather conditions.

Thus, there is a wide spectrum of options with different combinations of mode, access distance, and feeder systems. Choices tend to depend

on the volume of demand, the costs involved, affordability among the people living in the fringe areas, and a range of other considerations. Typically, access is at a shorter distance and services are at a higher frequency in the core city areas, but these access distances increase and frequencies come down as one moves to outer areas.

Figure 18 summarizes the policy issues relating to the coverage of public transport, the options that exist, and the factors that influence a choice.

CAPACITY

In developing countries, the urban population is growing rapidly and placing an increasing demand on the urban transport system. So an important issue for consideration is the time horizon for planning future transport capacity. Should planning seek to satisfy the demands for the near term of say 2–3 years, or should it aim to cover future demand over a longer time horizon of say 10 years or 15 years. Often these questions and answers have an impact on technology choices and cost implications.

The future is uncertain. Demand patterns may change. Trip patterns may change. The projected demand may not materialize for a variety of reasons. Therefore, there are risks in making high investments in anticipation of demands too far into the future. However, there are economies of scale in establishing a higher capacity in one go as the

FIGURE 18 POLICY OPTIONS RELATING TO THE COVERAGE OF PUBLIC TRANSPORT

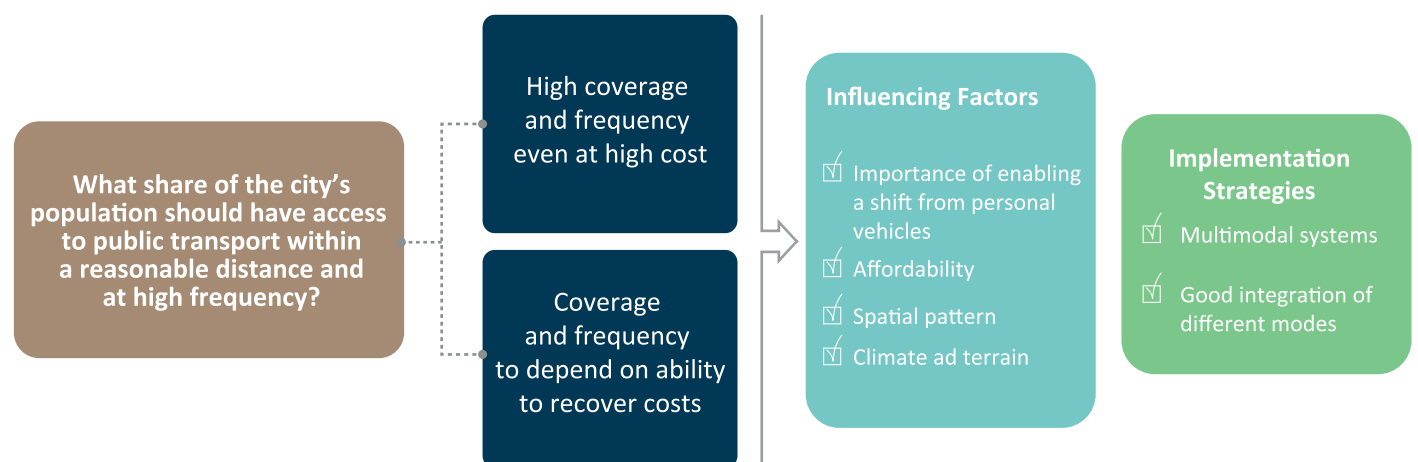
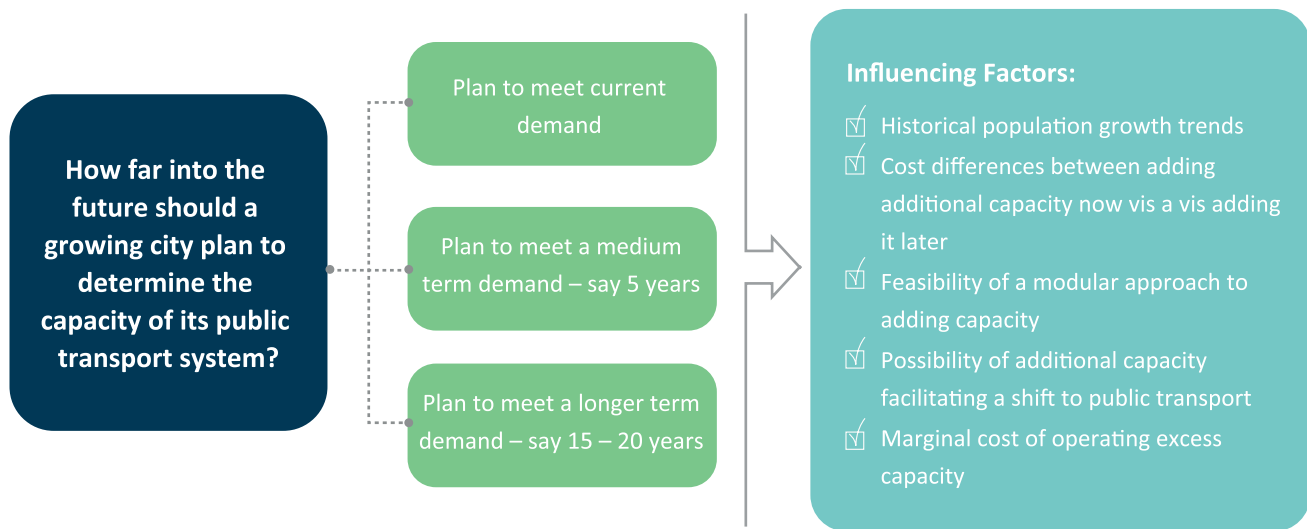


FIGURE 19 POLICY OPTIONS RELATING TO THE CAPACITY OF THE PUBLIC TRANSPORT SYSTEM



costs of expanding capacity in smaller instalments would be more higher. It is this trade-off that poses a challenge for public policy.

The key factors that need to be taken into account in making these choices seem to be the following:

- What has been the historical population growth trend, and how likely is it to continue?
- What are the likely cost differences in adding the new capacity now as opposed to adding it later, when the demand reaches a certain level?
- Is a modular approach to adding capacity feasible? For example, metro stations may have to be designed to accommodate eight coaches even if the current need is only for four.
- What is the possibility that somewhat excess capacity would help shift people from personal modes to public transport, or help channel growth of the city along a public transport corridor?
- What is the marginal cost of operating at excess capacity?

Figure 19 summarizes the policy issues relating to the capacity of the public transport system, the options that exist, and the factors that influence a choice.

INDUSTRY STRUCTURE AND REGULATORY RIGOR

With regard to the industry structure for urban public transport, there seem to be three broad models around the world. They are:

1. **Unified Public Model**—a monolithic public entity owns and operates public transport services in the city. This entity organizes and operates all the modes of public transport. It plans all services; decides the routes, frequencies, and service levels; and also manages the entire associated infrastructure. Most cities in the United States and some in Canada (Toronto being one) have this arrangement.
2. **Closely Supervised Private Model**—the planning and coordination functions are separated from the operations functions. The planning functions are generally with a public entity responsible for making decisions on the kind of service the consumers need. Operations are carried out by a separate agency (public or private) typically under structured contracts. The planning entity does not have to worry about the day-to-day operational concerns, such as availability of buses and crew, scheduling, and so forth. On the other hand, the operator concentrates only on keeping the operations going and does not have to make decisions on

the routes to be served and on the service levels. These are done by the planning entity and given to the operator to carry out. This industry structure reflects competition “for the market.” Examples of this model are found in London, Lyon (France), and Curitiba (Brazil), among other cities.

3. Loosely Supervised Private Model—there is no centralized or coordinated planning, and there are multiple independent operators. Each of the operators undertakes its own service plans and carries out operations as per its own plans after obtaining a permit from a regulatory authority. There is no integration in their services. Each owns the infrastructure, equipment and support systems that it needs for its own operations. Generally, there are no common facilities or services across operators. This model reflects competition “in the market” and leads to the kind of “penny wars” witnessed in several cities. This is the most common structure in many countries in Africa and Asia.

The regulatory rigor also varies across these models. Aspects regulated by a public agency in each of these are as shown in **Table 13**.

The policy question is: Which model should be followed?

The Unified Public Model tends to be expensive and requires a high level of public subsidy, often owing to its inherent operational inefficiencies and certain inevitable compulsions faced in public sector operations. On the other hand, the Loosely Supervised Private

Model has the problem of competition in the market and the typical problem of oversupply on high-demand routes and undersupply on uneconomic ones. The Closely Supervised Private Model seems to have emerged as a good intermediary and is the current global trend. The public agency performs the role of planning and contracts operations from the private sector, which is better placed in undertaking commercial functions.

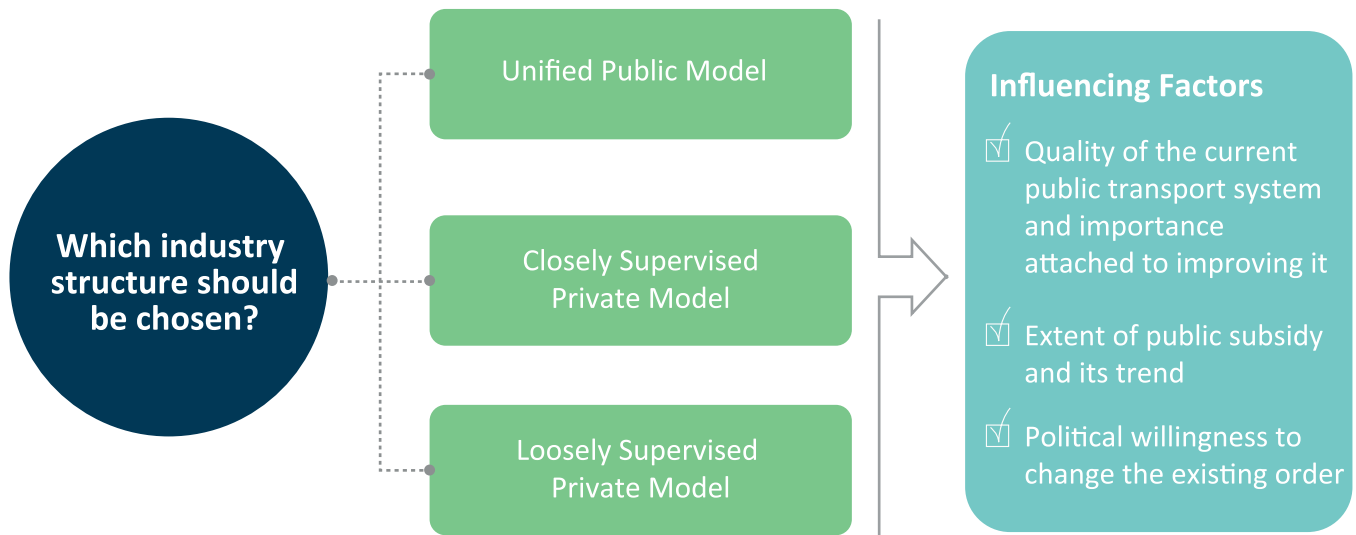
The key to making a choice is the historical situation and how well the current system is functioning. If it is functioning well, then there would be little reason to change. However, public policies relating to subsidies and competing claims on the public budget would often persuade a shift from Model 1 to Model 2. Similarly, poor quality and unsafe operations would persuade a shift away from Model 3. Model 2 seems an optimal choice, but such choices are largely determined by the political willingness to change the existing order.

Figure 20 summarizes the policy issues relating to the industry structure, the options that exist, and some of the factors that can be taken into account in making a choice.

TABLE 13 ASPECTS REGULATED BY A PUBLIC AGENCY IN DIFFERENT PUBLIC TRANSPORT INDUSTRY MODELS

	Unified Public Model	Closely Supervised Private Model	Loosely Supervised Private Model
Safety	Y	Y	Y
Emissions	Y	Y	Y
Route authorization	Y	Y	Y
Fares	Y	Y	Y
Route and network design	Y	Y	N
Schedules	Y	Y	N
Detailed vehicle specifications	Y	Y	N

FIGURE 20 POLICY ISSUES RELATING TO THE INDUSTRY STRUCTURE FOR PUBLIC TRANSPORT



baggage, patients who need to be rushed to hospital, and the elderly find it difficult to use the normal public transport system. In such cases, para-transit fills the gap that public transport cannot.

- They offer a service that places a lower demand on the parking system in a city, compared with the personal vehicle. For example, taxis would drop one passenger and pick up another without the need to park.
- They offer a service that reduces the fuel consumed in empty haulage. For example, people who use their own cars to go to the airport would need the car to be driven back empty. On the other hand, taxis would bring another passenger back and not waste fuel in empty haulage.
- They are useful for tourists who find the regular public transport system complicated and prefer the door-to-door convenience of para-transit.
- They are an opportunity for gainful employment.

UNDESIRABLE FEATURES

- In many cities, vehicles are driven by inadequately trained drivers, who tend to be undisciplined and cause undue congestion and accidents. Apart from this problem, many drivers tend to drive long hours and their fatigue compromises safety.
- They are often polluting, due to inadequate maintenance in an effort to reduce costs.
- Often people tend to prefer a taxi or other lower-cost para-transit options (like the auto-rickshaw in India) to public transport. In such cases, para-transit tends to compete with public transport, not complement it.
- They are often the scene of criminal activity. There are several instances of crime, especially against women using them late at night. Apart from this, there are cases of over-charging and misbehavior with vulnerable passengers.

OPTIONS FOR PUBLIC POLICY

Given the desirable and undesirable features of para-transit, it is for public policy to clearly define a role for para-transit. Possible options seem to be:

- A flexible and on-demand service that serves only areas not served by public transport;
- A higher-quality service that serves a high-cost and high-quality need and attracts personal motor vehicle users;
- A service for tourists who may not be familiar with the public transport network; and
- An extension of the public transport service that serves low-demand areas.

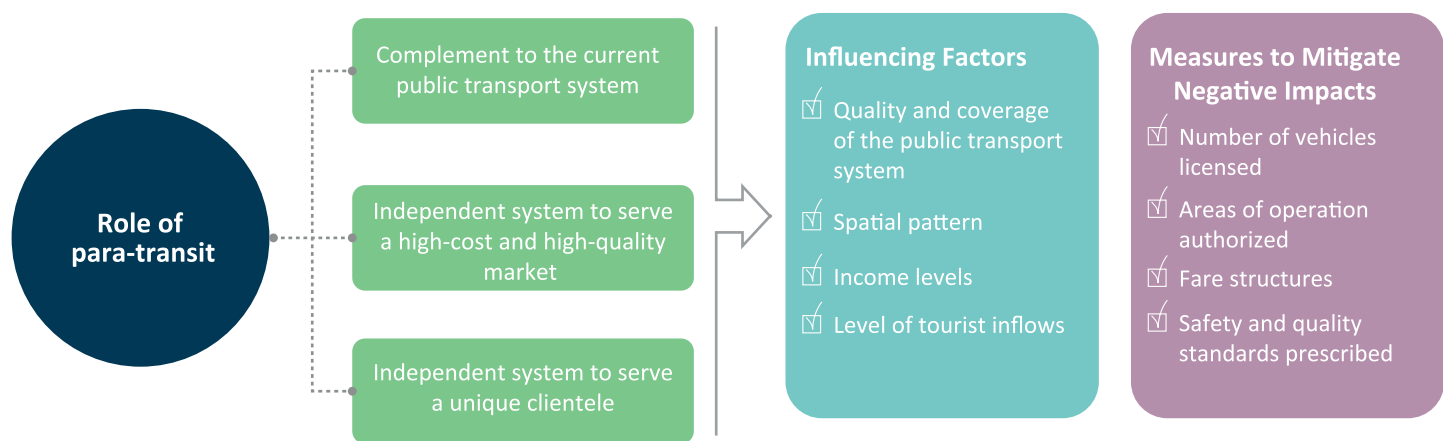
Some of the important factors that would determine a choice among the options are the following:

- Quality and coverage of the existing public transport system;
- Spatial patterns and layout of the city;
- Extent of tourist inflows; and
- Income levels.

The three main instruments for implementing policies relating to para-transit are:

- The number of para-transit vehicles licensed to operate in any area—licensing a large number would create all the attendant problems associated with destructive competition, such a lowering prices and compromising on safety, whereas permitting too few would enable the exercise of monopoly power, such as charging an illegal premium or refusing passengers who wish to travel to certain destinations.
- License conditions with regard to the vehicle maintenance standards, driver training standards, area of operation, and so on—para-transit vehicles are sometimes not allowed in the city center on the grounds that public transit is available and the congestion caused by para-transit is less tolerable there.

FIGURE 21 ISSUES RELATING TO PARA-TRANSIT



- The fare structure—a low fare structure would make para-transit a competitor to public transport, whereas a high fare structure would make it unaffordable as a service to fill the gap that public transport cannot.

Figure 21 summarizes the policy issues relating to para-transit and the options that exist.



NONMOTORIZED TRANSPORT

BACKGROUND

Nonmotorized transport (NMT) encompasses the most fundamental of transport options: walking, bicycles, tricycles, and other human-powered vehicles. NMT modes cause the least pollution, use the least road space, and consume the least amount of nonrenewable energy. NMT also directly relates to gender equity, as low-income women are particularly dependent on NMT options, and many women have daily schedules that are not adequately served by public transport services. Moreover, the viability of public transport systems is significantly enhanced by accessible NMT links to key origins and destinations. In fact, NMT accounts for a fairly large share of the trips in many cities around the world: it ranges from about 55 percent in Beijing to about 25 percent in Barcelona and Mexico City, to a low of about 4 percent in Chicago. Cities tend to become more livable when pedestrian friendly environments are put in place. Pedestrian only shopping areas tend to have increased commerce.

Unfortunately, as urbanization takes place, cities have tended to enlarge their areas, and travel distances are growing. As a result, there is an increasing shift from NMT to motorized modes. This is further reinforced by the fact that as income levels go up, people are able to afford motorized modes of travel. This shift is having an adverse impact on congestion, local air quality, and GHG emissions. It also has important effects on overall health, as beneficial physical activity from active travel is replaced by more sedentary motorized travel. It is in this context that there is a need to prevent this decline in the share of non-motorized modes in the overall travel demand.

Part of the reason for the declining share of NMT has been the poor infrastructure for its use. In their enthusiasm to provide adequate right of way for the growing number of cars, many city managers have compromised on the needs of pedestrians and other NMT users.

ISSUES FOR PUBLIC POLICY



Photo: O.P. Agarwal

The question for policy makers, therefore, is whether to allow the current trends to continue or to arrest them—or to go even further and try to reverse them. Obviously, there are costs to these approaches, but the benefits in terms of reduced pollution and congestion, reduced energy use, and lower levels of road accident fatalities may outweigh them.

For policy makers, the trade-off between the needs of motor vehicles and NMT becomes a bone of contention: How much of the available right of way should be allocated to NMT and to vehicles? Similarly, with limited budgets, the question becomes how much to spend on improving sidewalks and how much to spend on improving road surfaces. Both space and money are limited, and the needs of one group cannot be met without compromises from the other.



Photo: Sam Zimmerman

INFLUENCING FACTORS

A choice among the options is influenced by the following:

- Current levels and trends in NMT use—if the current share of NMT use is high or if public policies seek to be very aggressive with regard to reversing the trend of increasing car use, then a higher share would be allocated to NMT.
- Nature of the city—compact cities would tend to focus more on NMT than would cities that have been locked into land use patterns that require greater car use.

- Income levels and affordability of motorized modes of travel—NMT is often the only option for the poor and so investments in NMT infrastructure cannot be compromised in low-income cities.
- Level of economic development—in developing economies, growing use of motor vehicles is inevitable to allow access to employment and education and to allow an efficient distribution of goods. Hence, motor vehicle use cannot be completely constrained, because it would stifle growth. However, NMT infrastructure cannot be entirely ignored either, because it would have adverse impacts on the transport needs of the poor. A balance needs to be struck.
- Terrain—for example, in hilly terrains, walking infrastructure is extremely important, as it is often the most important mode of travel. Narrow streets may constrain the use of motorized modes.

INSTRUMENTS FOR IMPLEMENTATION

The most important instrument for implementation is the priority accorded to investments in safe infrastructure for NMT: sidewalks and bicycle paths. In addition, instruments that discourage the use of motorized modes serve to encourage NMT.

Figure 22 summarizes the policy issues relating to NMT, the options that exist, and the factors that influence a choice.

FIGURE 22 ISSUES RELATING TO NMT

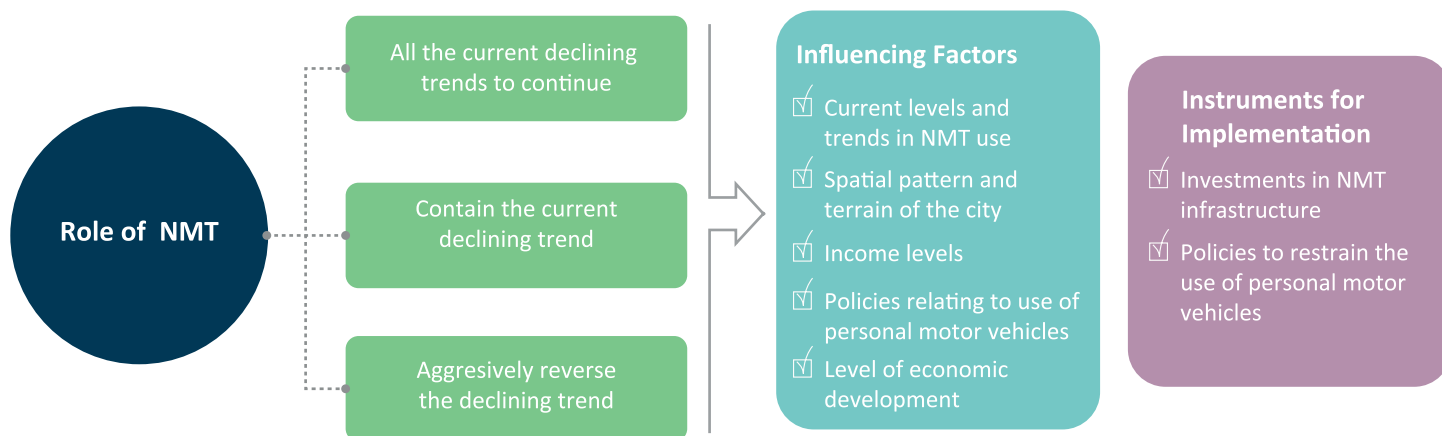


TABLE 14 BASIS FOR CHOOSING BETWEEN POLICY OPTIONS

	High Affordability	Low Affordability
High Essentiality	<ul style="list-style-type: none"> ● Adequate quantity ● High price 	<ul style="list-style-type: none"> ● Adequate quantity ● Low price
Low Essentiality	<ul style="list-style-type: none"> ● Limited quantity ● High price 	<ul style="list-style-type: none"> ● Limited quantity ● Low price

- Extent to which parking enables use of more sustainable systems—parking at transit stations in fringe areas is an essential form of last mile connectivity.

In all such cases, parking is essential, and there would be a sound rationale to provide adequate parking. On the other hand, affordability determines how much can be charged for the parking.

The matrix presented in **Table 14** could be a possible guide for choosing between the options:

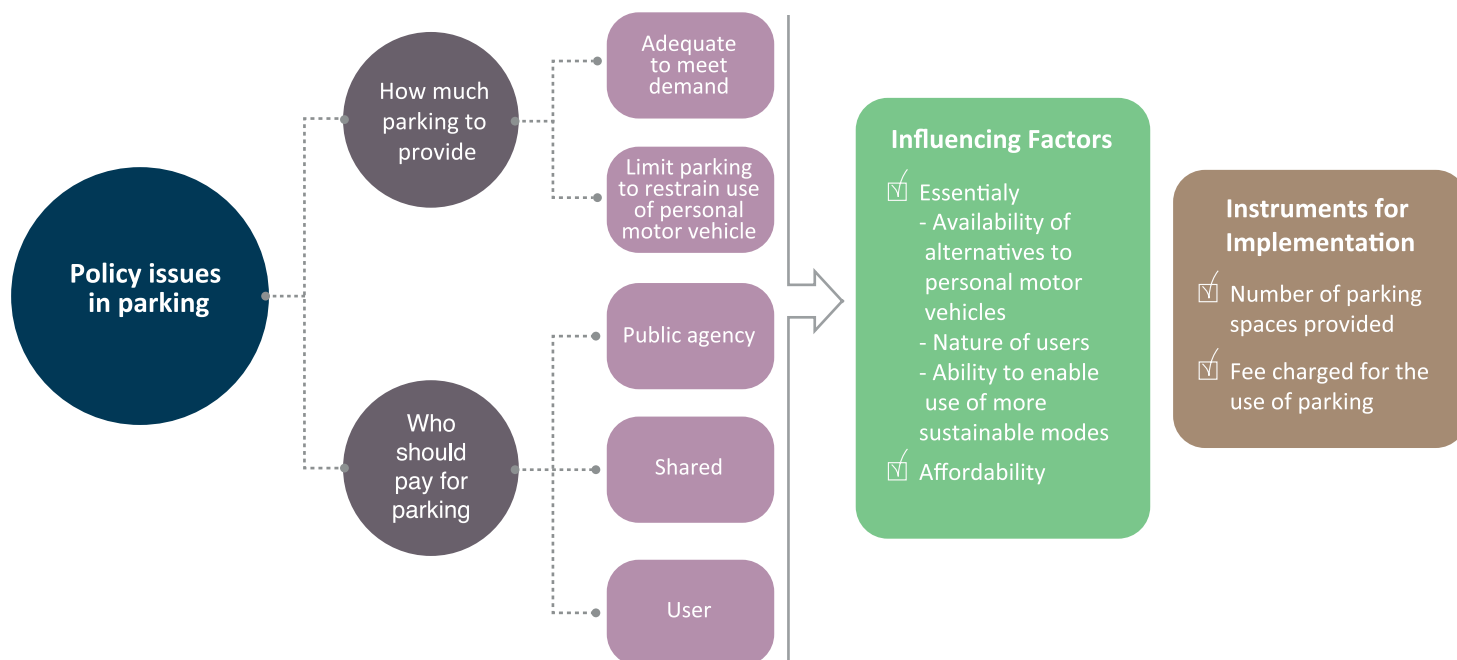
INSTRUMENTS FOR IMPLEMENTATION

The three main policy instruments for implementing a parking policy are:

1. The number of parking spaces to be provided;
2. The fee to be charged for use of the parking space; and

Figure 23 summarizes the key issues related to parking, the options that exist, and factors that go into influencing the choices.

FIGURE 23 POLICY ISSUES RELATING TO PARKING



SUPPLY VERSUS DEMAND MANAGEMENT

BACKGROUND

Two sets of strategies can be used to meet the travel demand:

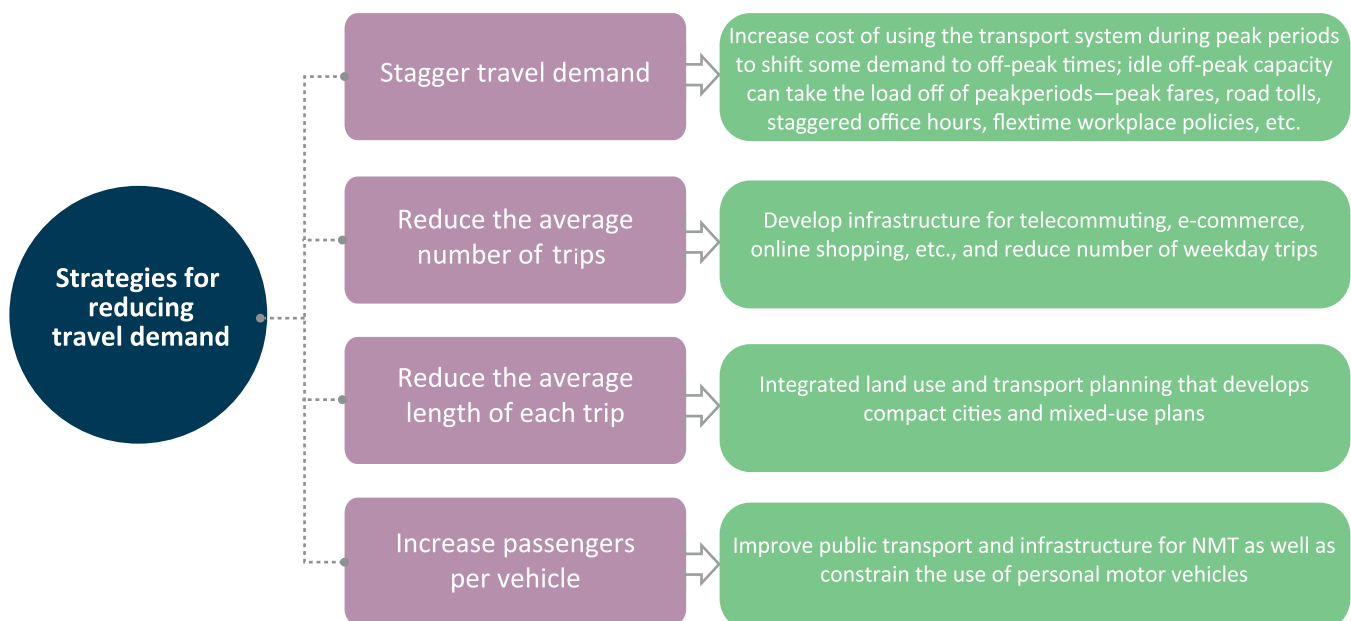
1. Create adequate capacity in the transport system to meet the demand (supply management); and
2. Reduce the demand to levels that the available capacity can accommodate (demand management).

Most cities have tended to increase capacity. New roads have been built, and existing roads have been widened. Flyovers and mass transit systems have been constructed. Buses have been added to the public transport fleet, and many more para-transit vehicles have been licensed to operate. These are all supply-management measures.

More recently, some cities have adopted measures that seek to reduce the demand for travel. Fuel taxes have been increased, parking fees imposed, parking availability has been limited, and special fees have been imposed on cars entering the core parts of a city. Similarly, high vehicle-registration fees and the need to buy expensive certificates even to be eligible to buy a personal motor vehicle have sought to restrain even the ownership of vehicles.

The main concern for policy makers is the demand for motorized travel, and so demand-management efforts are primarily aimed at reducing this. Thus, measures that allow the same travel demand to be met but with fewer motorized vehicles (say, when people shift from personal motor vehicles to public transport) are a powerful form of demand management. Similarly, carpooling is also a form of demand management. **Figure 24** presents some demand-management strategies.

FIGURE 24 STRATEGIES FOR REDUCING TRAVEL DEMAND



- Are there strong security concerns that necessitate use of fuels that can be obtained from alternative sources? For example, a country with strong concerns about the volatility of oil supplies and prices may be willing to invest in ensuring a stable supply of alternatives.

Some of implementation instruments are given below:

Fiscal incentives – Provide tax incentives for cleaner vehicles and fuels

Taxation structures that lower the cost of the preferred fuel can be a powerful incentive for its use. In particular, this is very useful when a new fuel is to be given preference and needs to compete against an established fuel. To allow such effective competition, reduced prices through tax policies will go a long way to enable production on a commercial scale and to establish the requisite distribution network.

Stringent regulation – Enact vehicle standards

Over the past few decades, standards on vehicle performance—including those on fuel economy, air pollutants, and safety—have driven advancements in the vehicle industry. An example is the CAFE standards in California, which have drastically improved fuel economy of cars sold in the state. Standards on air pollutants, such as the EURO standards, have drastically reduced the level of air pollutants, including nitrogen oxides, hydrocarbon, carbon monoxide, and particulate matter.

User sensitization – Provide consumer information and labeling

Governments can also enact legislation to make it mandatory for vehicle manufacturers to provide information on the fuel efficiency of the vehicle; this way, consumers can make an informed choice at the point of purchase. This information can come in the form of labels

that clarify the fuel economy of the vehicle, CO₂ emissions, and, importantly, the estimated running costs of the car.

Leadership through public procurement – Develop procurement guidelines for public fleets

Governments directly purchase, or directly influence the purchase of, vehicles for public use, including municipal buses, trucks for waste disposal, taxis, and official cars. By developing guidelines on the types of vehicles that can be purchased for such purposes, governments can take a leading role in bringing relatively new technologies to market.

Reducing cost differentials – Promote research and development

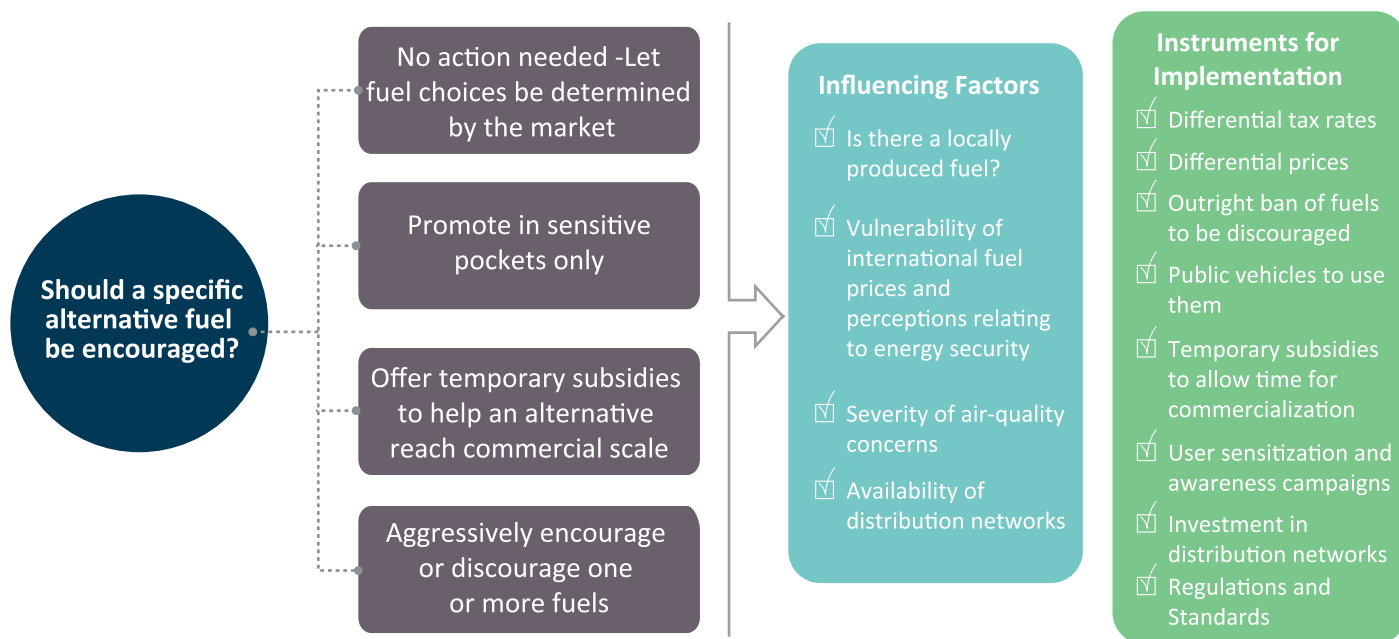
Governments can also provide grants or other in-kind support for research and development in critical areas. For example, the cost and technical performance of batteries is currently a large barrier to the uptake of electric vehicles. Public research can support breakthroughs in such fields.

Reducing infrastructure gaps for new technology – Develop harmonized standards for new infrastructure

With new technologies and fuels comes the need for modifications to or construction of new infrastructure. For example, electric cars require charging stations at workplaces, homes, and public places. To ensure interoperability across different service providers, manufacturers, and regions, governments in association with industry can develop technical standards or guidelines to mitigate duplication and inconsistencies.

Figure 25 summarizes the policy issues relating to alternative fuels, the options that exist, and the influencing factors.

FIGURE 25 POLICY ISSUES RELATING TO ALTERNATIVE FUELS



BOX 5: USE OF ELECTRIC VEHICLES NEAR THE TAJ MAHAL

The Taj Mahal, one of the seven wonders of the modern world, is in danger of being damaged by air and water pollution. Agra, India, where the monument stands, has been heavily polluted by industries and traffic over the past decades: illegal factories have sprung up around the Taj Mahal, more vehicles visit the area, and construction around the monument is uncontrolled.

At the end of the past century, the government of India realized the growing problem and started a program to save the monument's shiny white marble façade from turning yellow. To help control pollution, the Indian government has set up the Taj Trapezium Zone (TTZ), a 10,400-square-kilometer (4,000-square-mile) area around the monument where strict emissions standards are in place. Pollution stations around Agra monitor air quality around the clock. Car traffic has been banned within 2 kilometers of the Taj Mahal. Electric and battery-driven cars and buses take tourists to the site.



Photo: Jaymis Loveday

Source: <http://www.english-online.at/news-articles/environment/pollution-endangers-taj-mahal.htm>.

FINANCING

BACKGROUND

Urban transport requires significant investments. While costs vary significantly from project to project, as indicative numbers, building a metro rail system could cost around \$100 million per km, and BRT systems could cost around \$5–10 million per km. Buses alone could cost from \$100,000 to 200,000 depending upon their specifications. In addition, there are operating costs that depend on the price of fuel and the wage rate in the city.

A recent study by the High Power Expert Committee in India has projected the investment needs for urban transport in the country at \$400 billion over the next 20 years. In China, estimates indicate that \$5.3 trillion needs to be spent in the next 10 years on urban infrastructure, a sizable portion of which will have to be on transport infrastructure. Other developing countries also have large needs. In addition, there are needs for maintaining the infrastructure and operating the services. These large amounts cannot be sustained entirely through prices or even the current public budget. Therefore, in this section we look at policy issues related to the financing of urban transport infrastructure and services.

At the outset, the types of facilities and services required for urban transport can be classified into:

1. Those that are not generally paid for by the users—for example, use of sidewalks and pedestrian underbridges are usually not paid for; similarly, in most cases, even the use of city roads is free. Typically, these are public goods, and it is difficult to stop anyone from using them.
2. Those that are normally paid for by the users—for example, the use of parking facilities and public transport systems, even if the full costs are not recovered from such charges.

With regard to financing needs, there are also two types:

1. Capital expenses—one-time expenses needed to either build something or get it started. These are typically lump sums that sustain for several years. Examples would be the cost of building a road or a flyover, the cost of constructing a metro or BRT system, or buying buses for public transport services.
2. Operating expenses—recurring annual expenses and needed to keep the facilities operating and in a state of good repair. Examples are the cost of maintaining roads or the cost of operating a metro or bus system.

Here it would be good to distinguish between “users” and “beneficiaries.” Users are those who use a service; beneficiaries are those who benefit from a service even if they do not use it. For example, a passenger using a metro rail system is a user; however, a person who owns commercial property close to a metro system could be a beneficiary, even without using the system, because the value of the property would go up significantly because of its closeness to the metro rail system. Similarly, a bus passenger is a user of the bus service, but a car user benefits when others use the bus and thus relieve congestion on the roads.

Some benefits accrue only to those located close to the system; others accrue to those spread across the city, region, country, or world. For example, reduced congestion may be beneficial to only the residents in the city; however, reducing GHG emissions benefits people all over the world. Improved air quality would benefit residents of the city as well as surrounding areas, but not across all countries. Improved mobility would enhance economic efficiency of the city and thereby could secure benefits even at the national level.

POLICY ISSUES

A key question that arises in public policy is who should pay for the investments/expenses of urban transport. Three primary options exist:

- Only the users of the system;
- All beneficiaries of the system; or
- Shared cost between the users and the beneficiaries.

Typically, if the cost is to be paid entirely by the user, then it happens in the form of a user fee or fare. If it is paid by beneficiaries, then it is usually done via taxes (general or dedicated) collected from such beneficiaries and paid through the public budget. Again, the public budget could be the budget of the city or the budget of a larger jurisdiction, such as the provincial budget or the national budget, or even the budgets of several countries.

INFLUENCING FACTORS

Affordability and extent of public value are the two main factors that determine who should pay for urban transport. Although fairness and equity would require that many of these costs be paid by beneficiaries and not just users, practical difficulties in identifying users and the complications of determining the extent of benefit often make it difficult to have beneficiaries pay the entire cost. Besides, in some cases, such as the use of sidewalks, it will be difficult to prevent use by someone who does not pay and so levying a user fee may be difficult. In such cases, there may be no option but to cover costs through general taxes.

Situations differ considerably from context to context, so it is difficult to offer a one-size-fits-all model of who should pay. **Table 16** shows some examples of transport-related costs, who should pay for them, and how these payments can be realized. It also gives a brief rationale for this suggestion. This table should not be treated as a manual that can be applied in all situations; it is only a guide to the basic principles in deciding who should pay the costs involved.

In this context, it needs to be recognized that for many investments, the full payments do not come directly from the public budget. Often, the public sector borrows funds from financial institutions (loans) or even from the public (bonds), but this does not mean that the financial

institution or the public has paid for these investments. At times, even the private sector contributes by way of equity for some of the capital investments; however, these are investments made in the expectation of a return and do not mean that the private sector has paid the cost. The ultimate test of who pays is determined by who repays the debt or who provides the revenues for the returns on equity. If debt repayment or equity returns come from the fares collected, then the user has financed the system; if it comes from out of the public budget, then those who contribute to the public budget have financed the system.

ADDITIONAL SOURCES OF REVENUE

Existing public budgets are usually committed. So how can the public budget find additional resources to meet the costs of urban transport facilities and services? Are there possible sources of revenue beyond the fares and fees currently being charged and beyond the general tax revenues already being collected?

The options seem to be:

- Enhancing the existing user fares and charges;
- Enhancing the existing general taxes;
- Levying a specific charge on nonuser beneficiaries of transport systems; and
- Raising funds from the commercial exploitation of property used in transport systems.

Factors that influence a choice would be:

- Feasibility of levying a user fee for services not being charged for at present – in some cases it may not be possible to levy a user fee as it may be difficult to collect the fee (collecting tolls within a city) or it may be difficult to prevent access to someone who does not pay (for example the use of sidewalks within a city);
- Whether there is enough public value to continue funding from the public budget – for example good public transport helps to reduce congestion and improve air quality that benefits all city residents;
- Whether users can afford to pay a higher price – this brings in the question of affordability;

- Whether a higher price will lead to a shift toward unsustainable modes (for example, increasing public transport fares makes motorbike use more attractive);
- Whether there are nonuser beneficiaries of the investments;
- Whether nonuser beneficiaries can be clearly identified and made to share the cost of the investments; and

- Possibility of commercial ventures using the assets of the transport systems that could generate additional revenues, for example using the air rights on metro terminals to build commercial space that can be leased out to earn revenues.

Table 17 presents some options for raising additional revenues, the contexts in which they can be used and also some examples of cities where they are being used.

TABLE 16 EXAMPLES OF WHO SHOULD PAY FOR A SAMPLE OF TRANSPORT RELATED COSTS

Item of Cost	Who should pay	Mechanism for realizing the payment	Rationale
Parking in core city areas	User	Parking fees	<ul style="list-style-type: none"> ● Typically used by those who can afford it ● Public transport is available, but they still prefer personal vehicles
Parking in fringe areas	User + City residents	Parking fee + Subsidy from the city	<ul style="list-style-type: none"> ● Typically used by those who can afford it ● Typically public transport is not available
City roads and sidewalks in core city areas	Personal vehicle users + City residents	Road user fee for personal vehicle users + Subsidy from the city	<ul style="list-style-type: none"> ● Used by all and difficult to charge a user fee from all ● Typically public transport is available, and personal vehicles should be discouraged
City roads and sidewalks outside core city areas	City residents	Subsidy from the city	<ul style="list-style-type: none"> ● Used by all and difficult to charge a user fee from all ● Typically public transport is not available
Cost of public transport	User + Personal motor vehicle users + Property owners in the vicinity + Local employers	Fares + Subsidies from fuel taxes, congestion charges, and land value capture	Users benefit directly, but personal motor vehicle users also benefit from reduced congestion. Property owners benefit from increased property prices and employers benefit due to easier access for their employees
Cost of clean vehicles for public transport	All city and regional residents	Subsidies from the city, regional, and national government	Benefits of cleaner air accrue throughout the region
Cost of clean technology for personal motor vehicles	User + All city and regional residents	User pays a discounted cost price, with discount covered by subsidies from the city, regional, and national government	Benefits accrue to user as well as to all residents of the region
Losses due to concessions for the elderly, the physically handicapped, and students	All city residents	A discounted user fare is paid by the traveler, with the loss on account of the discount coming from subsidies by the city	It is a social responsibility for all city residents
Cost of special bus/metro services to the airport	User	User fares	Users are typically those who can afford it and also benefit from the convenience of these services; if a shift to public transport is required, then a lower fee with a subsidy from the city is justified
Cost of school buses	User + All city residents	A monthly fee on users + Subsidies from the city government	Users benefit, but all city residents benefit from better access to education
Cost of special services for women	User + All city residents	A monthly fee on users + Subsidies from the city government	Users benefit, but all city residents have a social responsibility toward safer travel for women
Cost of services in low-demand areas and off-peak hours	User + All city residents	A monthly fee on users + Subsidies from the city government	Users benefit, but all city residents have a social responsibility toward ensuring access for all

TABLE 17 SOME POSSIBLE OPTIONS FOR RAISING ADDITIONAL REVENUE

Possible source for additional revenue	Explanation	Contexts in which they can be used	Examples of use
Increase in fares and user charges	The charges of specific services are increased.	If there are increases in input costs, such as fuel price, wage rate, etc.	Fuel price increase leading to fare increase is a common practice all over the world
Congestion charging/ road user fee	Use of roads in the core part of the city requires a fee to be paid.	Generally possible if a good alternative is in place, such as a mass transit system. Also, it should be possible to clearly delineate the area to be covered by such a fee and have all access points covered by collection/charging facilities.	London and Singapore levy a congestion charge in the central parts of the city
High parking fee	Parking fees are levied at a high rate, especially in core city areas.	Can be used in all situations, though are good to use for areas where alternative modes of travel are available.	Most cities levy a parking fee in core city areas. Washington, DC, charges \$10–\$12 a day.
Betterment levy/ land value capture	A higher tax is levied on properties that benefit from mass transit investments.	Can be used if it is possible to clearly delineate the areas that benefit from the investment and also assess, in a fair manner, the extent to which each unit of property benefits	Colombia
Employment tax	Levy a tax on employers who benefit from improved access for their employees.	Can be used in any situation where mass transit systems are operational and used by employees.	France
Commercial exploitation of land	Property in prime areas is developed and used for sale or rental income.	Land should be available to the public agency at prime locations and it has the resources to invest in new development on this land.	Hong Kong, Singapore, Delhi, and several other cities
Certificate of entitlement	The right to buy a car is sold through auctions, which raises resources.	Can be used if a policy to strongly restrain car ownership is adopted,	Singapore
Increase vehicle registration fee	Fees charged for the initial registration of vehicles is increased.	Can be used if a policy to strongly restrain car ownership is adopted,	Singapore

Generally, additional or new taxes would be used when it is difficult to identify a clear set of beneficiaries. However, if the beneficiaries can be clearly identified, then a dedicated fee on such beneficiaries would be more appropriate. For example, benefits of improved air quality are secured by all and so all the residents of the city, region,

country, or the world could be asked to pay for this. However, the benefits of enhanced property value accrue only to those who own property around the transport systems, and so a dedicated charge on them would be more equitable.

ROLE OF THE PRIVATE SECTOR

BACKGROUND

Transport services in cities around the world are provided by both the public sector and the private sector. Typically, services that can be provided in a competitive market are chargeable and profitable, making them attractive to the private sector; those that are not profitable will not attract the private sector. Those that are monopolistic may be preferred in the public sector; those that are not chargeable will need to be provided by the public sector. As examples, public transport services in the United States, China, Russia, and several other countries are provided by state-owned entities, whereas in much of Africa and Latin America, and in the Philippines, they are provided by a large number of private operators. Most other countries have a mix of public entities and private operators providing these services. Similarly, several parking facilities are provided by the private sector; the city government provides others. Para-transit services, like taxi services, are mostly provided by the private sector. Roads and sidewalks are mostly provided by public agencies.

It is possible to get the private sector to provide services that are generally the responsibility of the public sector through arrangements where the private sector is compensated for losses or offered funds for providing the service.

There are two major reasons the private sector is sought for such services:

1. It can bring in performance efficiencies that help reduce the cost of operations and yet offer similar or better services; and
2. It can bring in financial resources that the public budgets may not be able to provide.

It is true that, compared with the public sector, the private sector tends to be more efficient in managing commercial operations. Long-term maintenance contracts for urban roads with the private sector enable a better optimization between maintenance costs and resource availability. Similarly, contracting the private sector in bus operations helps secure more cost-efficient operations. The private sector also does a better job in providing facilities that are commercially attractive, such as parking facilities and public transport terminals.

But there are situations where use of the private sector may not be desirable. In particular, an unregulated private sector could conflict with public good. For example, providing bus services in a competitive market has led to dangerous driving practices to capture the market. This has led to severe compromises on safety. Furthermore, it has left some parts of the city overserved and some parts underserved, depending on the relative profitability of different routes. This imbalance leads to an inefficient public transport network, which is not a desirable situation. On the contrary, there are situations when unviable services could be made viable by the public sector offering some subsidies or some form of partial payment to help reduce costs. This can entice the private sector to providing services that may not otherwise be attractive to them.

The private sector is in a position to bring in additional financial resources, but the cost of capital for the private sector tends to be higher than that for the public sector. This is because the public sector is considered by lenders to be the least risky and therefore secures the lowest interest rates. A more compelling alternative need for public resources may, however, justify greater use of private resources for urban transport.



Photo: World Bank

INSTRUMENTS FOR IMPLEMENTATION

Given the above information, an important issue that arises in providing transport services in cities is the role that the private sector can play. More specifically, the kinds of questions that come up are:

- Can the private sector be entrusted with services that are of a monopoly nature, or should such services be provided only by a public operator?
- Will competition be desirable and cost effective in all cases?
- Should the private sector be involved only in operating services (because they tend to be more efficient than the public sector in managing commercial functions), or should they also be involved in making capital investments (because the public budget has limited funds)?

The available options are:

- Services are provided entirely by the public sector through assets it owns entirely;
- The public sector builds and owns the capital assets, but the private sector is contracted to operate the services;
- Services are provided through public–private partnerships, where the capital as well as the operating costs are shared between the two entities; and
- The private sector is allowed to provide all the services with only limited regulation.

INFLUENCING FACTORS

Some basic facts need to be kept in mind when making a choice:

- The private sector is interested in profits and not in public value (which is the domain of the government).
- Often, public value and profit are conflicting objectives. For example, the private sector will not be interested in low-demand routes for bus services, because they do not get a profit, but the government has a responsibility to provide public transport services for all residents. It is important to resolve these conflicts.
- Financial institutions usually consider the government (or the public sector) as the “least risky” borrower and so interest rates tend to be the lowest for the government; therefore, the cost of capital is lower for the government.
- Private monopolies may be worse than public monopolies.
- Regulation often needs a very high degree of competence, and it is not easy to find people with such competence.
- Regulatory capture is a problem, especially when the stakes for the regulated entity are high. How does one ensure that a regulator is truly fair and neutral?

While there are several examples of equally successful public and private operations, a choice between them is often made on broader policy considerations, such as:

- The political and economic ideology followed in the country. In some countries, the political and economic ideology favors a larger role for the public sector in providing basic services, and so the first attempts are for the public sector to take on this responsibility. In other countries, there is a more favorable climate for the private sector, and so the attempts are to look at creating the

right incentives and environment for the private sector to come into the market.

- Historical factors. Often, historical factors play a role in determining private sector involvement. There are situations when the services were started by the private sector, but for various reasons the public sector stepped in to fill a gap and then stayed. In other cases, the public sector started a service but, due to its poor performance and accumulated losses, the private sector was brought in to correct the situation.

Given the above considerations, the options and factors that could be taken into account when determining the private sector’s role are shown in **Table 18**.

Speaking more broadly, there is a trade-off between the public value of a service and the level of return it can offer to an investor. High public value and low returns would be a case for public provision, whereas good returns and limited public value would be a case for services to be in the private sector. High public value and high returns would suggest that public–private partnerships are best. **Table 19** offers a quick guide to deciding where the private sector could be more useful.

In short, a private provider would be useful if:

- There is good reason to believe it can deliver a comparable or a better service at a lower or a comparable cost;
- A competitive procurement process can be carried out to ensure the terms being offered by the private sector are fair; and
- The public agency has the capability to supervise the private provider to make sure it is adhering to its commitments.

Figure 26 summarizes the policy issues related to the role of the private sector.

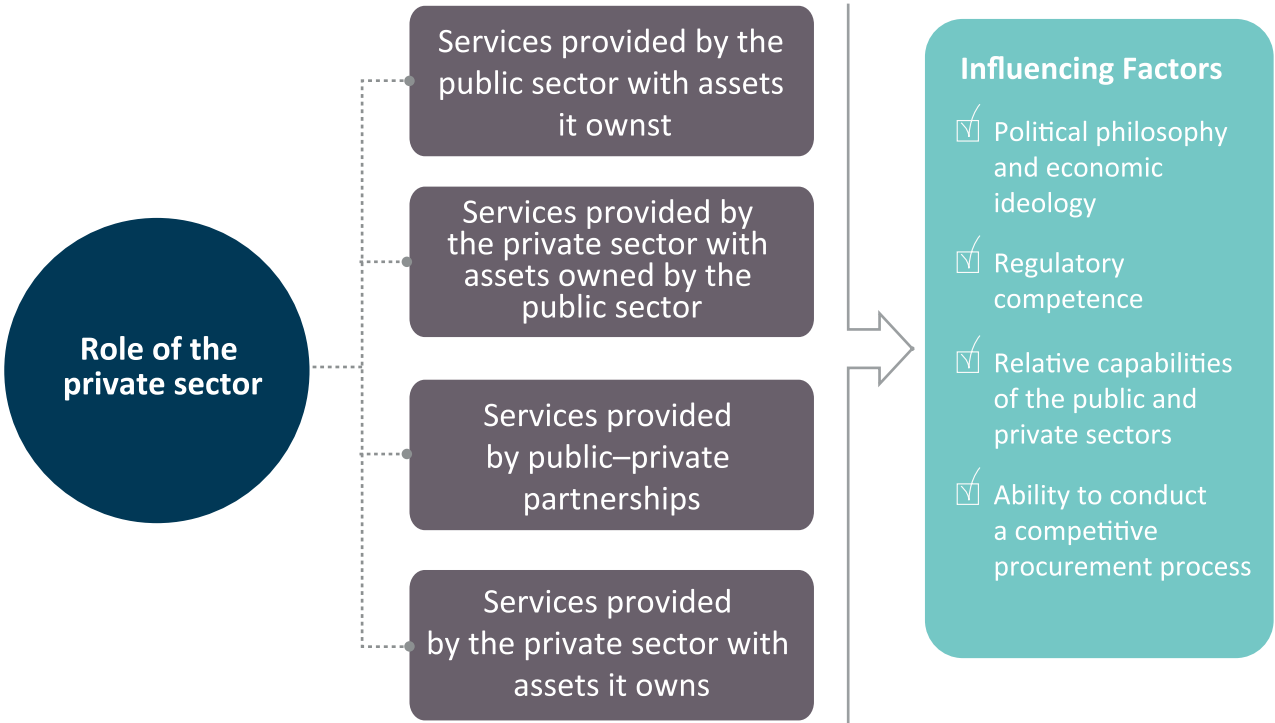
TABLE 18 OPTIONS AND FACTORS

Option	Factors / Situation / Scenario	Possible example
Completely in the public sector	<ul style="list-style-type: none"> ● Very high public value ● Low profitability or large operational losses ● High degree of monopoly power ● High investments and very long gestation period ● Very complex regulation 	<ul style="list-style-type: none"> ● Metro rail system
Capital investment by the public sector but operations by the private sector (management contract / service contract)	<ul style="list-style-type: none"> ● High public value ● Possibility of profit from operations but not on capital investment ● Potential of competition “for” the market ● Somewhat complex regulation 	<ul style="list-style-type: none"> ● Management contracts for light rapid transit/bus rapid transit (LRT / BRT) operations
Capital investment and operations by the private sector, but for a limited period	<ul style="list-style-type: none"> ● High public value ● Possibility of returns on capital investments ● Simpler regulation ● Some competition exists 	<ul style="list-style-type: none"> ● Parking facilities, terminals, some LRT systems
Completely in the private sector, but with tight regulation (regulation of routes, schedules, fares, level of service, safety, emissions, etc.)	<ul style="list-style-type: none"> ● High public value ● Potential for abuse of monopoly power ● Affordability is a concern ● Existence of potentially profitable and potentially non-profitable submarkets ● Limited competition ● Some economies of scale ● Good possibility of profits ● Simple regulation 	<ul style="list-style-type: none"> ● Citywide bus services
Completely in the private sector, but with medium regulation (regulation of fares/ fees and safety)	<ul style="list-style-type: none"> ● Reasonable public value ● Some potential for abuse of monopoly power ● Affordability is a concern ● Reasonable competition is available ● No economies of scale ● Good possibility of profits ● Simple regulation 	<ul style="list-style-type: none"> ● Parking facilities ● Bus operations in some areas
Completely in the private sector, with very light regulation only (regulation of safety)	<ul style="list-style-type: none"> ● Limited public value ● Limited potential for abuse of monopoly power ● Adequate competition ● No economies of scale ● Competition would not have negative externalities (such as over-supply leading to congestion or unsafe practices) ● Good possibility of profits ● Simple regulation 	<ul style="list-style-type: none"> ● Parking facilities in core areas

TABLE 19 BASIC PRINCIPLE FOR DECIDING INVESTMENTS

	High return	Low return
High public value	Public–private partnership	Public investment
Low public value	Private investment	

FIGURE 26 ROLE OF THE PRIVATE SECTOR





PROCESS AND IMPLEMENTATION

BACKGROUND

Any policy, once formulated, needs to be acceptable to all stakeholders if it is to be successfully implemented. Sensible participatory practices and processes during its formulation and implementation can ensure such stakeholder buy-in. In this section, we examine the two relevant phases: formulation and implementation.

FORMULATION

The formulation phase can be divided into three broad stages:

- Drafting;
- Consultation; and
- Refinement

DRAFTING

Typically, once a decision is made to develop an urban transport policy, an initial draft is prepared by an individual expert, a committee of experts, or an organization. It is important to keep in mind that this sort of policy document is a public document and not one that is limited for use within the professional or academic community; any city resident should be able to read, understand, comment on, and appreciate it. This alone will help secure wider acceptance and allow successful implementation. Therefore, the nature of the language used is very important. It must be simple and devoid of technical jargon. It should also not be very lengthy. Few have the time to read a long document. Therefore, brevity and clarity are critical. Enhance its readability by including simple charts, graphs, and pictures—rather than just tedious text—to make it appealing.

Experts cannot always draft documents in nontechnical language and keep it devoid of jargon. Good editing can address this problem.

It is important to ensure, at the drafting stage itself, that the policy choices are practical and “doable.” A mere wish list serves no useful purpose. For example, a policy that every city of more than 0.5 million residents would have a metro rail system—without a statement of where the financing would come from or how the required labor to manage such systems would get developed—would make little sense. Similarly, a policy that personal motor vehicle users would be charged a congestion fee for use of the city center would meet stiff resistance unless adequate public transport systems were provided as acceptable alternatives. As another example, a policy that every city would prepare a comprehensive land use and transport plan would not be doable unless adequate technical personnel are groomed and equipped to undertake such a task.

CONSULTATION

A good consultation process is essential in order to: (1) obtain comments and suggestions to improve the draft and make it more applicable; (2) explain why certain choices have been made and thereby secure greater acceptance; and (3) secure some important champions.

Typically, comments are first invited through public notice. A challenge lies in ensuring that there is an adequate response but that frivolous responses do not mire the process. To ensure an adequate response, it may be necessary to repeat the call multiple times. It will also be useful to send requests for review to some influential individuals; securing their support becomes very useful. Including a provision for rewarding good suggestions is also helpful, because it gets a better response and also secures champions. Encouraging a public debate and allowing a reasonable time for it helps to get greater acceptability for the policy. In some cases, getting back to

responders with questions helps convey a message that their suggestions have been taken into account. This goes a long way to winning their support.

A second stage of the consultation process could be to have multiple workshops and seminars with key stakeholders, as another opportunity to explain the rationale for certain choices and to win support. Feedback received during this process can be very useful and practical.

REFINEMENT

Once this consultation process is over, the suggestions, concerns, and feedback need to be reviewed with an open mind and the initial, or a second, draft refined to a final document.

IMPLEMENTATION

Once the final policy has been agreed upon, ensuring its effective implementation requires three aspects to be addressed:

- Form that the policy takes
- Institutional oversight, and
- Capacity Building

FORM THAT THE POLICY TAKES

The form that a policy document takes determines its effectiveness. Several options exist:

- Formal legislation or decree—such as the U.S. Urban Mass Transportation Act;
- A non-legal policy document that specifies incentives for implementation or for abiding by the policy—such as the National Urban Transport Policy of India (2006); and
- A non-legal policy document or a white paper, with no statement of incentives but with a statement of the government's intent—such as the “China State Council Document #46 (2005)” or the “New Deal for Transport (2000)” in the United Kingdom.

A choice depends on the degree of importance the government intends to give the policy implementation. Legislation is certainly

the most powerful, but it runs the risk of a long drawn-out legislative process, both in its first promulgation and in any changes that become necessary later. A policy document with financial incentives could be equally powerful in and less cumbersome, though it will not be able to penalize noncompliance or enforce implementation of the policy. A policy document, without a statement of available incentives, may not attract immediate interest in implementation, but is a good way of conveying government's preference in the longer term. It could slowly gain acceptability, but it will be unable to ensure compliance.

A choice between the above options will depend on the specifics of each situation. If the current problems are acute and urgent mitigation essential, then legislation or financial incentives are crucial. If the problems are foreseen for the future and the objective is only to set the right direction, then a policy statement could meet the objectives. At times, a policy document could even be the first step to subsequent legislation. Such a two-step process helps to test the waters and win greater support before embarking on a more stringent legal document and the more cumbersome enactment process.

INSTITUTIONAL OVERSIGHT

The institutional mechanism to oversee the implementation of the policy is important. Otherwise, it runs the risk of just remaining a paper document with no agency responsible to make sure that it is implemented. In the United States, the Federal Transit Administration under the Department of Transportation administers the provisions of the Urban Mass Transportation Act by way of channeling federal funds in accordance with the act. In India, the Ministry of Urban Development administers the National Urban Transport Policy by offering financial incentives under a national urban infrastructure improvement program known as the Jawaharlal Nehru National Urban Renewal Mission.

CAPACITY BUILDING

If a policy is to be implemented effectively, it is essential to ensure that there is adequate capacity to do so. Manpower needs to be properly trained and equipped to deal with the tasks. Arrangements are also needed to ensure a continuous stream of manpower through well designed educational programs.

Capacity building is not limited to manpower training and skill development alone, but also encompasses financial resources and decision support systems that are required. For example, the lack of a good database is often a barrier to effective monitoring and oversight. This needs to be created as part of the capacity building effort. Pilot projects help get a better understanding of the challenges in implementation

and would be a useful exercise before upscaling or replication at multiple locations. It helps to make sure that mistakes are not repeated.

Finally, it needs to be recognized that a good policy is one that is well implemented, not just well written. Therefore, ensuring good implementation through appropriate institutional mechanisms is extremely important.

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