



Les déplacements urbains en Méditerranée

Guide de recommandations

Urban Transport in the Mediterranean Region

Guidance and Recommendations

Travaux issus du Séminaire Régional sur les Déplacements Urbains
en Méditerranée - Skhirat, Maroc, 22 et 23 janvier 2008

*Product of the Regional Seminar on Urban Transport in the Mediterranean
Region - Skhirat, Morocco, January 22-23, 2008*

En partenariat avec : / In partnership with:



Urban Transport in the Mediterranean Region



Guidance and
Recommendations

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Printed in August 2008

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Preface



All large cities are confronted with rapid urban growth, most often combined with expanding urbanization. These trends generate increased mobility demands and a strong need for transport infrastructure.

Southern Mediterranean countries are no exception to this phenomenon and must also face difficulties resulting from the multiplication of poorly regulated informal or small-scale systems and from the decline, and even collapse, of public or private transport companies.

Faced with these problems and the ever-increasing use of automobiles, central governments and local authorities in charge of urban transport are aware of the need to develop their urban transport networks, but prospects are often lacking because authorities do not always have the opportunity to exchange experiences and to share their knowledge.

In view of this situation, it has been recognized as essential by CODATU, an international association seeking to encourage international exchanges in the field of urban mobility, with the support of the French Ministry of Ecology, Energy, Sustainable Development and Spatial Planning (MEEDDAT), the World Bank, and MedCités to help decision-makers to identify good practices in urban mobility through the publication of a Recommendations Guide.

The Guide is the fruit of the analysis carried out by a team of experts and the work accomplished in a regional seminar on urban transport in the Mediterranean held in Skhirat, on January 22-23, 2008 which was organized by CODATU and the World Bank in collaboration with the Blue Plan, the French Development Agency (AFD), the City of Marseilles, MedCités, and the Ministry of the Interior of Morocco.

The Guide is meant to be a true decision-making aid tool for the implementation of technical, financial, and economically viable urban transport solutions offering mobility alternatives that are compatible with the protection of the environment, the reduction of inequalities, and a better use of energy resources.

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Introduction

0/1 Urban Transport Diagnosis

According to the Blue Plan, the urban population of eastern and southern Mediterranean countries currently estimated at 165 million should increase annually by some 4 million for an average annual increase of almost 2.5%. Urbanization should rise from 64% in 2004 to almost 75% in 2025. All in all, by 2025, the urban population in the region will have increased by approximately 80 million.

In addition to this population growth, widespread spatial expansion, sometimes due to illegal extensions but also to a type of horizontal population settlements, results in extremely different densities in urban centers and peripheral areas. Cairo, for instance, spreads over a surface of 46 kilometers (North-South) by 35 kilometers (East-West) while Istanbul covers an area of almost 100 kilometers. Moreover, urban mobility has now a metropolitan scope with neighboring cities sharing the same space for daily transports.

Consequently, the limits of the central urban area are no longer applicable for a relevant approach of urban mobility issues. These changes in territorial scales, which characterize the metropolization process, entail additional difficulties for urban transport management, particularly at institutional levels.

Low, yet increasing, levels of urban mobility

Levels of urban mobility in large cities South and East of the Mediterranean seem relatively low compared to North Mediterranean cities and other regions of the world. However, individual mobility is increasing due to several factors among which economic growth plays a determining role. Around the year 2000, the following individual mobility rates were recorded in the region:

- Algiers, Beirut: 0.6 to 0.8;
- Cairo, Casablanca, and Istanbul: 0.9 to 1.1;
- Tunis: 1.2 or higher.

Walking remains the most common means of transportation accounting for 30 to 50% of the trips surveyed. Besides being a natural mode of transportation for short trips, pedestrian transport is sometimes used for longer distances in replacement of deficient public transport, or by certain underprivileged groups whose purchasing power is too low to pay public transport fares.

Contrary to other regions in the world, there are practically no bicycles, but in some cities (Sfax in Tunisia, Moroccan cities, etc.) motorized two-wheelers are present, even if their use tends to decline.

Relatively **low and uneven** levels of motorization

Levels of motorization (number of private vehicles per 1,000 inhabitants) in countries South and East of the Mediterranean are on the whole relatively low compared to other regions in the world. The rapidly changing situation varies slightly depending on the city. For example, the following rates have been reported:

- Low (from 70 to 100): Cairo (68) and Algiers (69 in 1990, 83 in 2004);
- Intermediate (from 100 to 200): Tunis (64 in 1994, but 100 in 2002), Casablanca (110 in 2004), and Istanbul (134 in 2006);
- High (over 300): Beirut (350 in 1994 and approx. 500 in 2006).

Beirut's exceptionally high rate is nevertheless lower than motorization levels in the most developed countries, for example 488 for Marseilles in 1997, or in other cities in Eastern Europe.

A trend towards a strong increase of motorization is observed in most cities due to policies promoting the liberalization of imports, higher incomes, and to the aspirations of middle classes eager to own an automobile.

Less **public transportation** users... more private vehicles

In Mediterranean cities, the number of private vehicles has increased to the point of accounting for 50% (and in some cases even more) of all modes of transport. Even if public passenger transport is still in the leading position in most cities, its predominance is gradually being threatened, particularly in Algiers, Casablanca, Tunis, and Teheran. Beirut, where private vehicles account for almost two thirds of urban trips, is atypical in this sense.

Table 1 : **Modal Split**

City	Algiers 2004	Beirut 1994	Cairo 1998	Casablanca 2004	Istanbul 2005	Tunis 2002	Teheran 2004
Public Transport*	65%	29%	74%	50%	58%	40%	58,5%
Private Vehicles	29%	71%	26%	30%	36%	50%	34,5%
Taxis	5%	—	—	11%	6%	10%	—**
Two-wheelers	1%	—	—	9%	—	—	7%
Total Individual Mobility	35%	71%	26%	50%	42%	60%	41,5%
Total	100%	100%	100%	100%	100%	100%	100%

*: Public Transport includes metros, buses, minibuses, shared taxis, etc.

** : For Teheran, taxis are counted as shared taxis.

Sources: Household surveys and counts.

It appears in fact that the supply of public passenger transport, particularly that of the formal sector, cannot satisfy the ever-increasing demand. The consequences of the resulting low service levels of public urban transport systems are:

- Overcrowded vehicles, unsuitable for passenger comfort;
- Long and uncertain waiting times, affecting the reliability of programmed activity schedules, particularly for work; and
- Long travel times with the resulting fatigue and detrimental effects on quality of life.

Deficient public transport services encourage users to seek other transportation modes: more adequate small-scale transport or individual transport modes for those who can afford them.

The key role of **small-scale public transport** or paratransit

During the last several decades, small-scale transports have developed amid public transport modes. Depending on the city, paratransit includes shared-taxis and different types of mini or minibuses in Morocco, Cairo, or Damascus, vans in Algeria, "services" in Beirut or in Amman, etc. These modes of transportation actually play a key role in the supply of public transport, with several thousands of vehicles in each city, and account for a significant number of motorized trips. Tunis is an exception in that minibuses (louages) are only used for interurban trips.

Table 2 : Percentage of Paratransit in Motorized Transport

	Algiers 2004	Cairo 2001	Casablanca 2004	Damascus 1998	Teheran 2004
Shared-Taxis	3%	—	21,5%	—	16,5%*
Minibuses	53%	25%	—	46%	18%
Total	56%	25%	21,5%	46%	34,5%

*: Assuming that all taxis work as shared taxis.
Sources: Household surveys and counts.

Their capacity to adapt to users' needs explains their success; however, they also contribute to traffic congestion and pollution in high-density urban zones and their fees weigh down family budgets.

Special bus services for employees and student transport

The inability of the public offer to meet the increasing transport demand has led to the development of alternative transport services and modes. Thus, in reaction to inadequate public services, growing numbers of private operators provide special transport services for employees and students.

In Casablanca, for instance, a total of 1,400 vehicles, mainly minibuses with a capacity of 20 to 30 passengers, are used by more than 300 schools for student transport.

Student buses have also been used in Algeria for many years in spite of Algerian authorities' efforts to limit their use. In Algiers, these specialized transport services concern mainly university students and mobilize a considerable amount of buses, exceeding the number of buses of public operators.

Increasing congestion of urban roads, source of alarming levels of pollution

The urban road network has many problems in terms of capacity, structure, and management of intersections. The diagnosis reached for a city in Morocco could apply to most cities:

- Inadequate capacity of the main axes of the primary urban road system (congestion during peak hours);
- Lack of bypass roads (excessive use of feeder roads);
- Unstructured network (no defined road hierarchy);
- Poor traffic management in urban centers (deficient operation of intersections, inadequate walkways and road signs and signals);
- Lack of a parking policy.

Increasing traffic congestion in all large cities, sometimes despite important road investments, has an alarming impact in terms of air pollution. Measuring tools are being implemented but there are no standardized systematic data available yet to determine what city dwellers must live with every day. In many cities, air pollution is aggravated by old vehicle fleets that do not comply with the strict standards applied in Europe.

Authorities in charge of urban transport: dominating role of the State and fragmentation of responsibilities

Countries in the Mediterranean region are still highly centralized. The State plays a dominating role in urban transport planning, organization, and financing through its central body and also at decentralized levels. When these competences are devolved to local authorities, it seems that often the allocation of responsibilities is not clearly established.

In Morocco, urban transport management falls under the competences of local authorities, though supervised by the central State. The Ministry of the Interior is in charge of urban transport, and the Ministry of Infrastructure is in charge of roads infrastructure.

In most countries, local and/or national institutions in charge of urban transport do not have the necessary skills. They are inadequately staffed, in quantity and quality, for the major issues they have to deal with. Few institutions are dedicated to transport systems planning and management, but new initiatives are in the making in several countries with the perspective of new planning authorities: in Tunisia, the 2004 reform introduced the principle of these transport authorities within a framework heavily controlled by the State; the reform project in Morocco with authorities responsible for transport planning and management; Algeria has also been considering a project for several years, etc.

This institutional fragmentation explains the lack of adequate knowledge and information on urban mobility and why planning tools are only partially operational. But recent household surveys carried out in Algiers, Casablanca, and Cairo, and older surveys in Istanbul and Tunis show that efforts have been made to gain knowledge of the situation. However, they must be pursued since these surveys are not always fully exploited, or not easily accessible... and they must be carried on through constant data follow-up and update, as it was done in Tunis with the Master Plan on Transport and the RFR project.

Moreover, public transport systems themselves are undergoing transformations or in crisis. The public sector has a larger share than private companies in the transport supply. In fact, the private sector consists mainly of small-scale transport services (Algeria, Tunisia, Egypt, and Iran). Morocco stands out with the mobilization of private companies in Public/Private Partnerships (PPPs).

Pricing policies applied to the public sector inevitably generate deficits because governments traditionally try to lighten the burden of transport expenses on family budgets. Deficient financing of the urban transport sector ensues which explains in part the current crisis in transport supply.

In fact, there are no financing sources dedicated to public transport. Municipalities' financial resources are inadequate and it is the State that contributes directly to finance public transport companies – investments and to a certain degree operators – through compensation systems, particularly for fare reductions granted to certain categories of users.

Different investments in mass transit

In an effort to overcome the difficult situation in urban passenger transport, modern transport supply tends to focus on showcase infrastructure with numerous investment projects for mass transit in most Mediterranean cities, as opposed to a few effective undertakings. However, they do not always meet the requirements for their implementation and are only partially capable of meeting the needs of the population and of providing solutions for existing dysfunctional systems.

Cairo has successfully engaged an investment program for a metro system. The first regional line opened in 1987 and currently transports over one million passengers daily while 500,000 passengers use the urban line opened in the year 2000. A third metro line is currently under development. However, the success of the metro has resulted in the relative neglect of other surface modes of public transport.

Tunis has a rather complete light metro network that opened its first line in 1985. However, this leading investment is a victim of its own success: saturation levels have been reached in its central part, and the system does not offer metropolitan coverage. Large-scale investments in a regional railway network (RFR) were initially engaged in 2007 but the network's high costs may require spacing out its execution throughout a long period that may extend over several four-year plans. The possibility of a light metro project has been brought up for several years in Sfax, yet it still has not reached the preliminary design stage.

Istanbul has a variety of railway systems (light metro, tramway, suburban trains, metro) but with limited development mainly due to high investment costs and integration difficulties. Most future investments target regional railway services with metropolitan scope. Ankara is building a metro system and other undertakings are under way in intermediate-size cities.

In Algiers, a project for a metro system began some twenty years ago but had to face complications and uncertainties before a strong commitment emerged setting 2009 as the date for its completion. A tramway line should complete the mass transit system as part of a project that also includes upgrading suburban trains. Tramway projects have also been launched in other large Algerian cities.

Morocco's tramway projects for Rabat and Casablanca have made considerable progress. In Rabat, the first phase of the tramway project has just started, and Casablanca is well ahead on project studies for a mass rapid transit (MRT) system. In Syria, a study is being conducted for a metro project for Damascus

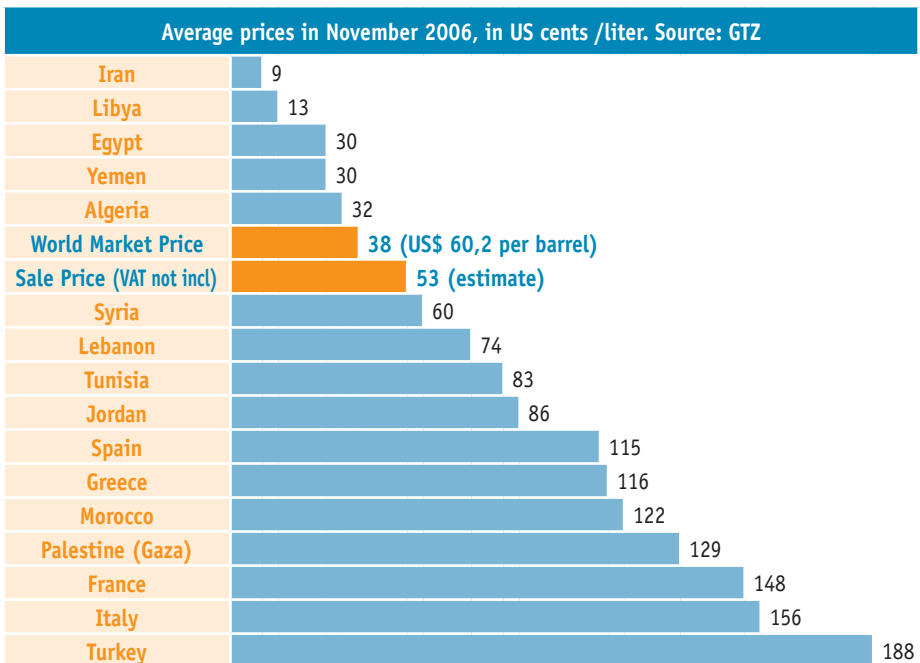
Public policy initiatives still in favor of the automobile...

Most urban transport policies seem to encourage the use of individual transport modes through the many projects and undertakings in road and highway infrastructure. Besides these investments, other public policy initiatives also tend to encourage private car ownership.

A national program encouraging the population to buy cars was implemented in Tunisia in the 1990's offering lower taxes and credit facilities. A similar program was developed in Morocco. More recently, the establishment of an automobile industry in Tangiers that produces low-cost vehicles also promotes private vehicle ownership.

In Algeria, liberalization of imports and automobile distribution have made it easier for Algerian families to own a car, an item where they were considered to be below modern standards.

Figure: Gasoline Prices In The Mena (Middle East North Africa) Region



In Iran, directive national policies have favored for many years very low fuel prices that in turn promote the use of private vehicles to the detriment of public transport. Today, however, the consequences in terms of mobility of recent rationing measures should be considered. There are strong differences in fuel prices among Mediterranean countries, but the trend rise in oil and energy prices is a new factor that affects urban mobility systems.

Measures limiting automobile traffic have also been implemented in some cities. Tunis, for instance, has a traffic management plan since 1987 barring automobiles from going through the city's center (currently less effective) and Teheran has introduced road pricing in the downtown area and traffic restricting measures based on odd-even license plate numbers.

0/2 Key Urban Mobility Issues

Controlling the impact of dysfunctional systems on local communities

Already, the consequences of inadequate urban transport in cities South and East of the Mediterranean are many:

- Time wasted by car owners and users of public passenger transport and its impact on local productivity;
- Air pollution and its impact on public health;
- A higher energy bill and its impact on the countries' trade balance, particularly for Morocco and Tunisia, and most oil-importing countries of the Mashreq.

Access to services and economic activities tends to be limited and according to available indicators, accidents, air pollution and other adverse effects are constantly on the rise in cities.

Costs for the community are probably very high but further analysis is needed in this area. The competitiveness and appeal of Mediterranean cities is affected by these malfunctions. Moreover, even if it is difficult to accurately measure their social consequences, they are nevertheless significant.

In the absence of strong policies, cities could take an even higher toll if we take into account the combination of three trend factors:

- Higher rate of individual mobility;
- Longer urban trips due to sprawling cities;
- Growth in urban population, slowed-down by demographic transition but constant nevertheless.

Urban mobility needs should continue to grow exponentially with a resulting annual increase of 10% in transport needs (passengers/kilometer). The challenge will consist of finding effective transport solutions to meet the surging demand and, at the same time, trying to control the undesired elements in this process of change.

Coping with **new** environmental and energy **constraints**

New context parameters related to changes in the world economy and to sustainable development objectives should be taken into consideration:

- Absorbing a sustained increase in oil prices (The situation will not be same for all since some Mediterranean countries produce oil or gas and others do not. In any case, declining oil sources should call for the implementation of energy-saving policies.);
- Preserving the local urban environment by reducing sources of pollution harmful to the health and traffic noise;
- Limiting greenhouse gas emissions that cause global warming.

Institutions capable of effectively **implementing** an urban transport **strategy**

Setting up effective institutions in charge of public transport and urban traffic management is one of the major challenges identified in the diagnosis of the situation. In view of the political and institutional specificities of each country and the different, yet limited, decentralization processes, Chapter 1 discusses guidelines and possible solutions for institutional frameworks.

Cities are changing fast and will continue to change. It is advisable to plan in advance the city of the future in its new environment to offer sustainable solutions. This is only possible through a strategic planning approach that is also presented in Chapter 1.

Finding the right place for each **transport mode**

To improve the quality of life and to make Mediterranean cities more competitive, widespread accessibility to urban transport must be increased, which in turns requires a balance between the different transport modes. Also, it is important for political decision-makers that Mediterranean cities give a positive image as efficient and user-friendly urban centers when compared, as is often the case, to other cities worldwide.

Development policies should focus more on pedestrians, particularly in projects for the implementation of large-scale road infrastructure or the construction of new peripheral urban areas. Pedestrians are the most frequent victims of road accidents and suffer the most from the pollution caused by motorized vehicles. Non-motorized transports should be promoted since they contribute to a better quality urban life and more animated cities (Chapter 4).

Another major and complex issue is regulating automobile use. It involves limiting the cost of its negative externalities and at the same time enabling the urban population to meet their aspirations and to benefit from the advantages of the efficient use of private vehicles. These topics are presented in Chapters 1 and 4.

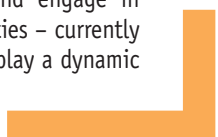
Adequate financing of transport infrastructure and services and a pricing policy are essential to ensure quality public transport with access to all, particularly low-income groups. They are also key issues to be considered in order to increase the road network's capacity and to improve traffic management when it is economically justified. Chapter 2 will analyze several proposals of sustainable solutions for securing financing funds.

Multimodal systems must be implemented in large cities to give a new boost to public transport supply by combining structuring lines of mass transport, an efficient bus network, and a complementary controlled supply of minibuses and/or shared taxis. This is the main subject of Chapters 3 and 5.

Mobilizing and developing skills and **management capacity**

Many challenges remain to be faced, and it is sometimes difficult to identify the adequate solutions. Objectives may be conflicting and reliable skills are necessary to make solidly based and well-informed decisions. Technical expertise on urban transport needs to be developed in Mediterranean cities. There are many ways to achieve this goal, some of which are described in Chapter 6.

To be economically competitive and attractive, territories need high-performance metropolitan transport systems based on environmentally sound options. Mediterranean cities should therefore innovate in this sense and engage in sustained long-term policies that will enable the region and its cities – currently facing many challenges compared to other regions worldwide – to play a dynamic and proper role in today's globalizing world.



Urban Transport

Institutions and Planning

The Need for Better Public Transport Services

Mediterranean cities are faced with a strong and fast-paced increase in the demand for mobility. International experience – in emerging and developed countries – shows that it is not possible to face the rising urban mobility solely by developing road infrastructure.

A quality public transport supply is all the more necessary for emerging countries where motorization levels are still low and where several organization patterns for urban mobility may still be applied. The public transport supply must allow for a balanced distribution of transport modes and a more effective use of public space coherently with urban development.

And yet, Mediterranean countries often lack adequate organization, undermining the quality of public transport. Achieving an efficient organization is even more delicate since paratransit has been able to develop without the intervention of public authorities.

1/1 Transport Planning Needs

Master Plans for Mediterranean cities often involve long-term projects whose financing is not secured

Mediterranean cities are confronted with fast-growing population and motorization levels as well as spatial expansion, but their transport infrastructure is not necessarily moving at the same pace. These rapid changes have taken place over a few decades, contrary to European cities, for example, that had almost a century to cope with similar transformations.

In these conditions, anticipating the future is even more vital. There are several planning initiatives under way, for instance, the master plan in Tunis or the urban transport plan in Casablanca, but they were often developed without taking into consideration financial constraints and are therefore looking to distant horizons.

**Long-term planning is important,
but **closer perspectives** are being endorsed**

Long-term planning applied to all transport modes is needed to achieve a coherent approach between actions that require long-term investments. It must also be consistent with urbanization options and particularly with the creation of new towns. As shown by the experience in Tunis, accurate planning allows setting land aside for infrastructure (road, public transport, etc.), and future costs may be reduced.

However, today the emphasis is on Urban Transport Plans (UTP) on a much closer horizon of the next 5 to 10 years. These plans involve exchanges and discussions between partners within a truly multimodal approach and whose financing may be secured.

In this chapter, the terms “master plan for urban traffic and transport” (Rabat) and “urban transport plan” (Algeria) refer to the same concept. The efficiency of a UTP approach is dependent on the existence of a recognized planning structure.

**Responsibilities and collaboration to articulate
an **Urban Transport Plan****

Responsibility for the elaboration of the urban transport plan falls legitimately on the authority in charge of urban transport, but other structures may be involved in the process. Given the vital importance of developing sustainable urban transport in Mediterranean cities, the authority responsible for the organization of public transport should at least be closely linked to the elaboration of the urban transport plan along with all the actors responsible for other modes of transport.

When the public transport authority is in charge of preparing urban transport plans, it is possible to give priority to public transport; however, other difficulties arise, such as the public authority's legitimacy to take actions that will affect other transport modes.

The municipality of Tangiers, in charge of public transport planning, has begun a study on a Master Plan for Urban Traffic and Transport. In Cairo, the High Committee for Transport Planning of Greater Cairo, created by decree by the Prime Minister in the year 2000 and presided by the Minister of Transport, is in charge of preparing documents on urban transport planning.

Urban Transport Plans provide general guidelines

UTPs lay down general objectives – e.g. a proposal for a development plan of public transport – but the work to be accomplished is only outlined (different color lines on a city map). Much work needs to be done in different areas in the field and feasibility studies have to be carried out.

This is a critical moment for the successful implementation of UTPs: once the urban transport plan has been approved, different local services must start working on detailed studies. The purpose of the UTP is not to provide a restructuring design for the public transport network or to establish a detailed road hierarchy, nor to decide on intersection upgrading and management of traffic lights, etc.

Urban Transport Plans concern all transport modes and their interfaces, and contribute to wider scope issues

To be effective, a global transport policy must coordinate all modes of transport: public passenger transport, including paratransit, private vehicles, heavy vehicles and freight transport, pedestrians, bicyclists, and motorized two-wheelers. The policy must also cover their intermodal interface: parking facilities, park-and-ride sites, sidewalks and public structures, connection/transfer facilities, road safety, etc.

But UTPs need not be limited to transport issues; they may also contribute to improve the quality of life, the environment, the economic efficiency, or even energy management.

Urban Transport Plans are not merely documents: they involve long-term sustained action

An Urban Transport Plan is much more than a document on planning. Experience shows that planning must continue over the long-term to be effective. An adaptive and iterative approach is necessary with periodical updates that take into account the fast-changing urban environment and the difficulties that may arise in the implementation of structuring investments.

Urban transport planning is directly coupled to the city, to its evolution, its highs and its lows. It therefore requires a resolute and consistent approach, and at the same time it should be flexible enough to adapt.

Above all, the Urban Transport Plan approach is a working process

Managing an urban transport plan requires special attention that should be directed to the technical contents of the document being prepared but, above all, to the conditions in which the study is undertaken. The elaboration of a UTP requires organizing information exchanges between different actors, providing facilities to exchange technical data, and involving all partners in the decision-making process.

Hence, it is a learning and collaborative process between multiple partners that will produce a shared vision on public transport. It is above all a working process more than an end in itself.

Crucial coordination with other planning strategies, particularly urban development

Even if UTPs deal with transport issues, they must be consistent with other planning tools. Transport schemes should be coordinated with land-use planning and should take into account urban development data on the territories under study. With these prospective elements, it should be possible to design transport services that are coherent with local development and to anticipate future land acquisitions.

An operational, realistic, and correctly assessed action plan

Urban Transport Plans concern relatively short-term initiatives for the next 5 to 10 years. It is therefore essential to have a detailed action plan – facts and figures – that is realistic and financially viable.

Adequate technical skills on urban transport

Formulating a comprehensive urban transport policy requires qualified technical staff and even expert consultants to conduct studies on relevant subjects. The authority in charge of the plan and all the structures that collaborate in the plan's elaboration should have these technical skills. Imbalanced capacity levels between the technical services concerned affect the proper conduct of the planning process in which the quality of the final document is a direct result of the collaborative efforts involved.

Opportunities for knowledge transfers to local services

Even if foreign consultants may be requested to collaborate in urban transport planning, it is necessary to develop local consulting capacity. Local experts may be mobilized faster than foreign consultants – mostly for less extensive studies than planning strategies – ensuring strong local presence and more focused consideration of local contexts. It also makes possible developing qualified expertise on planning and transport issues. Moreover, it is essential that these studies – carried out by local or foreign consultants – create opportunities for knowledge transfers to the contracting administration. It should not be a passive relationship in the sense that it should promote the development of local technical skills.

Example**TRANSPORT PLANNING IN TUNIS**

The study for a master plan for Tunis' urban transport was carried out in 1998, and the conclusions were approved in 1999. They stressed the need for a regional railway network to meet the growing mobility needs on a metropolitan scale and to preserve a significant share of the overall transport supply to the declining public transport sector. A feasibility study was carried out to reexamine the scenarios outlined and their coherence with the proposals of Tunis' master plan on spatial planning. The study recommended complementing the light metro network and particularly the lines of the Regional Railway Network. Specific details are found in the summary of the initial draft and the detailed initial draft covering the period of the 10th Plan from 2002 to 2007. The first undertakings of the network are scheduled for 2008 during the 11th Plan (2007-2011) and will span over several plans due to the significant investments required.

This example shows the importance of a continued approach to planning and the time needed to conduct this type of studies punctuated with the necessary decision-making stages on project options.

1/2 The Public Transport Planning or Regulating Authority and Operators

Decentralized responsibilities that often result in uncertainties in the field

Public transport planning in urban areas requires local management institutions to remain in close contact with the urban population's needs. In many countries, municipalities or groupings thereof are in charge of organizing transport services.

In Mediterranean cities, even if decentralization has gradually been implemented, the State's intervention (central or deconcentrated) is still strong. Hence, responsibilities actually devolved to local authorities are still limited.

One public authority in charge of public transportation demand management (TDM)

In view of the diversity of public organisms involved in public transport management, the creation of a unique authority can ensure the necessary coherence for a comprehensive policy aimed at developing efficient public transport with quality services that meet the needs of urban populations, today and in the future.

This urban transport agency should be in charge of all transport operators, bus companies, metros, and other mass transit systems, whether public or private, but also of paratransit operators who are currently major suppliers of public transport.

An action perimeter that truly reflects population movements

One of the difficult tasks that must be addressed in order to establish a unique transport authority is defining the perimeter of action that will reflect the population's mobility behavior.

The population rarely travels within the limits of one city only. Therefore, agreements must be reached between several cities, and even between different levels of local authorities, because coordinating transport on larger areas, regional transport for example, is also relevant. The "Region" could become a more appropriate geographical scale, but then again each case is different. Action perimeters will most certainly change and will reflect the development of territories.

To be efficient, the authority's role and institutional responsibilities must be clearly established. Powers and competences conferred by law or by the State to local authorities should be devolved to the transport authority to enable it to fulfill its mission. It is advisable to avoid creating new obstacles by superimposing an additional administrative level, which would only increase delays due to administrative bureaucracy.

Organization, management, and planning of public transport, including paratransit

The following key missions should be ensured, as a minimum, for a more efficient public transport system:

In relation to the organization of public transport services:

1. A clear definition of the public transport network and of quality standards for services: supply of transport services, service levels for the major transport modes, pricing policy;
2. Integrating paratransit (small-scale transport) into the regulated public transport supply and defining its role within the public transport system;
3. Planning the future development of public transport and, if possible, of overall urban mobility;
4. Undertaking large-scale infrastructure projects.

In relation to public transport management and regulation:

5. Setting up operating contracts with one or several public and/or private operators;
6. Allocation of lines or geographical sectors;
7. Management and monitoring of contracts;
8. Monitoring enterprises and adequate service provision.

A coherent approach, **one authority** and gradual decentralization

As mentioned, missions fall under two categories: organization actions, and public transport management and regulatory actions.

It would be better of course to have only one institution in charge for increased coherence, but missions may be distributed among several institutions within the framework of a gradual decentralization approach, for example. This is the case with Tunisia's regional transport planning authorities (Autorités Régionales Organisatrices des Transports Terrestres, AROTT) envisaged in each of the countries governorates.

A gradual transition toward a **unique planning authority** and its possible **legal forms**

Even if it essential to aim at the objective of a unique public transport authority, mobilizing in the long-term local authorities, other forms are also possible over the short and medium terms, for example, through the creation of a public institution with representatives from the State (central and/or local authorities), municipalities, and even other administrative levels. Or else, as in Naples, it could take the form of a consortium of public transport companies.

Wide participation of **urban transport actors**

To be effective, all actors concerned must take part in the decision-making process. The public transport authority should aim at establishing a comprehensive transport scheme in which public transport services play an important role. This requires close collaboration with other partners concerned with transport issues.

Adequate **financial resources** and **quality staff**

The authority in charge of public transport should have adequate means at its disposal to implement a transport policy. These include financial resources and also human resources. Its staff, who will depend on the institution's missions, should be knowledgeable in transport management and public transport planning. Likewise, the authority should have skilled personnel to study and monitor transport issues and, if need be, it should be able to count on local consultants. This will also require adapting existing organizations to include the transport authority.

Example

THE ORGANIZATION OF TRANSPORT SERVICES IN NAPLES¹

Beginning of the 90's, accessibility was a major problem in Naples' transport system due to the lack of connections between transport infrastructures and to the fragmented management of transport networks that mobilized six different operators. As a result, for a given journey, the population had to face either physical access difficulties (poor inter-connections), or financial difficulties (forced to use several transport tickets for one trip). A new type of organization was devised to deal particularly with the financial aspect.

The integrated fare system of Naples' transports started with the creation of a network by the six public transport companies covering the metropolitan area that formed the Napolipass consortium destined initially to assimilate the six traveling tickets into one "Giranapoli" ticket for use within the city perimeter, and to create a new "Unico" ticket for the metropolitan zone. Napolipass is therefore in charge of ticketing for consortium companies. Fare revenues are distributed to the companies according to the number of users traveling on the different networks. Consortium staff is composed of personnel designated by each participating company. All fare related decisions are taken jointly by the companies and by three institutional levels (city, province, and region according to their institutional competences). Ticket sales have soared since the implementation of integrated fares: from 27 million in 1995 (year in which the consortium was created) to 39.5 million in 1999.

1/3 How to promote citizen involvement?

Limited citizen participation in Mediterranean cities

Involving citizens in local needs assessment is not a common practice in Mediterranean cities. It is however an important element to determine which projects will be better adapted to existing needs and to build consensus for the project's acceptance by the population. Experience in industrialized countries has shown the increasingly important role of consultation tools in the elaboration of UTPs and large-scale projects' design.

1: Source: Floridea Di Ciommo, L'accessibilité : l'enjeu prioritaire de la nouvelle politique de transport public à Naples - Veille internationale (2002); and Une comparaison franco-italienne. La tarification unique, outil d'accessibilité aux transports collectifs - Pouvoirs Locaux, dossier - Transports et Territoires : la nouvelle donne (2005).

Different citizen actions for different countries

Clearly, citizen participation depends on the political context of each country and on local traditions on public debate. And yet, transport systems should benefit local populations and therefore should correspond to their needs. Consequently, the issue is not if citizen participation is relevant but which mechanisms should be used to facilitate and encourage citizen involvement.

It is not possible to apply a standard process to encourage citizen participation to different local situations. Innovative solutions must be identified in each case. Consultation is a gradual step-by-step process. These are long-term initiatives that go beyond transport issues and have direct social impact.

Promoting citizen participation

Built during successive stages, the participatory process aims at the final objective of matching adequately transport supply to the needs of the population. User surveys, for instance, help determine satisfaction levels and are very useful to meet specific objectives, but are not strictly speaking participatory actions.

Three stages can be identified in the process to develop citizen participation:

1. The first stage involves the transport authority since it consists of communication campaigns on the project to inform the population. There is no active consultation but a process is engaged to create awareness on transport issues, to encourage citizens to take an interest in the project and, eventually, to formulate questions. Different tools may be used in this stage: bulletin boards on building sites, press kits or press conferences relaying the information through the media, etc.
2. During the second stage, the initial process continues through an iterative approach involving mutual exchanges between project managers and the population. A dialogue is engaged to provide answers to questions raised by communication campaigns during the first stage. The authority begins to integrate the population's reactions, and citizens obtain answers to their questions. In this stage, consultation meetings may be organized for a direct exchange of ideas with the community.
3. Finally, the third stage is the consolidation stage in which user groups are created. These are structured groups more capable of reacting to the projects proposed, and even of anticipating population needs. These users' associations may be regularly consulted later on and may be involved in the planning authority's decision-making process as members of policy committees, for instance. During this third stage, recognized and competent users' associations (France's National Federation of Transport Users (FNAUT), for example) have been created and are consulted before project implementation.

Useful consultation with **informed citizens**

Quality citizen participation is directly dependent on the participants' knowledge of transport issues. Just as in the planning process where exchanges between partners and sustained analysis are required to prepare quality documents, developing transport proficiency in the community will be a long-term process and will result from exchanges on transport projects and policies.

Collaborative efforts and a vision shared by **technical services and local authorities**

Technical services and local authorities should develop a common vision to meet the citizens' needs in urban transport. Associating citizens to transport projects generates two types of exchanges between project developers and future beneficiaries. On the one hand, there are political exchanges on how to incorporate these projects within more comprehensive strategies, and on the other, there are technical exchanges on the projects themselves. Consequently, participatory actions cannot be envisaged without skilled technical services familiar with public urban transport and capable of leading these projects. This also requires building capacity on transport issues and securing local services from consultants trained on transport services and citizen participation.

Example

PUBLIC DEBATE ON THE PROJECT FOR A RING ROAD IN NICE

Faced with increasing congestion problems on freeway A8 that goes through the city of Nice (Côte d'Azur), public authorities initiated a project presenting three proposals for the construction of a ring road that would bypass the city. The National Commission for Public Debates, an independent administrative authority, appointed a Special Commission to carry out a public debate, which is required by law for this type of project, in order to inform the Ministry of Infrastructure on the timeliness and local acceptance of this major investment.

The debate took place over a period of four months in 2005-2006, based on documents prepared by the administration and made available to the public. The different controversial aspects of the project were discussed during eight public meetings of 3 to 4 hours duration, and during more technical restricted workshops, also open to the public. The debate allowed to draw attention to the need for a policy in favor of public transport in the city before envisaging the major road investments proposed. A consensus was reached to carry out more limited road arrangements until it has been verified that measures in favor of public transport have been effective.

Financing and Pricing

2/1 Financing Urban Transport Operations

The recurring deficit of public transport companies

In most Mediterranean countries, public transport companies are in financial difficulties. This is mainly due to the following factors:

1. Public authorities do not compensate operators for public service obligations (particularly reduced transport fares for certain passengers);
2. Fares are relatively low and are not adjusted to inflation;
3. The strong competition of informal transport providers that offer services in the most lucrative lines. In Morocco, the loss of earnings of public transport operators has been estimated to almost US\$32 million for the 2005-2006 season. In Tunisia, the Société des Transports de Tunis (STT) and the Sociétés Régionales de Transport (SRT) expected for 2007 an operating deficit of almost US\$174 million.

These deficits generate a vicious circle for transport companies in which maintenance and investments are neglected with the ensuing degradation of the quality of services that leads to the inevitable decline in ridership and to higher losses. Faced with this situation, public authorities have implemented several support mechanisms for transport operators. In Morocco, the State has liquidated most of its transport agencies. It has also created a budgetary fund, allocating part of its resources (US\$17.5 million) to compensate reduced rates. In Beirut, the State grants the Railway and Public Transport Agency annual subsidies amounting to US\$13 million to cover its operating losses. In Tunisia, the State and transport companies entered into three-year contracts/programs specifying actions to be implemented (higher fares, payment of financial compensations, etc.) for the rehabilitation of the companies' financial situation. This mechanism did not yield the expected results mainly because the parties were unable to meet their commitments.

Major challenges for the future

One of the future challenges for public authorities concerning pricing policies will be to ensure the financial viability of public transport operators while improving access of the very poor to transport services. Current fares are often too high for a large sector of the population, affecting particularly households under the poverty line who only have limited access to employment opportunities and public services. Restructuring public transport companies will also bring additional challenges to State authorities. Public transport operators lack the adequate means and skills to offer quality transport services. They are often overstaffed with levels that sometimes exceed 6 to 7 employees per bus (compared to less than 4 in France, even if this is not a goal in itself), have low levels of productivity, and very old vehicles. Finally, the last major challenge concerns designing the public transport offer itself – number of lines, frequency, etc. – that will largely condition the financial sustainability of operators. The public transport offer must be economically effective and must be part of a comprehensive policy for urban transport in proportion to the size of the agglomeration.

Solutions to be found

It will be difficult to achieve the rather conflicting objectives of financial sustainability for operators while providing access to the very poor without strong intervention of public authorities, whether to reorganize the transport supply or to implement financial compensations for public service obligations.

International experience shows that public authorities should start by creating favorable conditions to the financial viability of public transport operators. This requires particularly a new operational organization to improve services, to guarantee intermodal complementarity (or at least effective competition especially with shared-taxis or mini-buses), and to reduce operating costs per passenger in order to keep fares as low as possible.

Secondly, existing pricing policies must be reviewed. Even if it is necessary for social reasons to maintain low fares for the public in general, reduced fares for certain categories of users – sometimes not targeted to the right groups and ineffective – could be reviewed. Within this context, there is also the question of providing two different offers of public passenger transport: one offering a low-cost service affordable to all and another offering a more expensive quality service that could appeal to users who are inclined to favor private vehicles. This last solution has rarely been successful throughout the world.

Most often, a system that provides financial compensation for compulsory service obligations is unavoidable. The system must allow transport operators to cover operating costs and to make reasonable profits, regardless of the pricing policy adopted. To address this issue effectively, the amount of the compensation could be determined during public tendering by selecting operators based on the minimum subsidy requested in their bids². But the question remains as to who will pay the compensation. If local authorities make low fares mandatory, logically, local authorities should provide adequate funds from their own budgets. However, if the central State mandates local authorities to apply reduced fares for certain categories of users, it seems normal that regulatory authorities (the Ministry of Education, particularly) should cover related expenses.

Finally, it must be pointed out that outsourcing public transport services to private operators often results in higher productivity and better quality offers. Nevertheless, this solution requires well-balanced contracts based on strict rules that must be observed by all the parties involved (particularly regarding raises in fares). In order to attract private operators, fixed-price contracts³ may be a wise choice since they guarantee the operator will be paid for services rendered (as opposed to contracts at contractor's own risk).

BOGOTÁ'S TRANSMILENIO

TransMilenio, the bus rapid transit (BRT) system of Bogotá, is often given as an example to demonstrate that it is possible to have a highly effective mass transport system (service quality and capacity almost equivalent to a metro system) within a social policy of transport pricing. In spite of significant investments, the system does not need subsidies for its operations and generates acceptable profits for private operators (even after depreciation of their bus fleet). Highly under-estimated initially, fares went from US\$0.30 to US\$0.40 in the year 2000, rising later on to US\$0.52. However, the modally integrated fare mechanisms implemented after TransMilenio's creation reduced transport costs for users who could take different transport modes for the same trip paying only once.

2: The financial compensation would be specifically stated in the contract.

3: In fixed-price contracts, the public partner "buys" a determined service from the operator at a fixed price. Hence, the public partner has better control over the quality of services.

2/2 Pricing

Very different transport pricing levels and no modally integrated fares

Today, in most Mediterranean cities, different transport fares apply to the following categories of users:

1. Users paying the full fare;
2. Students;
3. Fully-exempted passengers (veterans, for example).

There may be a great difference between fares for the first two categories of users. Tunisia, for example, has one of the lowest student fares in the region (10% of the regular fare in Tunis). Moreover, integrated fares between the different transport modes, and even within the same mode (buses, for instance) are not common, thus increasing considerably the burden of transport expenses on the household budget.

The right balance between higher fares and access to transport for the poor

As previously mentioned, the major challenge in a pricing policy is the conflict between very low reduced fares and the need for sustained financial viability of transport operators. In order to meet this challenge, the adequacy of current pricing levels must be assessed. In fact, they are inconsistent with the expectations of two categories of users: poor households and the middle class. For the poor, fares are generally too high limiting their use of public transport. As a result, they choose to walk which gives them only restricted access to many public services and economic activities. Whereas the mediocre service resulting from the operators' financial fragility may encourage middle classes to choose individual transport modes, particularly the automobile, with the ensuing aggravation of traffic congestion and pollution. All these issues may only be assessed through a comprehensive approach, within the framework of the government's social policy and through public transport planning.

Solutions to be examined

There are many solutions to address these challenges. It is noteworthy that solutions presented below may be adapted and/or combined according to the specific characteristics of the different urban centers in the region.

- **Reduced fares for certain social groups.** Reduced fares for certain social groups (students, in particular) are a challenge for public authorities and for transport operators as well. Raising transport fares, currently very low, could be a solution. Also, direct aid mechanisms for the very poor could be useful to better target the groups according to income levels. Another alternative could be limiting the number of lines where reduced fares are accepted.

- **Adjusting fares to distances traveled.** Today, urban growth and expansion raise the question of adjusting fares according to the distance traveled. In most large cities, transport fares vary proportionately to the number of urban zones the user is entitled to go through (the first zone is generally the urban core and the first inner suburbs). Systems based on concentric zones starting from the urban core are the most common worldwide. These systems can nevertheless penalize the poor who live in peripheral areas.
- **Introduction/widespread use of season tickets or passes.** Widespread use of season transport tickets brings many advantages for operators and users. For users, they offer the possibility of unlimited trips for a fixed amount over a certain period of time (weekly, monthly, or yearly tickets) and therefore lower costs per trip. For operators, season tickets develop customer loyalty (thus increasing the overall use of public passenger transport) and generate lower fee collection costs. In Tunisia, the Société des Transports de Tunis (STT) offers a wide range of seasonal tickets (5 in total) for different types of users: Bus, Metro, the Tunis-Goulette-Marsa suburban railway (TGM), Bus & Metro, and finally Metro & TGM.
- **Multimodal Integrated Ticketing.** It is the greatest challenge for public authorities in the medium term. Creating an “integrated ticketing community” (one-ticket) for different transport modes and/or operators is truly essential to render public passenger transport more competitive and attractive than private vehicles. The implementation of integrated ticketing is a complex task for public authorities, particularly when several transport companies operate in the transport perimeter in question (which is often the case). They must therefore proceed by stages. Firstly, integrated ticketing requires structuring effectively different public transport networks (in order to assure their spatial complementarity) and the implementation of a common ticketing system. Whatever the type of multimodal ticketing, public authorities must have substantial capacity and skills to efficiently manage and apportion fare revenues between the different operators. It requires detailed and precise knowledge of passenger traffic by line and by transport mode, and therefore an effective monitoring system. This is not an issue when operators work on the basis of fixed-price contracts or when only one operator is in charge of all public transport systems in one city.
- **Controlling fare evasion.** In most Mediterranean countries, fare evasion has increased these past years. There are several reasons for this: 1) there are not enough traveling ticket controllers, 2) inadequate sanctions for fare evaders are not effective, and 3) mechanisms to combat fare evasion are inadequate, and even nonexistent. The situation calls for the modernization of ticketing systems that would also make possible calculating accurately the amount of trips (particularly those of privileged users). Enforcement measures should also be intensified by increasing the number of ticket controllers and through better follow-up and collection of fines.

EXAMPLES OF INTEGRATED TICKETING

Most North Mediterranean cities have adopted the solutions described above, particularly multimodal integrated ticketing, seasonal passes, and strict controls for fare evasion. Some countries in Latin America and Asia have also implemented these solutions successfully. In Bogotá, Colombia, TransMilenio users have the right to use feeder lines with the same transport ticket. In Singapore, integrated ticketing applies to all the different modes of transport (buses and trains).

2/3 Financing Infrastructure

Severely underfinanced urban transport infrastructure...

Throughout the Mediterranean, investments in urban transport infrastructure are far below required levels. In 2006, the 24 most important municipalities of Morocco only invested an approximate amount of US\$93 million out of an estimated total of almost US\$300 million required. According to a recent study conducted by the World Bank⁴ in Egypt, in the past ten years Greater Cairo only invested an average US\$100 million per year in transport infrastructure, that is, approximately one fourth of the investments normally required for such a large city. The situation is all the more critical since the few investments made concentrated particularly on road infrastructure, to the detriment of public transport systems.

... generates high costs for the community

For several decades, cities have been the engines of economic growth for countries in the Mediterranean region. The quality of transport services is a determining factor for their competitiveness and also a key element of all policies aimed at reducing poverty. Recurrent underfinancing of the urban transport sector (particularly public passenger transports) can generate extremely high costs for local communities in the time lost by users of individual and public transports (due to increased traffic congestion) and in health costs due to air pollution. It is also worth mentioning the burden of the energy bill and its impact on the country's trade balance, particularly for net oil-importing countries such as Morocco, Tunisia, Jordan, and Lebanon.

4: Greater Cairo: A Proposed Urban Transport Strategy, World Bank, November 2006.

**But it is not only
a question of financing**

In most Mediterranean countries, local authorities do not have enough resources to finance urban transport investments by themselves. In Morocco, for instance, local funds cannot finance more than 25% of sector investments. In fact, today the State is always one of the funding partners for major transport infrastructures such as beltways and mass rapid transport systems. Thus, major issues concern the State's capacity to 1) increase significantly its funding for urban transport infrastructure, and also 2) guarantee that effective institutional mechanisms can optimize the use of funds and distribute resources between cities according to economy-based predefined criteria.

**Available
financing options**

In order to meet these major challenges, public authorities – at both local and central levels – must reexamine their current financing priorities and consider all possible sources for additional funding. The main options, whose viability depends on the specific context and conditions in each country, are presented in detail in the following paragraphs.

- As in many industrialized and emerging countries throughout the world, the State must lead the way in urban transport financing; however, to limit the impact of the State's contribution on the national budget, tax increases could target direct or indirect beneficiaries of transport infrastructures. Fuel surtaxes, registration taxes, and vehicle ownership fees are common mechanisms worldwide and economically justified since they target those road users who, in general, are often undertaxed for the costs and externalities they impose on the local community. A tax for automobile users is also justified by the fact that automobiles demand significant public investments in road infrastructure and because taxes, such as car registration stickers, are in general designed to increase gradually. Other types of taxes may also be envisaged. The financial contribution of indirect beneficiaries of public transport systems could take the form of taxes levied on companies, supermarkets, and real-estate transactions as well as collecting charges on the increased value of the land, for instance.
- Local authorities, municipalities in particular, must intensify their financial efforts and increase their respective contributions. To do so, however, given their limited resources, local authorities would have to reallocate their current resources to the urban transport sector.
- Dedicated financing – effective and transparent – should also be taken into consideration. Taxes mentioned above may be collected by dedicated funds. Resources in these funds cannot be used for other budget lines giving an assurance that a direct relationship exists between the taxes levied and the results obtained in the field. Specific criteria for funds allocation can also be determined in order to guarantee they are used rationally on well-designed priority projects.

- Borrowing from funds providers should also be considered, for instance, for the construction of mass transit lines. However, it is definitely not advisable to undertake expensive high-risk projects simply because it is possible to obtain international financing.
- Finally, public-private partnerships (PPPs) may be a wise alternative to complement State financing. International experience shows, however, that few private investors are willing to take the risks (especially commercial and political risks) involved in financing heavy transport infrastructures in emerging countries without substantial guarantees.⁵ Nevertheless, several examples in Latin America and Asia confirm that investors are interested in operating concessions of mass transit systems. In these concessions, the private sector is fully in charge of the rolling stock and system operations, while public authorities assume the responsibility of heavy infrastructure constructions.

EXAMPLES

Many developed and emerging countries have created sustainable financing mechanisms for urban transport infrastructures. In 2004, the United States federal administration financed 40% of all investments made in urban transport infrastructure and equipment (against 14% for individual states and 46% for local authorities). Most federal budget allocations for urban transport programs (including all transport modes) are calculated according to a predetermined formula set forth by legislation.

In France, public sector agencies and private companies of more than 9 employees located within specific urban transport perimeters must pay a transport tax (Versement Transport, VT). The amount of VT applicable to the company's payroll is determined by urban transport planning authorities within limits established by law. This transport tax currently covers about 35% of the budget of transport planning authorities and so it contributes to finance public transport investments and operating costs.

Finally, Colombia's Integrated Mass Transit Systems are being financed through PPPs. The public sector, the State and concerned municipalities, assume financing of heavy infrastructure (MRT, etc.). Municipalities contribute with local revenues from fuel taxes, urban taxes, and other local resources: their contribution has fluctuated in the past from 30 to 60% of the total amount of public financing. The State provides the remaining funds from its own budget or by borrowing from fund providers. For the first phase of Bogotá's TransMilenio, the municipality implemented a 25% fuel surtax (allowed by Colombia's laws) and used half of the revenue for investments in infrastructure. As for the private sector, it covered the purchase, operations, and maintenance of buses and of equipment for the ticketing system.

⁵: Sovereign guarantee of the central State, investment subsidies, strong participation of funds providers, etc.

2/4 Public-Private Partnership (PPP)

Private participation limited to transport networks operations

Public-private partnerships in the urban transport sector are quite common in South Mediterranean countries, but most are limited to transport operations, mainly bus lines. Practically no Build-Operate-Transfer contracts have been used. (BOTs are more complex arrangements involving large private investments for transport infrastructure.) Often, PPP contracts set few direct guidelines and operations remain at the operator's own risks. Under those conditions, private operators often concentrate their efforts in the most lucrative lines (with detrimental effects on the rest of the network) and compete between themselves. Finally, it is noteworthy that PPPs also concern urban and shared taxis. In all countries in the region, operating licenses for urban and shared taxis are granted by public authorities for a limited duration.

Institutional and risk-sharing issues

PPPs should only be established on a sound basis allowing private operators to have a long-term vision of their services and financial results, and full knowledge of all the investment risks involved. To achieve well-balanced public-private partnerships, a delegating authority is needed with a clearly defined mission and adequate skills in public transport planning and management. This is currently not the case. One of the major future challenges for PPPs will concern the institutional framework or the capacity of public authorities: to define a coherent offer of public transport at city level; to grant network operation concessions to one or several private operators; and finally, to manage and supervise PPP contracts, including enforcement of sanctions if necessary. Lastly, existing PPPs must be evaluated before deciding on an individual basis which ones offer the best risk distribution between public and private partners.

Solutions to be implemented

Given that few private investors are willing finance heavy transport infrastructures without substantial guarantees (sovereign guarantee of the central State, investment subsidies, strong participation of funds providers, additional sources of revenues⁶, etc.), future improvements should concern primarily PPPs for public transport services:

6: In some cases (Japan, Hong Kong), property development income (shopping centers) linked to the public transport network is a major source of funds for infrastructure investments.

- **Implementing a favorable institutional framework.** PPP contracts will only be effective if functions are clearly separated between operators (private or public for that matter) and public agencies whose objective is to take into consideration and protect the interests of users. The implementation, at local levels, of public transport planning authorities is essential. All large cities in the region should have a planning institution (See Chapter 1) in charge of designing the public transport network (lines, frequencies, etc.), planning the transport offer, choosing private line operator(s), managing and monitoring PPP contracts, and finally, setting up a data base of public transport supply and demand.
- **Financial balance of PPPs.** Public transport operators will not be efficient and enterprising if they cannot make reasonable profits in a context in which they cannot control all the risks. Public authorities should in fact create favorable conditions which will require, particularly, a coherent pricing policy (with, above all, payment of compensations for compulsory public service obligations); eliminating direct competition between operators working on the same lines; a strict operating framework for complementary transport providers (shared taxis, in particular); and designing a transport supply that adequately meets the demand in terms of quality, frequency, and quantity.
- **New forms of PPPs.** Public authorities should consider a wide array of PPPs besides the usual arrangements at contractor's own risk. There are many different combinations that allow sharing risks on costs and revenue between public and private partners (See table below). It would be interesting to study the possibility of fixed-price contracts⁷. These contracts allow the public partner to "buy" a specific service⁸ from the operator at a fixed price thus enabling the public partner to better control the quality of services. The operator, who has guaranteed revenues and is able to manage the risks involved⁹, may focus efforts on the provision of effective services and is well disposed to make investments. Integrated pricing is also easier to implement. Nevertheless, fixed-price contracting may involve certain difficulties concerning fare collection. It may also require the city to invest funds if revenues do not cover expenses. Another form of PPP is management contracting in which the private operator only supports the technical risks related to system operations. However, management contracts require significant investments from the procuring public authority, chiefly in rolling stock.

7: Gross-cost contracts.

8: For example, a particular amount of vehicle/kilometers over specific lines with fixed schedules.

9: Except when increasing traffic congestion unpredictably decreases travel speed.

- **One or several private operators?** Having only one private operator brings many advantages since it is easier to manage the transport offer and to implement an integrated pricing system (highly profitable to users). Also, depending on the size of the city, it may be possible to attract an important partner with sound management skills and strong investment capacity. Finally, the partner may develop a privileged relationship with the public authority and be motivated to find sustainable solutions to problems that will most certainly arise. However, potential significant disadvantages must also be considered (monopoly effect, rigid management procedures, lack of comparison, stronger competition in subsequent tendering) which require reliable skills from the delegating authority in terms of regulations and monitoring measures. These critical skills are also necessary when several operators provide transport services. They could each operate a group of lines or in a predefined geographical area.

Type of contract	Risks on Costs for the	Risks on Revenue for the
At contractor's own risk	Operator	Operator
Gross Cost Contract	Operator	Planning Authority
Net Cost Contract (fixed subsidy)	Operator	Operator, in excess of the fixed subsidy by the Planning Authority
Management Contract	Planning Authority	Planning Authority

EXAMPLES

Examples in Latin America and Asia have shown that private investors are interested in operating concessions when public authorities are willing to provide favorable conditions for the projects' success. In most BRT systems in Latin America, the State and the municipalities involved have financed heavy urban infrastructure – MRT systems, for example – while private operators invested in equipment – fare systems, articulated buses, etc. – for the systems' operations and maintenance.

In terms of new forms of PPPs, the municipality of Amman (Jordan) recently decided to entrust operations of its entire bus network to two private operators through fixed-priced contracts.

Choosing a Mass Transport System for a Public Transport Network

Faced with a critical situation in urban transport supply and a strong increase in transport needs in cities whose population may range from one million to several millions and even exceed 10 million inhabitants like megacities, many high local authorities aim at providing efficient and modern transport services with effective mass transport systems that will not become an unbearable financial burden for their citizens.

The provision of mass transport services on high demand corridors requires major investments in infrastructure for the implementation of mass rapid transit (MRT) systems. The investments required vary greatly depending on the technology chosen. Several technologies exist with different functions, integration capacity, and costs. Without seeking to oppose the different transport options, a large city may have to combine several mass transport technologies. They are described below to show that reasoned decisions are possible, bearing in mind that beforehand many measures for circulation and traffic management and road sharing schemes may benefit buses and even minibuses at lower costs. It is also noteworthy that a major public transport project is a structuring urban project that will have a determining impact on the city well beyond the transports field.

The choices made in each city are compromises between the technologies available, the transport needs, the financing capacity, and the urban context.

3/1 Selection Criteria for a Mass Transport System

The range of options available for mass transport has been considerably enlarged since the introduction of Bus Rapid Transit (BRT) systems offering high levels of service. In addition to “traditional” tramways, metros, and rail transport, the BRT concept, which appeared first in Latin America, may be considered as a cost-effective solution developed by cities in this world region seeking to establish efficient transport systems. The concept has since spread worldwide.

However, there is no universal answer to mass transport. Each city is different: alternative analysis and detailed studies are needed to determine the most appropriate transport mode. Mentioned below are some interrelated parameters for analysis in the choice of a transport system:

- Mobility demand;
- Transport capacity at peak hours;
- Vehicle frequency;
- Average distance between stations;
- Commercial speed;
- Urban integration capacity;
- Investment costs in infrastructure and rolling stock;
- Operating costs.

Different modes of mass transport

There are four public transport systems potentially capable of meeting mass transport needs¹⁰: tramways, BRT (Bus Rapid Transit), LRT (Light Rail Transit), and MRT (Mass Rapid Transit).

The definition of these transport modes may vary from country to country which is sometimes source of confusion. The table on the next page summarizes the main technical characteristics of the different systems.

¹⁰: This typology is inevitably simplifying; important variations are possible, particularly in the definition and operations of BRT systems.

	Tramway	BRT - Bus Rapid Transit	LRT - Light Rail Transit	MRT - Mass Rapid Transit
Integration	Right -of-way ⁽¹⁾	Right -of-way ⁽¹⁾ or exclusive right-of-way	Exclusive right-of-way ⁽²⁾	Exclusive right-of-way ⁽²⁾
Mode	Tramway	Bus	Long tramway, metro	Metro, Regional Express Railway
Right-of-way	single lane/direction	single lane/direction or two lanes/direction ⁽⁴⁾	single lane/direction	single lane/direction
Guided	Rail	Often none ⁽³⁾	Rail	Rail
Length of vehicles or trains	20 to 50 meters	Buses or articulated buses up to 28 meters long	40 to 90 meters	50 to 225 meters
Width of vehicles	2.20 to 2.65 meters	2.50 to 2.80 meters	2.20 to 2.70 meters	2.40 to 3.20 meters

(1): Right-of-way: the transport system is partially separated from general traffic and is subject to congestion conditions.

(2): Exclusive right-of-way: the transport system is totally segregated from general traffic; speed and service reliability are guaranteed.

(3): But several technologies using mechanic, optical, or magnetic guides exist.

(4): Or single lane/direction with a passing lane at stations.

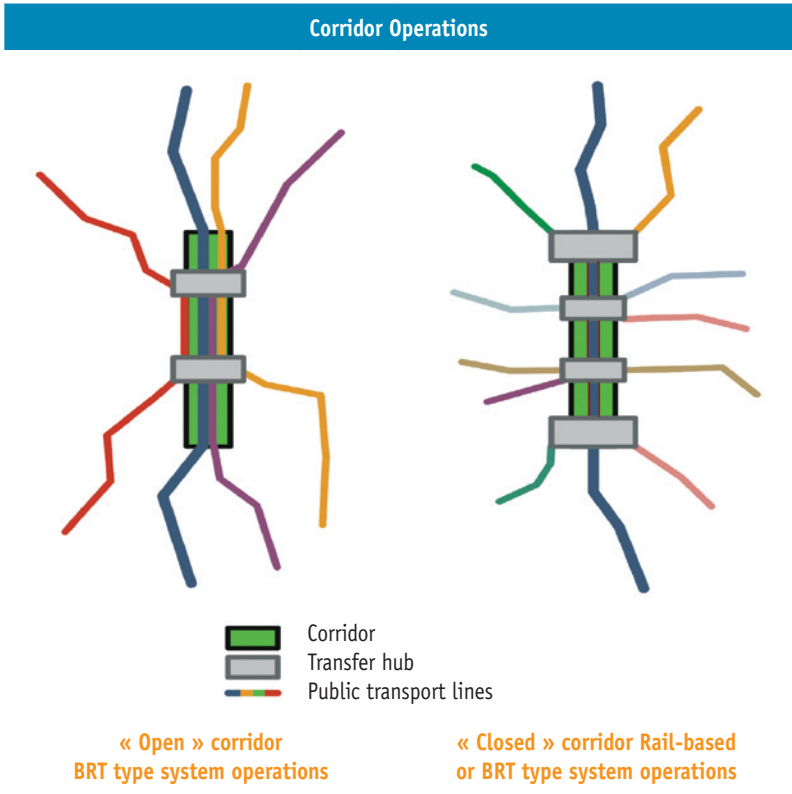
Transport demand

The assessment of the public transport demand is a fundamental parameter in the choice of a mass transport system. It will dictate a first choice between the different potential systems and will allow dismissing others whose capacity is too low or, on the contrary, too high.

The demand should be determined for existing conditions, but long-term forecasts should also be made in order to determine the system's projected flexibility and scalability. For example, changes to less adaptable rail-based systems are more expensive than for systems running on rubber tires like the BRT.

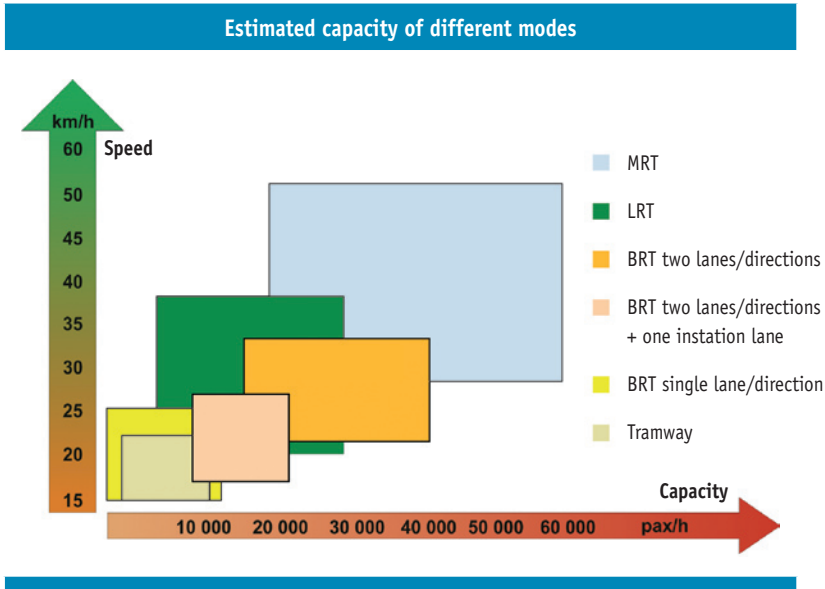
The location of the demand also provides information on the structure of the network to be implemented. The needs for links to other networks, express lines, feeder lines, and the identification of a central node, a corridor, etc. will affect the choice of transport system:

- The concentration of flows linked to a network organized around a central node may limit the extension of a line or of a network;
- Corridor operations are organized differently according to the transport mode used. A rail system limits the operation of several lines along the same corridor and requires transfer hubs with feeder services to these transfer sites. BRT systems offer several possibilities for operations along one corridor: express, limited service, omnibus.



Original in French. CETE - Lyon.

The location of the transport demand is closely related to the city's organization, which is in turn affected by the structure of the public transport system. Therefore, the choice of a mass transport system and its integration, the place it will occupy within the public transport network, should be integrated with land-use planning.



Original in French. SYSTRA.

Note : The graph above presents the estimated capacity of the different modes which is not enough to determine which mode will match the needs of a specific city: detailed studies based on the analysis of different specific parameters are required.

Capacity and commercial speeds vary greatly by mass transport modes. They may reach almost 60,000 pphpd (passengers per hour per direction) and 60 km/h:

- Tramways reach optimum capacity with service frequencies of 5 minutes/direction, or a tram every 2.5 minutes at each intersection which allows them to have priority over other traffic when they reach the intersection. The capacity may be then regulated by the number of vehicles per tram;
- Even if bus capacity is important (in Bogotá, bi-articulated buses may be up to 28 meters long), the capacity of BRT systems is determined by the frequencies of buses. High capacity levels may be obtained (service frequencies of 280 buses/hour/direction, that is one bus/direction every 13 seconds) by they must operate on a two lanes/direction basis;
- The exclusive right-of-way systems provides greater flexibility in frequencies and allows higher-level performances in terms of commercial speed and passenger carrying capacity;
- For a given capacity, the service frequency of a BRT system, related to lower bus capacity, is an asset that makes BRT even more attractive.

Distances between stations affect commercial speed and total length of lines. The closer the stations, the lower the commercial speed and the longer the travel times from one line terminal to the other. Bearing this in mind, many different distances between stations are possible, and the choice will be made according to the level of services to be provided. Common distances between stations for the different mode are as follows:

- The average distance between tramways stations is approximately 500 meters, for lines with a total length of 10 kilometers;
- The average distance between stations for LRT and MRT systems tends to be over one kilometer and is adapted to lines whose total length exceeds 15 kilometers;
- BRT performance in terms of capacity is similar to tramways in single lane/direction systems and may be similar to MRT's in two lanes/direction systems, therefore distances between stations range between those of tramways and MRTs.

Costs

It is somewhat difficult to compare the costs of different modes. Often, costs for BRT systems do not include the rolling stock¹¹, while French tramways include rolling stock and construction of maintenance centers and even urban facilities outside the trams' right of way. Labor costs are different in each country and therefore affect construction and operations costs. Finally, the imported materials paid in foreign currency that are required by some technologies like tramways and metros have an impact on final costs, whereas other modes, like buses, may be produced locally more easily.

Considering the above, costs may be estimated as follows:

- Excluding the rolling stock, investment costs for BRT projects may go from €1 million/km¹² to more than €5 million/km. In Bogotá, the cost of TransMilenio has been estimated to €213 million for 41 km or €5.2 million/km for a two-direction exclusive right-of-way bus system, without the rolling stock. The total cost of Metrobus in Mexico has been estimated to US\$2.8 million/km (approx. €1.9 million/km);
- In France, investment costs for tramways range from €15 million/km to €30 million/km in high-density urban zones. In addition to transport costs, these costs include frontage rehabilitation works and other equipment needed for tramway operations such as maintenance yards;
- Investment costs for metros are in the range of € 20 to 40 million/km for at grade systems, € 40 to 75 million/km for elevated metros and finally, € 60 to 180 million/km for underground metros.

11: Contrary to tramways, BRT's rolling stock is generally purchased by the operator and not by public authorities.

12: Transjakarta (Indonesia), Metrovia (Guayaquil).

Regardless of the transport mode, creating a mass transport system requires major investments and perennial resources (See Section 3 and Chapter 2). Another important element in the choice of a transport system is the vehicles' lifetime: it may be up to 15 years for buses, whereas for metros and tramways it may exceed 30 years.

During the workshop, Bernard Rivalta, President of SYTRAL (*The Transit Authority of Rhone County and the Lyon Urban Area*) pointed out that for an equal investment "you may choose to have either 1 kilometer of metro or 5 kilometers of tramways or 25 kilometers of BRT". Considering what we have just mentioned, these numbers are not to be taken literally, however, it does give an idea of the different unit costs for the different modes.

The different investments costs have a direct impact on the timeline of mass transport projects: the more expensive the systems, the greater the difficulties to secure financing with the accompanying uncertainties for the project's completion.

Another parameter is the magnitude of the work to be done. In terms of project timelines, at grade transport modes have an advantage over underground or elevated structures but they may have to deal with other obstacles relative to expropriation of property if the right-of-way is not available. Considering local calendars, and particularly terms of public office, BRTs that require less construction work can be completed in less than one term of office, while the construction of a tramway system may span over a whole term, and metros tend to extend over two terms of office, or even longer.

Urban integration

The urban integration of a transport mode depends on objective parameters (required width, length of stations, turning radius, etc.) and on more subjective parameters as well (impact of high service frequencies on the urban environment, accessibility of stations, etc.). It is a particularly delicate issue for at grade transport modes such as trams and BRT, and LRT or MRT modes sharing right-of-way with other traffic.

Lane width can be reduced with rail-guided vehicles; however, they will require a larger turning radius. A 15-meter turning radius is needed for BRT (18 meter buses) compared to 25-30 meters for a tram. Also, both limited integration measures and reduced turning radius are possible for trams running on tires or guided buses. It should also be noted that in order to achieve the highest capacity levels, BRT systems must operate with two lanes in each direction and therefore need a wider right-of-way.

The length of the stations depends on the length of trains for tramways and on the amount of stopping berths per bus station in BRT systems. The length of tram stations ranges from 20 to 60 meters and the longer TransMilenio BRT stations in Bogotá with up to 6 stopping bays are 150 meters long¹³.

13: To be compared in this case with MRT systems.

Lines may have a more turns in rubber-tired BRT systems than tramways. Many turning movements will lower the commercial speed, but this is less of a handicap for BRT systems than for trams. Greater gradients are also possible in BRT systems.

High frequencies of BRT systems may sometimes call to mind the image of a “wall of buses”, a potential nuisance to residents and pedestrians in high-density urban areas. But put into perspective, and as shown by cities in Latin America, “bus trains” will only occur in degraded situations, particularly when automobile traffic is allowed to penetrate the exclusive lanes of BRT vehicles (poor regulation and enforcement of segregated right-of-ways) or when the systems seeks to achieve capacity levels, beyond its reach. Most of the time, however, it is rather automobile congestion that creates “walls of cars” sometimes over several lanes. In any case, integration possibilities in high-density urban areas will depend on acceptability levels that vary from country to country but that should not be regarded as immovable.

Another essential element is ease of access to stations. Adequate station design makes possible better passenger boarding and alighting times. Stations in BRT systems are designed like metro stations and provide level access between the station’s platform and the vehicle floor. Similarly, in order to achieve high capacity levels, the system must provide good and safe conditions to access the stations. Hence, public transport design should also integrate non-motorized transport to favor a synergy between non-motorized modes and public transport and ease of access to public transport services (safe pedestrian ways and crossings should be systematically provided close to stations). Simple and inexpensive measures are possible, such as, pedestrian refuge islands, sidewalks, bicycle lanes, and pedestrian walkways. Nevertheless, these must be integrated in a global process that will define the hierarchy of the road network and how it will be shared by all users (See Chapter 4).

Operations of **different modes** of transport

Operating conditions of the different modes of transport will determine their respective levels of service. Already, we have quickly analyzed important criteria such as the speed and frequency of services. The exclusive right-of-way of LRT and MRT systems guarantee their operating speed and therefore high levels of service, provided frequency and regularity are assured.

For trams and BRT systems, their integration is a determinant factor for speed and high levels of service. Bearing in mind as mentioned earlier, that too many turns may impact adversely the system’s commercial speed, it is essential to adequately integrate public transport lines with general traffic and to limit as much as possible additional stops in between stations.

Therefore, among other factors, the system's integration must deal with intersections. BRT systems seeking high levels of service may have heavy bus flows and higher frequencies that do not match traffic signal phases. Good commercial speeds cannot rely exclusively on right-of-ways or priorities at traffic signals. Whenever possible, the hierarchy of the road network should allow for efficient commercial speeds: distances between intersections, constraints on perpendicular ways. This means that during the design of BRT lines it will be necessary to carry out an assessment of the road network and the priority granted or sought for public transport (See Chapter 4).

In the event of insurmountable conflicts between public transport and general traffic, it is always possible to provide grade separations at intersections but this will obviously increase construction costs.

Each project is unique

Time after time, examples and counterexamples have shown there is no universal and definite solution to mass transport issues and that it is up to each city – based on its own case specifications – to determine which is the most suitable transport mode. For instance:

- The cost of Lyon's T3 tramway line only amounted to €12 million/km because it uses an existing railway and has a commercial speed of 35 km/hour thanks to an elevated inter-section and barrier separated intersections. It also has several intersections with grade separations;
- BRT systems in Quito (Ecuador) or Pereira (Colombia) operate in high-density areas, chiefly in the cities' historical centers;
- The City of Curitiba is studying the possibility of introducing a third lane, and over the medium term a metro system, because the transport demand on the BRT system's trunk lines has exceeded capacity after 30 years of service.



Figure 1 – TransMilenio in Bogotá



Figure 2 – BRT system in Pereira, Colombia



Figure 3 – Grenoble’s Tramway, France



Figure 4 – Tramway in Tunis, Tunisia



Figure 5 – Line 2 in Cairo’s metro



Figure 6 – BRT system in Quito, Ecuador

Cairo is currently the only city in Africa to have a **metro in service...**

The first line of Cairo’s metro started operations in 1987 and transports today more than 1.4 million passengers daily. The second line was opened by stages between 1996 and 2000. With a total length of 66 kilometers, the current network should be completed with a third line. With this new East-West line 33 kilometers long, Cairo’s metro will cover a distance of almost 100 kilometers and should be able to transport 5 million passengers by 2020.

... but soon, Algiers will have a **metro too**

Algiers metro project dates back originally to the 1970’s. Launched in 1980, the project was considerably slowed down by financial difficulties followed by the country’s unstable conditions in the 1990’s in a context of uncertainty relative to these options. The project was re-launched in 2003 and a first phase 9 kilometers long should be in service by the end of 2008, with an expected patronage of 60 million passengers per year.

3/2 Quality Bus Networks to Guarantee Transport Services for the Entire City

Regardless of the mass transport system implemented, it can only meet the demand to a certain extent. A large part of the urban population relies on the bus network (and minibuses or shared taxis) for transport services.

Often, bus networks may be reorganized and optimized before making large investments on mass transport systems. How can the bus network be improved to attract more users, besides captive public transport customers, and to make bus services accessible to the poor? Below are some important criteria for public transport customers.

Coverage and frequency

Customers perceive the transport supply through the system's geographical coverage (network design for services to the different areas) and the service frequency.

In a rapidly changing urban environment, it is essential to provide adequate residential coverage to ensure the poorest have access to public transport services within reasonable walking distances.

The frequency of public transport vehicles is an important factor to render the network easily accessible. If there is a bus every 5 to 7 minutes close by, users do not need to know the precise bus schedules. This is not the case, however, with lower frequencies (15 minutes or more).

Reliable services

For users, reliable services imply being able to travel in a given time, planned in advance. To this effect, bus stops and bus lines must be clearly identified, offering regular schedules and travel times.

Travel time

In Mediterranean cities, with already high (or increasing) levels of traffic congestion, it is essential to offer satisfactory travel times by bus. This is dependent on two key elements:

- Bus line structure: the more and the closer the bus stops, the lower the commercial speed. It is advisable to limit the amount of stops or to provide express buses with few stops, in addition to regular lines;

- Road arrangements in favor of buses, not necessarily expensive yet effective, may considerably increase bus travel speeds and regularity. (Police forces may initially be required to enforce.) These may include right of way at traffic lights, exclusive lanes at intersections, segregated busways and even reserved streets, and bus stops location and facilities.

Besides, some operating parameters have also a key impact on travel times, e.g.: fare collection method (off-board payment vs. on-board...), number and width of doors per bus, etc.

Comfortable and secure bus stops

In Mediterranean cities, private vehicles occupy a prominent position in public space design. To encourage users to take the bus, it is important to provide easy and safe pedestrian access to bus stops, with regards mainly to automobile traffic. This is particularly important for children, women, and the elderly. Also, bus stops should meet safety requirements and should provide as a minimum comfortable conditions during waiting times; at night, lightening improves significantly the safety perception for women. The design of bus stops and their surrounding areas is an important element that is often neglected.

Adequate information

The legibility of the transport supply depends on clear information readily available on the street: bus stops should be easy to identify and should display information on lines, schedules, and fares. This is particularly important for occasional users.

Moreover, the structure of the public transport network and its hierarchy are also key elements for a user-friendly system:

- Strong trunk lines, with high frequencies and speeds, at regular intervals;
- Feeder lines; and
- Local lines with services tailored to specific areas.

Integrating the bus network with existing mass transit systems (tramways, metros, or BRT) and with adequate connectivity

The physical integration of the network (and fare integration, if possible) is a particularly demanding challenge when there are different public transport operators and many transport authorities.

Regardless of the quality of a network, users always prefer direct trips with no connections. It is therefore particularly important to provide adequate connecting facilities (convenient, user-friendly, and safe) in order to reduce connection-related inconveniences during transfers between bus lines, to the mass transport network, or to individual transport.

3/3 Conditions for Successful Structuring Investments in Mass Transport Systems

In general, planning and execution of metro projects and all large-scale investment projects span over long periods of time (Calcutta and Algiers metros) while results in terms of patronage are not always guaranteed and depend on many parameters. Several guidelines, which may be useful for this type of projects, are presented below. They are based on different experiences worldwide and particularly in Mediterranean cities and aim at identifying favorable conditions that may lead to successful projects.

Political **commitment** and continuity

As major urban projects that shape a city, large-scale transport projects require time. They cannot be successful if they are not supported by a strong continued political will. The institutional framework combined with the strong personality of a senior official in charge of the project play an essential role in the project's success. Experience has shown that in the absence of such a unified commitment, the light metro project in Tunis suffered from dysfunctional decision-making (changes in the alignment, hesitant decisions regarding Bourguiba avenue crossings) that threatened to undermine its execution, until clear decisions were made in 1987 by the new President of Tunisia. Likewise, Algiers' metro project would have been unable to enter its final stage without the political will of the President of Algeria.

The timeline for a metro project, with underground lines, usually exceeds one or two terms of office. On the contrary, BRT systems may be concluded within one term of office, as shown by the outstanding performance of the Mayor of Bogotá who conducted successfully a five-year project from 1998 to 2002.

Creating a strong adequately **skilled project team**

In view of the complex nature of the project and the many interdependent parameters (capacity objectives, physical characteristics of lines, choice of rolling stock, vehicle size, station and platforms dimensions, interface with local community services, etc.), the agency in charge of the project's development must have an effective and skilled structure capable of discussing relevant issues with engineers and constructors of equipment and integrated systems.

A strong and skilled project team is therefore fundamental: it must have internal recognition and guaranteed stability. Dialogue with political officials is always a delicate matter particularly due to overlapping technical and political spheres. Within this context a solid team appears as a prerequisite for a successful outcome even if this alone will not suffice. Necessary skills combine urban transport technology and planning, project management, economy, etc.

One of the reasons for the success of Bogotá's TransMilenio was the presence of such a team whose members were offered the possibility at the beginning of the project to study at renowned universities abroad.

Securing financial resources over the medium-term

One of the obstacles of mass transit projects is their high, often prohibitive, costs compared to the municipalities' or the State's financing possibilities. Investment costs may block or delay many projects when financing is difficult to obtain. This unavoidable stage is linked to the project's genesis, but it is not necessarily the most difficult task.

Operating costs, on the other hand, tend to be neglected and often appear as an obstacle to effective system operations if they have not been taken into account in the financing scheme.

Since medium and long-term financing cannot be guaranteed, many officials prefer to proceed one stage at a time without making public the funds needed for the following stages. This tactical approach may be justified, but it may backfire undermining the viability of their project endeavors. It is advisable to seek financing schemes that will ensure the project's completion.

Good integration in a comprehensive transport system

A mass transit system alone cannot solve all urban transport problems in any given city. Also, since it is a long-term project, it will have a gradual impact, starting with one line, then several lines, before becoming a true network.

The first line of Cairo's metro opened in 1987¹⁴, the second urban line in 1996, and the third line was under construction in 2007.

To be effective, mass transit lines must be adequately integrated into the overall transport system. Integration objectives should aim at:

- Physical integration - with feeder lines for other modes and transfer stations, or intermodal transfer sites;
- Fare integration - that should also be implemented eventually, but its feasibility depends on the existence of a strong planning authority that regulates the system.

It is also advisable not to exceed the capacity of a given technology: success may turn into trouble. It is one of the risks of the light metro of Tunis: political leaders are tempted to continue expanding lines to the system that has gained wide public acceptance, risking to create congestion on trunks lines and undermining performance in travel time in peripheral areas. Other technologies (different central line configurations, rapid rail lines or high capacity bus lines, depending on the situation) may be better adapted for this type of service.

14: It is worth noting that thanks to project planning, connecting facilities for a future urban line were built at the central station of the first line, even if the future line was only a hypothesis...

Mobilization of large-scale resources for a metro-type project entails the risk of neglecting other transport system components, stifled by inadequate financial means. This is the case in Cairo where the metro had a very positive impact but generated the neglect of the older tramway system and the public bus company.

Consistency with land-use planning

Should the development of heavy infrastructure axes come before or after the city?

The answer requires careful evaluation of urban changes triggered either by drifting rural populations or by lower urban densities. The design of major urban projects (new neighborhoods, business centers, etc.) should include the appropriate heavy infrastructure as a project's full meaning and impact will only be felt in tomorrow's cities, not today.

Much lower costs are possible for railway infrastructures built outside the urban area or in low population density zones. It may be interesting to consider the alternative of creating the transport network of future towns first and building the costly linkages of urban centers during a second stage once development has generated the necessary financial resources. But this is highly dependent on many specific parameters that vary from one city to another.

Depending on the increased accessibility resulting from the project, the added value of land benefiting from transport services may also contribute to pay for the new lines in an urban context where the land market allows such an alternative. Here the agency in charge of project development may also have to play the role of property promoter in one way or another, or some partnership arrangement may be concluded with the planning agency. Some would be tempted to abandon this type of arrangement that is very difficult to achieve, but in view of the financing challenges entailed by these projects, it seems useful to persevere in order to secure the necessary resources.

Nevertheless, projects must often face the dilemma of:

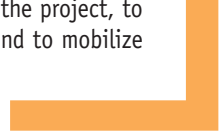
- Providing services to areas with the highest demand as a result of existing urban growth; or
- Orienting/structuring urban development according to clearly identified and public choices, particularly through options included in land-use master plans.

Reaching a compromise between these alternatives could finally depend on the financing capacity and the financial balance of mass transit transport line(s) operations.

The connection of the transport system to land-use development requires coordination with urban projects in areas served by the system – densification around planned stations – but bearing in mind the true capacity of the transport technology chosen.

**Early procuring of right-of-way
for heavy transport corridors**

In most cities, the rising value of land and the fast development of suburban urbanization may increase the cost and the difficulties for the construction of corridors of heavy transport systems. Therefore, it is important to determine precisely in advance the right-of-way needed for all the phases of the project, to record it in the land-use plans enforceable against third parties, and to mobilize the necessary funds for their acquisition.



Traffic Management and Parking Policy

How can we better share the Public Space?

The importance of **traffic** and demand **management**

Traffic and parking management and, in general, transportation demand management (TDM) entail significant challenges for developing cities:

- The success of public transport policies is largely conditioned by the linkages between public transport and private cars;
- The increase in motorization levels has a negative impact on traffic, pollution, and accidents;
- The growth of cities has mechanical effects on transport demand, particularly private cars, that must be followed up but also managed.

The operating conditions of a transport system are the result of a balance between transport supply and demand. The overall challenge is to influence this balance to the advantage of public transport and accessibility of cities in general. Within this context, objectives dealing with congestion do not aim at its eradication but more at its control. On the one hand, it is difficult to eliminate congestion totally and, on the other, congestion may be used as a tool to induce mode shifting (in a fluid network users are not encouraged to shift to other modes of transport). Nevertheless, congestion should not slow down urban activities.

Even if it is vital to design transport policies as medium and long-term actions, the workshop pointed to the need for cities to implement measures over the short term. A paradox was revealed: medium to long-term planning documents emphasize public transport projects while short-term actions largely focus on private cars. How can overall coherence be achieved and how can all modes be integrated in the analysis of the transport situation?

The set of tools described in the following sections need monitoring and evaluations tools to optimize management, to assess the impact of the policies implemented (See Section 6-4), and to make any necessary corrections.

4/1 Public Transport Management and Traffic Management in a Multimodal Approach

The chapter on planning showed the importance of studying the organization of all transport modes through a multimodal approach to urban transport, particularly in Urban Transport Plans (UTP). Moreover, in order to aim at quality services – a prerequisite for sustainable public transport – traffic measures, such as priority lanes and easy and safe pedestrian access to stations, are needed to promote public transport services.

But besides UTPs, optimum performance in the field and measures in coherence with defined objectives will be possible when partnerships created during the elaboration of documents continue to exist within transport and traffic management structures. Coordination between public transport and traffic management depends on local organizations and should include the following parameters:

- The insertion of traffic and transport management measures in land-use and transport planning documents. The existence or absence of these documents, their nature, geographical scope, thematic content, and timelines established are all aspects that will have an impact on management measures to be implemented later;
- Knowledge sharing and dedicated structures for each mode: local technical services and planning authority;
- The internal organization of these structures;
- Adequate and balanced apportionment of human and financial resources for each structure;
- Clearly defined responsibilities.

Implementation of planning guidelines and policies

Adequate coordination between traffic management and public transport management also depends on how planning documents are put into practice. These documents generally cover large territories and often define the guiding principles of future actions. Their implementation, particularly management actions, must be adapted to the different goals. These may be local transport schemes or the networks' hierarchy with transport plans by mode. They may also include quality certification procedures that allow municipalities to qualify for public financing. For example, local undertakings that meet certain objectives of the transport plan may be granted quality certification to receive additional funding.

Traffic and Transport Management Institutions

It is clear that effective transport and traffic coordination requires the creation (or reinforcement) of structures for urban traffic and parking management and of a transport authority.

International experience has allowed to develop mechanisms for road network management that are available to these structures. Tools for public transport management include network plans indicating the needs for passage priorities at intersections, mass rapid transit systems, park and ride sites, and sites for intermodal connections and pedestrian facilities. These tools allow traffic managers to determine the elements that must be considered to orient their actions.

For roadways, they will include adequate traffic plans with a road network hierarchy, optimization of traffic flows, modern systems for traffic signals control, and appropriate infrastructure, particularly to improve conditions for buses and pedestrians (See Section 4-2). Moreover, parking policy should not be neglected since it is crucial for transportation demand management (TDM) (See Section 4-3).

EXAMPLES

Bus Rapid Transit (BRT) systems cannot be implemented without previous consultation with road management authorities. Unilateral decisions are not possible when the public road space must be shared by different users.

But even if there is no BRT project planned, the development of a public transport network requires minor modifications to road infrastructure and therefore the collaboration of transport and road management authorities. These changes may concern on-street bus circulation, turning radius, intersection management, bus stops, etc.

4/2 Traffic Management Tools

Road network planning and design

Road network hierarchy is an essential tool for traffic management. It is the link between transport planning documents (e.g. UTP) and traffic management. Roads are classified according to their function (and not only according to their administrative classification). Within the city, setting up a hierarchy will be useful to:

- Design coherent functions, uses, and infrastructure for the road network;
- Link the different modes of transport;
- Integrate land-use planning documents.

Different types of networks can be identified in a road hierarchy. The most currently used are:

- Regional/national networks;
- Structuring urban networks;
- Distribution network/connections between hubs;
- Inter-district networks;
- Local networks.

Roads in each type of network have specific characteristics: structural features (number of lanes, width of lanes), speeds, types of intersection (grade separated, roundabouts, traffic signal, right-of-way, etc.), coexistence with other modes (segregated or shared lanes for public transport, bicycles, sidewalk specifications, zones limited to 30 km/h, with or without parking facilities, etc.).

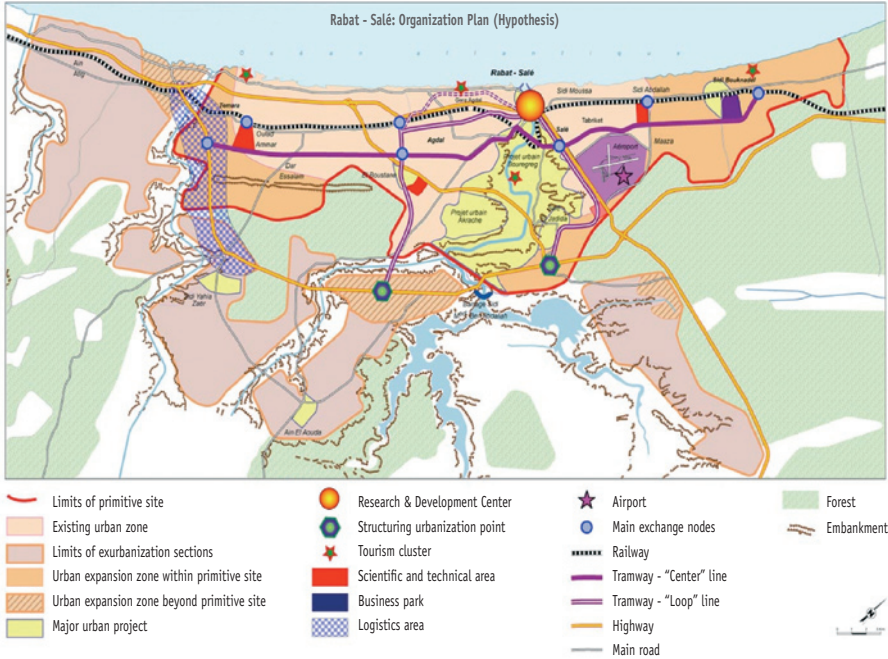
The advantage of this type of design is that urban traffic can be organized (identification of major traffic axes, feeder roads, etc.) and integrated with other planning schemes:

- Public transport: coherence between strong lines and transit lanes; integrate the needs of segregated right-of-way transit systems; and
- Land-use: anticipating urban development.

Another advantage, and not the least important, is that they contribute to the coherence between short-term actions often oriented to traffic measures and medium to long-term measures of heavy infrastructure projects for public transport.

Traffic plans, i.e. detailed planning of the network (direction of traffic, intersection management, horizontal and vertical signage), and car flow control measures are efficient when coordinated and in agreement within a road hierarchy.

Road Network Plan



How can we better share the public space?

In view of the strong pressure of the automobile on the public road system, it is often designed and managed for the exclusive benefit of private vehicles without really taking into consideration public transport, pedestrians, or two-wheelers – particularly bicycles. A more balanced distribution of the public space is necessary since each transport should have a permanent, safe, and comfortable network to ensure accessibility.

Giving right-of-way to public transport is the only solution to improve their commercial speed, punctuality, and productivity. For buses, this means providing segregated right-of-way infrastructure on all roads where it is justified by traffic volume and giving buses priority over other traffic through intersection design and management.

Walking often accounts for more than 50% of urban trips and should be given serious consideration in urban transport policies. It is also important to make sure that other road users and local businesses respect the public space dedicated to non-motorized transport (sidewalks, pedestrian crossings, bicycle paths, etc.).

Intersection, weak points of the network

Intersections regulate the flow capacity of the traffic network's roads, but are often dysfunctional in terms of design and operations.

In the absence of a precise count of vehicles circulating during peak hours, traffic lights cannot be adjusted to the demand. Also, intersection street signals are often managed by obsolete systems based on fixed and regular cycles that do not take into account time-related variations in demand. Consequently, intersection capacity cannot be optimized with the resulting traffic congestion during peak hours and waste of time during off-hours.

Capacity could be improved with traffic flow detection systems currently available and systems that detect public transport vehicles on major road intersections to give them the right of way.

In addition, intersection design should take into account specific elements for the safety of other users – buses, pedestrians, and two-wheelers.

Significant potential benefits could be obtained for the regular flow of automobiles and, above all, for public transport. Appropriate intersection performance has an impact on the commercial speed and frequency of services; efficient intersections will also make possible giving priority to public transport at traffic signals.

Deteriorating road safety must be a core issue of traffic management and planning

Reducing the number of road accidents or simply stopping their alarming increase is a major challenge. Most road accidents take place in urban areas, their victims being mostly pedestrians and two-wheelers. The lack of adequate infrastructure for these users and violations to traffic regulations, not only by drivers but also by pedestrians and users of two-wheelers, are among the most important factors.

Transport safety, therefore, becomes a constant concern acting as a viewing lens through which all traffic measures should be analyzed. This implies controlling speed, providing adequate infrastructure, and segregating traffic flows when necessary.

Reinforcing the role of traffic police

Traffic police play a key role in the enforcement of traffic measures. It is therefore essential to make them more efficient, allowing them to have an overall view of all relevant traffic issues, which will enable them to enforce regulations accordingly.

Training and planning sessions should be organized for police forces that could either be municipal forces or a special unit of the national police.

4/3 Demand Management

Problems related to increasing levels of urban mobility may be described as unbalanced supply and demand problems. When the demand for urban transport is excessively high in relation to the public space supply and the available infrastructure, the system becomes dysfunctional and generates the familiar traffic congestion, parking problems, fuel over-consumption, noise, pollution, dangerous roads, deterioration of living conditions, etc.

International experience, particularly in emerging countries, shows that it is not possible to meet the growing demand of mobility in private vehicles only by adapting and extending its infrastructure. The solution requires supplying the population with quality public transport as an alternative to private vehicles. Even if motorization levels in emerging countries are still low, they show a tendency to increase.

A new urban mobility approach: from supply management to demand management

The challenge of sustainable urban development is a priority. It is a question of striking a balance between economic urban development and accessibility on the one hand and a better quality of life and the protection of the environment on the other.

The urban space allocated to circulation and parking facilities is limited; that is why, meeting the increasing demand of mobility in private vehicles simply by developing road capacity and parking facilities has never been an effective solution. The only possible way to meet the demand is by regulating automobile traffic within a given infrastructure, and by influencing transport demand. A comprehensive mobility management strategy is the result of an integrated approach of solutions to be implemented with a judicious combination of measures concerning supply and demand.

Consequently, transportation demand management (TDM) is a combination of different mechanisms that aim to influence the users' choice of transport mode, besides actions specifically targeted at supply management. A prerequisite for these actions is to provide a true alternative to private cars by developing a competitive and efficient public transport offer and facilitating the use of non-motorized transport: walking and cycles (a central issue in this guide, see Chapters 1 and 2).

The principal tools of TDM for a more rational utilization of the automobile are:

- Using road infrastructure to regulate automobile use. These measures aim at adjusting the road network to other modes of transport, not only the automobile. For example, they would avoid allocating excessive road capacity to automobiles where there is a public transport supply. The main underlying notion is sharing the public space. Automobiles are not the only legitimate transport mode of occupying public right-of-way (see the first sections of this chapter). Exceeding numbers of private vehicles overload the capacity of the road network leading to longer travel times;
- Increasing the costs of automobile use by integrating related social costs (congestion, risk of accidents, pollution) that vary depending on the place, time, and traffic conditions. Different types of charges may be used to attain this objective (parking fees, road pricing, fuel taxes) that may be more easily implemented with the new technologies available;
- An urban structure that favors “savings” in automobile use, and in general in motorized transport, by promoting mixed-use development, locating facilities closer to users (schools, for example), coordinating urban development with the public transport network, etc. These issues fall under land-use planning and its linkages to urban transport;
- Managing urban “time” by spreading out peak hour demand (flexible working schedules, no-breaks working days, telecommuting, business opening hours, etc.).

All these tools do not have the same impact, require more or less time for their implementation, and their efficiency depends on other complementary tools. They are nevertheless important because they increase the performance and efficiency of mobility related investments, and particularly public transport.

The most common transportation demand management (TDM) tools are:

- Parking policies;
- Road pricing or congestion charging.

Parking policies

The experience in many cities of developed and emerging countries has shown that the use of automobiles is highly conditioned by the availability of a parking space at destination. Hence, parking regulations and fees can be a strong lever to promote mode shifting.

Parking space cannot be dissociated from automobile travel since all cars are parked at the start and at the end of any trip. Consequently, contrary to other TDM measures, parking is an unavoidable element of any transport system. Faced with this situation, municipalities are not able to control their public space.

A parking policy consists of a set of measures concerning physical restraints, organization, fees, and infrastructure for parking control according to urban, transport, and environmental objectives. In this sense, a parking policy must be integrated into the larger framework of an urban policy for public transport and demand management.

Parking policies are an essential tool to integrate the negative externalities of automobile use. In view of the pressure exerted on public space, it is imperative to ensure more efficient planning and management of on and off-street parking facilities. A parking policy is much more than physically allocating parking space. In fact, a true parking policy should clearly define the different offers (public/private, on-street, off-street, parking lots and decks, park-and-ride), and also operating conditions:

- Type of demand to be met according to the location (residents, employers, commercial clients, etc.);
- Regulation (unlimited or limited time, free or metered);
- Parking fees (linear or graduated);
- Type of management (public or private);
- Enforcement.

The elaboration of a parking policy also involves consultation actions with the different local actors concerned (residents, shopkeepers, employers, etc.) and information campaigns to explain the measures envisaged that often are not popular.

A parking policy takes into account merchandise delivery vehicles and includes provisions on the supply of parking space and regulating measures (limited hours, control system, etc.).

Finally, the policy may be translated into land-use planning through regulations mandating parking spaces according to the type of construction. These may call for a minimum number of spaces (lower limit) or, even more interesting to regulate the use of the automobile, restricting any construction that exceeds a maximum amount of spaces (upper limit).

Road tolls or congestion charging

Transport demand regulation, that is, limiting or discouraging certain trips relative to a transport supply with limited capacity, is possible using two variables:

- Congestion, inducing longer travel times;
- Costs generated by the use of transport modes: according to economists, charging for the use of automobiles is in the public's interest. Charges could be applied to parking facilities, as previously mentioned, or to road use i.e. road tolls/pricing or congestion charging.

Road pricing may have many objectives: reducing traffic congestion (congestion charging), improving urban environmental conditions (environmental toll), or generating financial resources for the development of public transport services (financing toll), etc. There are also road tolls that are used to finance road infrastructure only. The purpose of road pricing is to encourage automobile users to reconsider using other modes of transport.

New technologies, particularly communication technologies, offer increasingly effective and fine-tuned solutions for toll systems and for every type of scenario. Less sophisticated solutions, like those used in Teheran are also possible.

Nevertheless, road pricing may encounter difficulties. It may require high operating costs and may yield lower income than initially expected (London's congestion charging scheme). But the chief difficulty is the public acceptance of the project. Many reasons are invoked against the implementation of road pricing: infringement to the individual's right to move freely, spatial inequality (only some sectors are charged), social inequality (the same price applies to people with different income), inadequate alternative supply of public transport, road tolls could affect economic activities in the areas concerned, etc. For all these reasons, congestion charging will only be successful if the project is coherent and shared by stakeholders (serving a transportation policy, backed up by a widely shared and continuous political will, and aiming at objectives that will meet the population's expectations) and if it takes into account the users' reluctance by answering some of their concerns. For example, the project should be as simple as possible, implemented step by step; it offers alternative solutions to the automobile, taking into consideration inequality issues, with the income reinvested in transport, etc. It is important to prepare the public opinion to this type of solution.

Parking policy in Beirut

Within the framework of a project on urban transport development financed by the World Bank, the Greater Beirut Area (GBA) launched in 2002 a program for more efficient parking management. One of the program objectives is to regulate and control on-street parking in certain key areas of Greater Beirut in order to restrict traffic in the city and promote the use of public transport. It is part of a comprehensive transportation demand management (TDM) strategy. The Traffic Management Organization (TMO), an autonomous agency especially created for the urban transport development project, is in charge of strategy implementation. TMO's Parking Department has entered into concession agreements with all the municipalities concerned by the program authorizing it to manage on-street parking on the municipalities' behalf. These concession agreements also include provisions for the enforcement of parking regulations (issuing parking tickets) and planning responsibilities.

The parking program will be implemented gradually in three successive stages over a period of three years and will focus on 14 specific zones of the Greater Beirut Area. The first stage, or pilot stage, is currently under way and concerns the city's center, Solidere. In the future, all the zones covered by the program will have the same road signing and lining and the same parking meters. Only the rates and the authorized parking duration will be different depending on the zone.

The comprehensive parking policy in Barcelona

The comprehensive parking policy of the city of Barcelona was awarded a prize by the European Commission's NICHES program (New and Innovative Concepts for Helping European Transport Sustainability) for its innovative transportation demand management (TDM) strategy based on the implementation of green parking zones. The objective is to restrict parking at destination through different parking fees and time zones that reward resident parking and penalize visitor parking.

Every day, more than 6 million trips are recorded in Barcelona and 1,150,000 vehicles go through the city's center, among which 93% seek to park. It is within this context that the municipality generalized charges for on-street parking from 8:00 a.m. to 8:00 p.m. and added to the existing time-limited blue parking zone a green zone regulating parking on areas that were previously free of charge:

- Residents only parking: €0.20/day, €1.00/week;
- All vehicles parking:
 - . Reduced fees apply to residents: €0.20/day, €1.00/week;
 - . Fees for visitors are higher and limited to 1 or 2 hours depending on applicable regulation: €2.80/hour.

London's congestion charging scheme

A leading model in urban road pricing, London implemented its congestion charging scheme in 2003 covering an area of approximately 20 square kilometers around the City and Westminster. In 2007, the area was expanded to include Knightsbridge, Kensington, and Chelsea, doubling the surface covered.

The one-day permit costs £12 (approx. €15). Some vehicles like buses, minibuses, taxis, emergency vehicles, alternative fueled vehicles, motorcycles, and bicycles are exempted. Residents have a 90% discount if they buy cash one week or longer seasonal tickets.

The objective of this charging system is two-fold: to limit automobile congestion and to reduce air pollution agents. Users are therefore encouraged to use transportation modes with low environmental impact (public transports, less polluting vehicles, bicycles) in order to reduce congestion and allow faster more regular trips that generate less pollution. Transport for London has announced that most congestion charging revenues have been invested in public transports. However, the system's management costs reduce drastically the funds remaining for investments.

Teheran's congestion charging

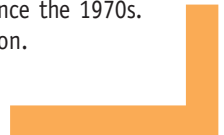
Teheran's road network is severely congested. According to a recent study, the network is slowed-down or jammed almost 50% of the day and bottlenecks during morning peak hours (7-8 a.m.) keep growing longer. The main reasons for this situation are the lack of a clearly defined hierarchy of the road network, the absence of a parking policy, excessive use of taxis due to poor public transport services, and apparently, to a certain extent, lax enforcement of regulations by traffic police.

To deal with this situation, an ambitious policy restricts vehicles from entering the city's center. Implemented in 1981, shortly after the revolution, the restricted access zone now covers almost 31 square kilometers and is accessible through 65 road tolls. Access is restricted on working days from 6:00 a.m. to 5:30 p.m. All vehicles must be preregistered and must pay an entrance fee on an annual basis (from US\$110 for public vehicles to US\$270 for private vehicles). Entrance permits are granted according to justified needs and concern today almost 80,000 vehicles, 40% of which are government vehicles. Traffic conditions were so degraded initially, that the system's implementation obtained relatively large public acceptance.

Manual control measures allow high levels of charge evasion, but the system totals an income of almost US\$6 million yearly, and it is chiefly used for improvements to the traffic management system.

And also...

Road pricing systems are currently being used in other cities throughout the world: Oslo, Stockholm, Bergen, Trondheim, and particularly Singapore since the 1970s. Many other cities plan to implement similar congestion charging soon.



A Regulatory Framework for Small-scale “Traditional” Transport ¹⁵

5/1 Definition, Advantages, and Disadvantages of Small-scale Transport

Small-scale transport designates single-operator public transports in which vehicle ownership is fragmented. Small-scale operations may be integrated into the public transport regulatory framework, but they may also follow more or less restrictive regulations determined by trade organizations. Even if sometimes a fleet of vehicles is owned by one person only, it is the driver who takes the initiative on vehicle operations acting as service manager in the field. The term small-scale transport or small vehicle paratransit refers to often legal activities, but this type of transport may sometimes be illicit or border on illegal operations on certain points.

Other terms are used with different connotations depending on the history of the city or the country. The diverse terminology reflects the different situations: informal, traditional, intermediate, transitional, etc. In addition, deeply rooted terms convey popular recognition: services in Beirut or Damascus, shared taxis in Cairo, vans in Algeria or big taxis in Morocco.

As in other regions of the world, this type of transport is very common in many cities of southern and eastern Mediterranean countries but in each city, small-scale transport has its own specific characteristics. Different types of vehicles are used:

- Traditional single-passenger taxis with one-trip fares (for the record);
- Shared taxis using private vehicles with 3 to 5 passengers capacity;
- Microbuses, vans, or minibuses with capacities ranging between 9 and 30 passengers.

15: The workshop organized by Inrets in June 2007, in Aix en Provence, MMSH was useful in preparing this chapter. See the report: *Le transport artisanal dans les villes méditerranéennes*, Actes Inrets, ed Lavoisier, 2008.

Major and complex role of paratransit in Mediterranean cities

The major role played by small-scale transport has been confirmed by the limited data available. Indeed, the sector is sometimes difficult to assess statistically since no information is recorded.

The paratransit sector involves a complex social organization and on occasion, political issues may interfere with its operations, in Lebanon, for instance. Some of the actors involved in this system are:

- Drivers who operate the vehicles for a living and work long hours;
- Owners of vehicles, a kind of “car rental” arrangement;
- License holders who do not always own the vehicle;
- Multiple trade unions that federate the activity and defend the sector;
- Police forces in charge of controlling the activity and who are sometimes in close contact with operators;
- The administration that issues operating licenses and whose actions are frequently determined by social and/or political criteria.

The importance of small-scale transport reflects (as gap-filler) the crisis of institutional public transport since its expansion is made all the more easier by an inadequate or deficient public transport supply. However, its uncontrolled operations also contribute to aggravate the decline and critical conditions of public transport companies.

Public authorities face the challenge of integrating this paratransit into a sustainable transport framework (taking into consideration accidents, pollution, energy use, and congestion) while recognizing that the sector contributes with essential transport services to meet the needs of urban and periurban populations.

Potential advantages...

Opinions on paratransit vary significantly. It all depends if its advantages or disadvantages are put forward. Quickly summarized, the advantages that explain its success are:

- Good frequency and availability;
- Passenger comfort, seating places;
- Flexibility to adapt to changing demand, particularly in periurban areas;
- Immediately effective, passenger load factor;
- Source of employment in a difficult social context with high unemployment rates;
- No (or limited) public financing needed.

... but also many disadvantages

The potential disadvantages of small vehicle paratransit offset or tone down its advantages:

- Unsafe traveling conditions (old vehicles and dangerous driving);
- Pollution (depending on the vehicle's age and conditions, aggravated in congested areas);
- Higher traffic congestion (in high-density areas);
- Predatory behavior as competitors of bus operators, in the absence of clear enforceable rules;
- High costs for users in some cases;
- Low energy efficiency on high demand roads, compared to mass transport (but higher energy efficiency than private cars);
- Bad working conditions for drivers who work long hours, often with no social protection;
- Chaotic on-street parking at terminals.

Choosing a strategy for action

Public authorities may decide on different strategies, depending on their choice to focus on the advantages or disadvantages of the paratransit system. They may:

- **Decide to drastically eliminate the sector**, prohibiting all activities. This approach is rarely successful and depends in any case on the provision of adequate transport services by public transport companies;
- **Adopt a laissez-faire approach**. As long as small-scale transport plays a secondary role complementing the structured supply of public transport companies, it is the lesser evil;
- **Aim at its integration as complementary** transport services within a comprehensive public transport system. Its advantages are exploited, but it does not play the leading role;
- **Gradually transform self-employed operators into transport companies** by compelling them to group together.

Whatever the long-term policy chosen, public authorities must find ways on the short-term to deal with transitions in each of the strategies mentioned. The following paragraphs discuss regulating mechanisms for the sector and tools that may be used to turn its actors into formal transport service providers. In all the scenarios described, it appears that a unique planning authority (See Chapter 1) should be in charge of defining the specific roles of small-scale transport and of public transport providers operating concessions or under contracts for the provision of delegated public services. Fragmented regulatory authorities and competences over transport operations can only undermine the effectiveness of the overall system.

5/2 Regulating Mechanisms

Even if during the 1990's there was a tendency in many countries to increased deregulation of transport services, we are currently going through a phase that favors reintroducing regulations and a formal framework for paratransit or informal sectors. The World Bank, for example, is now in favor of promoting for-market competition through simplified tendering procedures, instead of a direct in-market competition, predatory and damaging if left unregulated.

There are mainly two types of tools available which can be adapted according to the overall organization desired and the existing context:

- Operating permits or licenses;
- Associations of transport providers.

Operating License Management

The operating authorization, license, or permit is an ideal tool for sector regulation. In a multimodal system, operating licenses may be used to position the small-scale transport supply in areas where it will be most efficient. As we know, granting licenses based on patronage and social criteria may result in uncontrolled situations, therefore the approach should focus on the efficiency of the transport system to meet the transport needs of urban populations. In order to have professional transport providers in the sector, licenses should be attached to specific vehicles so as to avoid the proliferation of non-professional actors in small-scale transport management.

There may be different types of licenses depending on the type of transport service provided. In Tunisia, licenses are granted to:

- Shared taxis;
- "Louage" vehicles operating in interurban areas (The administration considers them inter-governorate services, but they also offer suburban services in large urban agglomerations like Tunis.);
- Rural transport.

Vehicles have different colors depending on the service supplied and can be easily identified by users and police forces.

The concentration of small-scale transport services on periurban areas is a "normal" trend in multimodal systems. However, even if many authorities wish to prohibit their operations in high-density urban areas, a clear definition of the urban perimeter may pose serious difficulties due to urban expansions and the metropolization of periurban spaces. Therefore, it is important to provide for linkages and connecting sites between the different transport modes.

When licenses are granted according to geographical and administrative criteria, the issue of a balanced distribution of operating licenses by area must inevitably be addressed. Regular reviews will be necessary to adapt the number of licenses to changing transport needs and the complementary supply of public transport companies.

Small-scale services and large-scale operators can be complementary, as illustrated by the following examples:

- In some intermediate-size Brazilian cities, small-scale transport has been chartered as feeder services for bus lines. It is a way of containing the development of illegal transport in peripheral areas with inadequate public transport services;
- In Bogotá, as part of TransMilenio’s BRT system, microbus operators associated in sector cooperatives became project collaborators in two ways:
 - . Some cooperatives hold equity in companies that operate the BRT system; and
 - . Contracts for feeder services to BRT stations.

Also, specific taxes may be applicable to licensed operators. Annual taxes may be a major source of public revenues that may be reallocated to finance sector upgrading. Even if it has encountered some difficulties, such a mechanism exists in Abidjan since 2001.

Funds are needed to implement these reforms and to promote such an organization, as well as to promote the integration of small-scale transport into the professional transport supply (See below), but they are reasonable amounts for a municipality or a governmental program.

Associations of small-scale operators

Organization initiatives for the paratransit sector must address the major difficulty posed by widely scattered individual operators. To this end, public authorities could encourage operators to form associations, or they may decide associations are mandatory. Then, a new public transport organization scheme could be implemented in the urban perimeter with a preliminary stage that may span over a period of one to three years. During this time, individual operators may associate and adapt to new regulations. Instead of granting authorizations to individual operators, new line licenses or concessions would be granted to the new entities incorporated as companies or as Economic Interest Groups, an intermediate status in which members have more autonomy. Algeria is studying this solution, and it was implemented in Dakar in 2005 promoting an initiative to replace old minibuses.

Financing small-scale operators to replace unprofitable transport services

Small-scale operators have a tendency to concentrate on high demand routes hoping to obtain higher and regular revenues. This trend generates adverse effects and an unbalanced supply, and tends to neglect services to peripheral zones where the demand is lower. By granting certain advantages, particularly financial advantages, to small-scale operators it may be easier to extend the transport supply to lines that are considered unprofitable or to areas where the demand for transport services is low. Agreements to that effect should specifically state the terms and conditions applicable as well as the minimum service required.

Complementary actions for sector organization

Different actions could or should be envisaged to regulate and control small-scale services. These include a combination of physical arrangements, regulatory and control measures, and financial incentives.

Channeling the competition of small-scale transport into complementary services for public transport companies requires the implementation of **intermodal connection facilities**.

Besides these connection facilities, adequate management of depots/terminals dedicated to small-scale transport is a strategic element in the effective control of the sector. The planning authority, subject to preliminary consultation with the public actors concerned, should decide the location of these terminals. Likewise, physical arrangements for **on-street stops and stations** may be used as tools to regulate the sector and to achieve a more orderly boarding/alighting of passengers that would benefit drivers and users who could also adopt a more disciplined behavior! But an excessively rigid approach could be difficult to implement and may be a disservice to users: hence, a more gradual approach could prove more effective. In either case, consulting with professional actors will guarantee the applicability of the measures taken.

Controlling an activity and enforcing applicable regulations is always a delicate matter that mobilizes police forces. It is advisable to aim at:

- Setting up a hierarchy for regulations: strict for essential matters, but also flexible since regulations cannot provide for all the different situations in the field;
- Specific training for police forces on these topics (and in general, in traffic-related subjects);
- Police integrity, which may be difficult to obtain based on experiences in many countries but is definitely possible;
- Clear penalty procedures for violations to regulations (a prerequisite for effective police action).

The **pressure of quality conventional public transport** can effectively encourage paratransit transporters to engage themselves in a quality transport supply within their market segment, under the pressure of users. Restructuring the overall transport supply with modern companies may be designed as a substitute for paratransit services, but it may also generate new situations that will force the small vehicle sector to provide more modern services in order to survive. This was the strategy adopted by Algerian authorities with the creation of new public bus companies in medium-size cities. Yet, this competition will not exert the same pressure on all areas, which constitutes an additional argument in favor of modal complementarity.

Financial assistance to replace old vehicles is useful to modernize and improve the conditions of vehicles on the road, but it also has an impact on paratransit organization by compelling aid beneficiaries to integrate the formal framework designed for the sector. In Tunis, vehicles were replaced in a few years through a package deal to buy new vehicles offering reduced taxes (lower customs duties) on vehicles bought for small-scale transport (“louages”), and interest-free credit facilities granted by a specialized banking institution. However, interest-free credit can only be envisaged as an exceptional measure.

Setting-up standards for transport vehicles may help promote modernization, but it could also be of use for a planned regression of small-scale transport when it has reached a certain magnitude, as in Algeria’s case. This regulatory approach that is justified for safety and environmental reasons can only be applied at a national scale.

5/3 Mechanisms for the Integration of Small-scale Services into the Professional Transport Sector

Aid granted to small-scale operators to become professional transport providers aim at more efficient operations, better services for users, and limiting collective and individual production costs. They also seek to integrate the sector into a comprehensive system in order to make possible the complementarity of urban transport modes.

These actions may include:

- Training for drivers;
- Management courses for operations and management staff;
- Support to trade/professional organizations;
- Granting licenses according to professional transport criteria.

Training programs for drivers should be prepared by specialized organisms (taking the necessary precautions, they may also collaborate with trade organizations) and could cover the following topics:

- Driving and observance of driving regulations;
- Adequate behavior in congested traffic;
- Creating awareness on energy saving measures;
- Relationship with clients, manners, and conflict management;
- System regulations for operations and line management;
- Providing information to clients.

Training courses on operations and management concern, in principle, vehicle owners and license holders when they are truly the owners of the company, but they may concern drivers too when they wish to be involved in management tasks.

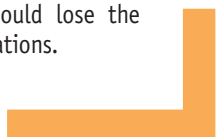
The courses could cover the following:

- Accounting skills depending on the activity;
- Vehicle amortization;
- Financial balance of transport activities;
- Managing service supply according to existing demand;
- Revenue control and management;
- Filling out documents for simplified tendering procedures.

These training programs could also be addressed to members of trade organizations. They can benefit from facilities granted by public authorities if they engage in relevant actions in collaboration with public authorities or the planning authority. Besides the satisfactory representativeness objective, one of the requirements is to avoid excessive proliferation of trade union organizations (more than twenty taxi trade unions in Casablanca!) that would be prejudicial for an effective dialogue on the sector's organization.

Another way of encouraging actors of the sector to become professional providers is by requiring a certain degree of qualification to be able to obtain an operating license (vocational title, exam, etc.) or a driver's license for small vehicle public transport. However, this approach poses difficulties and may result in abuse if it is not closely controlled from start to finish. The authority in charge of enforcing these requirements must also be designated. It might be a local authority or the regulatory authority of the Ministry of Transport that is customarily in charge of these matters. The license should belong to one vehicle in accordance with public transport rules, which would give the license holder a sense of the responsibilities and formal obligations attached thereto.

Surveillance operations and sanctions for violations could also be used to promote the sector's transition to professional activities. An operator could lose the operating license for serious or repeated infractions to major regulations.



Capacity Building



Urban transport systems are particularly complex in Mediterranean countries since they function in cities where pre-colonial heritage coexists with western urban elements introduced during colonial times, and formal and informal urban extensions.

“Modern” transport systems are superposed on one same space to other more traditional modes (sometimes transferred from rural areas), which may reflect the urban fragmentation observed in these cities. Here, more than anywhere else, the transport system is dependent on the general organization of the public space and in particular on the structure of a traffic network capable of supplying services and accessibility to the entire urban space.

Adapted and relevant expertise in such a complex urban context creates a true virtuous circle that nurtures itself through combined research, teaching, and professional practice. The conjunction of these three spheres, particularly during the initial stages and launching of urban transport programs, is one of the key factors of their success, which is also dependent on the possibility of having on a permanent basis and over the long-term up-to-date information on the sector.

Capacity building and the creation of data banks needed to develop expertise raise the issue of securing the necessary resources that should not be underestimated but that are difficult to mobilize in view of the critical situations that some Mediterranean cities are currently facing. Nevertheless, this expertise should be considered as investments that can only have beneficial effects for Mediterranean cities and countries. The scope of these problems is not only local. They deserve the commitment of central States bound to play a key role in the development of the different structures that will provide the expertise and will work on the data banks.

6/1 Developing Research Structures

Research structures on urban mobility and transport issues in southern and eastern Mediterranean countries appear to be underdeveloped. The study of the urban transport sector in Mediterranean cities can provide knowledge on existing systems and may help understand their dynamics. Moreover, linkages should be established between research and political spheres aimed at exploring and identifying solutions adapted to the existing institutional framework and thus ensure their implementation. This research will necessarily require time and adequate structures covering Mediterranean cities and dealing with land-use planning and transport.

Importing ready-made solutions often leads to a dead-end. Research teams aim at understanding mobility and urban integration to identify innovative and adapted solutions that will take into account simultaneously economic, social, and environmental dimensions – key components of the transversal thematic approach of sustained development. This research will be all the more productive if it benefits from international experience.

Variables of the transport economy are often not well known, and inadequately described and measured. It involves establishing the weight and role of transports in the local economy, evaluating the demand and its solvency, and analyzing the organization and evolution of the transport supply, the costs linked to services (direct and induced), and the economic consequences of transport mode choices in terms of investments and infrastructure, as well as their operations and maintenance.

Mobility places users at the heart of transport systems. Significant research efforts are also needed on mobility focusing particularly on access to and use of the automobile, and possibly two-wheelers. Other relevant aspects include interfaces with urban planning through accessibility, intermodal transports, user information and, most important, the capacity of urban dwellers to access transport services taking into account their expectations, their economic situation and their spatial distribution. This social dimension also concerns the different professionals actively employed in the sector, their training, and organization, as well as the relationships they have established with their companies.

Urban transport tends to be the main factor of local and overall pollution in cities. There is extensive research to be done on how to improve transport systems in terms of local pollution and nuisances, energy efficiency, accidentology and their impact on the greenhouse effect. Moreover, the trend rise in oil prices is a new factor that affects transport systems and creates very different situations in Mediterranean countries depending on whether they produce oil or are dependent on oil imports.

Among transversal research issues, the leading question concerns sustainability and improvement of different forms of public transport, including small-scale transport or small vehicle paratransit. The systems' flexibility and scalability is also an important theme referring to the possibility of preparing the future through present choices. This is closely related to the interrelationship between urban transport and land-use planning that brings up other aspects such as urban density, public space profiles and the development of a vision on transport systems within the urban space.

The introduction under the global political agenda of sustainable development and more specifically of sustainable urban mobility favors the creation of teams of researchers working in open networks of international scope. Research efforts imply the mobilization of adequate financing, that the State will provide to a certain extent, but that may also be secured through partnerships and international programs such as the programs that could take shape within the Union for the Mediterranean.

6/2 Professional Training

Training may be described as constructive when it transmits skills to the trainee and provides answers to specific needs and deficiencies in a given sector of activity. Now then, in the field of transports, training covers a wide array of occupations and professions that need competent human resources. It will range from the driver's license, compulsory entry point for all those involved in road transports, to instruction courses on urban mobility management and public transport planning and management. By way of example, it is extremely time-consuming, costly, and difficult to create a true shared vision of public transport when a city chooses to implement new heavy mass transit infrastructure. It is essential to provide training locally and it could use the support of existing structures – when they exist – such as the company operating the network.

Nevertheless, the complex nature of transport systems requires international training for management staff that will make possible capitalizing on knowledge and expertise and providing new perspectives by comparing different situations. Specialized courses on emerging countries already exist and may be adapted to Mediterranean countries. They deal successively with issues related to sustainable transport systems (energy, climate, pollution, clean technologies), supply and demand analysis (closely related with research), financial, economic, political, and social issues related to transport, and finally – a key point often neglected – setting-up projects and management systems.

The same applies to the elaboration of transport network projects since the skills required are concentrated in a limited number of companies and research consultants whose staff is more international than local. It is important then to systematically assemble and make accessible in the city concerned the studies and particularly the statistical and factual data compiled for these programs. Documentation centers of permanent institutions open to the public, such as universities or public libraries, may be used to capitalize on and disseminate the information, keeping in mind a broader diffusion through the Internet is also possible. This would allow local academia and researchers to have updated information at their disposal to teach students on their country's specific situation.

These capacity building actions include two different yet complementary mechanisms:

- General education for young executives, in university programs or in engineering and management schools;
- Professional development or continuing education for management staff, with more precise professional objectives.

Most cities in the region benefit from outside funding for their programs. It would be advisable to put into practice – as it is currently done in some cities – systematic monitoring procedures involving local actors in order to make the most of and diffuse lessons learned from these programs. These could then be incorporated in training programs adapted to each situation. In earlier stages, studies on transport projects and transport plans led by international consultancy firms provide opportunities to transfer knowledge to local professionals, but certain conditions should be met:

- Availability of financial resources to carry out these studies including the necessary actions for knowledge transfers;
- Identification of human resources to be mobilized on a long-term perspective;
- The number of people working in monitoring teams should allow efficient handling and analysis of technical aspects.

Based on the above, Mediterranean countries should have clear knowledge of the responsibilities of public and private actors involved in urban transport issues. Local authorities, administrations, and research consultants require skilled staff to carry out their respective missions. Related careers should be professionally attractive and their true value should be put forward. For example, in France, being in charge of an Urban Development Plan is professionally fulfilling. Having qualified management staff could be a starting point for a dialogue between local and national authorities on the one hand and decision-makers and fund providers on the other – prerequisites for a strategic policy on urban transport.

6/3 Exchanges between Professionals

Building professionals skills and innovation require professional exchanges between relevant actors. These should be developed in the Mediterranean region. Different actions are possible depending on the actors involved and the geographical area.

As mentioned in Chapter 1, the transport planning authority should be responsible of consultations among actors at city level. But the implementation of such an authority will be the result of a long and delicate process. The experience of the IAURIF in Ile de France suggests that, in the meantime, the creation of an organism free of short-term political eventualities could be a compromise solution. The IAURIF combines the functions of an urban planning agency and an observatory capable of monitoring actions, and its role is to suggest guidelines for the transport and urban mobility sector. The planning institution should be adapted to each context and could take the form of an agency, a center of excellence in partnership with a university, or a private institution with long-term financial independence.

The different Mediterranean planning authorities could constitute a network for quality exchanges on urban transport issues. It could be modeled on the European transport authorities EMTA network created by ISTED in support of STIF.

At national and regional levels, existing exchange networks are fragmented and scattered. Several organisms plan to take action in the next years with different approaches (CODATU, the Blue Plan, the International Association of Public Transport (UITP)), but there is no regional association or forum similar to CLATPU in Latin America or EASTS in East Asia that mobilize scientific and professional actors, to say nothing of Europe.

The renewed importance attached by Mediterranean cities to urban mobility, with the support of fund providers – the World Bank through its agency for the MENA region, the French Development Agency that supports many programs in the region, and other institutions of the European Union – should ensure the successful completion of this process of change. Decentralized cooperation also concerned with exchanges can contribute greatly in terms of training and support to projects provided it is pursued over the long-term (See CODATU guide, 2006).

Given the strategic role of researchers, initiatives should be envisaged to reinforce their action. Besides existing bilateral agreements between North and South Mediterranean countries, they should include North-South and South-South international cooperation programs.

Logically, the mechanism should be reinforced with the creation of a reference center for the region. The center's mission could consist of promoting research in the transport and urban mobility sector and, at the same time, support the implementation of training centers, and organize exchanges on a regular basis between the different actors concerned.

6//4 Monitoring Mechanisms (Statistical Observation)

The production of reliable data on the different transport systems should be encouraged and reinforced, and should open out to regional problems concerning Mediterranean cities. Related initiatives are being developed by the International Association of Public Transport (UITP) and the Blue Plan.

Availability of observation data is a constant concern of evaluators who can be, among others, professionals working in the transport sector, researchers, or services providers. Without observation data, it is not possible to prepare accurate and precise studies to plan the future, capitalize on experience and carry out assessments. An observatory for the collection of monitoring data is a valuable tool for policy impact monitoring and assessment and, if necessary, to take the appropriate corrective measures. However, it is true that even in European cities with clearly established transport schemes, it is difficult to implement statistical observation mechanisms and to keep them operational.

The need for available data for transport studies and plans

Being able to identify mobility patterns and the characteristics of the transport supply is vital as basis for a diagnosis and to determine the course of action. Forecasts used for planning, for negotiations of major projects particularly with banks, or for agreements with operators must also be based on reliable data.

Good knowledge of the transport system may also aim at more operational objectives and enable operators to efficiently manage transport supply. In this case, data are more precise and directly linked to management concerns but useful nevertheless for the public transport knowledge-based system.

Data on urban transport in general and on users of public transport in particular also make possible comparisons between cities, and other countries (benchmarking). By comparing the urban transport performance of similar cities, essential information is gathered to identify the areas where improvements are possible. For example, studies conducted by Urban Transport Plan (UTP) teams of the city of Lille (France) highlighted the excellent performance of Lille's metro system compared to other French cities, but the network's performance as a whole appeared as mediocre due to low quality bus services. Counterintuitively, the UTP finally recommended to stop investing on the metro system on the short term and to develop a more efficient bus network. The impact on public transport mobility is already visible.

An observatory for a long-running process of data collection and monitoring

With an observatory, regular updates of the transport data used for interactive planning could be envisaged, along with monitoring procedures on the impact of projects or policies and the identification of remedial adjustments.

Close linkages should exist between monitoring and planning tools to be able to determine if the measures implemented within the framework of transport planning initiatives are efficient.

An observatory needs to observe a wide range of data, from the number of public transport vehicles, to flow measures in transport networks, to individual mobility (mode, time, transport costs, etc.). Information may be obtained from two sources: exploitable data produced by the transport network's operators/institutions and field surveys (household surveys on mobility, origin-destination surveys, counts, etc.) specifically designed to obtain data for the observatory. In both cases, the frequency of necessary data updates will be determined according to the type of information collected.

One location with extensive information for all

Considering the extent of the work to be accomplished, during an initial stage, Mediterranean cities could centralize the transport data collected for one territory in one place. For example, for Casablanca's UTP many surveys were carried out and large amounts of data were collected, but all of them have not been exploited nor developed. By concentrating the information in one place, it could be made available to all those who will prepare studies on Casablanca.

Observation data should provide answers

Exploitable data is relevant: it is representative of a phenomenon and it is reliable. Consequently, the observatory must determine the major characteristics of variables:

- **Frequency of updates** - Individual mobility, for instance, does not have to be monitored every year but rather on a ten-year basis. On the contrary, changes in public transport ridership or in the utilization of the road system may require higher frequencies;
- **Area for measurements** - Tools for transport monitoring need information by geographical zones, characteristic of a given territory. Hence, the local competences of the different partners involved must be taken into account, and they must be adapted according to urban mobility zones;
- **The level of aggregation** - It is related to the territory under analysis and involves deciding the degree of localization for each type of data within a given area.

Collaborative efforts for a comprehensive approach in transport observation

Even if the observatory focuses on public transport, a monitoring tool for all modes of transport is necessary. Adequate analysis must take into consideration the entire transport system and the different geographical scales. This is only possible through collaborative efforts consistent with transport planning strategies, that is, with the participation of all local actors concerned with transport issues.

Moreover, producing raw data does not mean it will be immediately useful. Network managers normally generate data for their own activities. The data will not be exploitable for other purposes until it has been structured, stored and “purged” of incorrect information. These are not “natural” tasks for network operators and are not given priority. (See below CORALY and ticketing in Lyon’s transport network.)

Human resources for the observatory

The observatory would also need adequate human resources in charge of data collection, confirmation, analysis, and diffusion or important information could be lost. For example, in Casablanca, a significant amount of useful transport data was generated for the UTP, but in the absence of a technical service in charge of collecting, processing, and updating this information, there is a high risk of losing it all.

EXAMPLES

An unexpected consequence of UTPs in France: the promotion of competitive tendering for public transport operations.

French UTPs provided transparent information through a shared vision of the future of local communities with related facts and figures. According to French specialists in public service procurement, this transparency has promoted competition in public tenders for local public transport contracts. Since 2002-2003 the number of candidates has increased and changes in operators are unusually frequent.

RAW DATA MUST BE PROCESSED AND EXPLOITED

The first mission of CORALY (Coordination center for traffic regulation on Lyon’s expressways) concerns the network’s operations. For quite long time, the center produced data that was classified and used solely for its basic mission. Today, an adequate structure has been created to process the information for use in network monitoring tools. A similar situation exists after the introduction of the ticketing system for the city’s public transport network. Data are being produced on network users but for the time being cannot be exploited.

Appendix

Acronyms, websites



- AFD** - Agence Française de Développement - www.afd.fr
- CERTU** - Centre d'Etudes pour les réseaux, les transports, l'urbanisme et les constructions publiques - www.certu.fr
- CETE DE LYON** - Centre d'Etudes Techniques de l'Equipement - www.cete-lyon.equipement.gouv.fr
- CITY ON THE MOVE** - www.ville-en-mouvement.com
- CLATPU** - Latin America Congress on Public Urban Transport - www.clatpu.org
- CODATU** - Cooperation for Urban mobility in the Developing world - www.codatu.org
- CORALY** - Coordination et régulation du trafic sur les voies rapides de l'agglomération lyonnaise - www.coralys.com
- DGCL** - Direction Générale des Collectivités Locales - www.dgcl.interieur.gouv.fr
- EASTS** - Eastern Asia Society for Transportation Studies - www.easts.info
- EMTA** - European Metropolitan Transport Authorities - www.emta.com
- FNAUT** - Fédération Nationale des Associations des Usagers des Transports - www.fnaut.asso.fr
- FORMAPLAN** - International Consultant - www.formaplan.com
- IAURIF** - Institut d'Aménagement et d'Urbanisme de la région Ile de France - www.iaurif.fr
- INRETS** - The French National Institute for Transport and Safety Research - www.inrets.fr
- ISTED** - Institut des Sciences et des Techniques de l'Equipement et de l'Environnement pour le Développement - www.isted.com
- INTERNATIONAL TRANSPORT FORUM** - www.internationaltransportforum.org
- ITDP** - Institute for Transport and Development Policy - www.itdp.org
- KNA-MENA** - the Knowledge Networks Agency for the MENA (Middle East and North Africa) Region - www.worldbank.org/knamena
- MAP** - Mediterranean Action Plan - www.unepmap.org
- MARSEILLES CITY** - www.marseille.fr

- MEDCITIES** - Network of Mediterranean coastal cities - www.medcities.org
- MEEDDAT/DAEI** - Ministry of Ecology, Energy, Sustainable Development and Spatial Planning/Direction of European and International Affairs - www.developpement-durable.gouv.fr
- PLAN BLEU** - Regional Activity Centre - Environment and development in the Mediterranean - www.planbleu.org
- SMAP** - Mediterranean Programme for the Environment - www.smaponline.net/EN
- STIF** - Autorité Organisatrice de Transports en Ile de France - www.stif-idf.fr
- STT** - Société de Transport de Tunis - www.snt.com.tn
- SYTRAL** - The Transit Authority of Rhone County and the Lyon Urban Area - www.sytral.fr
- TRANSMILENIO** - Bus rapid transit system in Bogotá - www.transmilenio.gov.co
- UNEP** - United Nations Environment Programme - www.unep.org
- UITP** - International Association of Public Transport - www.uitp.org
- UITP/MENA** - International Association of Public Transport/Middle East and North Africa - www.uitp.org/regions/mena
- WORLD BANK** : www.worldbank.org
- for the Mediterranean Region: www.euromedina.org

Les déplacements urbains en Méditerranée

Guide de recommandations

Urban Transport in the Mediterranean Region

Guidance and Recommendations

Ce guide pratique, à l'usage des décideurs en charge des questions de transports urbains, présente quelques recommandations d'aide à la décision.

Il contient les aspects liés à l'organisation institutionnelle et la planification, les grandes questions sur le financement et la tarification, la description des différents modes de transports, les bonnes pratiques de gestion de la circulation et du stationnement, l'encadrement du transport artisanal et une description du renforcement des capacités d'expertises.

This guide provides practical guidance and recommendations for decision makers confronting urban transport issues.

It deals with the institutional framework and planning processes for urban transport, financing and pricing issues, the key features of various transport modes, best practices for traffic management and setting of parking policy, regulatory mechanisms for small-scale traditional transport, and ways and means of building capacity.

*Guide réalisé avec la contribution des organismes suivants :
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