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The Fundamental Paradox of Urban Transport Strategy

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ABSTRACT

Urban transport can contribute to poverty reduction both indirectly, through its impact on the city economy and hence on economic growth, and directly, through its impact on the daily needs of poor people. However, urban transport exhibits a fundamental paradox. How can a sector with such an obvious excess of demand over supply and with such a heavy involvement of private suppliers of service fail so completely to meet the aspirations of both politicians and citizens? Why has it not been possible to mobilize commercial initiative to yield the kind of revolution in service quality and cost that has been achieved in the telecommunications, water, and energy sectors? Finally, why does increasing affluence seem to have the effect of reducing the quality of travel, at least for poor people?

Keywords:— *Urban Transport, Non Motorized Transport (NMT), De-Concentration, Motorization, Public Passenger Transport (PPT), Mass Transit.*

I. INTRODUCTIONS

Urban growth increases transport costs. From the viewpoint of efficiency and growth, it is not too difficult to characterize the central problem. Economies of agglomeration generate the growth of cities. As cities grow and become richer, vehicle ownership and use grow more rapidly than the available road space, resulting in increased congestion and traffic-generated air pollution. Urban growth often has perverse distributional effects. As cities expand, the price of more accessible land increases. Poor people are forced to live on less-expensive land, either in inner-city slums or on city peripheries. As average incomes grow and car ownership increases, the patronage, financial viability, and eventually quality and quantity of public transport diminishes. Motorization, which is permitted by the growth process, may thus also make some poor people even poorer. In particular, in the absence of efficient congestion pricing for road use, piecemeal investment to eliminate bottlenecks will almost certainly benefit the relatively wealthy at the

expense of the poor. This paper proposed an eclectic strategy for four main ways to address these problems.

(a) Structural change (b) Improved operational efficiency of the transport modes (c) Better focusing of interventions to assist the poor, and (d) Policy and Institutional reform.

II. Structural Change

De- concentration has a limited role to play. The most fundamental structural response is to try to shift activity away from megacities, concentrating new development in medium-size cities. Unfortunately, it is not clear at what city size the economies of agglomeration run out or how a policy of de- concentration can be effectively implemented. Nevertheless, central governments can encourage the development of smaller regional hubs by eliminating fiscal and public expenditure distortions, including elimination of price distortions in land and transport markets, such as the under pricing of congested road space and the absence of full-cost connection charges and impact fees for land development. They can also lead by the location of their own activities.

Improved structure within cities can contribute greatly. A less-radical approach emphasizes coordination of land use and transport infrastructure and service planning, to ensure provision of adequate and well-structured road space as the city grows. This requires improved development control skills and practices at the city level. Critics of this approach argue that such an emphasis on road capacity fosters a level of motorization that will create dependence on the automobile, and will eventually overtake space availability. In any case, it is unlikely to be socially or environmentally acceptable to balance supply and demand solely by increasing road capacity in larger cities.

Good road infrastructure does not necessarily mean total auto dependence. Indeed, it is the combination of land-use and transport planning that has made it possible for some cities to reconcile high mobility with high quality of urban life. In order to achieve that reconciliation, traffic has been restrained (as in Singapore, by road pricing) and has been managed to maintain safe, efficient, and environmentally acceptable movement of people, not just of vehicles. This implies prioritization of infrastructure to protect movements of public transport and NMT against unrestricted expansion of private motorized trips (as in Bogotá, Colombia, and Curitiba, Brazil, through busway systems). In these more constrained circumstances, rigorous appraisal of investments in road capacity needs to take into account (a) the effects of induced traffic on benefits; (b) the benefits to, and disbenefits of, NMT; and (c) the environmental impacts.

III. Improving the Operational Efficiency of Transport

To improve the efficiency of transport, the needs of each mode must be addressed - the road system, NMT, public passenger transport, and mass transit. In addition, the role of the private sector as a means of promoting efficiency deserves special attention.

The Road System

Even in highly congested cities, urban road transport efficiency can be improved through better system management. Although rapid development of technology has reduced the cost- as well as the maintenance and operational skill requirements - of modern traffic

management techniques, many cities are still too poorly organized and inadequately staffed to make effective use of this development. Both technical assistance and investment are capable of yielding high returns in this field, as long as fundamental institutional and human resource problems are addressed.

Urban road decay is a serious problem in many countries. Road decay contributes to congestion and increasing operating costs. It often arises from jurisdictional conflicts - such as conflicts, over which authority is responsible for which roads, lack of clear ownership of neighborhood roads, or inadequate allocation for urban roads from the national road funds through which road funding is channeled.

Nonmotorized Transport:

NMT is systematically under recognized. Walking still accounts for the largest proportion of trips taken, although not of distance traveled, in most low- and middle-income countries. All income groups are involved. Despite this fact the welfare of pedestrians, and particularly the welfare of mobility-impaired pedestrians, is frequently sacrificed in planning to increase the speed of the flow of vehicles. Cycling is similarly disadvantaged. Without a continuous network of secure infrastructure, people will not risk bicycle travel. Without users, investment in infrastructure for cycling may appear wasteful.

A comprehensive vision and action plan for NMT is required. In the planning and management of infrastructure, the excessive emphasis on motorized transport may be redressed by (a) clear provision for the rights as well as responsibilities of pedestrians and bicyclists in traffic law; (b) formulation of a national strategy for NMT as a facilitating framework for local plans; (c) explicit formulation of a local plan for NMT as part of the planning procedures of municipal authorities; (d) provision of separate infrastructure where appropriate (such as for safe movement and secure parking of vehicles); and (e) incorporation of standards of provision for bicyclists and pedestrians in new road infrastructure design. Incorporation of responsibilities for provision for NMT should also be included in road fund statutes and procedures.

Traffic management should be focused on improving the movement of people rather than on improving the movement of motorized vehicles. In order to achieve that goal, police need to be trained to enforce the rights of NMT in traffic priorities as well as in recording and preventing accidents. Furthermore, the development in poor countries of small-scale credit mechanisms to finance bicycles, credit mechanisms that are increasingly successful in rural areas, might also be developed in urban areas.

Public Passenger Transport

Public transport is for all. Concentrating on the transport modes of poor people in middle-income countries essentially means the provision of affordable forms of public transport, both formal and informal. But it should not be viewed as only for the poor, as the importance of public transport to all income groups in many rich European cities demonstrates. Improving efficiency in public transport must be concerned not only with keeping costs down but also with providing a flexible framework within which the less poor as well as the very poor can use public transport with confidence and comfort.

Most urban public transport is road based. Bus lanes and automatic priority at intersections can improve public transport performance significantly, but these

solutions tend to suffer from inadequate enforcement by police, who are untrained in traffic planning and management. In contrast, exclusive bus ways in developing countries have proved to be capable, except in very high traffic volume corridors, of performance nearly equivalent to rail-based systems but at much lower cost.

Pricing and financing issues are at the heart of public transport problems. Formal bus operations face financial collapse in many countries, partly as an unintended consequence of goodhearted but wrong-headed fare and service controls. Some prescriptions can easily be made to forestall this. General fare controls should be determined as part of a comprehensive city transport financing plan, and their effect on the expected quality and quantity of service carefully considered. Fare reductions or exemptions should be financed on the budget of the relevant line agency responsible for the categories (health, social sector, education, interior, and so on) of the affected person. Modally integrated fare schemes should be assessed for their impacts on poor people. It is in the interests of poor people for sustainable financing and efficient targeting of public transport subsidies to be paramount.

There is a rich agenda of urban public transport policies that is both pro-growth and pro poor. The recent decline in both the quality and quantity of public transport has resulted partly from the absence or disappearance of a secure fiscal basis for support. Public transport, however, can be improved in many ways that are consistent with the fiscal capabilities of even the poorest countries. Giving priority to public transport in the use of road space makes public transport faster and more financially viable.

Competition is pro-poor. Supply costs can be reduced through competition between private sector suppliers. In Buenos Aires the urban rail system has been revolutionized through concessioning. Regulated competition in the bus market has also worked well in cities such as Buenos Aires and Santiago—but care is needed in system design. Total deregulation in Lima, although it has increased supply, has worsened road congestion, the urban environment, and user safety and security. The lesson is that it is not privatization or deregulation per se that improves public transport, but rather the introduction of carefully managed competition, in which the role of the public sector as regulator complements that of the private sector as service supplier.

Cities should strive to mobilize the potential of the informal sector. Informally supplied small vehicle paratransit (publicly available passenger transport service that is outside the traditional public transport regulatory system) is often dominant in providing for dispersed trip patterns and in flexibly addressing the demands of poor people, particularly in low-income countries, but it is typically viewed as part of the problem of public transport and not part of the solution. Certainly, anticompetitive or antisocial behavior should be controlled through quality controls and enforcement, but its potential can be better mobilized through legalizing associations and through structuring franchising arrangements to give the small operator an opportunity to participate in competitive processes.

Mass Transit

Rail-based mass transit systems have a role to play in very large cities. Rail-based mass transit systems are less congesting than are road-based systems and can be very important for those who are peripherally located and have long journeys

to access employment in the cities. In Latin America, in particular, rail-based systems carry significant numbers of very poor people. The Bank has financed several major urban rail developments in the past decade, typically in metros and existing suburban railway refurbishment but occasionally in new construction. Often the restructuring of bus services, which eliminates direct competition and can harm the interests of poor bus-users unless skillfully planned, supports the rail-based systems. The position that has been adopted is that such developments must be integrated into a comprehensive urban transport strategy and that arrangements should include physical and fare integration between modes, to ensure that the poor are not excluded from or disadvantaged by the Bank's investments.

Urban rail-based systems should be cautiously appraised. Urban rail-based systems are costly to build and operate, are more expensive for the passenger to use than road-based modes, and can impose a large burden on the city budget. It remains appropriate, therefore, to advise cautious examination of the fiscal sustainability of rail investments and their impact on poor people before making expensive commitments. The most critical lesson the Bank has learned is that mass transit investment decisions should be driven by a thorough examination of strategic objectives of technological alternatives, and financial implications, and not by short -term political or commercial opportunism.

The Role of the Private Sector

Private financing of urban transport infrastructure is possible. Recognizing the burden of investments in major roads and metros on municipal budgets, cities such as Bangkok, Buenos Aires and Kuala Lumpur have already managed to secure private capital finance for them. Experience so far has shown that this requires very high demand for faster movement in the affected corridor and a realistic stance by government on the relationship between price controls and commercial profitability. Experience has also shown opportunistic development on an ad hoc basis to be damaging, and usually costly to the public purse. Mass transit systems, in particular, appear to yield greatest benefit when they are incorporated into a citywide price-level and structure plan in which the full cost of new mass transit investments on the municipal budgets, on fares, and on poor people has been estimated in advance.

Planning and regulatory arrangements for private participation in urban transport are fundamental. The interaction of transport with land use requires its careful integration into the planning of metropolitan structure and finance within a comprehensive long-term plan for the city. The public sector must set a strategy; identify infrastructure projects and describe them in some detail; and confirm the acceptability of environmental consequences, tariffs, and any contingent changes to the existing transport system. It must acquire the necessary land and rights-of-way, ensure development permissions, commit funding, and provide some necessary guarantees. Physical coordination (to achieve convenient modal interchange) and fares coordination (to keep public transport attractive and to protect poor people) need to be embodied in a comprehensive transport strategy plan that recognizes the relationships between modes of transport.

IV. Better Focusing of Interventions to Assist the Poor

There are two possible approaches when designing poverty-targeted transport interventions—directly serving the

locations where poor people live and work, and targeting disadvantaged groups. In addition, institutions must address two issues that have a particular impact on the poor—the polluted urban environment, and safety and security.

Serving the Locations Where Poor People Live and Work

Transport improvements can be focused on where poor people live and work. These improvements may involve concentrated efforts to improve access to slum areas or to improve public transport to peripheral locations. The Bank-supported Pavement Program in Low-Income Areas in Brazil proved highly successful, and was extended throughout the country, as well as to other Latin American countries.

Leakage through land rent changes must be taken into account. Transport investments or service improvements change the structure of land values. If there is strong competition for the use of land and highly concentrated ownership of land, rents increase in improved areas and the benefits of transport improvements accrue to rich landowners rather than to poor land occupants. Some investments—such as improvements in bus or NMT systems—are less likely to drive poor people out to more distant, less-expensive locations than are others—such as primary roads or more highly priced, mass transit systems. This finding further emphasizes the need for transport to be part of a comprehensive urban development strategy.

Targeting Disadvantaged Groups

Transport provision can be part of a social safety net. A complementary approach is to focus on the specific categories of disadvantaged people. Given the overwhelming importance of the ability to access employment, the work journeys of poor people may be a prime target for support. The cost of ensuring that these trips are affordable may be shifted to the employer (as with the "vale-transporte" in Brazil) or the state (as with the commuter subsidy system of South Africa). Although they may be less-than-perfectly targeted (for example, the vale-transporte misses very poor informal workers), may distort residential location incentives, and are inferior to direct income transfers, targeted transport subsidy arrangements may be the best practicable safety net for poor workers.

Low income is not the only form of deprivation. Gender confers some particular disadvantages in terms of diffused trip patterns and timings, as well as particular vulnerability to safety and security problems. Age and infirmity pose rather different problems, calling for sensitive "inclusive" design of physical facilities. Both locational resettlement and occupational redeployment impinge in a particularly harsh way on poor people, requiring adequate safety nets.

Fare controls can do more harm than good. Experience teaches two important lessons about what not to do with respect to fare controls. First, controlling fares in the absence of realistic analysis of, and provision for, the resource needs of that social strategy actually destroys public transport service and may cause serious harm to some poor people. Second, cross-subsidy within public sector monopolies does not eliminate the fundamental resource problem, and instead adds some extra burden of inefficiencies in supply.

Poverty of "Life Quality": Transport and the Urban Environment

Poor people tend also to be the most vulnerable to environmental pollution. The most damaging pollutants are lead,

small suspended particulate matter, and in some cities, ozone. Local air pollution from transport in developing countries contributes to the premature deaths of over 500,000 people per year, and imposes an economic cost of up to 2 percent of gross domestic project (GDP) in many countries. A strategy for improvement of the effects that urban transport has on the environment is thus not a luxury to be afforded at the expense of poor people, but an important element of an urban transport strategy. The Intergovernmental Panel on Climate Change (IPCC) also forecast that developing countries will suffer disproportionate costs of from 5 to 9 percent of their GDP should the global level of carbon dioxide double (IPCC 1996).

Understanding of the environmental impacts of urban transport remains deficient. There are some clear technological priorities. While it is generally preferable to concentrate on performance standards, rather than on specific technology preference, there are also some relatively clear technological priorities for the sector. These include the elimination of lead from gasoline, the replacement of two-stroke motorcycles with four-stroke motorcycles, and the elimination or cleaning up of high-mileage, heavily polluting vehicles. The Bank can help with technical assistance in these fields and, in some cases, with the financing of infrastructure and incentive mechanisms to stimulate change.

There is no quick technological fix for developing countries. Local air quality can be improved in the long run by new fuel and vehicle technologies. In the short run, however, the vehicle stock is dominated by an older generation of technology, which is often badly maintained. In some countries the emphasis on identifying and acting to improve the worst, highest-mileage polluters—often buses, taxis, and some trucks—has helped. Inspection and maintenance programs, if undertaken by technologically efficient instruments in a corruption free context, can have great impacts. At the extreme there are assisted, or forced, scrap page schemes.

Some robust "win-win" environmental strategies exist for the urban transport sector. Good traffic management can reduce environmental impact as well as congestion. Tax structure reform can encourage the use of cleaner fuels and stimulate better vehicle maintenance. This reform, however, requires the design of fiscal measures to handle problems associated with the use of fuels (for example, kerosene, which is used in several sectors), and to handle the associated conflicting policy objectives, such as those associated with the taxation of diesel fuel (see the more detailed discussion in the main text of the report). The integration of transport interventions in general municipal development packages may offer better leverage in this respect than the integration of transport-specific projects.

Safety and Security

Road accidents are a global pandemic. Nearly 0.5 million people die and up to 15 million people are injured in urban road accidents in developing countries each year, at a direct economic cost of between 1 and 2 percent of GDP in many countries. Accidents occur widely on roads between intersections rather than being concentrated at intersections, as is the case in industrialized countries and the majority of victims are poor pedestrians and bicyclists.

Adequate data are the basis for policy formulation and implementation. The first steps to improve traffic safety are the development of national road accident data

collection and analysis capability, and the formation of institutional arrangements to ensure that the data are transmitted to those who need them for policy purposes. Accident frequency and severity can be reduced by improved road design and traffic management policies. While some infrastructure investment is specifically safety oriented (such as infrastructure for NMT in Lima, or grade-separated railway crossings in Buenos Aires), there is a strong case for mandatory safety audits in the design process for all transport infrastructure. Improved medical response can be achieved by some relatively inexpensive and simple institutional innovations. Increasing safety awareness to change traffic patterns and pedestrian behavior requires development and training of staff for specific road-safety coordinating agencies or councils, at both the national and municipal levels.

Personal security is a growing social problem in many countries. While this problem encompasses much more than the transport sector, it is important to analyze the nature and significance of insecurity in the urban transport sector and to devise policy instruments to counter it. That might include collection and analysis of data on personal security in the transport sector to enhance official awareness of the problem, and might include commitment of police authorities to arrest and the courts to appropriately penalize offenders. Strengthening public participation in projects, particularly at the neighborhood level, is important. Some transport policy initiatives can contribute directly to better personal security. For example, street lighting -designed to improve pedestrian security - can be included in street improvement, and particularly in slum-upgrading, projects. Franchise conditions for public transport can give incentives for improved attention to security by public transport operators.

V. Policy and Institutional Reforms

Technical measures alone are unlikely to resolve the fundamental paradox of a sector's combining excess demand with inadequately financed supply. Improvements in the efficiency of roads, vehicles, public transport operations, and traffic management can undoubtedly improve the efficiency of urban transport. This will not be enough, however, because of three structural characteristics that distinguish urban transport from most other urban service sectors. These characteristics are (a) the separation of infrastructure from operations, (b) the separation of interacting modes of transport, and (c) the separation of infrastructure finance from infrastructure pricing. What is required, therefore, is an integrated package of strategies for infrastructure pricing, service pricing, and urban transport system financing, founded in well designed institutions within an appropriate political framework.

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