A Framework for Urban Transport Projects
Operational Guidance for World Bank Staff
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FOREWORD

As cities in the World Bank’s client countries continue to grow in terms of population, area and economic importance, urban infrastructure and services move up the short list of sectors essential for the welfare of households and the performance of businesses. This is especially true in the urban transport domain because motorization—ownership and use of motor vehicles—is increasing inexorably, being both a by-product and a contributor of urban growth. The income and motorization-led rise in transport demand invariably exceeds the capacity of local governments to respond in both institutional and financial dimensions. Consequences—high costs and low-level services for all transport modes and demand strata—threaten city productivity and competitiveness, and pose a barrier to poverty alleviation. Globally, urban transport emissions of greenhouse gases contribute to climate change, and the rise in aggregate demand for energy is clearly not sustainable.

Because urban transport issues have evident relevance to its chief concerns—economic growth, poverty reduction, and environmental preservation—the World Bank has been active in this sector since the 1970s. Some 75 urban transport projects were completed, 22 projects are active, and another dozen are being prepared. An effort is underway to increase significantly the scale of involvement. The Bank has regularly reviewed and updated its urban transport policy and strategy, as it has done for its parent sector—transport and the urban development agenda. Cities on the Move (2002) is the most recent policy review specifically focused on urban transport matters. The Bank’s transport sector strategy is stated in Sustainable Transport (1996), soon to be updated and extended by Safe, Clean and Affordable… Transport for Development (forthcoming, 2008). Work is underway to update Cities in Transition (2000), the strategy document for the urban development agenda. A common feature of these formal strategy and policy documents is their focus on key urban transport issues and recommended ways of resolving these, rather than on the Bank’s own practice in making development projects.

This Paper is meant to close the gap between nominal sector strategies and project design activities in urban transport by presenting an operationally-oriented strategic approach, i.e. an approach couched in the same terms as those used in project making. Since a great majority of Bank-funded urban transport projects consists of an investment program alongside specific policy and institutional changes under a set of common development objectives, the strategy laid out in this Paper is made using these same categories.1

An operationally oriented approach is needed on at least three counts: (1) to guide the development of the Bank’s region- and country-specific business strategies and project making activities; (2) to provide a perspective for making cross-project and cross-regional comparisons and evaluating project and program results; and (3) to clarify strategic aspects of Bank operations for staff, clients and partners.

The core of the approach outlined in this Paper derives from an analysis of Bank projects active and in preparation during the last 15 years (1991-2006), based on data cited in documents available at the project appraisal stage. A strong and stable central tendency is evident in this time slice, even though projects show a wide diversity of features, reflecting inherited local conditions, socioeconomic changes underway, and the vintage of client-Bank relations. This empirical core approach was then enriched by comparing policy, institutional and investment scope of this project cohort against ideas contained in sector policy documents, and recent developments in the wider professional community.

1 In actual practice, development lending operations involve making choices in dimensions other than investments, policies and institutions. Projects options often include using different partners on the borrower side or externally; and/or twinning with related sectors inside the Bank, such as transport, urban (multi-sector), environment, and social development. Lending instruments available to the Bank go well beyond standard investment projects, including adaptable program loans, sector loans, policy development loans and structural adjustment loans.
The resulting framework should not be taken as a blueprint for the design of all projects of this genre. Urban transport situations differ from one country to the next, and even between cities in the same country. As local contexts vary, so do development paths, the resources available, the institutional capacity and willingness to change, and the patterns of winners and losers related to proposed changes. Thus this framework is best viewed as a starting point from which more specific designs can be developed, as well as to provide an overall consistency check for individual operations.

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EXECUTIVE SUMMARY

Context
Transport demand growth in the World Bank’s client cities invariably exceeds the response capacity of local governments in both institutional and financial dimensions, reducing and threatening the benefits of economic growth for households and businesses, in addition to having consequences for the global environment. The reasons for the shortfall are manifold. On the demand side, sharp income inequalities lead to highly heterogeneous, difficult-to-serve markets. This is reflected on the street scene in fierce competition for road space between pedestrians, bicycles and various motorized vehicles, but also in very different prices and quality for transport among travelers coming from different income groups. On the supply side, some problems are structural. Motorized traffic is not charged directly for the full social cost of road use which, in essence, provides it with a financial incentive in addition to its performance advantages to consume more. The revenue-generating capability of public transport services is hampered by the affordability of fares for low-income travelers, often the majority of its customers. Slow operating speeds due to traffic congestion have negative impacts on both the service quality and operating costs. Strong institutions are required to resolve the resulting pricing, funding, traffic management and regulatory issues, but actual institutions tend to be fragmented, with a plethora of national, sub-national and urban area entities each holding a piece of the puzzle. In all, cities rarely succeed to develop and implement a program of coherent, prudent and far-looking policies and investments, thus turning transport infrastructure and services into binding constraints to development.

Purpose of the Guidance Paper
Urban transport projects are made by the Bank and the client governments on the basis of place-specific analyses and country program objectives, within a framework provided by the Bank’s overall, global strategy for the sector. The current urban transport strategy as stated in Sustainable Transport (1996) and Cities on the Move (2002) is couched in terms too general to guide the design of specific projects. To close the gap, this Paper proposes an operationally-oriented framework, based on a combination of the project experience and recent in-house and external research. Being operationally-oriented means that the approach consists of policy, institutional and investment components under a set of common objectives, i.e. has the same structure as common Bank-funded urban transport projects.

Organization of the Paper
The Paper starts with a brief perspective on urban transport in developing countries, followed by a detailed presentation of an overall framework for making projects in this sector. The final chapter illustrates a variety of ways in which this framework is reflected in the design of actual Bank-funded urban transport projects. Additional details on cities and projects used as case studies are given in the accompanying tables.

Key messages
The challenge for the Bank is to assist client cities in providing transport infrastructure and services that respond to demographic, spatial and economic growth in ways that balance the many different competing interests. Reflecting the importance that poverty and environmental factors are given in its development lending, the key strategic goal of the Bank is to protect and nurture public transport services and non-motorized transport modes, with underlying meta-objectives of equity and sustainability.

In the policy dimension, the proposed approach features: (i) the equitable allocation of existing/new street space to protect and nurture public transport and non-motorized modes; (ii) a “for-the-market” rather than “in the market, on the street” competitive model for public transport, with services operated by the private sector under strong public regulation and oversight; (iii) a financially viable public transport system, with affordable fares commensurate with costs and any necessary subsidies
targeted to those in need; (iii) appropriate user charges for urban roads (parking and traffic); (iv) feedback from transport demand to resource mobilization from within the sector; (v) support for institutions ranging from municipal traffic management departments to multi-modal transport authorities, with urban area-wide jurisdiction; and (vi) an array of supporting, cost-effective, environment-friendly and sustainable investments in roads and public transport infrastructure and equipment.

The investment dimension of the approach is increasingly oriented towards the provision and rehabilitation of public transport systems operating on exclusive rights of way, both roadway and rail-based, because of their potential for efficient, high-quality services as well as for being a vehicle for progress on several policy fronts.
A FRAMEWORK FOR URBAN TRANSPORT PROJECTS

1 CONTEXT

Over the last 30 years, most of the Bank’s client countries have seen their cities expand vastly in population and even greater in land area. Cities are prime centers of economic growth, offering a better life for many, but also becoming homes to an increasing share of each nation’s low-income and poor households. Motorization—ownership and use of two and four-wheeled motor vehicles—followed and exceeded urban growth trends, and appears to be accelerating. In some countries (Eastern Europe and Central Asia, North Africa and Middle East) motorization is car-led and takes place in cities that hitherto relied on public transport services. Eastern Europe and Central Asia Region is of particular interest, motorization having come to stable-size cities, where extensive public transport systems for decades had near-total dominance in passenger travel. Ownership rates there currently exceed 300 vehicles per 1,000 people (vehicles per thousand people=vpt) in many cities, and reach over 500 vpt in some, approaching higher-end West European levels (eg. 600–700 in major Italian cities). In East and South Asia, notably in China and Vietnam, motorization is rising in cities where walking, bicycles and other non-motorized modes were dominant until a decade ago and public transport is still undeveloped. In some countries (India, Vietnam), it is not cars, but motorized 2- and 3-wheelers that lead the motorization wave. Elsewhere, e.g. in most African cities and in some parts of Latin America, taxis, vans and other forms of shared vehicles are the main growth category, providing both transport services and employment for many on the lowest rungs of the economic ladder.

Conventional, government-supplied public transport services in African cities are practically extinct, torn apart by problems of low fare affordability and inefficiency. In Asia and Africa, urban car ownership rates are typically well under 100 vpt. Where 2- and 3-wheelers are present, total vehicle ownership may reach or exceed 300 vpt (e.g., Chennai at 325, Bangalore at about 300; above 400 vpt in Ho Chi Minh City and Hanoi), reaching deep into lower segments of income distribution and allowing an unprecedented level of household mobility along with more than commensurate issues of accidents, noise, air pollution and congestion.

It is axiomatic that motorization has brought benefits of greater accessibility to many and will continue to do so, however difficult it may be to demonstrate this in quantitative terms. What is much more visible than accessibility gains are transport problems arising from city governments’ failure to respond adequately to demand growth in terms of transport infrastructure and public transport services. With some notable exceptions, road networks in the Bank’s client cities are increasingly clogged by traffic, and on-street, mixed-traffic public transport systems offer low levels of service. Public transport systems on exclusive rights of way, irrespective of mode, are relatively rare. Street congestion is ubiquitous, with accompanying noise, accidents and pollution. These are mapped through various mechanisms into reduced access to opportunities, lower standard of living, higher costs of economic activities, and a loss of competitiveness for urban areas. Problems are legion even at relatively low motorization rates, as could be expected when demand growth exceeds by far the rate of transport system development. While the costs of congestion, accidents and environmental blight fall on all those who are causing them, pedestrians and users of non-motorized vehicles—typically coming from poor and lower-income households—are the first to suffer severe adverse


3 Data necessary to gage the extent and distribution of these benefits are rarely available, even for a before-and-after analysis, much less for adopting an with-and-without framework.
impacts, followed by passengers and operators of street-based public transport modes (where they exist). Eventually, it is found that the business and investor communities voice explicit concerns about urban transport infrastructure and public transport services. Indeed, if no effective response comes, high transport costs for all transport users becomes a drag on city productivity and competitiveness, a barrier to economic growth and poverty alleviation, and a community health hazard in terms of safety and environment. Greenhouse gases, to which motor vehicles are significant contributors, are also linked to climate change. Together with the rise of demand for oil and other non-renewable energy sources, global warming lends a menacing aspect to local and national debates on social, economic and environmental sustainability of current urbanization and transport trends.

Box 1.1 Urban transport developments in China and India

Urbanization and motorization waves are welling up at unprecedented rates in China and India, the most populous countries in the world. Initial conditions in both are very different from those in the United States or Europe. China, most notably, is seeing two decades of steady, double-digit economic growth now being translated into car ownership, together with the planned rise of lower-density suburbs. Chinese cities are evolving from a bicycle and walking dominated model, and face a classic competition between ascendant motor vehicles and relatively weak, unattractive public transport networks.

Motorization in India is—so far—of a 2-wheeler variety, with major negative impacts on the performance of the hitherto dominant mix of non-motorized and public transport modes, safety and air quality. Only 25 percent of India’s 85 largest cities (over 500,000 population) have formal public transport systems. In most of them, government-owned public transport companies, running poorly maintained, primitive buses in mixed traffic, provide a low level of service. Where permitted, private operators are weakly regulated. Informal modes are ubiquitous and dominate in smaller cities. In large, prosperous cities, private, often “high tech” companies provide door-to-door minibus services for their employees. Responses to motorization and its side impacts over the last 15 years were sporadic, ranging from a new metro and a court-ordered conversion of buses to CNG in Delhi to enthusiastic building of “fly-over” structures in Bangalore. Several cities are rushing to build metros, subject to major capital subsidies from the national government. Neither urban development nor transport institutions in Indian cities are up to the daunting challenges they face, in terms of staffing, funds, concepts or instruments. Jurisdictional and financial relations between state and local governments are a major stumbling block. This may now be changing given the new awareness that urban accessibility is on the critical path for both economic growth and the living standards (including health) of rich and poor.

Problems are at their most acute and damaging in mega-cities like Bangkok, Cairo, Lagos and Mexico City, but are also present in medium-size cities. It is to be expected that performance of the transport system is at its worst in places where population and spatial growth rates exceed economic growth rates, notably in all of Sub-Saharan Africa and many Latin American countries. This said, the fact that poor performance is also experienced in cities where economic growth rates exceed population growth (e.g. Bangalore) indicates that critical underlying causes are not only in cities’ low wealth but also in the institutional dimension.

Of the many factors underlying the persistence of urban transport problems in so many cities, four appear to be the most challenging. First, a given on the demand side, urban transport markets are heterogeneous, reflecting income inequality and diversity of economic functions. At the bottom of the income ladder, people depend on walking, non-motorized modes, and public transport services. More than anything else, they need all-season, safe street space and low fares. At the top of the ladder, owners of cars and motorized 2-wheelers demand ample and well-maintained roads, as do freight shippers and businesses. In between are several tiers of public transport passengers, with fares being important at the low end of the income range and service quality increasing in importance as household incomes rise. Frictions exist both between motorized and non-motorized traffic streams, and within the motorized traffic stream, especially between public transport vehicles and the general traffic. Actions to improve the lot of one group tend to be detrimental to all others.
Second, urban transport activities do not usually generate enough funds to finance the entire multi-modal network’s operation, maintenance and expansion. Urban vehicle traffic is not charged directly for the use of streets, roads and parking, and the revenue generating capability of public transport services is constrained by the low incomes of many, sometimes most of its passengers. High levels of congestions mean low operating speeds and high costs for public transport providers. These factors mean that cities have to draw on their general budgets for their transport expenditures and/or seek assistance from higher-level governments, both of them over-stressed and subject to intense competition. All too often, the result is that resources available for operating and capital spending for the urban transport sector are much too low relative to the justified need. Importantly, a lack of capital and current funds may be accompanied by low spending for institutions, with downstream impacts on policy making, investment planning and other essential activities.

Third, urban transport is known for its fragmented institutions. National and other supra-national governments (e.g., provinces, states) all have a hand in urban transport, through a combination of systemic laws, control of financial resources and direct ownership of all or parts of the road network, even some public transport systems (each the state road transport corporations throughout India). Horizontal (within urban areas) and vertical (between government levels) interactions are both problem ridden. Jurisdictional boundaries often tend to be out of line with functional responsibilities for the road network and transport services.

Fourth, there are unresolved problems of respective functional roles of the government sector and the private sector in the provision of transport infrastructure and services. Extremes of governments retaining dominance, even monopoly of service provision, on the one hand, and an unregulated private sector, on the other, both exist, sometimes in the same place. The first has high production costs, hence needing high subsidies, often matched with poor services. The second tends to focus on profit, often leading to the oversupply of low-quality, unsafe services using high-emission vehicles and charging high fares on some routes while low-volume routes serving the poorest are ignored.

The most visible consequence of under-funding and demand heterogeneity is that the competition for transport space is fierce, whether on sidewalks or limited-access roads and public transport systems. The conflict between growth objectives (more road space for the increasing number of motor vehicles) and social objectives (space for walking, non-motorized vehicles, and public transport vehicles) is played out on city streets, but also in boardrooms when it comes to deciding how to allocate capital funds for transport system expansion.

The second major consequence of under-funding and demand heterogeneity is that the provision of public transport systems involves a difficult trade-off among objectives. Social development objectives may require low fares, while “clean” environment objectives—increasing public transport share of the market—imply high quality (vehicle amenities, reliably low travel times) to compete with private modes. Having both low fares and high-quality services are most often mutually exclusive. The pairing results in generally unaffordable subsidy loads for city governments and hence declining quality over the longer term. This is also where public/private issues become important, given that the private sector working in a competitive framework holds the promise of delivering services more efficiently than the government sector can, thus decreasing the need for subsidies.

Drawing on the above discussion, the key strategic questions in the urban transport dimension in any given city have to do with: (a) the use of the space on existing and planned road networks, in physical, price and funding terms; (b) fare/service level choices for existing and proposed public transport systems; (c) distribution of jurisdictional and resource powers relevant to urban transport between governmental bodies; (d) allocation of functions between the public and private sectors, especially as concerns the provision of public transport services; and (e) the source of funds for all urban transport activities and mechanisms for their allocation among roads and public transport in general, limited access highways and rapid transit in particular.
2 THE FRAMEWORK

2.1 Relation between projects and the global strategy

World Bank interventions in urban transport, as in all sectors, involve a combination of advisory and financial assistance. Financial instruments are diverse, and keep evolving to suit changing circumstance and incorporate lessons of experience. By far the most frequent instrument used in urban transport activities is the specific investment loan, commonly referred to as "Bank's urban transport project."4

An urban transport project is normally a three-dimensional package, containing an action program for policy change; an action program for institutional change; and an investment program, funded in part by a loan from the Bank. In each individual case, policy and institutional changes and investments should make a coherent whole that responds to a set of common objectives drawn from the place-specific context, and falls within the decision-making power of the borrower.5

Box 2.1 Structure of a typical Bank-funded urban transport project

(i.) a set of objectives drawn from a place-specific context;
(ii.) an action program for policy change;
(iii.) an action program for institutional change; and
(iv.) an investment program funded in part by a Bank loan, city and/or country equity, possibly contributions from other partners

The relative importance assigned to policies, institutions and investments may differ from one place-specific project to another, depending on local circumstances, the complexity of implementation, and other sources of assistance available to client governments. For example, it is common to find traffic management projects with only investment and institution building components. Or, when a loan finances an investment which is especially complex to prepare and implement, policy and institutional components of such a loan may be minimal, or not present at all. Another variant in the design of investment-only projects occurs when client governments prefer to maintain policy/institutional dialogue outside of, and in parallel with lending programs. In this case, a productive dialogue is a prerequisite for having a lending operation as well. Most urban transport projects are free-standing, but some are included as components of larger urban development or transport operations. In latter cases, it may happen that urban transport components include only investments, or only policy, or only institutional change.

All other lending instruments can be considered as special cases of the Bank-funded project. For example, a technical assistance loan focuses on institutional and policy change and contains only minimal investments related to capacity building, e.g. for studies, training and advisory services. At the other extreme, a development policy loan has the same structure as shown in Box 2.1, except that its typically large loan funds are not meant for specific investments but go into the general budget.

Each urban transport project is prepared as a joint and iterative endeavor of the client government and the Bank. Typically, the client city enters the process with a request for the Bank to finance an investment, and the Bank—following an initial study of the proposal and city-specific circumstances—expands the agenda by adding in policy and institutional dimensions, and outlines a detailed preparation process for all project components. Eventually, there emerges an agreed to, comprehensive urban transport strategy for the client city, from which a "sample" of priority actions is selected for inclusion in the project itself.

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4 Formally, the term "loan" is reserved for lending by the International Bank for Reconstruction and Development, while "credits" refers to lending by the International Development Association. Credits feature significantly lower interest rates and long repayment periods and are reserved for lowest-income countries. In this text, for convenience, "loan" is used for both. Since Bank loans provide only a portion of funds needed for specific projects, the balance is made up by the client government's equity and/or loans/grants from other sources—other development finance agencies and the private sector. The agreed action program may also contain investments not financed by the World Bank loan, but by the client government alone.

5 This Guidance Paper addresses free-standing urban transport projects, but the cited principles apply also to multi-sector projects where one or more components deal with urban transport matters.
Since urban transport is just one of many subjects dealt with by either partner, each will have criteria and procedures to ensure that what is arrived at in the urban transport domain is not only coherent internally, but also responds to wider economic, administrative and political concerns. Client governments will have their own ways of ensuring technical quality and coherence, consistency with other programs, and political feasibility. On the Bank side, there are three main dimensions in which an urban transport project is evaluated. The first, applicable to all projects, consists of standard tests for economic and financial viability, embedded in a multi-criteria framework and subject to social and environmental safeguards. The second test is the consistency of the proposed operation with the Country Assistance Strategy (CAS). The CAS is a document agreed to by the client government and the Bank, updated periodically, that establishes the priority sectors, issues and directions for cooperation, and provides the size and content of the lending program. The proposed project must fit within the thematic and financial envelopes defined in the CAS. The third test involves a “match” between the proposed project and the Bank’s global strategy for the sector to which the project belongs, e.g., urban transport, – the subject of this Guidance Paper.6

To be in a format directly relevant for the design of projects, the Bank’s global urban transport approach is cast in the same structure as that commonly observed in individual projects, i.e. it contains three elements—policies, institutions and investments—that together address a set of objectives.

The core of the approach presented herein was derived by analyzing projects active and in preparation during the last 15 years (1991-2006), using documents that were ready at the project appraisal stage. A strong and stable central tendency is evident in this cohort even though projects show a wide diversity of features, reflecting inherited local conditions, socioeconomic changes underway in specific cities, and the vintage and depth of client-Bank relations. It is also evident that there are essential, even critical policy issues, notably road use pricing and urban transport funding, which by and large have remained outside the reach of actual projects. The overall approach was put together by adding to the empirically derived core a number of these essential but as yet untried initiatives, drawing on ideas contained in sector policy documents.

The framework should not be taken as a blueprint for project design. As already noted, urban transport situations differ from one country to the next, and even between cities in the same country. As local contexts vary, so do development paths, resources available, institutional capacity to change, and patterns of winners and losers related to proposed changes. Thus this framework is best viewed as a starting point from which more specific designs can be developed, as well as to provide an overall consistency check for individual operations.

2.2 Framework overview

Like individual projects, the overall approach has a set of objectives, linked to policy, institutional and investment components. What is the strategic objective behind the Bank’s urban transport program?

Generally, the Bank’s broad aims in urban transport are the same as in all other sectors; helping its client countries achieve economic growth with greater equity and inclusion, and with increasing and explicit attention to safety, environmental quality and the sustainable use of non-renewable resources. Depending on local circumstances, project strategies can range from an exclusive focus on economic growth at one extreme, to a focus on equity, inclusion and poverty elimination, at the other extreme. Most projects fall somewhere in between, having multiple objectives. In a continuous chain of objectives and means, some project components will have direct impacts on these “ultimate” objectives, while other components will have more “upstream” impacts. Investments in infrastructure and public transport fleets, for example, have the most direct impacts, while institutional components are the opposite end of the range.

6 This is a simplification adopted strictly to make this paper easier to write. There may be intermediate strategies between the project level and the global strategy, e.g. regional or country-based. Also, urban transport cannot be treated in isolation from many other sectors. The closest linkages are with municipal management and finance, urban land use planning, water and other utilities under the jurisdiction of urban governments, transport infrastructure and services falling under ministries of transport and public works, environmental affairs, poverty reduction, ... The Bank produces separate sector strategy papers for urban, transport, environment, poverty reduction. The reconciliation between these diverse sectors is done both at the global and regional strategy level and when developing individual projects.
The global urban transport strategy was defined above as a central tendency in the envelope containing all urban transport projects enriched by initiatives as yet untried but deemed essential. The dominant strategic objective implicit in this complement, and fully in line with the Bank’s overall orientation, is to increase the use of inclusive and “clean” urban transport modes. In other words, the strategy leans toward social equity and environmental quality, aiming to nurture the attractiveness of public transport and non-motorized modes relative to individual motor vehicles.

The approach features a selection of policy, institutional and investment instruments, the highlights being as follows:

- Allocation of street space in favor of public transport and non-motorized modes, both for the existing urban road system as well as in expansion projects;
- Pricing policies for parked and moving vehicles, to ration scarce road space and reflect the true cost of private motorized vehicle use;
- Public/private partnerships in the regulation and provision of public transport services: for-market, regulated competition with privately provided operations and a strong public role to protect the community interest in both the transport and environmental spheres;
- Objective-orientated and viability-tested fare/subsidy policies in public transport services, stressing targeting and links to the social assistance system for those in need;
- Feedback loops from transport demand to resource mobilization (fuel taxation, congestion charges);
- Integrative transport authorities and/or mechanisms with urban area-wide, multi-modal jurisdiction;
- An array of supporting investments, some in roads and public transport infrastructure, others involving equipment and/or institutional capacity building, selected so as to make coherent wholes with policy and institutional initiatives.

The following sections will provide brief explanatory statements for each of these strategy instruments, divided into three groups – policy reform, institutional development, and investments.

### 2.3 Policy instruments

#### Allocation of road space

Allocation of road space among pedestrians, non-motorized vehicles, motor vehicles, public transport vehicles, and parked vehicles is one of the most potent, low-cost instruments available to governments to manage traffic and transport, and to express preferences concerning different transport modes and social groups. The goals of street space allocation may be quite diverse, such as protecting walkers and cyclists, maximizing the capacity for safe people movement and the quality of public transport through bus-only lanes, favoring motor vehicle mobility, or traffic calming. An extreme form of space re-allocation is to construct dedicated running ways for high-performance transit (e.g., BRT) on arterial roads. In many large cities in which the Bank works, current use of road space by public transport often exceeds the capacity of a single lane, yet local authorities find it difficult to improve safety and performance for everyone by dedicating only one lane to exclusive bus use. Indeed, because of the pressure of motorization under conditions of road space scarcity, it is common to find an emphasis on motor vehicle mobility at the expense of non-motorized and public transport. The Bank’s strategic orientation is to halt and reverse this trend.

Due to strong local vested interests and a culture of space sharing present in many client cities, reallocation of space on existing roads tends to be contentious. It requires an exceptionally careful and participatory preparation process, followed by high-intensity, continuous enforcement.

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7 The terms used to characterize the Bank’s transport sector strategy are “safe, clean and affordable” (Transport for Development, 2008, forthcoming). The omission of “economically efficient” and “financially viable” in this description, just as in this statement of urban transport strategy, does not imply the abandonment of these objectives. It simply moves the strategic focus to results from the user’s (demand) point of view.
Major rehabilitation projects and network expansion projects offer the most propitious city-based opportunities to improve the status of walkers, bikers and public transport passengers. Less direct but potentially even more effective opportunities are present in discussing geometric design standards with national authorities.

**Time and price instruments to manage road use**

For a given allocation of street space, time controls and charging for use offer a flexible and powerful instrument to manage traffic patterns and transport demand. The most common tool in this policy category is *on-street and especially on-sidewalk parking management*. A gradual approach involves applying time controls first (e.g., removing parking during peak periods), then moving to on-street parking charges and perhaps to total bans. Enforcement of parking controls is essential, and provides an opportunity to involve the private sector. Parking fee programs generate revenue, which – at a minimum – should cover capital and operating costs of the program. Depending on availability of off-street parking and modal alternatives to driving, on-street parking fees can be raised to levels high enough to affect modal split and even trip patterns, but will still not be sufficient to cover all transport system funding needs.

*Charging for the use of urban roads* is a uniquely promising method for managing congestion and affecting modal split, while also generating substantial revenue (see also the section on funding below). It has a solid theoretical basis, which in essence says that urban road traffic under congested conditions does not cover its social costs. Application techniques are well-developed and have been field-tested, ranging from a pioneering effort in Singapore in 1970s to the recent experience in London. In Bank work, a congestion charge initiative was floated unsuccessfully under a proposed project in Kuala Lumpur in 1980s but not since then. Now that its implementation is spreading, especially in Europe and the U.S., it is becoming widely accepted as a realistic, technically and politically feasible policy option, the complexity notwithstanding. It needs to be brought back into both analytic and project work, especially because Bank attention to public transport subsidies has not been matched by similar attention to often hidden motor vehicle subsidies. A prudent approach in project work is to apply and refine parking charges immediately, while gradually building the relevant knowledge base, institutional capacity and public understanding that are all needed to introduce congestion charges.

**Provision and regulation of public transport services**

Institutional approaches to providing public transport services range from a single publicly-owned monopoly operator at one extreme, to numerous weakly regulated or un-regulated small-scale, privately owned providers at the other. In some cities a range of approaches coexist. The first extreme tends toward inefficient operations and uneconomic fares both of which map into high subsidies. It may also produce poor services, especially when the subsidy mechanism fails and operators are starved for funds. The other extreme may produce good services at zero public expenditure, but more often provides poor service with high accident and pollution costs. When this regulatory set-up is matched by low fares constrained by regulation or unfettered competition, service levels and quality fall and externalities rise.

What is at stake here is the division of functions (who does what), ownership of fleet and infrastructure, and the scope of regulation, with different underlying allocations of cost and revenue risks, and their different effects on the public interest.

The strategic stance in Bank work is that private transport companies, operating in a regulated, competition-for-the-market framework, will provide better services, and/or have lower operating costs, than government-owned entities. Regulatory and planning functions (vehicle specifications, routes, service frequencies, fares) and the ownership of infrastructure (for rapid transit modes) remain in the public domain. The stance toward risk is flexible: some circumstances may point to gross-cost (fares accrue to public sector) contracting, while elsewhere the private sector may retain fare revenue and thus take over the revenue risk as well. The success hinges on there being institutional capacity at the local level sufficient to design the regulatory system, manage the tendering process, monitor performance and enforce contractual obligations of operators. Since this condition is rarely met, the best-practice position is to be treated as an ultimate goal for the medium-to-long term, designing a flexible, gradual and dynamic change path in its direction. Depending on the city-specific situation, the regulatory policy change championed by individual projects may involve, singly or together: (1) deregulating a publicly-owned monopoly and introducing market mechanisms
to reduce costs and improve services; and/or (2) regulating (formalizing) "in-market" competition to improve services and to reduce adverse impacts such as air pollution.

Programs to compensate losers on the supply or demand side are often put in place as part of the reform package. Whether the reform involves deregulation or formalization, this policy instrument is always used in tandem with a strong effort to build the requisite institutional capacity and political support. Furthermore, regulatory and institutional reforms need to be organically coupled with an infrastructure investment. Sometimes, as in the Lagos project included below as a case study, infrastructure in question may be as simple as road paving, but it can also involve large-scale public transport investments, as in Rio de Janeiro, Bogota, Hanoi projects also included below as case studies. Implementation of new bus-based rapid transit in one or more corridors provides uniquely favorable opportunity to do either deregulation (as in Hanoi), or formalization (Bogota), and can be used for both.

**Box 2.2.**
The evolutionary cycle of public transport regulation is best seen as a progression in the type of risks assumed by the private sector in a public/private partnership, starting with management and operation risks, moving to ownership of fleets and facilities, and perhaps also to owning infrastructure. Multiple options are available for allocating risks between public and private partners; the choice depends partly on how well developed the legal system and other market institutions are in a given country and city. Also, regulatory changes in urban transport are politically linked to and must cohere with reforms taking place in water, energy, other urban utilities, and national transport enterprises.

**Public transport fares, subsidies and levels of service.**
It is accepted that subsidies and cross-subsidies are valid tools of social and transport policy, as long as objectives are explicit and clear, and the subsidy is targeted, financially viable, and efficiently and effectively delivered. Sadly, this is rarely the case:

- objectives tend to be unclear or unachievable (e.g., reducing fares for everyone for mediocre bus service to reduce congestion by attracting private vehicle users to public transport);
- the leakage of benefits and user subsidies from those that need them is widespread;
- provider subsidies, particularly to public enterprises, create perverse incentives for cost-inefficiency;
- low fare requirements, particularly for private service providers, unmatched by public provider subsidies threaten their performance and financial health, with cumulative financial impacts sometimes endangering the larger public finance system.

One of common endeavors in project work in public utilities is to repair the subsidy mechanism. In the domain of public transport services, as noted above, the situation is complicated by having to consider simultaneously fare and service levels. Subsidies are used mainly to reach equity/inclusion and modal split objectives, the latter also having environmental and energy implications. These two groups of objectives clash. Keeping fares low (by fiat), to ensure that urban transport services remain in reach of low-income households, while stressing a high rate of cost recovery (by minimizing or eliminating subsidies), results in such poor service that "choice" passengers tend to shift to taxis, cars or motorcycles. Further negative consequences include low passenger and traffic safety, congestion, and high pollution levels. If high levels of service are provided and fares are kept low (to retain passengers from all income groups), the subsidy load becomes unaffordable. This problem is serious for street-based services, and critical for rapid transit public transport modes which operate on exclusive running ways.

There are no silver bullets to solve this problem. Knowing the specific travel market well is essential for both fare/service policy and investment choices. A delicate balance is sought between service quality—service differentiation included—and fares, coupled with a system that targets subsidies to those that need them, mainly low-income travelers. No matter what combination of fares and service quality is selected under specific circumstances, it is essential to have cost-efficient provision to reduce the gap between revenues and costs. In any agreed arrangement, a stable and sustainable framework to finance any subsidies is a must. A contractual approach in countries with strong legal systems tends to offer a better guarantee that "social" subsidies rendered to customers in the form of reduced fares will actually be paid in full to the respective operator, irrespective of public or private ownership model. This, alongside the capital brought in by the private sector and cost-efficiency made possible through competitive tendering of services, explains why the competition-for-the-market approach to urban public transport regulation is considered to be the best-practice.
Urban transport funding
Most client cities lack sufficient and sustainable funding for either roads or public transport systems. Funding directly from national, sub-national and local general operating budgets is the most common. The difficulty of this approach in low-income countries, especially the long agency chain from revenue collection to actual spending, explains why the provision of urban transport infrastructure and services tends to lag so much behind the demand pressure. Bank-funded urban transport projects are not suitable tools for tinkering with general budgets to resolve the funding problem of this sector. Two transport-linked policy approaches, singly or in combination, appear to have best prospects for doing that. Both are focused on road traffic, since public transport offers scant opportunity for surplus revenue. The first is to work with the national systems of road user charges, typically fuel taxes. Reforming fuel taxation to provide urban transport funding involves setting tax rates for different classes of vehicles and roads, and selecting among explicit formulae for allocating revenue to cities. The Bank has a busy record of analytic and project work involving client countries’ road user charging systems, but little experience in addressing urban transport funding in this context. An important variant involves earmarking arrangements, such as transport development funds. These can be based on fuel taxes or general budgets, and are typically given to cities as capital grants or low-cost loans, to finance rapid transit systems.

The second approach is to evolve a city-based system of transport funding, requiring an enabling, legal framework at the national level, but subject to local decision making regarding specifics. The French approach of using salary taxes has produced dramatically positive results for urban public transport systems in that country, but it cannot be borne by fragile labor markets in client countries, and is unsuitable for countries where informal employment is dominant. Real estate taxes, especially in rapidly expanding cities, have potential as a source of funds for general urban budgets, but it is not likely that this policy initiative could be included in most urban transport projects. A promising approach to at least partially addressing the transport funding problem is that of introducing some form of congestion charges (e.g., for street parking), thus creating a virtuous loop between the demand growth and the supply response. This was already discussed above under the heading on pricing, concluding that the novelty of congestion charging and the absence of strong local institutions require a staged approach, initiated through field-based analytic work and its dissemination.

It is fair to say that introducing a radical new funding approach specifically for urban transport systems transcends the leverage capacity of most Bank city-based projects, no matter whether the instrument considered is a variant of fuel taxation, a capital grant program, locally based congestion charging, or some combination of several or all of them. More promising in this respect are some of the Bank’s other lending instruments, such as nationally-based transport and urban loans, development policy loans, or structural adjustment loans.

Land development policies
Calls for integrated transport and land development planning in cities are common, based on well documented links among macro urban land use patterns, site plans, transport network characteristics, urban travel patterns, user costs, and environmental impacts. A reasonably strong consensus is that high-density, mono-centric (or polycentric) cities with a single or a few large, dominant central business district are best-suited for traditional fixed route, fixed schedule urban public transport, whereas lower-density, homogeneous cities with many widely dispersed weak centers are better served by individual modes. There is less agreement on which direction to pursue or what instruments to use to achieve the more efficient development patterns.

Arguments for and against administrative and market approaches to land development continue without resolution, since at the foundation of each position lie cultural preferences. The global trend is for a blend of the two approaches, with markets getting the upper hand. Looking at tangible policy instruments that could be used in urban transport projects, three categories stand out as most relevant. The first is road use pricing, where the absence of direct, locally-based charges acts to encourage long-distance driving and low-density development. The proposition to place such charges on the Bank’s strategic agenda was already made above for reasons having to do with congestion management and transport funding. To these can be added potentially positive land development impacts.

The second category is land taxation, a powerful tool for shaping development and generating municipal revenue. The importance of land taxation, however, transcends by far the concerns over urban transport systems, requiring a multi-sector urban perspective. It follows that urban
development projects are better suited to tackle this policy category than are urban transport projects. The third category includes a host of land development regulations addressing density (floors-to-base ratios), lot sizes, building set-backs, parking requirements/limits, property rights, zoning, public land conversion, and others. Though a full urban perspective is also necessary to undertake a reform of these regulations, it is conceivable that urban transport projects could be used as vehicles to change them, singly or in groups.

### 2.4 Institutions and planning instruments

Urban transport is marked by a multiplicity of functions and institutions. The situations in the Bank’s client cities are often bunched around two extremes. At one extreme, transport-related functions are spread over too many institutions, local and/or senior government (i.e., province/state, central), with overlapping terms of reference and jurisdictions, and major coordination problems. At the other, transport institutions are so weak that important functional areas have no caretaker. Bank-funded projects may support the establishment of specific institutions, the establishment of jurisdictional boundaries on national-local or intra-local scales, and the development of planning tools and processes that individual institutions use to perform their functions. One or more of the following strategic functions and related institutions, by no means an exhaustive list, are typically supported in project interventions.

**Municipal traffic management (TM)**

Capacity for TM is essential for the introduction and durability of all policies and investments to improve the performance of an existing urban road and street system, especially in central areas and major corridors. Its purview should include the flow of people and vehicles of all types as well as parking, and safety. TM requires considerable engineering, organizational, and political skills. It must be given an explicit institutional profile, in the form of a unit or division, within the city government structure. Difficulties arise when the relevant functions are weak, or do not exist, or when TM duties are scattered throughout a city administration, or assigned to the traffic police with little technical skill in the necessary traffic engineering disciplines. Projects include either strengthening TM units, or setting them up anew. Projects focusing on re-allocation of road space (discussed above under the policy heading) typically will include a TM institutional component.

**Traffic law enforcement**

The traffic police organization is the enforcement arm of the municipal traffic management unit. A well-trained and effective police presence is important for controlling traffic and parking even in a stable situation, and essential for the lasting success of all new traffic initiatives, especially those involving re-allocation of street space from one user group to another, and everything related to safety. The difficulties of achieving such a presence through development projects are even more formidable than those related to traffic management, given the multi-functional nature of police forces.

**Public transport regulation**

Any project that seeks to reform the provision of public transport requires the presence of a public transport authority of some kind. Such authorities should carry out market studies, design routes and schedules, establish service standards and price-subsidy policies, develop tender documents, manage the tendering process, pay agreed-to subsidies, monitor performance of contract operators, and enforce contract obligations. In large cities, with several constituent municipalities, the authority is external to and independent of municipal structures, with a board composed of public and private interests. In smaller cities, most relevant technical functions can be carried out from within the municipal administration, with the city council as the decision making power.

**Urban transport coordination**

Typically in urban transport projects, strategic actions require some form of integration or at least coordination among institutions with different authorities and interests. Large urban areas have fragmented governments and multiple institutions, and primary and secondary transport infrastructure and services often cross sub-area boundaries. National or state ministries and other supra-urban authorities that are active at the local level also need to be included. Coordination can be arranged around specific issues, as in a public transport fare association, or be more comprehensive. A common set-up under Bank-funded projects is to have inter-agency and/or inter-governmental committees, with permanent or rotating host institutions.
Multi-modal urban transport planning and resource allocation
Institutions with a purview over the entire urban transport system are quite rare in developing countries. In advanced cities, project supported policy reforms sometimes involve major multi-modal issues such as establishing priorities for transport funding among competing modes, or when municipal leaders understand the value of integrated multi-modal planning and policymaking. In such cases, institutional reform may evolve from coordination mechanisms to area-wide, multimodal transport authorities that combine the functions of road departments, traffic management units, public transport regulatory authorities, and planning departments (e.g., TransLink in Vancouver).

Role of national governments
Using the maxim that jurisdiction should follow the extent of impacts, urban transport is primarily a matter for local governments. Yet national governments, typically through ministries of transport/communications, public works and/or urban development, play these important roles in the context of Bank-funded urban transport projects: (1) provide sovereign guarantees required for Bank loans to sub-national governments and entities; (2) impose nationwide regulations for public transport services and fares; (3) set up and implement national road user charges, typically a fuel tax; (4) fund, build, and maintain “national” highways that connect and often enter urban areas; (5) provide technical assistance when it is in short supply locally; (6) provide financial assistance by funding individual projects or programs, the latter sometimes with incentives reminiscent of conditionality in Bank loans and advice; and (5) make framework laws stipulating planning processes and instruments. When it comes to locally-based road charges, national framework laws are likely to be necessary. Any of these roles justifies having the national government as a partner, perhaps a principal partner, even when the project in question is city-based.

Urban transport strategic planning
Urban transport planning departments exist in most client cities. When working properly, they monitor the performance of the transport system in their city, follow trends in urban processes and development, and plan policies, programs, and investments. At a minimum, in-house capacity is needed to conceive strategic transport planning exercises, facilitate their production, evaluate the results, involve the public, shepherd the outcomes through the decision making process and connect the selected strategic direction to implementation activities. The format of such studies varies among countries, sometimes being prescribed by law within a master planning or general urban planning legislation, but in other places following flexible procedures. It is common to find studies using transport network and travel demand modeling as a tool for evaluating and planning major infrastructure and facilities. Under Bank-funded projects, the approach is to have a comprehensive diagnostic phase that serves to evaluate current system performance, identify issues and bottlenecks, and propose a broad-based but selective program of investments, policies and institutional changes. Demand/supply modeling is not shunned, but it is reduced in importance and may be of exploratory nature. Given the heterogeneity on the demand side, distributional aspects of proposals are highlighted. Expenditure programs for both short and long term are subjected to both economic and financial evaluation, and linked to funding capacity of the client government.

Generally, Bank-funded urban transport projects are convenient vehicles to help upgrade planning institutions, data and tools, through various forms of technical assistance (TA), knowledge dissemination, and staff training. Capacity building for transport planning may be organized as part of the development cycle for project-supported investments, providing hands-on experience in both design and evaluation, but it normally transcends the perspective of a single project.

Urban transport pre-investment cycle
Among common reactions to the process of rising motorization are proposals by client cities for the Bank to invest in major urban roads and (most often rail) rapid transit systems, or merely help design and finance pre-investments studies for such proposals, and/or design or evaluate such studies done by third parties. Both are problematic. For roads, the traditional approach is focused on enhancing motorized mobility, following a predict-and-provide paradigm as it evolved in the US and UK. This paradigm broke down once it was seen to lead in a direction unsustainable on resource, environmental and social grounds, but has yet to be succeeded by a widely adopted new paradigm. The standard Bank approach to project evaluation, for transport and other sectors, still contains elements of the original (predict-and-provide) paradigm, including the use of economic rate-of-return for the pre-determined singular solution as the pivotal decision parameter. In recent years, an effort has been made within the institution to move to a multi-criteria, multi-alternative, participatory framework capable of accommodating a wide scope of concerns, going well beyond travel time and cost. The
process of improving this approach continues. Transport planning literature has ample examples of pre-investment studies plagued by poor quality. Typical problems include overly narrow range of options examined, over-estimated revenue and other benefits, under-estimated costs, and neglected risks. Acting on conclusions of such studies is likely to lead to poor investment decisions with limited financial resources wasted and financial sustainability problems created. While the literature in this respect tends to focus on large-scale urban public transport systems, e.g. metros, similar problems arise under major road projects in urban areas and especially when road projects involve tolls. When such studies are included under Bank-funded projects, whether or not investments are to be funded in part by Bank loans, the approach is staged, to reduce the risk of premature convergence, and the focus is on ensuring three things: (i) inclusion of all relevant alternatives; (ii) realistic and risk-conscious cost and demand forecasts; and (iii) financial evaluation over the life of the project.

2.5 Investment components

The Bank’s urban transport strategy is to focus on those investments which, in addition to meeting standard Bank tests for project justification, make coherent wholes with the policy and institutional initiatives of the given project, independent of the size of investment. What is routine and/or small in some cities can be pivotal and large (hence strategic in common parlance) in others.

Improvements to existing central area and arterial roads

When the management of the congested street space in central areas and on major arterials is considered a strategic policy initiative, low-cost road improvements become a strategic investment category. These include pavements, sidewalks, staircases, street-crossing aids, bicycle paths; bus lanes and bus bays; signs and markings; and traffic and parking control systems. This kind of investment has been the bread-and-butter of Bank-funded urban transport projects since the beginning of the program, and is likely to continue so. The design of road improvements can vary to suit the strategic thrust of the street management program, for example by favoring one mode or set of modes over others in specific corridors. Rather than maximize the space available for private motor vehicles, such investments should follow a “people-first” policy, with combined service, equity, safety, and environmental benefits. At its outer limit, this investment category may include the insertion of exclusive running ways for public transport vehicles (normally bus- and rail-based “surface” semi-rapid transit lines).

Street networks inside built-up low-income areas

Investments in all-weather secondary and tertiary road networks in low-income areas, most often on the urban expansion boundary, can go a long way to expanding mobility and access for the poor in many cities. Such investments can be used in tandem with programs to create collection/distribution public transport networks.

Arterial roads in urban expansion areas

In many client cities, massive fringe developments are taking place in a more or less spontaneous manner and without communal infrastructure, many a way station for rural migrants. Investing in road networks in such areas, be these green-field investments or a post facto attempt to add infrastructure after development has commenced, has potentially these categories of benefits: (i) direct access benefits to residents, mostly low-income households; (ii) low land and construction cost; (iii) introduction of road design standards that are friendly to non-motorized and public transport modes without having vested interests that make this initiative so difficult in built-up areas in the absence of effective land use planning; (iv) provision of a transport efficient structure (e.g. block size) inside which land markets will do the rest; and (v) use of this investments to leverage changes in land development policies.

Public transport fleet and facilities

Investments in fleet replacement and expansion, and related depots, workshops, and terminals were frequent in past Bank projects that sought to restructure or create government-owned urban public transport companies. These policy goals proved difficult to achieve. Nonetheless, investments in fleet and facilities for publicly owned companies remain on the strategic agenda, subject to meeting criteria regarding efficiency, subsidy design, and financial viability. In some cities, reforming an existing public-sector operator may be a part of a promising and essential regulatory reform package, especially within the framework of public-private partnerships. Fleet and engine replacement investments can also play a large role when advancing a green agenda.
**Primary roads**

Primary road networks, radial or circumferential, with partial to full control of access, are a tool that large cities can use to tap proximity benefits and to guide land use development. In a given city, decisions on where to build such roads and to which design standards, depend on the urban and transport development strategy, density patterns and the relative roles of public transport and individual modes. The planning process used to develop the road construction program must be transparent and participative, and the work must be independently replicable.

The evaluation framework must be open enough to allow the inclusion of non-road options, and involve multiple evaluation criteria that address social and environmental as well as transport and economic factors. The scale of this type of investment makes it suitable for leveraging significant changes in road design standards in favor of public and non-motorized transport, land development regulations, the creation of transport institutions, and the adoption of particular transport planning and decision making processes. It may even be possible to use such investments to leverage the introduction of exclusive running ways dedicated to public transport for rapid transit modes, or some form of locally-based road use charges. On the opposite side of the ledger, including primary road investment in Bank-funded projects tends to involve difficulties in complying with safeguards (relocation, barrier creation, environmental impacts) and may involve contentious transport planning and land development issues. Also, as noted above, when primary roads are conceived as pay-for-use facilities, possibly in the context of a public/private partnership, they often experience problems with underestimated costs and overestimated traffic and revenues.

**Rapid transit systems**

These include bus-based and rail-based modes operating on rights-of-way with substantial exclusivity of use, be these surface-based, elevated or underground. Rapid transit modes, irrespective of vehicle technology, are capable of the highest performance (i.e., operating speeds, reliability, and safety) and passenger carrying capacity. Strategically, they have a much greater potential than do street-based modes to attract "choice" passengers, thus contributing to a "cleaner" modal split. They also have a strong potential for shaping surrounding land use. When combined with traffic restraint and pricing measures, they can help decongest central areas while supporting very high land use densities therein. Their disadvantage is the difficulty of finding the requisite surface space, or face high-cost and risk-laden tunneling and elevated construction. In operational stage, tensions between revenue objectives and patronage maximization are much stronger than for street-based modes because fixed costs make for a high proportion of total costs. Long-term financial sustainability is an issue because very few rapid transit systems, especially the ones using rail technology, cover their total capital and operating costs from fare and other operating revenues.

The choice of the system to be built in a given location, especially the choice of vehicle technology (rail vs. bus) is critical. Under Bank-funded projects, the selection of options should be approached without pre-conceived notions, with a thorough knowledge of pitfalls seen in practice. A range of alternatives that are reasonable in terms of physical and operational feasibility and financial sustainability should be objectively considered. The choice is inevitably highly charged, given the scale of investment and the power of the natural lobbies tied to one selection or another. As noted in the section on major roads, the planning process must therefore be open and participative, and staged to reduce risk, by having a sequence of studies with increasing accuracy and a decreasing number of options. In the purely technical domain, the focus is on replicability and integrity, inclusive of a range of alternatives considered; the competence in making forecasts of costs, demand and revenue; approach to risks; and the breadth of evaluation criteria—economic, financial, and other. In particular, the environmental sustainability perspective, including the carbon footprint assessment, will have to be fully integrated in the analysis when comparing technical solutions.

In both middle and low-income cities, common sense dictates that all effort be exerted to explore the use of lower-cost, at-grade modes, be they bus-based or rail-based, suitable in all but the densest corridors. Bus-based rapid transit (BRT) is of particular interest, whenever at-grade space can be found (or taken). Its construction costs are low-to-moderate (about US$5–15 million per route-km),

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Footnote:

8 In urban transport literature, the terms “rapid transit” and “mass rapid transit” apply strictly to modes with full exclusivity of the travelway, notably metros. Modes with partially exclusive travelway belong to the “intermediate rapid transit” category, e.g. various forms of bus or light-rail based systems where some sections and/or intersections are also used by other traffic. In this Paper, for simplicity, “rapid transit” covers all modes with substantial degree of travelway exclusivity.
and the capacity to comfortably carry up to 25,000 passengers per hour per direction. These low costs can translate into longer networks and better area coverage than rail-based systems for a given investment.

Investments in rehabilitating and creating rapid transit lines can be quite effective in tandem with policy and institutional complements. When a regulatory reform is envisaged in a city that desires to move away from total dependence on publicly owned bus companies, then rapid transit may provide a matching strategic investment component to leverage the envisaged reform. Infrastructure tends to remain in public ownership longer than all other elements of public transport systems, due to the scale, risks, and longevity of the investments needed. Its financing through a Bank project can be readily incorporated into a public/private venture, with operations moving to the private sector. Such a public/private partnership framework, with services awarded through competitive bidding, enables rapid transit systems to achieve an excellent balance of efficient operating costs and quality of service. Rapid transit investments also are well suited to complement public transport reforms that involve re-regulation of a hitherto informal sector, with some operators competing for trunk line services while others are retained for collection/distribution routes. Project examples from Bogota, Hanoi and Rio de Janeiro, described later on in this document, illustrate various ways in which these investment-policy linkages can be made.

In their transport function, construction costs, and potential development impacts, rapid transit systems correspond to primary, limited-access urban roads, i.e., expressways and freeways. But the beneficiaries of the two tend to be quite different. Limited-access roads tend to do the best job of serving long internal-external or through freight traffic, long internal-external or through auto trips, and relatively long trips on surface-based public transport. They do not serve traditional pedestrian-oriented downtowns well because of the need for significant parking capacity, right of way requirements and negative externalities. Accounting for these deficiencies with hyper-expensive underground alignments and off-street parking in structure makes their construction in urban cores commonly out of question.

They tend to result in urban activities dispersing toward the fringes and are associated with low-density, homogeneous urban expansion, with a many-to-many travel pattern.

By contrast, rapid transit systems serve only passengers, work best in high density radial corridors connected to large central business districts, and tend to be associated with mono-centric urban patterns or polycentric patterns involving a small number of large, strong nodes (e.g., downtown and mid-town New York). Depending on patterns of urban growth and the pace of motorization, cities may be under the pressure to develop both limited access roads and off-street public transport networks, often in the same corridors.

Because funding for strategic roads and rapid transit systems tends to come through different institutional channels, evaluation studies most often look at uni-modal sets of options. In line with the Bank's strategic orientation stated earlier on in this Paper, it is of essence to consider an inclusive, multi-modal set of options in all major investment studies.

Specifically, whenever a limited-access urban road (even a ring road) is being considered in a development project, the option of including some form of complementary rapid transit or at least transit-supportive elements such as bus lanes and passenger transfer terminals within the same right-of-way should be included. At a minimum, consideration should be given to preserving right of way for the future addition of dedicated public transport facilities. This will make project preparation and evaluation more complex, but could help mitigate the potential highway investment’s negative externalities and ultimately benefit the largest number of travelers.

Transport networks serving transport activity centers
This category of investments overlaps that of primary and secondary roads, but is cited separately because of the role of cities as gateways for national and international trade networks. Port, air, and railway complexes may be outside the domain of city governments, but road networks around them and public transport lines serving them are not. The quality of service of these roads and/or public transport systems is an essential contributor to the performance of terminals.

9 Capacity and level of service (including safety) are linked performance parameters. Transmilenio BRT in Bogota carries over 30,000 passengers per hour but at “crush” conditions.
2.6 Poverty alleviation, climate change and local air quality content

This section re-groups aspects of the approach that accommodates the special Bank concerns for poverty alleviation and global and local air quality improvement.10

Urban transport projects can be designed to focus on poverty alleviation by including the following actions drawn from different parts of the proposed framework:

**Public Transport**
- Improve the operating environment of public transport in major corridors, through a variety of traffic management, road-space dedication and public transport operations schemes;
- Construction of bus or rail-based surface rapid transit lines with at-grade exclusive running ways on existing or new roadway or independent public transport rights of way. This can have an especially positive impact on the mobility of public transport dependent low-income travelers and provide increased economic activity and job access while staying within a financial envelope affordable to both low-income travelers and local authorities;
- Explicitly include fare/subsidy issues among strategic concerns, by ensuring that benefits are actually reaching low-income residents and not leaking to higher-income residents;
- Reform the provision and regulation of informal transport modes with a view to preserving their provision of affordable services to low-income passengers;
- Support route/fare associations and other forms of service integration, to assist passengers who have to make one or more line transfers, typically low-income travelers from urban fringes.

**Non-Motorized Transport**
- Build exclusive side walks and bikeways as components of public transport, roadway and street projects;
- Incorporate design features in road and public transport improvement projects specifically benefiting walking and other non-motorized transport modes (e.g., construct pedestrian crossings and refuges, bike parking facilities, etc.

**Roadway and Street**
- Improve primary roads, secondary streets and/or public transport in places where poverty is endemic, e.g., off-corridor and in fringe areas where lower cost land and housing is available.

The approaches contained in the urban transport strategy used to address air quality issues, both global (directed at climate change and local air pollution, include:

- Invest in the incremental costs of vehicles and/or propulsion systems with clean technologies
- Invest in the infrastructure needed for public transport to utilize clean fuels (e.g., CNG), with both efficiency and environmental objectives in mind;
- Nurture and enhance public transport and non-motorized modes to make those cleaner modes more attractive and effective for private vehicle users through a variety of traffic management and public transport operations interventions and the provision of exclusive public transport running ways;
- Support public transport reform to create (or strengthen) public regulatory authorities with responsibility for developing and enforcing vehicle emission and safety standards;
- Support for air quality testing, vehicle emissions’ monitoring facilities, equipment and institutional support;
- Implement systematic carbon footprint assessment methodologies when designing and comparing technical solutions in a long term sustainability perspective;
- Provide grant-based technical assistance to cities, funded through the UN’s Global Environment Facility and other funding windows, focused on developing clean environment-related institutions, policies, plans and investments to implement them.

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10 Adverse poverty and environmental impacts of urban transport projects are handled through safeguards that are applicable to all Bank-funded projects and hence not repeated in sector and thematic strategy documents. Paragraphs on air quality are limited to transport factors, such as modal split and congestion. The exclusion of vehicle, engine and fuel variables, normally a national rather than urban matter, follows a traditional division of subjects between Bank’s sector departments.
3  **From Framework to Projects**

The global urban transport framework approach presented in the preceding chapter was derived in
great part from project experience over the last 15 years. Through eight case studies, the current
chapter illustrates a variety of ways in which the framework can be implemented through projects.
These case studies were selected to show how much variety there is in the initial conditions in client
cities, therefore also in project design. The selection includes projects different with respect to
geographic location, the underlying socio-economic dynamic and urban transport features, both in
terms of *status quo* and proposed corrective actions.\(^{11}\) An attempt was made not to miss any one
important variant in project design in the project cohort 1990-2007. Since the focus of this Paper is on
the original and joint intent of the Bank team and the client, project data are drawn from documents
ready at appraisal stage. No attempt is made to evaluate these projects as they evolved during
implementation, or in terms of their ultimate success or failure.\(^{12}\)

The case studies are arranged chronologically. Brief comments on each project are supplemented by
additional information given in tables. Projects in Budapest (1995), Rio de Janeiro (1997), Bogota and
other Colombian cities (2004), and Santiago (2005) focus mainly on public transport modes. The first
two involve deregulation and the last two involve re-regulation, in addition to a significant take of
street space in favor of public transport services. The Moscow project (2001) addresses only roads and
traffic. Projects in Lagos (2002), Wuhan (2004) and Hanoi (expected 2007) cut across all modes -
road infrastructure, traffic operations and public transport services.

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\(^{11}\) Almost all projects come from three regions with sizeable project cohorts over last 15 years: Latin America and
the Caribbean; East Asia and Pacific; and Europe and Central Asia. In this period, there have been very few Bank-
funded urban transport projects in the remaining regions (Africa; Middle East and North Africa; and South Asia).

\(^{12}\) This is especially relevant for the Santiago project which, at the time of this writing, is experiencing severe
implementation problems.
Case 1: Budapest Urban Transport Project

This is the oldest project in this batch.\(^\text{13}\) It illustrates one of the approaches that the Bank took in dealing with the difficult situation found in many cities in Eastern Europe and the former Soviet Union as they moved to change their political and economic systems.\(^\text{14}\) The impetus for the Bank to get involved was not a crisis in the performance of the urban transport system. It was a crisis on the supply side of public transport services, due to a severe recession, accompanied by traffic congestion. The city-owned monopoly provider of public transport services was facing serious financial problems, due to reduced subsidies. It was also losing passengers, because of increased motorization in the city, but still carried 70-80 percent of all trips. The company, BKV, was arguably the best of its kind in Eastern Europe, with an extensive multi-modal system and a proportion of on-street and off-street exclusive tracks that can only be dreamed about elsewhere. It was also over-staffed, and contained many in-house functions whose products could be purchased on the market at better terms. Fares were unsustainable at the current level of services, but the resistance to changing either of these came from both passengers and the unions.

The project design called for gradual deregulation, while keeping BKV as the dominant service supplier. Behind its stated objective of improving BKV’s performance and financial health lay the wider objective of keeping public transport competitive with the private car use, already on the rise. The company was slimmed down, by reorganization and by spinning off its large non-transport departments. The level of transport services was stabilized through operational improvements and investments in bus fleet and tram infrastructure funded under the project. The project also made a first step towards private provision of transport services, requiring BKV to start to sub-contract with private operators on a gross-cost basis. The delicate question of subsidies from the city and the national government to BKV was dealt with through a "contractual" increase in cost recovery. The project agreement left open whether this increase would be achieved through fare increases, cost reduction, or some combination of the two. In the institutional dimension, the relation between BKV and its owner, the Municipality of Budapest, was formalized through a quasi-contractual service agreement, the first step toward a concession-based regulation. To deal with the problem of irregular subsidy payments by both city and national governments, the project included a condition that explicit subsidy calculation principles were to be adopted, and thereafter respected. The "stretch" aspects of the project included an initiative to create the Budapest Transport (Fare) Association (a budding Transport Regulatory Authority), and a requirement (loan covenant) of rigorous project evaluation for large-scale investments. This last was essential since the city was poised to invest in the third metro line on the basis of scant preparation studies. The project stepped outside the public transport boundary by including an agreement for the bank to monitor the introduction of a parking charge system in the central area. In all, the project design is consistent and coherent, especially when it is seen together with the concurrent EBRD-funded project to rehabilitate one metro line and purchase parking meters, and the Municipality’s self-funded program to improve traffic conditions in tram corridors.

\(^\text{13}\) This section is based on World Bank (2001b).

\(^\text{14}\) World Bank (2002b) has a detailed account of approaches used in other projects in the same region: Kazakhstan, Kyrgyz Republic, Latvia, Russia, Turkmenistan and Uzbekistan.
**Budapest in the mid 1990s**

<p>| <strong>Population and population growth:</strong> | About 2 million people in 1990, with a downward trend that continues to the present. Urban pattern typical in all &quot;planned” socialist cities, with high-rise housing blocks built by the government on the periphery. By the mid-1990’s: internal restructuring with flight to suburbs of both residential and commercial activities. |
| <strong>City economy:</strong> | The country and the city went into a recession in the late 1980s, following the breakup of the Eastern European alliance and the introduction of a market economy. At the time of conception of Budapest Urban Transport Project, the GNP was at its lowest point. The downward pressure on the public budget at both state and city level and on household budgets was at its most severe, with a concurrent upward pressure on prices for hitherto inexpensive or free services. Real per capita income fell by 26 percent in 1988-93. Recovery started roughly as the Bank-funded transport project was approved, and proceeded with sharp income inequalities. |
| <strong>Poverty:</strong> | The fall in economic output was handled by reducing salaries rather than by laying off workers. Therefore, even middle class households considered themselves as poor. |
| <strong>Urban government:</strong> | Municipality of Budapest, with six constituent districts. |
| <strong>Motorization:</strong> | Around 215 per 1,000 population and rising, both in ownership and use. |
| <strong>Transport system at project conception stage:</strong> | A fully developed road system, typical of European cities dominated by public transport, i.e. good balance of radial and ring arterial roads, without access limitations; rudimentary development of circular and tangential motorways. An extensive, multi-modal public transport system with a tradition of a high level of service, but starved of funds for fleet and track replacement. The system included several metro lines, tramway lines largely on separate street-based tracks, an extensive street-bus network, and a three-line commuter rail network. Traditionally low fares, covering as little as 25 percent of total operating costs in 1980s, but climbing towards low 30 percent in 1990s. |
| <strong>Modal split:</strong> | Public transport in decline, from a share of 90 percent of daily passenger trips in late 1980’s to 70–80 percent in early 1990s, a drop of 4–5 percent per annum. Use of passenger cars in a corresponding ascendance. Walking about 10 percent; bicycles present but carry a negligible share of the travel market. |
| <strong>Transport problems:</strong> | Street congestion with its usual adverse side impacts. The level of service provided by the city-owned Budapest Transport Company (BKV) starting to falter under the weight of its internal problems and a financial crunch due to external circumstances. |
| <strong>City strategy:</strong> | Overhaul public transport operators without deregulation; reduce subsidies; build metro extensions to improve service quality; seek balance between pro-car and restraint (build new roads but introduce parking charges). |</p>
<table>
<thead>
<tr>
<th><strong>Budapest Urban Transport Project (P008494)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Borrower:</strong> Municipality of Budapest</td>
</tr>
<tr>
<td><strong>Implementing agency:</strong> Budapest Transport Company (BKV) Ltd.</td>
</tr>
<tr>
<td><strong>Appraisal Report date:</strong> May 17, 1995</td>
</tr>
<tr>
<td><strong>Loan type and amount:</strong> Specific investment loan, US$ 38 million</td>
</tr>
<tr>
<td><strong>Project cost estimate:</strong> US$ 67 million (approximately)</td>
</tr>
</tbody>
</table>
| **Objectives:**  
  (i) improve the financial position and performance of BKV;  
  (ii) test the potential of private sector participation in the delivery of transport services;  
  (iii) restrain automobile traffic in the city. |
| **Policy components:**  
  (i) restructure and commercialize BKV;  
  (ii) reduce subsidies paid to BKV (by shifting the load to passengers and reducing operating costs);  
  (iii) bring BKV financial position to balance;  
  (iv) increase private sector role (contracting out auxiliary functions and some operations);  
  (v) improve street space management (through parking charge program). |
| **Institutional components:**  
  (i) establish a formal contractual relationship between the City of Budapest and BKV;  
  (ii) create Budapest Transport (Fare) Association;  
  (iii) improve planning procedures and decision making for new metro lines |
| **Investments:**  
  (i) replacement of 47 kilometers of tram tracks in main corridors;  
  (ii) replacement of buses older than 12 years, 50 vehicles of the low-floor, high performance and low emission type;  
  (iii) vehicle monitoring and communication system;  
  (iv) maintenance equipment;  
  (v) training of BKV and municipal staff. |
| **Major indicators:**  
  BKV’s cost recovery from fares to reach 50 percent (from 37 percent at the outset);  
  reduction of fraud (passengers without tickets) from 12 to 7 percent;  
  operating ratio to be maintained at 100 and debt coverage ratio at 1.5 or higher;  
  five percent of operations to be subcontracted to private operators. |
| **Parallel operation:**  
  An EBRD loan to the same borrower and beneficiary, for a purchase of 272 low-emission bus vehicles, replacement of another 96 bus engines with higher-performing and low-polluting engines; rehabilitation of Budapest’s historic Millennium Metro Line; and pay-and-display, on-street parking meters. |
Case 2: Rio de Janeiro Mass Transit Project

The Rio project provides another illustration of using deregulation, institution building and direct investment to improve public transport services. It belongs to a recent batch of projects in major cities of Brazil and Argentina where urban transport systems had paid the price for economic stagnation alongside steady population growth.\(^{15}\) Public ownership of transport operators had exhausted its potential, as downward pressure on fares due to poverty of many travelers and inefficiencies on the supply side had pushed operating subsidies into an unsustainable domain. An additional complication was that, in metropolitan regions, administrative boundaries tended to differ from economic ones. The Rio project was put together after street-bus operations had already been moved to the private sector -based on a variant of “for-market” competitive framework- but were still hampered by street congestion and fragmentation of service networks. The hope was to introduce another wave of reforms, with suburban railways - still in public ownership but poorly run and in poor physical state- as the centerpiece.

The project aimed to improve services and reduce operating costs of public transport modes, with a dual concern for both captive and choice travelers. It featured the transfer of Flumitrens (suburban rail system) operations to the private sector, based on a long-term concession. The loan was to fund the rehabilitation and upgrading of the rolling stock and track infrastructure, both of which remained in state ownership. A parallel effort improved modal integration, specifically transfer nodes where Flumitrens intersected metro and street-based bus lines. Since the fragmentation of transport responsibility was among the main factors behind the sorry state of street-based and other modes, the key institutional component was the creation of a multi-modal urban transport authority. The immediate tasks of this institution included oversight of the regulatory reform and the creation of a comprehensive agenda for future actions. The latter was to be done through a study integrating transport, land use and air quality concerns.

\(^{15}\) This section is based on World Bank, 1997.
## Rio de Janeiro

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population:</strong></td>
<td>5.7 million Rio municipality; 9.8 million metropolitan region, accounting for 75 percent of the population of State of Rio de Janeiro; huge population increases 1970-2000; decentralized city type, high average density.</td>
</tr>
<tr>
<td><strong>City economy:</strong></td>
<td>Stagnant in recent years (negative growth rates since mid-1980), but still highest per capita income in the country; informal economy more than half of total employment.</td>
</tr>
<tr>
<td><strong>Poverty:</strong></td>
<td>1.1 million people live in favelas; about 15–20 percent of the regional population is considered poor.</td>
</tr>
<tr>
<td><strong>Urban government:</strong></td>
<td>Municipality of Rio de Janeiro, together with another 16 smaller municipalities make up the Rio De Janeiro Metropolitan Region, constituted under the authority of the R-J state.</td>
</tr>
<tr>
<td><strong>Motorization:</strong></td>
<td>216 cars/1,000 people (1997 datum)</td>
</tr>
<tr>
<td><strong>Transport system at project conception stage:</strong></td>
<td>264 kilometer rail network, now state owned; bus companies mainly private, receive no subsidies; route licenses awarded through competitive bidding; intro-municipal companies regulated by municipalities, inter-municipal ones regulated by the State of Rio de Janeiro.</td>
</tr>
<tr>
<td><strong>Modal split:</strong></td>
<td>67 percent by public transport, 11 percent by car, 20 percent walking, 2 percent other modes; PT trips: 77 percent by buses, 14.5 percent by combi &amp; taxis, 3 percent subway, 4 percent suburban trains (Flumitrens); half trips require a transfer.</td>
</tr>
<tr>
<td><strong>Problems:</strong></td>
<td>Severe street congestion with especially bad impacts on street-based bus services; overcrowding and journeys of 2.5-4 hrs for majority travelers who are low-income; high accident rates; high air pollution; Flumitrens serviceable fleet down to 50 percent; insufficient service integration between bus and rail lines, and no fare integration; subsidies paid to metro and Flumitrens unsustainable.</td>
</tr>
<tr>
<td><strong>Government strategy:</strong></td>
<td>Public owned bus operator (CTC) liquidated; next move is to have the metro and Flumitrens operated by the private sector; creation of a State Regulatory Entity with jurisdiction over all industries, incl. PT services.</td>
</tr>
<tr>
<td><strong>Prior Bank involvement:</strong></td>
<td>Specifically in Rio - Brazil – Rio de Janeiro Metropolitan Transport Decentralization Project (Loan 3633-BR, 1993); supported decentralization of Flumitrens from the Federal Government to the State of Rio de Janeiro. Elsewhere in Brazil: 3 urban transport projects 1978-91; the fourth (1987) would have had components in Rio, but was cancelled. Subsequent projects in Sao Paulo (1992), Recife (1995) and Belo Horizonte (1995).</td>
</tr>
</tbody>
</table>
**Rio de Janeiro Mass Transit Project (P043421)**

<table>
<thead>
<tr>
<th><strong>Borrower:</strong></th>
<th>State of Rio de Janeiro with guarantee by Federal Republic of Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Implementing agency:</strong></td>
<td>Secretaria de Transportes do Estado do Rio de Janeiro and Companhia Flumitrens (suburban rail)</td>
</tr>
<tr>
<td><strong>Appraisal Report date:</strong></td>
<td>December 2, 1997</td>
</tr>
<tr>
<td><strong>Loan type and amount:</strong></td>
<td>Specific investment loan, US$ 186 million</td>
</tr>
<tr>
<td><strong>Project cost estimate:</strong></td>
<td>US$ 372.5 million, of which 96 percent for vehicles and infrastructure and 4 percent for soft components.</td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
<td>(i) improve PT services through better integration of modal systems in Rio; (ii) improve services and reduce costs of Flumitrens.</td>
</tr>
<tr>
<td><strong>Policy components:</strong></td>
<td>Flumitrens to be operated by a private concession; create basis for air quality management.</td>
</tr>
<tr>
<td><strong>Institutional components:</strong></td>
<td>Creation of a Metropolitan Urban Transport Agency (AMTU-RJ); preparation of an integrated Transport Policy, Land Use and Air Quality Management Strategy for Rio.</td>
</tr>
<tr>
<td><strong>Investments:</strong></td>
<td>(i) rehabilitation of Flumitrens rolling stock, infrastructure, control systems, fare collection; (ii) rehabilitation or new construction of nodes and terminals where Flumitrens intersects with metro and bus lines; (iii) technical assistance and studies.</td>
</tr>
<tr>
<td><strong>Parallel operation:</strong></td>
<td>State Reform Project (creation of the State Regulatory Entity; fare study for the RJ region; Flumitrens concession signing is a second-tranche release condition).</td>
</tr>
</tbody>
</table>
Case 3: Moscow Urban Transport Project

The circumstances under which the Moscow project was initiated resembled, in part, those found in Budapest in the sense that Moscow was an ex-socialist city with an extensive public transport system, with a metro as its jewel-in-the-crown. The wealth of Moscow, however, was in a stark contrast to poverty elsewhere in Russia. Motorization in the urban area was so rapid that the modal share of cars almost doubled in 1990-97, while passenger volumes on the public transport system held steady (and the Moscow metro showed no signs of faltering). The response of the city government to unprecedented traffic congestion was mainly in terms of capital investment to upgrade radial arterial roads to limited-access standard and to build new ring roads. Traffic management and law enforcement to optimize the use of the available road network, improve safety, and/or protect street-based public transport modes were not given high priority rating, especially as this would have meant redrawing institutional boundaries in the city government, and introducing new functions.

The project’s main focus was to create an institutional focus on traffic management in the city administration, and to build up its capacity, working in tandem to do the same with traffic police. On the public transport side, the project included strategy development for street-based modes, with a strong emphasis on regulatory reform (towards deregulation), but no specific policy changes were pursued under the loan agreement. To leverage these institutional changes, the investment element of the project is of unusually large scale; in addition to classic, smaller-scale traffic management investments (corridors and central area improvements) it also included the rehabilitation of a major bridge, accounting for a third of estimated project costs. The policy “box” of the project is essentially empty.

16 Information for this case study was drawn from World Bank (2001a)
| **Moscow** |
|-----------------|-------------------------------------------------|
| **Population:** | 8 million (city), 13 million (metropolitan area) |
| **City economy:** | Booming, Moscow leading Russia’s economic recovery, generates 40 percent of federal revenue. |
| **Poverty:** | Not considered |
| **Urban government:** | Strong city government headed by a mayor; transport coordination - Transport Commission headed by a First Deputy Mayor. |
| **Motorization:** | 2.2 million cars in 2000. Car ownership increased by 250 percent in 1991-1998, ending at 190 cars per 1,000 people (close to EU average in 1970). |
| **Transport system at project conception stage:** | A highly developed metro network and a less developed street-based system of buses, and trolley-buses; inherited street system with low differentiation, with two recent, limited-access ring roads (inner “garden” ring closed to center and outer-area ring). |
| **Modal split:** | High individual mobility at 3.3 trips/person/day (1997) and traditionally a high modal share of PT modes (more than 85 percent, 1/3 by metro). Passenger volume on public transport system steady in 1990s, but modal share of cars increased from 11.7 percent in 1990 to 21.6 percent in 1997. |
| **Problems:** | Congestion increasing over longer hours and more routes; street-based PT services losing quality; decline in safety, with pedestrians accounting for 2/3 of deaths; 80 percent of air pollution attributable to motor vehicles; low-level traffic management and traffic law enforcement; the former fragmented over many agencies; neglect of street-based PT; capital bias in transport planning; explosion of PT subsidies and road expenditures. |
| **Government strategy:** | Building-out of congestion through road-oriented capital investment program, focusing on ring roads, including large projects conceived without economic, social and environmental analyses; a start of realization that a different approach is necessary, following a Transport Strategy Study financed by the UNDP. |
| **Prior Bank involvement:** | Russia Urban Transport Project (1995) dealt with PT services in cities other than Moscow; Bridge Rehabilitation Project (1996) included US$ 50 million for rehabilitation of some bridges in Moscow. |
**Moscow Urban Transport Project (P046061)**

<table>
<thead>
<tr>
<th><strong>Borrower:</strong></th>
<th>Russian Federation (funds on-lent to the City of Moscow)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Implementing agency:</strong></td>
<td>Foundation Moscow Project Implementation Unit (set up for Bridge Rehabilitation project) gradually to shift oversight to Traffic Management Center.</td>
</tr>
<tr>
<td><strong>Appraisal Report date:</strong></td>
<td>January 12, 2001</td>
</tr>
<tr>
<td><strong>Loan type and amount:</strong></td>
<td>Specific investment loan; US$ 60 million</td>
</tr>
<tr>
<td><strong>Project cost estimate:</strong></td>
<td>US$ 123 million, of which US$ 48 million for corridors; US$6 million for central area; US$ 39 million for the Donbasky Bridge complex (on radial Varshovskoye corridor); and about US$10 million each for traffic management and traffic police units.</td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
<td>Improve the institutional capacity of the City of Moscow to use traffic management methods and enforcement; improve ’traffic processing” capacity of the road system of Moscow; prepare PT reform; introduce better investment planning and project execution.</td>
</tr>
<tr>
<td><strong>Policy components:</strong></td>
<td>Development of a surface PT strategy with a regulatory thrust.</td>
</tr>
<tr>
<td><strong>Institutional components:</strong></td>
<td>Establishment of a permanent, staffed and empowered Traffic Management Center in the Moscow City Government, with at least 20 professional staff by July 2001; capacity building of Traffic Police.</td>
</tr>
<tr>
<td><strong>Investments:</strong></td>
<td>Traffic control systems; equipment and training for traffic police; road improvements in corridors, including widening, traffic control, intersection geometry, pedestrian crossings (at-grade and underpasses), bus lanes; bridge rehabilitation; central area traffic studies, major surface transit study (i.e. non-metro parts of the public transport system) oriented to service improvements and higher cost recovery.</td>
</tr>
</tbody>
</table>
Case 4: Lagos Urban Transport Project

The Lagos setting is distinctly different from Budapest, Moscow and Rio. Lagos is a mega-city, a demographic avalanche gathering size in spite of low-rate economic growth.\textsuperscript{17} Poverty is overpowering. Infrastructure and service provision by public authorities could not keep up with urban growth in spite of the considerable oil wealth of the country. Lagos became known as a “self-service” city, referring to private or micro-communal attempts to organize in the vacuum at the municipal and state levels (Gandy, 2006). Roads were in very poor shape. The formal public transport service provider, failed under the weight of low fares and unsustainable subsidies, was replaced by a market of informal operators. These provide low-quality services, compete “on-the-street” and have adverse side impacts accumulating towards critical levels. Institutions and financing arrangements for urban transport were in disarray.

The strategy adopted by the project attempts a gradual re-regulation of the informal sector, using massive road rehabilitation as a lever for policy changes, and as a direct instrument to reduce poverty (through employment on road works). Public transport service franchises would be introduced on roads improved by the project. On the institutional side, the project creates a partner institution (the Lagos Area Metropolitan Transport Authority, LAMATA) and gives it the threshold financial capacity the sector needs, a Transport Fund fed by transfers from the Lagos state, and a share of road user charges. No provision was made to seek street space exclusivity for public transport vehicles, reflecting a sober assessment of what was politically feasible.\textsuperscript{18} The project design is atypical in that investments in one mode (road infrastructure) are used to leverage regulatory changes for another mode (public transport services). This was possible because the client government (Lagos State) has jurisdiction over both modal systems.

\textsuperscript{17} Information for this project was drawn from World Bank (2002c).

\textsuperscript{18} But exclusive bus lanes were investigated to prepare for future activities and planning of the Lagos’ first BRT line is underway.
### Lagos in early 2000s

| **Population:** | 12.8–15 million, growing at 6 percent per annum, expected to double in the next 15 years |
| **City economy:** | GDP per capita US$ 317 (country); GDP growth per capita 1.2 percent; Lagos employs 45 percent of the skilled manpower nationally. |
| **Poverty:** | Estimated at 9.6 million people in Lagos; deeper and more severe than in the country as a whole; mostly self-employed in street trading and unskilled tasks in the informal sector. |
| **Urban government:** | 18 local governments (21 in the Lagos State), each with public works departments, some with Traffic Management Units (TMUs); transport matters handled by Lagos State Ministry of Transport. |
| **Motorization:** | Boomed in 1970-80s, then decayed; vehicle fleet aged and poorly maintained. |
| **Transport system:** | Road-based, with an entry-level development of primary (limited-access) roads; the rest of the network not differentiated functionally, and poorly connected to primary roads; overall low road density (0.4 kilometer per 1000 population); many areas poorly served by roads; road space used for trade; unregulated on-street parking; **Public transport:** public-owned operator defunct; informal, small-scale private operators dominant: they run 75,000 vehicles, mostly minibuses (role increasing), medium-size buses (role diminishing), and passenger-carrying motorcycles (okadas); mixed-traffic operation with poor stop and terminal facilities; fares set by government; profit margins low. |
| **Modal split:** | Public transport share of motorized trips cca 77 percent |
| **Traveler problems:** | Poor and poorly protected street space for non-motorized travel; highest accident rate in the world; low-quality and unsafe UPT services; transport (fares) amount to 20 percent of budget for poor households; congestion; air/noise pollution and oil dumping; transport infrastructure and services considered a major constraint to the city’s productivity. |
| **Underlying problems:** | Fragmentation and weakness of institutions; area revenue from road user fees accounts for merely 13 percent of area spending (mostly for roads); major revenue source (fuel tax) in federal hands. |
| **Government strategy:** | (i) build transport institutions on state level; (ii) increase cost recovery (for roads); (iii) promotion of affordable UPT services; (iv) action on protection of environment; (v) create business environment conducive to private provision of services; (vi) making best use of available capacity. |
### Lagos Urban Transport Project (P074963)

| **Borrower:** | Federal Republic of Nigeria |
| **Implementing agency:** | Lagos Metropolitan Area Transport Authority (LAMATA) |
| **Appraisal Report date:** | October 25, 2002 |
| **Loan type and credit amount:** | Specific investment project, US$ 100 million |
| **Project cost estimate:** | US$ 135 million |
| **Bank project objectives:** | (i) improved and sustained institutional capacity to manage the UT system; (ii) increased efficiency of the public transport network, mapped into better services (see indicators); and (iii) poverty reduction. |
| **Institutional components:** | (i) establish LAMATA with regulatory, planning and expenditure powers over 600 kilometer road network and public transport services; (ii) establish Transport Fund, to finance LAMATA’s administrative and road expenditures; (ii) traffic management units in all key local governments, with enhanced links to and performance by the traffic police; (iv) multi-modal transport master plan for the urban area; (v) studies for further institutional restructuring; (vi) studies concerning the introduction of rapid transit modes. |
| **Policy components:** | (i) LAMATA funding from a combination of state government transfers and share of revenue from road user charges; (ii) new regulatory framework for street-bus public transport services, based on franchises, with incentives to improve quality, including some minor on-street privileges; (iii) some NMT-oriented improvements; (iv) building information & awareness base for subsequent environmental action. |
| **Main investment components:** | (i) maintenance and rehabilitation (including TM measures) of 400 kilometer of the road network, amounting to 63 percent of main roads, carrying core bus services (costing US$ 98.5 million); (ii) bus services enhancements (US$ 0.73 million); (iii) capacity building (US$ 27.6 million). |
| **Major indicators:** | reduction of accidents; reduction of time and money costs spent for travel by low-income households; percent of bus operations governed by the new regulatory framework; employment creation (through road construction); reduction of accidents; setting up of LAMATA and TMUs; proportion of LAMATA budget coming from the federal level. |
Case 5: Wuhan Urban Transport Project

The city of Wuhan is an economic success story, growing faster than average in China, against a background of moderate (controlled) population growth and low poverty level. When the project was put together, car-based motorization was at a low level and accounted for mere 12 percent of daily trips. Bikes and walking retained dominance, but the road network was so poorly developed that even at this level of car use the street congestion was judged severe. The city government pursued the usual route of major road construction, made plans for numerous metro lines and was leaning towards involving private operators for street-based bus services.

The Wuhan project pursued an integrated approach to transport planning, by trying to water-down the vehicle-first inclination of the city government, in favor of a more traditional orientation towards walking, biking and public transport services. The project is notable for the number of diverse elements it included, but it avoids falling into a Christmas-tree category because of a conscious balance between policy/institutional aspects on one hand and investments on the other. Given the large size of the loan (and total project cost), the non-investment agenda is considerable. The key feature in the policy dimension is public transport deregulation, coupled with the establishment of a bus route tendering agency (a budding public transport authority). Beyond this agency, innovation on the institutional side is mainly in terms of instruments, e.g. transport strategy study expected to pioneer a new approach to investment planning, preparatory studies for vehicle emissions control, and new a road management (maintenance) system. Investments are heavily focused on roads (network development, road maintenance), followed by traffic management and smaller, but non-trivial amounts for public transport and environmental regulation. The stress on walking and non-motorized modes -clear in project objectives- is not explicit in the description of project elements, but is likely to be contained in design details of both road and traffic management components.

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19 This case is based on World Bank, 2004a.
20 $24m loan amount reserved for traffic management would be considered enough for a solid, free-standing traffic management project in most regions.
City of Wuhan (Hubei)

| **Population:** | 3.9 million in 1998, projected to increase to 4.5 million in 2020 (still based on the Hukou system for restraining rural-to-urban migration). |
| **City economy:** | Growing much faster than the national average, expected to continue at 7–9 percent per annum. |
| **Poverty:** | Estimated at 5 percent, excluding "visiting population." |
| **Urban government:** | Municipality of Wuhan responsible for all aspects of urban transport; minor roles of provincial and state governments. |
| **Motorization:** | Car ownership increased from 56 cars/1,000 people in 1998 to 99 per 1,000 in 2001 and to 167/1,000 in 2020. |
| **Transport system at project conception stage:** | Road network poorly developed with a few arterial roads and key road links missing; public transport services based on street buses operated by an umbrella organization of 7 poorly-equipped, state-owned companies (6 using buses and 1 using t-buses) and one a public/private joint venture; fares cover 90 percent of direct operating costs; poor or missing physical infrastructure (terminals, garages). |
| **Modal split:** | 37 percent walk, 29 percent bicycles, 22 percent buses, 12 percent motor vehicles (cars and motorcycles). |
| **Problems:** | Increase in motor vehicle traffic is overwhelming Wuhan’s road system and mobility in trips per person is declining; both traffic management and road maintenance (by public agencies) efforts are weak and weakly funded; pedestrians and bicyclists increasingly endangered; transport funding not assured; land use and transport planning proceed independent of each other; air pollution still not serious except on arterial roads (lead-free fuel introduced in 1998; national emission standards enforced through testing since 2000). |
| **Government strategy:** | Ambitious road construction program plus 6 planned metro lines; openings towards private sector involvement in the provision of PT services. |
### Wuhan Urban Transport Project (P069852)

**Borrower:** People’s Republic of China, on-lending to Hubei Provincial gov’t, on-lending to Wuhan MG, on-lent to Wuhan Municipal Capital Investment Management Office (WMCIMO).

**Implementing agency:** Wuhan Municipal Government through WMCIMO, this last to set up a Wuhan UTP Office (project unit); plus several sub-implementing agencies for different components, e.g. Traffic Police for the TM component; a consultative Wuhan UTP Leading Group to provide overall guidance.

**Appraisal report date:** February 12, 2004

**Loan type and amount:** Specific investment loan, US$ 200 million (US$ 132.3 million for road network development; US$ 20 million for road maintenance; US$ 24 million for traffic management; US$ 11.1 million for public transport; US$ 3.4 million for environmental management; and US$ 7.2 million for studies, training and technical assistance. Counterpart funds will require 2/3 of the city’s total capital budget in first two years.

**Project cost estimate:** US$ 598.2 million

**Objectives:** Promote the development of an integrated, efficient, and sustainable transport system in Wuhan, with emphasis on mobility of low-income people (indirectly by improving performance for walking, biking and PT).

**Policy components:** Formulation of transport strategy, incl. transport policy white paper and a 5-year investment program, then use of strategy as a vehicle for integrated approach to the change agenda; new investment planning approaches; separation of PT operations from regulatory role; introduction of bus route tendering on competitive basis; fare/subsidy policy; preparation/adoption of vehicle emission control strategy; introduction of a Road Maintenance Management System.

**Institutional components:** Establishment of a bus route tendering agency.

**Investments:** Road improvements on through- and cross-town traffic routes; improvements on bridges; central area roads and traffic improvement program; new roads in development areas; and pedestrian improvements; road maintenance equipment; upgrading pollution measurement, vehicle inspection and maintenance systems.
Case 6: Colombia - Integrated Mass Transit Systems Project

This project is the latest in a sequence of Bank-funded operations in support of a remarkable evolution of urban transport matters in Colombia, and is a showcase of the Bank’s strategy. In the 1990s, Colombia experienced accelerated urbanization, fed in part by people from the countryside and smaller cities escaping to a few larger cities to avoid ravages of the long-lasting civil war. This also meant a shift of poverty to cities. Most migrants settled in peri-urban barrios, needing long commutes to centrally located jobs. Three quarters of daily trips in large cities used public transport services (and still do). These were provided by private operators with route licenses and fare ceilings, apparently with slim profit margins. This led to an oversupply of aged, high-polluting buses and mini-buses, competing on-street for passengers. By the mid-1990s, streets of Bogota and other cities were congested, polluted and had a high frequency of accidents involving buses. The on-going process of decentralization removed the national government as an active participant in urban transport matters, while local governments lacked both institutions and funds to do this on their own. Common responses included building roads and planning metros. After a very disappointing cost and traffic experience with the Medellin metro, and accepting that a metro in Bogota was unaffordable, a corner was turned in the mid-1990s when the city of Bogota started to construct the first corridor of a bus rapid transit network that would become the Transmilenio, the most successful such project since that in Curitiba many years earlier.

The main development objective of this project, on the demand side, is to improve the performance of the transport system for the majority of the population, 70 percent of which have low-incomes. The essence of the policy reform, whose middle phase is supported by this third-in-line Bank-funded project, is to turn an inferior, weakly regulated public transport system into one based on concessions, moving trunk lines from mixed traffic city streets onto an exclusive running way, re-organizing the street-based public transport route network into a system of feeders and distributors, developing interchanges and terminals, and introducing an integrated fare system. As in preceding projects, vehicle specifications are for articulated, high-capacity and low-emission buses. The main investment “twin” of these reforms is the exclusive busway infrastructure. Busways are constructed on city streets, reducing the space remaining to other traffic in major corridors. In addition to busways and associated structures, the project finances paving of feeder/distributor streets in barrios, road paving of lanes adjacent to the busway, and other street improvements reclaiming the city for non-motorized transport. Infrastructure is provided from public funds, and transport services are provided privately, without subsidies. While the first project in the sequence (Bogota Urban Transport project, 1996) was limited to the capital city, the current project is expanding to other large and medium-size cities (Cartagena, Pereira and others). Its loan size is modest (US$ 250 million, but an additional loan of US$ 207 million is being processed at the time of this writing, signifying the success of the initial stage of the project. In total costs terms, the program is approaching billion dollars, and even more if parallel projects funded by other multilateral banks are included.

On the institutional side, each participating city would create a Bus Rapid Transit System agency to carry out the requisite regulatory functions. Importantly, the national government is re-engaging in the sector through an increasingly ambitious and refined National Urban Transport Program. The Program will finance up to 70 percent of infrastructure cost, drawing on funds generated by a fuel tax surcharge, and will also provide technical assistance to cities. The Bank’s project will fund technical assistance for institution building on both city and national level.

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21 The source of data for this project is World Bank (2004b)
22 The project will in fact finance the national contribution to cities other than Bogota.
### Bogota and medium-size cities

| Population: | Bogota 6.6 million; Cartagena 0.7 million; Pereira 0.5 million; the country is 75 percent urbanized. |
| City economy: | Recession in the late 1990s, followed by recovery; fiscal situation still tight, locally and nationally. |
| Poverty: | Two-thirds of population under poverty line live in cities, due in part to 2.5m people moving there to escape the civil war |
| Urban government: | Municipal governments with powers increased during decentralization implemented in 1990s, still working on securing adequate local finance. Central government re-involving itself with urban issues, given cities’ role in economic growth. |
| Motorization: | 25 percent of household own cars. |
| Transport system at project conception stage: | Road network. |
| Modal split: | Public transport carries 75 percent of all trips; 14 percent commute by car. |
| Transport problems: | Street congestion (peak period speeds less than 10 km/h) and poor public transport services, the latter due to a weakly regulated system of licensed bus operators with in-market competition for passengers ("penny war"); oversupply (50 percent) of both mini and standard-size buses and dangerous driving practices contribute to congestion, accidents and pollution. Poor families spend about 25 percent of their income on public transport, generating a massive political problem. Peri-urban areas especially affected. Institutional capacity to deal with urban transport problems still weak at both city and national level. |
| Government strategy: | Prior strategy consisted of building roads to accommodate traffic growth and planning metro systems. Following several attempts to build a metro system in Bogota, and learning from a problem-laden metro project in Medellin, City of Bogota opted for a bus rapid transit concept, with public-owned infrastructure and privately provided, profit making services based on for-market competitive tendering. The initial success of the first phase led to its expansion (under the now-famous name of Transmilenio) in Bogota and replication of the concept in other cities. In the early 2000’s the Government of Colombia adopted a National Urban Transport Program (NUTP) featuring annual fund transfers to major cities, on regular basis through 2016, to help them finance of infrastructure investments (up to 70 percent share) and provide technical assistance. A total of US$ 1.6 billion is envisaged, drawn from a surtax on gasoline. |
Integrated Mass Transit Systems Project (P082466)

**Borrower:** Republic of Colombia (National Urban Transport Program)

**Implementing agency:** National Planning Department (secretariat of the Technical Committee of the National Urban Transport Program) and Ministry of Transport; at city level, Bus Rapid Transit System agencies and/or specialized municipal agencies.

**Appraisal Report date:** May 14, 2004

**Loan type and amount:** Specific investment loan, US$ 250 million (additional US$ 207 million sought in 2007) to finance the national government participation, except direct finance of the Bogota component.

**Appraisal document date:** May 14, 2004

**Project cost estimate:** US$ 464 million

**Complementary operations:** The project is the third in a series commenced by Bogota Urban Transport Project (Loan 4021-CO, 1996-2001); Bogota Urban Services Project (Loan 7162-CO, 2003, ongoing); Regulatory Reform technical Assistance Project (Loan 4138-CO). Parallel loans by Inter-American Development Bank (Cali) and Andean Finance Corporation (Suba corridor in Bogota).

**Objectives:** Improve performance (travel times, safety, fare levels, emissions) of the transport system for 75 percent of travelers and in particular increasing access for low-income populations from peri-urban areas and disabled travelers; and enhance the participation of the private sector; continuing involvement in Bogota and expanding to medium-size cities; build-up institutional capacity at national level within the national Urban Transport Program framework. Initially cities of Bogota, Cartagena, Pereira; in a later phase: Medellin, Barranquilla, Bucaramanga and Soacha.

**Policy components:** Introduction/enhancement of the concession system for public transport services based on competitively awarded contracts between municipalities and private operators for both trunk line and feeder-distributor services, using high-capacity, low-polluting buses, with integrated system of fares set by public authorities; reforms include route reorganization and programs to scrap/replace aged bus vehicles owned by current operators, and re-integration of displaced operators.

**Institutional components:** Creation of public transport regulatory agencies in participating cities; signing of agreements between the National Urban Transport program and each participating city.

**Investments:** Expansion of the Transmilienio in Bogota by 15 kilometer plus improvements on parallel roads (barrio feeder roads improved under Bogota Urban Services Project); 57 kilometer of bus rapid transit corridors in participating cities, including stations and terminals; and improvements on parallel roads and in feeder areas.
Case 7: Santiago Urban Transport

This complex, risky project was prepared in the socio-economic context diametrically opposite to that of Budapest and Rio, and similar to that of Bogota. Chile is one of the world’s most deregulated economies, with years of sustained growth, but with increasing income inequality. Paradoxically, it is the state that is the major player on the urban transport scene. Santiago is widely known for its for-profit, free-wheeling private street-bus services and its publicly-owned metro. Bus service deregulation had been done as a matter of deliberate national policy, not because of absence of policy as was the case in Lagos. No capital or operating subsidies to bus operators are involved. The metro is one of the few in the world where fare revenues cover more than direct operating costs, a feat made possible by a combination of efficient operations management, high quality of service, and passengers belonging to middle class. Transport planning, traffic management and regulatory capacity in Santiago are second to none in the world, though fragmented due to the small size of the Santiago Municipality relative to the metropolitan area. The impetus for reform comes from a realization that street-bus deregulation did not result in good service quality, nor did fares come down. Moreover, the deregulated market produced unacceptable side impacts in terms of congestion, accidents and air quality.

In the history of World Bank’s involvement with urban transport, this project is the first development policy loan. The strategy behind the project design is to re-regulate local bus services moving to a “for-market” competitive model with the following elements:

- a metropolitan area-wide hierarchical trunk-feeder service pattern
- an over-all industry organizational arrangement featuring separate trunk and feeder service companies with an independent fare collection and revenue allocation company
- tighter public sector service and environmental requirements and regulation;
- a new, cleaner bus fleet;
- on-street exclusive transitways for the trunk bus line network
- all IC (smart card) fare collection

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23 The source of data for this project is World Bank (2005)
24 The national government is de facto metropolitan area government.
### Santiago de Chile in the mid-2000s

<table>
<thead>
<tr>
<th><strong>Population and population growth:</strong></th>
<th>Population is 5.3 million, close to 40 percent of the country. It grew by 28 percent between 1991 and 2001, with decreasing densities and increasing spatial extent. The growth rate is now modest at 1.4 percent per annum.</th>
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</thead>
<tbody>
<tr>
<td><strong>Economics:</strong></td>
<td>Sustained economic growth in the country to which Santiago contributes 47 percent. Sharp income inequalities, with corresponding spatial patterns.</td>
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<tr>
<td><strong>Urban government:</strong></td>
<td>34 municipalities without a strong overall government.</td>
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<tr>
<td><strong>Motorization:</strong></td>
<td>The motorization rate in 2001 was high at 560 cars per 1,000 population, up from 320 in 1977). Trips by car increased 223 percent between 1991 and 2001.</td>
</tr>
<tr>
<td><strong>Transport system at project conception stage:</strong></td>
<td>Santiago is served by an extensive road system, a 40 kilometer, public-owned metro, and 7,700 privately owned and operated buses. The metro serving 0.75 million passengers a day provided a high quality of service and covered its operating costs from fare revenue. Bus services run on city streets (without priority) and carry 4.5 million trips a day. 77 percent of services are franchises based on competitive awards (and further sub-contracting to small operators), the rest being essentially free-entry, with considerable route overlap. Bus services receive no subsidies.</td>
</tr>
<tr>
<td><strong>Modal split:</strong></td>
<td>Public transport is in decline, carrying 52 percent of motorized trips, or less (down from 83 percent in 1977 and 69 percent in 1991).</td>
</tr>
<tr>
<td><strong>Transport problems:</strong></td>
<td>Pervasive traffic congestion on all arterial roads. Oversupply of bus and taxi services, with low quality of service, high noise/pollution and poor safety (one death every three days involving PT passengers). In spite of competition, fares did not decline and pose affordability problems to low-income travelers, especially those who need to transfer. High-quality components of the public transport system too limited in size, and not well connected to the rest of the system. Constrained access of low-income communities to jobs and other opportunities, especially for passengers not having simple radial itineraries. Fine particulates concentrations are twice European norms. Buses responsible for 50 percent of all transport-generated emissions.</td>
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</table>
| **Transport strategy*:** | The approach is to lift the quality of service for both car and public transport users, with major improvements in air quality, and to improve the institutional setup and processes. The program involves: (i) the development of a 300 kilometer system of segregated busways and corresponding facilities, over 15 years, taking space from major urban arteries; busways to be constructed using a combination of private and public funding, and managed based on concessions; (ii) construction of new metro lines to double the current length (public investment); (iii) the construction of seven new toll roads, with combined private/public funding; (iv) functional unification of metro and bus trunk routes, and bus-based feeder/distributor networks into a public transport system; (v) new service standards, many ensuring fair treatment of vulnerable populations; (vi) new public transport emission standards, enforcement and monitoring; (vii) re-regulation of the public transport (bus) sector, use of gross-cost contracting with some demand risk, aiming for better services, larger and lower-emission vehicles; (viii) concessions for revenue collection management; (ix) fare integration using IC or “smart” cards, revenue sharing; (x) financial self-sufficiency of the system, including safety mechanisms to ensure gap coverage; (xi) mechanisms...
for coordination of transport and land use development; (xii) increased citizen participation in system management and planning; and (xiii) creation of an umbrella, multi-modal urban transport authority for the metropolitan area. The investment program includes US$ 1.6 billion for the metro extension (public investment), US$1.8bn for toll roads (mostly private investment) and US$ 900 million for busway infrastructure and the remaining public transport improvements; of this last item, US$ 103 million will be public investment, the rest private.

*The Transantiago plan as presented (excluding toll roads) was developed by Santiago’s transport planners and endorsed by the Committee of Ministers on Urban Transport for Santiago. Only some of propositions were formally adopted and budgeted for by the Government. Notably, the scope of item (i) beyond the first 20 kilometer, and items (x) and (xii) are considered “stretch” categories.

<table>
<thead>
<tr>
<th>Programmatic Development Policy Loan for Santiago de Chile (P082412)</th>
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<tbody>
<tr>
<td><strong>Borrower:</strong> Republic of Chile</td>
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<tr>
<td><strong>Implementing agency:</strong> Ministry of Finance</td>
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<tr>
<td><strong>Program Document date:</strong> May 11, 2005</td>
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<tr>
<td><strong>Project type and loan amount:</strong> A set of two Programmatic Development Policy Loans (DPL): DPL-1: US$ 30.16 million; DPL-2: US$ 100 million (cancelled after approval).</td>
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<tr>
<td><strong>Project cost estimate:</strong> Not applicable</td>
</tr>
<tr>
<td><strong>Complimentary operations:</strong> GEF-funded, US$ 7 million technical assistance grant, approved in 2003; and a Bank-funded US$ 4.8 million technical assistance loan (approved 2005). The national government is again the borrower, whereas Ministry of Construction is the implementing agency.</td>
</tr>
<tr>
<td><strong>Objectives:</strong> (i) raising the quality of urban public transport services for bus system passengers; (ii) improving air quality; (iii) strengthening regulatory institutions for public transport services; (iv) refining the allocation of risk between private and public sectors, while maintaining full cost recovery. The background objectives of the Government of Chile are to increase the (global) competitiveness of the capital, reduce environmental deterioration, and improve equity.</td>
</tr>
<tr>
<td><strong>Policy components:</strong> (i) permanent dedication of at-grade street space on major corridors for trunk bus route operation (a total length of 20 kilometer); (ii) regulatory reform of the bus-based public transport operations, based on for-market competition, involving gross-cost contracts, larger size contractors, and higher-comfort, low-emission buses; (iii) setting up a concession system for revenue administration; (iv) overhaul of the bus-based route network into a system of trunk and feeder/distributor lines, integrated with the metro network; (v) fare association (eliminating multiple payments of fares). Triggers for the first loan include awards of 14 main service concessions and award of the revenue administration concession. Implementation of the restructured service network and the integrated fare system will trigger the second loan.</td>
</tr>
<tr>
<td><strong>Institutional components:</strong> Setting up a Public Transport Regulatory Authority</td>
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<tr>
<td><strong>Investments:</strong> Not applicable for policy loans</td>
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</table>
Case 8: Hanoi Urban Transport Development Project

This project represents a fusion of ideas present in Bank-funded projects in China and various Latin-American countries, while also being pioneering in its own way. Hanoi’s demographic and spatial increases take place against the backdrop of a vibrant, growing urban economy. The pressure on the performance of the transport system for travelers and shippers comes from motorcycle-led motorization, with a residual but still strong presence of once-dominant bicycles. A low-profile, government-owned transport operator, carrying only 8 percent of the market, competes with two-wheelers for the same street space.

The project design aims to increase modal share of public transport modes relative to motorcycles. It incorporates a two-corridor BRT program which will bring high-quality, concession-based public transport services. Exclusive busways (financed by the loan) will be constructed at grade, on road space taken from general traffic. Just like in Wuhan, Santiago, Rio, Lagos and Budapest, the project aims to create a multi-modal, integrated Urban Public Transport Authority. In addition, road investment is conceived as a vehicle to increase equity, through geographic extent and public transport supportive design features. Uniquely in the Bank’s urban transport lending, road investments in this project will be used to guide land development. In all, the project has a close fit with the Bank’s global urban transport strategy as presented in this Paper.
### Hanoi, Vietnam in 2000s

<table>
<thead>
<tr>
<th><strong>Population:</strong></th>
<th>3.2 million people and growing at about 3 percent; projected to double by 2020, much of it fueled by urban migration. High density settlement (272 per hectare, 404 in the central area), with recent wave of lower density developments at the periphery, including both industry and residential land uses.</th>
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<tbody>
<tr>
<td><strong>City economy:</strong></td>
<td>National economy has grown steadily at 6 percent per annum since 2000. National per capita income US$ 635 in 2005. Hanoi’s economy is currently growing at 10 percent per annum; it produces 8.4 percent of national GDP (2005 data).</td>
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<tr>
<td><strong>Poverty:</strong></td>
<td>Falling in line with economic growth, from 37 percent in 1998 to 20 percent in 2004.</td>
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<td><strong>Urban government:</strong></td>
<td>Hanoi People’s Committee (equivalent to a city council).</td>
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<td><strong>Motorization:</strong></td>
<td>Increasing, led by motorcycles, of which there are 1.5 million, compared to 0.15 million cars; the latter are increasing at 10 percent per annum, many vehicles are business-owned; per capita incomes are rising so fast that car ownership is expected to take off in 2010.</td>
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<td><strong>Transport system at project conception stage:</strong></td>
<td>The road network quite constrained, being less than 7 percent of the area; primary roads not well developed. Buses are operated in mixed traffic by a single government-owned company, a monopoly until 2005; now two private operators won gross-cost contracts on six routes.</td>
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<td><strong>Modal split:</strong></td>
<td>Non-walk trips have doubled over 10 years, reaching 6.5 million in 2005. Motorcycles carry 60 percent of trips; bicycles carry 24.4 percent; buses carry only 8 percent; and cars/trucks carry 4.5 percent.</td>
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<td><strong>Problems:</strong></td>
<td>Congestion on arterial roads, high accident rates;</td>
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<td><strong>Government strategy:</strong></td>
<td>Would like to increase public transport mode share to 25 percent now and 50 percent by 2015, through a combination of bus system improvements and new rail-based rapid transit lines. Bus company improvements already implemented, including 700 new vehicles, restructured routes and schedules, system-fares, and higher punctuality have already led to a major jump in patronage (from near zero to over 700,000 per day, in just 5 years), but with unsustainable subsidies and difficult on-street operating environment. Introduction of private operators will be followed by providing incentives for a higher involvement of the private sector as investor and operator.</td>
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<td><strong>Prior Bank involvement:</strong></td>
<td>Urban Transport Improvement Project, financed by a credit of about US$40m, focusing on traffic management investments and institutions in Hanoi and Ho Chí Minh City.</td>
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<td><strong>Hanoi Urban Transport Project (P083581)</strong></td>
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<td><strong>Borrower:</strong></td>
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<td>The Republic of Vietnam, on-lent to the City of Hanoi</td>
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<td><strong>Implementing agency:</strong></td>
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<td>Hanoi People’s Committee through a Project Management Unit located in Hanoi Transport and Urban Public Works Service.</td>
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<td><strong>Appraisal Report date:</strong></td>
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<td>May 17, 2007</td>
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<td><strong>Loan type and credit amount:</strong></td>
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<tr>
<td>Specific investment operation, financed by a credit of about US$ 155 million.</td>
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<td><strong>Project cost estimate:</strong></td>
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<td>US$ 305 million: US$ 100 million for the BRT component; US$ 194 million for road improvements; US$ 10.5 million for institutional improvements.</td>
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<td><strong>Complementary operation:</strong></td>
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<tr>
<td>Hanoi Urban Transport Development Project GEF component (P085393) with a US$ 9.8 million grant.</td>
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<td><strong>Objectives:</strong></td>
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<td>(i) achieve a major “jump” in service levels of the public transport system through dedication of on-street area to its exclusive use; (ii) improve the lot of non-motorized travelers; (iii) promote urban growth patterns and infrastructure design standards compatible with good transport system performance; (iv) strengthen the city’s capacity to manage, regulate and plan public transport; (v) promote a shift to environmentally sustainable transport modes and urban development patterns (GEF project objective).</td>
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<td><strong>Policy components:</strong></td>
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<td>BRT operations to be awarded through competitive tendering.</td>
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<td><strong>Institutional components:</strong></td>
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<tr>
<td>Establishment of a Public Transport (Regulatory) Authority.</td>
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<td><strong>Investments:</strong></td>
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<td>(i) 24.5 kilometer long Bus Rapid Transit (BRT) line in two corridors, with supporting facilities and special amenities for non-motorized modes near stations; (ii) section of a Second Ring Road, 7 kilometer long, in urban expansion area, with resettlement housing site for households displaced by the road construction; (iii) institutional investments for air quality management, traffic management, the setting up of a new Public Transport Authority, and transport planning activities.</td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


