

Urban Transport Strategy for Cairo: Advice and Dissent

SLOBODAN MITRIC

Greater Cairo, Egypt, in the early 1980s suffered from severe traffic congestion, polluted air, and high accident rates. Its population was growing at the high annual rate of 4 percent, and car ownership was growing at 17 percent, but the great majority of daily trips (63 percent) were by public transport. The road system was only 60 percent paved and consisted mainly of ordinary streets with poor traffic control. Public transport vehicles, operated by Cairo Transport Authority, were the main victims of traffic congestion, in addition to other, internal sources of inefficiency. In response, an unusual urban transport program was initiated at that time, partially financed by the World Bank. It consisted of low-cost measures, for example, improved traffic management, selected road improvements, and greater productivity and cost recovery in public transport. A review of Cairo's experience since the mid-1980s reveals that the actions actually implemented in Cairo went in the opposite direction from the low-cost approach. For example, traffic management measures were minimal; cost recovery and efficiency in public transport, after initial improvements, actually decreased; and parking capacity was increased, but parking management was not. What has been done is a variety of large-scale investments, of which Cairo Metro is the most prominent, but considerable road building has also taken place. Four issues whose resolution would reduce the gap between action and technical advice are identified: the acceptance or otherwise of the inevitability of street traffic congestion in Cairo, the need to diversify travel markets, possible sources of finance for transport improvements, and institutional arrangements and capacity to undertake lower-cost methods.

The principal theme of this paper is the contrast between the strategy recommended in various transport studies for greater Cairo, Egypt, and the actions undertaken by the authorities.

The paper is organized as follows. The next (second) section of the paper summarizes urban transport problems in greater Cairo as diagnosed in the late 1970s and early 1980s through various studies carried out or commissioned by the Egyptian government (EG). The third section reviews the composition of and the experience with various projects undertaken in the 1980s by the EG or the three governorates comprising greater Cairo, or all of these. These include among others, the Cairo Metro, and urban transport elements of the Greater Cairo Urban Development Project (GCUDP) financed in part by the World Bank. The fourth section reviews current urban transport problems, plans, and proposals in this megacity, as reported in recent documents written by local officials and experts. The fifth and final section identifies the differences between the advice given and actions taken and develops a menu of key issues that would need to be discussed and ultimately resolved before significant improvements in urban transport in greater Cairo can be made.

GREATER CAIRO URBAN TRANSPORT PROBLEMS AND PROPOSALS 10 YEARS AGO

In 1981 greater Cairo already had about 8.5 million people—possibly more—and was growing at an alarming rate of 4 percent a year (1). Much of the growth was the result of migration from rural areas where the population increase exceeded the capacity of the local economy to create jobs. The average gross population density was high at 40,000 people per square kilometer reaching 100,000 in some older Cairo districts. Egypt's gross national product was about \$750 per capita, placing Egypt among the better-off of the low-income countries. An economic factor that affected urban transport in a major way was that the distribution of income and wealth left about 30 percent of all urban families under the poverty threshold (defined as \$715/household/year in 1980 terms) (1).

Public transport, including taxis, was by far the major transport mode, carrying 63 percent of all trips and as much as 90 percent in the peak hour (data probably coming out of a 1978 survey). Cars and motorcycles accounted for only 14 percent of all trips, and walking was surprisingly low at 23 percent. Data on car ownership are ambiguous, possibly because it is customary to quote the ratio of cars per 1,000 population, and various sources differ in their use of the denominator. The most consistent source gives 105,000 cars (including taxis) in 1973 (17 vehicles per 1,000 population) and about 400,000 cars in 1983 (43 vehicles per 1,000 population) (M. Daoud, unpublished data). Private car ownership was said to be increasing at 17 percent a year in the early 1980s (1). Travel by car was being stimulated through a fuel price subsidy, local prices at that time being 60 percent of the world price for gasoline, 12 percent for diesel.

Transport problems of Cairo residents included severe congestion (mapped into long delays and low moving speeds); high accident rates; extreme crowding in buses; bumpy rides and obstructed sidewalks; explosive mixture of people, parked cars, and moving vehicles in the same traffic lanes; and poor accessibility to any motorized mode of travel for some Cairo residents. The congestion and safety were critical in central Cairo, and accessibility to jobs and services was particularly low for residents of several lower-income districts.

Behind these problems lay an array of deficiencies on the supply side of urban transport. On the infrastructure side, these included the poor state of paved roads, particularly bus routes, with a high proportion (60 percent) of the road network without any surfacing and street lighting whatsoever. This last meant that neither public transport vehicles nor the household waste collectors could get into some of these areas; flooding also was a problem. On the traffic side, signal installations were few, of diverse makes, in poor mechanical and operational state, and widely dis-

obeyed by drivers and pedestrians alike. Parking places were scarce, and parking habits chaotic, seriously reducing the capacity of the street system for the moving traffic.

Taking yet another step back along this cause-effect chain, the diagnoses mentioned a glaring absence of trained staff, facilities, and institutional arrangements for diverse engineering and other activities related to road traffic. On the local government side, the three governorates coresponsible for greater Cairo were understaffed; their pay scales were so low that they could not hire or retain technicians necessary to regulate and manage various urban service systems. The transfer of responsibility for urban projects and services from the EG (i.e., sectoral ministries) to the governorates had only recently started.

On the public transport side, Cairo Transport Authority (CTA) and its subsidiary, Greater Cairo Bus Company, had too small a service capacity for an urban area of this size and car ownership level. CTA's fleet had 2,300 buses in total, of which only about 70 percent on the average could be placed in service on an average day. Its operating environment—mixed traffic on city streets—was as difficult as that of anywhere in the world. CTA's operation was inefficient, overstaffed, and ill supplied with both maintenance equipment and facilities. Much of this state could be blamed on CTA's low ratio of fare revenue to total costs: under 40 percent (1). The loss was not sufficiently compensated by the EG: in 1979, operating subsidy was about 25 million Egyptian pounds (LE) (\$35 million at the official rate), against the loss of LE 38 million. In the same year, a capital subsidy of about LE 27 million was also paid. A separately run streetcar line, Heliopolis Metro, provided a useful but limited-scope service from this well-to-do suburb to the downtown. Its operating speed was reasonable along the suburban part of the route, where it operated on a protected right-of-way, but it joined buses as a victim of congestion as soon as it approached the central area. Two Egyptian Railway lines entered the city, from the northeast and from the south but were not connected because of a 5-km missing link; the existing infrastructure and the rolling stock were in poor shape as well. One bright spot in this picture was provided by some 800 privately owned, shared taxis (really 12-seat minibuses), operating on pre-established routes.

Much of the diagnostic work was associated with various World Bank studies. To this view of the problem corresponded a recovery program also proposed by the World Bank, developed in the context of preparing GCUDP and the associated \$59 million loan (1,2). This is not to say that there were no other propositions, but the bank strategy was the only one attempting to be comprehensive and spelled out in some detail. Its backbone was the proposition to adopt "a revised urban transport strategy that explicitly focuses on low-cost engineering and management measures, improve the efficiency of public transport, and to strengthen Government institutions thereby developing their management and planning capabilities and enhancing their capacity to undertake further urban development" (1, p. 10). The characteristics of the approach practiced until then by local authorities, which the bank team wished to revise, were not cited.

In accordance with the proposed strategy, GCUDP had the following urban transport components:

1. Traffic engineering and road maintenance component, a 4-year time slice of low-cost investments in road repair and resurfacing, traffic signals, and other intersection improvements, street lighting, two off-street parking garages, and road maintenance

equipment; these accounted for about 50 percent of what the three governorates were expected to spend on road improvements. Geometric and signal improvements on radial corridors and in the central area were to be the key elements of this component. Full cost recovery for garages was to be adopted.

2. Traffic enforcement component, involving the rehabilitation of a traffic police training center, and the related equipment, including such things as motorcycles, radios, and tow trucks to improve the enforcement of traffic and parking regulations.

3. CTA component, including the construction or refurbishing of a bus overhaul workshop, or both, and a training center for drivers and mechanics. This was to be a part of a program under which CTA would replace its costs and increase its revenues from fares on the road to financial viability.

4. Institutional component, basically training, technical assistance, and studies for CTA and the governorates, including the traffic police.

It is of interest that, outside this project, the construction of Cairo Metro (Line 1) had already started in December 1981. This project involved the provision of the missing link between the Helwan and El Marg railway lines by constructing a tunnel through the downtown section, and the upgrading of the existing railway lines to metro standard. The entire line would on completion provide 42 km of continuous rapid transit service. Thus the World Bank-supported project could be seen as a counterpoint to the metro in that it was meant to demonstrate the effectiveness of low-cost means.

ACTIONS TAKEN IN PAST DECADE

Although an exhaustive list of what has been achieved in the past decade is not available, and it is not quite clear which of the implemented subprojects belonged to the original list adopted for GCUDP, the major achievements in the Fifth Plan period (1982 to 1987) were as follows (M. Daoud, unpublished data):

1. Some 34 large-scale structures were constructed, consisting mostly of elevated roads, viaducts (flyovers), and underpasses at major intersections.

2. About 760 km of roads and streets (8.4 million m²) was paved, including the elevated roads, flyovers, and underpasses cited under the preceding item, in addition to another 2 million m² of paved roads within urban development projects.

3. Multistory garages were constructed at Ataba and Opera Squares, plus another six surface parking lots, increasing the parking capacity of the central area by more than 100 percent (to 67,000 vehicles per day).

4. About half of an estimated 72-km ring road around Cairo was constructed.

5. The CTA training center was refurbished and equipped, and the bus overhaul workshop was started (the construction should be finished as of this writing).

6. CTA received 820 new buses and the Greater Cairo Bus Company received 440 new buses. In addition, the CTA received about 500 minibuses to operate its own shared-taxi services. The available sources do not state what happened to private minibus operations.

7. Some 28 km of the Cairo Metro, Line 1, was completed and placed into service in 1987.

The remaining 14.5 km of the metro, Line 1, was completed and placed into service in 1989. The cost was about 5,368 million French francs, all inclusive (M. H. Salam, unpublished data). It is not clear whether these are current or constant francs; at roughly 6 francs per U.S. dollar, this amount is equivalent to about \$895 million. In 1991, Cairo Metro carried about 703,000 passengers on an average day, with a peak day traffic at 845,000. In that same year, the metro had a revenue of LE 35.5 million.

The GCUDP experience has yet to be evaluated in detail. A perusal of documents from the last stages of the project indicated that the CTA component was implemented largely as envisaged, although with considerable delays; the financial viability remained an elusive goal, CTA's 1989 to 1990 deficit reaching LE 126 million of which only LE 61 million was compensated; the multistory garages were constructed, but it is not stated whether they are recovering their costs; some road paving and construction subprojects were implemented, but most were canceled; the central area traffic improvements program and a similar subproject on radial corridors were dropped at the tendering stage, when all plans and detailed designs were ready; traffic police training was carried out and enforcement equipment was purchased, but the practice of enforcement does not seem to have improved; and an attempt was made to introduce traffic management capability in the Cairo governorate, but the specialist staff left after the initial 2-year contract expired and no new effort was launched to rekindle this activity.

CURRENT PROBLEMS AND PROSPECTS

In urban transport professional circles in Cairo, it is commonly said that the investments mentioned earlier have improved the overall travel conditions in the urban area and that sizable costs savings and passenger benefits are associated with the operation of the Cairo Metro. There is, however, a dearth of quantitative indicators to back up this conclusion. For example, no data have been offered to show that CTA has improved its operating efficiency, or that travel times on the street network have been reduced, or that the safety record has become better. It is not clear whether any before-and-after studies actually have been conducted, not to mention more sophisticated with-project and without-project analyses. The few numbers available are not encouraging. For example, it appears that the average commercial speed of CTA buses is only 12 km/hr, not an improvement relative to the past. Nor does its cost recovery show a better trend. Still the considerable investments made over the last decade must have had visible results. It is likely that the average traffic and transport conditions in greater Cairo have not improved by much, except for those travelers living in corridors where the major road investments were located and those using the new metro. This whole matter needs to be examined closely. The space vacated on the existing system by users of new facilities may have been filled, or more than filled, by the hitherto repressed demand. The street congestion could actually be worse now than it was before the new projects. This of course does not preclude the existence of net benefits, since the transport system now carries a much higher volume of travel.

The data indicate that car ownership has continued to increase, reaching about 703,000 in 1987, or 66 vehicles per 1,000 population. This figure implies a population of about 11 million in 1987 and possibly as much as 13 million today. CTA now has about 3,200 buses in daily circulation (in two shifts), compared

with about 1,700 in 1983. It is understood that the transport system now carries about 7.6 million trips on an average day; of this, about 5.2 million is carried by CTA and its subsidiaries (including the Heliopolis Metro), some 80 percent by standard buses (M. Daoud, unpublished data). This is about 25 percent more than was reported in 1982 (1). Cairo Metro reports an average daily usage in 1991 of 703,000 passengers, all of them either previous bus or train users or new passengers. This is implied by the absence of any automobile-related benefits in the available evaluation of metro impacts (M. H. Salam, unpublished data). The remaining 1.6 million presumably move by cars and taxis. It is not clear what happened to special company buses and the remaining private minibuses.

It is also of interest in this context to examine what is being proposed for urban transport in greater Cairo in terms of future projects and programs. Judging only from unpublished documents prepared for a recent, informal workshop in Cairo, the investment plans for public transport in coming years include the following:

1. Incremental investments to increase the capacity, improve the level of service, and increase safety on the existing (Line 1) of the metro;
2. The construction of Line 2 of the metro; its Phase 1 will be 11 km long (from the north to the city center) and is expected to cost about LE 2 billion in 1991 prices, of which 50 percent is in foreign currency;
3. About 300 standard buses per year for CTA and an additional 1,300 minibuses to create a fleet of 2,000; and
4. New garages for standard buses and minibuses.

To these should be added the completion of the remaining half of the Cairo ring road and additional road interchanges, underpasses, and multistory garages. Other ideas apparently not yet in the design stage include the reorientation of the bus network to serve metro stations and the rehabilitation of the existing tramway system and its extension in the new suburban developments on a protected right of way.

On the noninvestment front, proposals for consideration include the fragmentation of CTA into separate companies, with coordination provided by a head authority for Greater Cairo Transit; new fare policies for CTA to improve the cost recovery, and the encouragement of the private sector to enter the sector as a relief to the public sector.

ISSUES

The approach agreed to for GCUDP was essentially an application of a model urban transport strategy recommended by the World Bank for populous urban areas in developing countries. This strategy was first formulated in a publication entitled *Urban Transport*, published by the World Bank in 1976, and then restated and expanded in a new policy study under the same title, published in 1986 (3). The substance of that policy, marginally expanded and reinterpreted by this writer, amounts to the following principles:

1. Urban transport should be operated and expanded over time as a single system, the value of which is to be optimized from the point of view of city residents, but ensuring the reconciliation with demands for other urban services, under common resource constraints. This requires a unified institutional arrangement,

ideally an urban area government or agency, whose jurisdiction would include all aspects and functions of urban transport. The national government should not own or manage urban transport entities in any individual city.

2. The short-run policies and current investments (affecting the supply side) should ensure the maximum utilization and proper maintenance of presently available infrastructure and rolling stock, before the proposals for expanding the system are made and implemented. Allocation of street space to favor the more efficient transport modes (typically public transport) is the basic tool in this respect.

3. The demand for urban transport services should be managed, in contrast to catering to unconstrained traffic growth ("satisfying needs"); the key method of demand management is pricing driven by cost recovery objectives, although other types of restraints may be used. In urban public transport, this affects the fares policy; in the road sector, it calls for introducing user fees for moving and parked vehicles.

4. The full cost-recovery objective in urban public transport may be modified by other social concerns (affordability, socially preferred modal shifts), but fare subsidies and cross-subsidies should be applied selectively and efficiently.

5. The capital-intensive investments in roads and public transport systems should be the means of last resort, employed only after the measures to achieve the optimal use of the existing system have been taken. Such investments must pass stringent tests of economic and financial viability (cost-benefit and cost-effectiveness analyses). In Egypt, this principle would be difficult to apply. Habitual methods of project appraisal are based on the principle of "need satisfaction," where need is based on observed demand contaminated with distorted prices. This is also true of costs (e.g., subsidized fuel prices), and on the benefit side (e.g., the value of time).

6. The existence of public objectives and demands in urban transport should not be confused with either owning or operating urban transport services and infrastructures. Both public and private sectors have their strong and weak sides as providers of services. Generally, good results are achieved by introducing competition and other aspects of markets into urban transport, in terms of improved efficiency of transport operations, reduced costs of supporting functions, improved and better diversified transport services, or mobilization of the private investment capital.

7. Scarcity of resources is a permanent feature of life, not just a temporary setback caused by the current economic difficulties faced by a country. This requires a careful selection of projects and testing against other potential uses of public funds. It also requires that the planning decisions have taken the budget constraint in consideration and that project financial planning is a part of the investment decision process.

The account given in preceding sections of the Cairo experience is admittedly cursory, incomplete, and with big holes in the available data. Still, it suggests a clear pattern concerning the approach the authorities in greater Cairo have used in dealing with urban transport problems. If this perception is accurate, then there is a considerable divergence between what the governorates and the EG actually have done in the recent past in this sector (and evidently plan to continue doing) and the strategy implied in the objectives of GCUDP, recommended to the governorates by the World Bank.

It appears that the approach actually implemented in Cairo reaches first for the most intensive capital investment projects (the metro, elevated roads, viaducts), with only marginal improvements to the traffic and public transport that remain on ordinary city streets. Going through the items, one by one, it is possible to see the following in the Cairo experience: traffic management measures have been minimal; demand management through user charges does not exist; cost recovery in CTA, after initial improvements, actually decreased; parking capacity has been increased, but parking management has not; and there has been little opening toward the private sector. CTA adopted the concept of minibus services, which the private sector had first introduced in Cairo, but then seems to have pushed the private operators out.

The reasons for the divergence of the strategy adopted by the authorities and the advice received are complex. Some of them involve different perceptions of what the underlying urban transport problems actually are; others may involve different local and foreign assumptions on what the objectives are and who should be the beneficiary of public expenditures; yet others have to do with institutional capacity for continuous actions to improve system performance. A sociopolitical and institutional analysis of the extent of and the reasons for this divergence has not been done and would require considerable fieldwork, skills, resources, and local interest. The balance of this paper, therefore, takes a pragmatic approach, focusing on four issues whose resolution is of critical importance for the further development of urban transport in greater Cairo and would reduce the gap between action and advice. These critical issues include the perception that congestion is inevitable; travel market diversification; financial resources for transport improvements; and institutional aspects.

Inevitability of Congestion and Large-Scale Projects

It is often said by local transport planners that in greater Cairo "surface solution to the public transport demand was not possible, as the surface roads had become overloaded," a conclusion used to justify the construction of the underground railway and (possibly) elevated highways. The trouble with this statement is that it implies that the overcrowding of the street system is inevitable, when this in fact is not the case. Roads in Cairo account for about 25 percent of the total area, which is quite good. Unfortunately, many streets are not paved or are not maintained. Even those that are in a reasonable shape have a great part of their capacity wasted on such factors as chaotic parking, incursion of pedestrians, unruly traffic behavior, and poor signals. Moreover, there is probably more driving than is necessary because fuels are not economically priced and road use is free. Finally, road use is equally available to private cars, which carry few people, and buses and tramways, which carry many more.

The consequences of accepting the inevitability of congestion have been grave and will continue to plague greater Cairo. To start with, the unmanaged congestion tends to send a wrong signal to the decision makers, who then place higher priority than is necessary on system expansion (even if it is just a question of timing of new projects). This does not mean that Cairo did not need to expand its off-street infrastructure, including the Cairo Metro, but that something else should have been done first to improve the operation of the street system that was already there. It is highly likely that both the scope and timing of the large civil works could have been somewhat reduced or postponed, or both,

with considerable savings for the state/governorate budgets. Instead, there seems to be an official acceptance of permanent on-street congestion. However much one would expand the system through new construction, however, there is a high chance that the existing street system would stay as congested, or even more so. Trip rates in Cairo indicate substantial suppressed demand for travel, thus any diversion of travelers from the ordinary streets to new primary roads is quickly followed by new trips hitherto suppressed. It is doubtful whether the city or state budget would have the capacity to invest enough to stay ahead of the new traffic generation. Even if it did, this would probably mean that some other needs will have gone unmet because Egypt is not a rich country.

The permanent congestion of city streets has three major negative consequences. The first one is that on-street public transport vehicles cannot achieve an efficient level of operations (that is, low unit costs per seat offered) and that their services are kept at a low level. Needless to say, this affects some 85 percent of all public transport users, the metro notwithstanding (at the current modal split). The second negative impact is that the permanent congestion means permanent environmental degradation in terms of noise, emissions, and safety. The third aspect is that permanent congestion affects poor people more than others because they tend either to use street buses or aspire to use them when their financial capacity improves; they also tend to be heavily represented among pedestrians, thus their suffering from congestion is disproportional.

In conclusion, heavy investment cannot be a substitute for managing traffic on regular (rather than limited-access) urban roads and streets. Among the many efficient ways of doing this are of course the allocation of street space for exclusive use of public transport vehicles, the priority of passage at intersections for buses and tramways, delay-minimizing traffic control systems, and parking charges and enforcement.

Travel Market Diversification

The travel market in greater Cairo consists of at least three distinct groups: higher-income people, usually car owners; the lower-income group, who tend to be pedestrians or bus users; and the middle group, who use buses or the metro, or both. The car drivers benefit from investments in new roads and bridges. The lower-income people are served by inexpensive but low-quality bus services (possibly also metro services). It is not clear whether the middle group is well served. The middle group benefits by paying fares meant to be affordable to the poor, but they get a lower quality of service than many of them would want and could pay for. From the public budget point of view, they get an unwanted subsidy. This group would profit from having higher-priced, but better-quality, services; for example, seat-only buses operating on a reserved-space street itinerary. Experience in other countries indicates that this type of service is best provided by the private sector, working under concession or other arrangement with the local government, typically without subsidy. The most successful of such cases of recent vintage are private bus companies in Casablanca and Rabat, Morocco, where a seat-only, private bus fleet within 2 years became comparable in size to the regular, public operation (4). Cairo's experience with private minibuses went in this direction, and some of its advantages may have been preserved even in the CTA minibus operation.

Financial Resources

Until now the financing of urban transport in Cairo has been based on a limited contribution by public transport users, with fares being kept low (or free) to make the system affordable to poorer city residents or some special categories of travelers, or both. The cost recovery from fares has slipped to about 20 percent. The corresponding subsidy from the budget has never been fully paid, which of course hampered the maintenance and expansion of the public transport infrastructure and vehicles. It is the capacity of the state budget, rather than the passengers' capacity and willingness to pay that affects the performance and expansion of the public transport system. Road users also are being subsidized. Although Cairo roads appear to have received more attention than public transport, for roads also the limits to expansion have been determined by constraints on the state budget, not user choice. It could be hypothesized that roads in Cairo might have expanded faster if a system of user charges were linked directly to operating and investment budget of a transport agency.

It is not at all clear how long the current approach to transport financing can continue. There are signs that the process of government decentralization will speed up and, with it, some kind of self-financing of urban services may be inevitable. There are many persuasive reasons why goods and services whose impact is local should be paid for from local sources, among them the simplest principle that costs should fall where the benefits accrue (5). It is prudent to start thinking of the financial issues related to decentralization beforehand. In the context of GCUDP, the financial focus was to reduce operating costs and increase fare revenues. Neither of these efforts has borne fruit and will have to be revisited and retried by some other means. There is concern that the question of efficiency in supplying services does not seem to be a priority for transport operators in greater Cairo. It is rare to find any technical paper on the subject of the metro and CTA that addresses operating costs or standard efficiency indicators of the two operators. What is being mentioned is the level of subsidy necessary and (sometimes) the revenues. As for fares, there is a possibility that they have been unnecessarily chained to too low levels. For one thing, the linkage between poverty and transport has never been studied in Cairo. For another, there are ways to provide direct assistance to the poor without adversely affecting the financial state of public transport operators.

If cost recovery in public transport has been problematic in Cairo, road user charges have not been considered at all. This topic is under increasing attention in many cities of the world, in rich and less rich countries alike, often because urban authorities have come to realize that charging for roads has a double role (as already cited): to discipline the demand (thus moderating negative effects of congestion) and to provide funds for maintenance, traffic control, and capacity expansion. The simplest charging systems are usually countrywide, that is, ownership-based fees or use-related fees (gas taxes), or both; these are typically collected by the national government and either fused with general taxes or earmarked and redistributed throughout the country on the basis of some allocation formula. Fuel taxes can affect the general level of automobile use but cannot be used for demand management in individual cities. Of more interest in this matter are local charges related to the time and place of use for moving or parked cars, sometimes called congestion charges. Fuel taxes are widely used, whereas congestion charges are only now getting increasing attention. Several cities in Northern Europe currently are testing

such charges, having given up hope that road and transit investments and low transit fares will do the trick (e.g., Oslo, Trondheim, and Bergen, Norway; and Stockholm, Sweden). These follow the early successful example of downtown entry fees in Singapore in the 1970s and the planned, but never implemented, Hong Kong experiment with electronic road use charges. Several variations on both concept and method of collection and control are available. Recent comparative studies indicate that area licensing schemes with human controllers are the most suitable as a congestion-reducing method, especially in countries where labor costs are low. Although the economic theory frowns at earmarking of thus generated funds for investing back into the road system, it is felt that in the case of urban road traffic a compromise can be made because earmarking makes the onerous aspects of yet another use tax more palatable to the population (6).

It is opportune to mention again the private sector participation when discussing financial issues in private transport. In industrialized countries that recently went through major deregulation of bus services (e.g., the United Kingdom), the objective has been to profit from greater efficiency of supply that private enterprises bring (mainly lower unit costs per bus-kilometer or per passenger, or both). Reportedly this has helped reduce by half the level of public subsidies in some cities. In a developing country such as Egypt, greater efficiency and a reduction of subsidies would also be important objectives, but there are others. Foremost among these concerns is the private investment capital that private operators would bring into the bus and tramway operation. This capital could provide great relief to the capital budget of the governorates, especially in view of the backlog of investments in CTA. The already-cited case of Casablanca and Rabat provides a host of useful lessons and should be studied in detail by Cairo planners (4). If foreign participation were also involved, there could be additional benefits (on both the cost and effectiveness side of the ledger) from technology transfer, that is, from the introduction of up-to-date expertise in traffic operations, maintenance, fare systems and collection, cost accounting and control, inventory management, and information systems. It would be regrettable if the governorates allowed the CTA to squeeze out the private minibuses operations, a self-installed and subsidy-free alternative provider of services.

Institutional Issues

Three different themes are covered under the heading of institutional issues. The first one touches on the capacity of an urban government, such as the Cairo governorate, to start doing traffic management. GCUDP failed in its objective to develop this capacity because the governorates appear to have preferred to go for the large investments instead. It is interesting to look into reasons for this failure. This type of failure is not unique; it has been very difficult to achieve success in many, if not most, developing countries. The city of Tunis is one of the rare exceptions, with a competent and active traffic unit in the municipality of Tunis since the late 1970s. On the other hand, such units are commonplace in the industrialized countries. The paradox is that low-cost methods are easy to apply in rich countries, whereas poor countries are reduced to large-scale investments to achieve similar results. One of the reasons is that traffic management methods are very staff intensive. In some cases, particularly in many African countries, there are simply no trained technicians to do the job. In Cairo there are

technicians galore, but they tend to avoid public service, because of its low pay scales. The problem could be resolved in the same way as for any other large undertaking by contracting out.

Another hypothesis is that local governments do not place value on low-cost methods, since neither prestige, nor power, nor financial remuneration can be associated with them. In other words, the Cairo governorate agreed to set up a traffic management unit in the context of GCUDP but did not have a real commitment to this activity and let it fall by the wayside. Recent literature points to a need to do a new kind of institutional analysis that would look at the structure of the administrative authority and the motivation and incentives of the civil servants involved in implementing a given program. The results of this analysis would be used to correct the program's design accordingly (7).

The second institutional issue is the need to unify the responsibility for all elements of an urban transport system in the hands of one authority. The situation in greater Cairo is particularly complicated because of the presence of three governorates, the national government, strong ministries, and some strong public enterprises. The continuing fragmentation of responsibilities for urban transport among different tiers of government is problematic from the point of view of establishing priorities and coordinating policies and investments. The community of interest, the distribution of political power, the fiscal environment, and the scope of decision making for a city government are quite different from that of a ministry, or a large, single-purpose public enterprise (such as the CTA, for example). These differences can lead directly to misallocation of investments within a given sector, as it may have happened in urban transport in greater Cairo. Moreover, in the system of split jurisdictions, it is very difficult, if not impossible, to make intersectoral trade-offs for a given city, for example, between investments in water resources and investments in transport. This has been recognized by some officials in the sector and it will be worthwhile to look into alternative administrative arrangements for a unified jurisdiction, a real Cairo Transport Authority this time—not just a name.

The last institutional issue mentioned here concerns the role of the state. In Egypt, the state is very strong in every aspect of urban transport and presents a barrier to the creation of a unified urban transport authority in the urban area. With the progressive decentralization and increased resource mobilization on the local level, this influence will weaken although it will not disappear. It is of interest to consider a possible future role of the state in the area of urban transport finance, once it stops paying massive subsidies. It is essential not to confuse partial financing of urban transport projects, which the state may want to do under certain conditions, with project ownership, which should be left to the city (governorate) level. A view consistent with the public finance theory is that local investments, whose impacts will be local only, should come primarily from local equity funds. This is based not only on the principle that costs should fall where the benefits accrue; the decision to commit local funds is a good measure of the "true" value of a project to the city in question. Numerous projects get implemented only because it means getting state investment funds, that is, a free project. It could be envisaged, particularly in a transition period away from the state ownership of local projects, that the city would own an urban transport project and provide equity funds for it, while the state would participate in its partial financing through a national program of matching grants, loans, or loan guarantees. The financial aid program of the state should be designed with explicit policy objectives, eligibility

rules, and procedural guidelines. In Egypt, such a program could be used to stimulate greater Cairo or Alexandria to follow urban transport policies deemed beneficial to society, or to follow model planning practices. For example, no Egyptian city would become eligible for financial aid from the state unless it implemented a program of environmental protection, traffic law enforcement, or measures that would give priority to public transport vehicles in street traffic (e.g., exclusive bus lanes or priority passage at signalized intersections). Valuable examples of this approach are the agreements ("development contracts") that the authorities of individual French cities sign with their national government (8) and a capital grants program for urban public transport investments run by the U.S. Department of Transportation (9).

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