PUBLIC TRANSPORT IN THE SUSTAINABLE URBAN TRANSPORT POLICY PACKAGE:
TAKING AN INTEGRAL POLICY APPROACH

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1. THE MISSION OF PUBLIC TRANSPORT HAS CHANGED OVER THE LAST DECADES

Urban living conditions have undergone profound changes in the last decades, with an increasing residential dispersion, longer home-work distances and a growing presence of more complex travel patterns. In conjunction with this, an increasing availability of private motorised transport is a common trend in most European cities.

We are now living in urban systems where mobility plays a very strong role in peoples lives, where mobility and activity variables have strong interactions and define a very complex mesh where opportunity and marginal effort are key aspects shaping one’s decisions. Market forces or policy action on one level may induce responses not only at that level but also (and possibly dominantly) on the other level.

On the basis of these changes are the evolution of the structure of the urban areas, with commercial and business activities concentrated in the centre and the residential areas spread across suburban areas, as well as the increase of the economic power of its inhabitants. The first group of factors had a direct impact on urban mobility demand patterns, the second on the availability of transport alternatives to a significant part of the population.

This has led to a profound change of the political role of public transport: whereas until the 70’s its main function was to satisfy the individual needs of the less affluent members of society, progressively the policy discourse has been changing, pointing instead to the necessary contribution of public transport for congestion relief and environmental preservation [European Commission, 1996]. This represents a fundamental change of emphasis, in the sense that public transport now would have a role geared more to the satisfaction of collective wellbeing than to the direct individual needs of those who use it.

It might even happen that public transport in a certain city would be supplying a price-quality package that would be very satisfactory for all those who (still) have no alternative, but this would not be enough to make it fulfil its new role of attracting enough people away from the private car to reach those societal goals.

So we see that, according to those policy orientations, the “main client” of public transport is indirect (society, represented by politicians), and the actual, direct clients often are those remaining, and taking its current services as the “least bad” option, but leaving it as soon as they can afford the regular use of the private car.

This change of the mission of Public Transport has implications on its capacity to collect subsidies for its operation. Whereas it would be hard to deny subsidisation of mobility of the less affluent, it is understood that many of the current passengers would probably be capable of paying their full fare, even if that would mean that some of them would then rather use their own private car. In such a framework, subsidisation of Public Transport is seen as less essential and has to compete with other “merit goods” in society.
2. WHY PUBLIC TRANSPORT HAS BEEN LOSING MARKET SHARE

As mentioned above, evolution of lifestyles (increasing revenue available, richer set of activities, more free time available) and of land use patterns (greater dispersion of activities, low density peripheral developments) favour adoption of motorcar as the universal mode of transport, making full use of its flexibility and availability.

But besides this inclination from the demand side, modal choice between public and private transport is an individual decision that is strongly influenced by a relatively small number of decisions made by public agencies. Unfortunately, these decisions are often sending mixed signals to consumers, as each agency considers only its strict agenda and fails to recognise more global implications. In fact, the majority of cities has effectively encouraged the use of private car, through planning (dispersed land-use in the suburbs), infrastructural (parking and circulation capacity increases), pricing and fiscal decisions. The consequence in many of those cities is not only growing congestion but a sense of perplexity about the possible ways out of it.

Besides the counterproductive effect of policy decisions in other mobility-related areas, we can see in many countries and cities a contradiction between the policy speeches, which stress the collective role of public transport, and the policy decisions about its regulatory framework and organisation. These decisions still largely reflect the traditional vision, that is more driven by equity considerations, namely that public transport should be available to all citizens, and that no one should be deprived of its services by considerations of price.

In fact, even more than equity in the transversal sense of society (which would be better served by direct subsidisation of those in need, instead of subsidy to the operators), it is probably the longitudinal dimension of equity (in the sense of preservation of entitlements of various social groups) that is the main blocking factor of application of the principles contained in those policy speeches.

But the argument of public service obligations, while generally not disputed, has led to solutions that have frequently prevented (or at least hampered) the accomplishment of the new mission: in fact, authorities normally impose the network, range of services, timetables and prices of public transport as if they knew best what citizens aspire to. In parallel with the protection of those who really need price protection, this has had a series of negative evolutions:

- Evolution of supply is too slow, being made in a bureaucratic process, incapable of perceiving movements and trends at the fringe of the market, looking only at the big mass. As a consequence, those market fringes are successively leaving public transport for lack of the response they wanted;
- By keeping general prices (unnecessarily) low and granting concessionary fares on top of it, public transport is made dependent on subsidies, frequently allocated with little consideration for the real value of the service. In such an artificial value domain, abolition or significant change of any type of service is inevitably rare;
- But this economic frame also makes innovation much difficult by itself: not only are there always financial strains that legitimise resistance against any new initiative, but also the artificial set of values (i.e. isolation from market reactions and risks) make failure of any such initiative a very unlikely possibility. This will make the next attempt even more unlikely;
It should be clear that, if the main reason for declining market shares of public transport is an evolution of demand, there should be conditions for a dynamic adjustment from the supply side trying to retain as large as possible satisfaction of that demand, while fully retaining the protection of access to less affluent citizens. Of course, this is not easy to accomplish, but only very recently are there signs that this is being seriously addressed in some countries, namely in Sweden.[ISOTOPE, 1997]

Low prices on public transport certainly help retain some of its current customers, but rigid supply patterns and poor quality have also led to the loss of many more over the years. To achieve a sustainable balance between private and public means of mobility, pricing policies have to be related to the costs of supply and be able to send the correct signals in order to induce an adaptive behaviour from the users, which in turn will provide the system with a reliable feedback on the needs for further investment and expansion of transport facilities.

In recent years, public transport authorities and operators have been making efforts towards efficiency and quality, but with very moderate success: in many cases this is reflected in a significant reduction of production costs, but these are accompanied by only a reduction of the rate of loss of market share, or its stabilisation [ISOTOPE, 1997]

But this should not be a big surprise:

- Efforts towards (productive) efficiency are normally applied through tendering processes, in which the authority defines the service it wants (network, service standards, and timetables) and tries to get the cheapest supplier for that. Only when the operator has a direct interest on the number of passengers will he do something for it, but even then his freedom of initiative is quite limited in most cases. Most efforts in the late 80’s and early 90’s were directed almost exclusively at efficiency;
- Sustained efforts and programs towards quality are more recent [QUATTRO, 1998], and they are systematically formulated as what is needed to achieve satisfaction of the client, as it is recommended in all quality management books. But those books do not address the case of industries which have been losing customers. In the case of public transport, customer surveys only have a partial value as they may help limit the rate of loss of patronage, but the really important thing would be listening to the recent ex-clients (those who have recently left), try to understand what made them leave, and then progressively bring them back;

Careful analysis of the urban mobility system shows that solid policies may be defined only if the various components of the system are considered, as well as the relations among them. This simple fact has implications for the policy and administrative organisation of the mobility-related agencies in the local administration, which are more often than not ignored.

3. A QUALITY APPROACH TO URBAN MOBILITY

Given the increasing significance for public transport of its “new mission” of contribution to a sustainable city, and also the fact that (surface) public transport and private cars share substantial traits of public road space, there has to be a joint vision of the urban mobility system.

On the demand side, there is a large segment of the population that cannot be considered captive of either Public Transport - for lack of a car - or of the private car – for strong inadequacy of public
transport to their mobility needs, and for those people modal choice could be an open question if only their wishes were understood and the corresponding service properly provided.

On the supply side, public transport and the private car are competitors but they are also complementary, both at the individual level (Park & Ride) and at the collective level (each with their share of urban mobility). Side by side with these modes, there is an important role to play by non-motorised modes, but also these have to be given good conditions for their performance.

Since the mobility system for both private car and public transport inevitably has a strong intervention from the authorities – at least on road space allocation and pricing decisions – it makes no sense that politicians say that public transport has to fulfil a (collective) goal of promoting a sustainable city, and then decide to keep management of the urban mobility system in separate departments, one responsible for general road traffic and the other for public transport. But this is the scene that is still prevailing in most European countries. [ISOTOPE, 1997].

This joint management of urban mobility should not mean that we only care about market share of Public Transport and take punitive measures on private car traffic to achieve it, but rather that we develop a joint vision of the system and try to reach a good overall quality in the mobility system by creating the conditions that allow each mode to perform at its best under a system of constraints that affects all modes, and keeping in mind that changes both at the level of the organisation and of the processes need to be accompanied by adjustments in the performance measurement [Cambridge Systematics, 1999]. When conflicts occur, for instance for allocation of limited road space, decisions have to be taken based on the values of avoidable costs for each mode and on the overall effect on modal shares and quality of the general mobility system, not on the basis of “who was here first”.

The regulatory and organisational framework of urban transport acts as an umbrella under which transport services are designed, planned and produced. The definition of transparent rules for the allocation of responsibilities and sharing of risks between the different agents of the system is thus an indispensable tool for the management of Urban Transport Systems. Operators from different modes and authorities from different jurisdictional levels have to coexist both in time and in space [Chislem, 1989]. Moreover, transport authorities have to devise together with authorities from other sectors common strategic goals for the same urban area if congestion relief and environmental protection are to be achieved.

This complex environment can be disaggregated into three levels of decision [Anthony, 1988; ISOTOPE, 1997; Viegas and Macário, 1997]:

- The strategic level, where the mobility policy is defined reflecting the needs of the citizens and the level of resources available, thus producing principles and guidelines on the basis of which the system should be designed. This level of decision should be in the hands of political authorities;

- The tactical level, where the transport system is designed, translating the strategic goals into the definition of a set of resources to be made available and a set of services to be produced, assuring the effectiveness\(^1\) and coherence of the mobility system. Depending on several parameters of the political and administrative environment, the functions at this level can be performed by different agents;

\(^1\) Effectiveness in this paper is defined as the capacity to achieve the goals established for the system, which in turn are defined at the strategic level.
- The operational level, where transport services are produced and consumed, and the management of flow in the system is active. Besides the direct operation of their cars by private drivers, there are at this level several professional functions (traffic control, public transport operation, maintenance of infrastructure, signalling, vehicles, etc) all of which have to perform satisfactorily for the system to run smoothly. In most cities, execution of these functions is shared by agencies in the Administration – traffic departments -, publicly owned companies (or privately owned companies under franchise from the Administration), and private companies acting in the market.

In practice the division into these three levels is not so clear as described above. In most European cities (or urban areas) the boundaries between these levels are very often fuzzy and the overlap between the strategic and tactical levels is common [Viegas and Macário, 1998b]. The lack of a clear and well-structured regulatory and organisational framework is a determinant factor that may hinder the successful definition and implementation of a coherent mobility system, in particular if an effective interaction between the different parts of the system is not properly assured.

The definition of objectives and guidelines to reach them, is a function within the strategic level of the mobility system. A consensual strategic goal is to achieve a transport system configuration that respects three vital equilibria [Ciuffini, 1995]:

- Transport equilibrium – Adequate balance between public and private modes in order to satisfy the needs of all market segments.
- Environmental equilibrium – Keeping the total sum of pollution caused by the different modes below an acceptable threshold;
- Economic equilibrium – Potential to create new financial resources while delivering “value for money” solutions, and capacity to induce users behaviour through pricing mechanisms without discrimination;

As the perfect system is hardly reachable, the second-best solution lies in establishing trade-offs between these three domains according to the socio-economic and cultural reality of each specific urban area, and conditioned by the political options that result from the interaction between the local, regional and national levels of intervention. It is thus a function of the strategic level to assure a more precise definition of objectives that provides an adequate orientation for the design of the system bearing in mind those local circumstances.

The design of the transport system, and the articulation of the different modal sub-networks to create an integrated urban network, are within the main functions performed at the tactical level. A poor performance at this level results in a fragmented urban transport system, characterised by selfish behaviour by all parties, each seeking maximisation of its own advantages, and without offering a network that effectively provides economies of scale and scope for the users, in particular, and for society in general.

For the urban mobility system to reach the goals defined at the strategic level, the quality approach has to focus on the interaction of the different agents (parts) of the system acting within and across the different levels of planning and control (i.e. Authorities, Operators, Suppliers of equipment, Citizens, etc.). This means that quality in a mobility system has to be addressed considering that the reality to be tackled is a set of different organisations interacting as parts (agents) of a system that is meant to
produce a common good – mobility. That is to say that the quality approach in the Urban Mobility System has two different, yet complementary, dimensions:

- Quality at the level of the different organisations involved in the definition and production of the service;
- Quality of the overall system.

To bundle these different dimensions, the quality approach to the overall system has to assure the consistency of criteria used in its planning and control throughout the different decision levels. This implies thinking of quality in terms of a continuously renewed start-to-finish process to integrate and interrelate functions at all levels of the system, and to constantly reassess existing practices [Bendell et al, 1993]. Only acting along these lines can we bridge the gap between the stakeholders’ interests - reflecting society needs and interests, desirably the basis for the establishment of the strategic goals of the Urban Mobility System - and its operational performance.

The mobility system has specific characteristics that make quality implementation more difficult: firstly, as all other services, production and consumption occur simultaneously and the services are intangible. Additionally, the production of services for several transport modes is made in an environment (the public urban space) in which multiple agents have to act on a time and space sharing basis. [Viegas and Macário, 1998a].

However, the recognition of the importance of quality does not mean that the sector has already made considerable achievements in this field. In most countries there is no uniform quality approach for urban public transport and quality still continues to be a rather vague concept, although increasingly mentioned.

Quality is proving to be a useful concept thanks to the systematic approach it provides for the identification of the needs of clients at the various levels and for the searching and testing of solutions to satisfy them [Meszaros et al, 1997; Stephen, 1994]. This has to be done not only at the level of operators – who could more easily adapt procedures from other sectors already more developed in terms of quality
approach – but also at the level of authorities – who are still having to discover their own methods and finding ways to cope with their responsibilities before increasingly demanding citizens.

4. DIMENSIONS FOR IMPROVEMENT OF QUALITY IN URBAN MOBILITY: EFFICIENCY, PRICING, INTEGRATION, SEGMENTATION

4.1 Efficiency

For some time public transport has been accused of low levels of efficiency that cannot be justified only by less effective pricing policies and the negative impacts of subsidies. Efficiency has to do with the overall performance of the system and not only with cost coverage [Thiagarajan et al, 1997]. As such, it can be seen in different levels of definition of the system, such as:

- Appropriateness of the goals defined with regard to the population needs
- Definition and selection of products
- Combination of production factors
- Allocation of resources for production

Although there are several ways for selection of the operator(s) who will be delivering the transport service, it is clear that some form of competitive pressure is needed to ensure that a serious effort is made towards productive efficiency [Carr, 1997]. This competitive pressure may be obtained either through direct competition for the market – through periodic tenders for the right to supply the service in a partly or totally protected environment – or through some form of systematic comparison with similar undertakings – benchmark. The former is more appropriate in the case of private operators where a negative result will mean loss of business for the incumbent, whereas the latter is better suited for publicly owned operators (still very common in many European countries), where a negative result will mean loss of their job for the managers and some of the staff in order to cut costs.

But besides productive efficiency for a fixed production scheme, there must also be pressure towards commercial success of operators, so that better cost coverage levels can be reached [CEMT, 1993]. The most appropriate way to achieve this is through a type of contract that gives the operator the necessary degrees of freedom to experiment, and then decide to retain or abandon, new types of services and pricing packages, on top of the existing basic set of services and tariffs, whose existence must still be guaranteed.

There are two types of agents that intervene in this process - Authorities and Operators. Except where operators are free to create and abandon services according to their convenience (British cities outside London), the relationship between these bodies is based on the principal-agent formulation. In this setting, the authorities (principals) try to define rules such that the operator (agent), when acting according to his own goals and interests, also satisfies those of the principal. Due to asymmetries of information this relation is rather complex and requires a clear attribution of functions and responsibilities.[Van de Velde, 1997].

4.2. Pricing

Finally, a key ingredient for more successful urban mobility is an adequate pricing and financing policy. Price of mobility services must be seen not only as an instrument for cost recovery but also for driving consumers’ behaviour. As such, they are a prime tool for managing market shares, not only globally in the urban region, but also by limited areas, as price levels for parking (or for car access into the
area) may be targeted in order to achieve values considered desirable for a sustainable balance of quality of life in each of those areas.

In addition, it is also the role of the transport pricing policy to contribute to the control of the external costs produced by the system, and this can only be achieved by the combined use of market based incentives together with control regulations. The former should persuade users to adapt their behaviour towards the policy aims, while the latter are mostly meant to restraint practices leading to the growth of external costs.

Frequently, pricing and financing policies imply the parallel use of different mechanisms, since single measures are never fully effective if applied in an isolated way. The risks involved in the implementation of each measure, the consistency and synergy of the measures combined in a package are important issues that have to be included in the concerns of the decision-makers when choosing the most appropriate policy package for implementation.

Many economists recommend adoption of prices for mobility services (including access by private car to the infrastructure) based on marginal costs, but this is very hard and expensive to measure and possibly even harder to explain to the common citizen. [Viegas, 1998]. Besides this element of pursuit of the optimum level of mobility production, other common goals for the pricing system are coverage of the full costs of the mobility system and avoiding exclusion of poorer citizens from the mobility market (and thus from the city) by the prevailing price levels for mobility.

The latter goal may be treated by consumer orientated subsidisation, which is now possible without any externally visible sign of discrimination, and so the other goals may be considered separately from this equity concern.

In this framework, the conciliation of marginal cost pricing principles with concerns for full cost coverage may be through a pricing policy based on the pursuit of quality of the mobility system, which is compatible with those principles and concerns:

- because quality deteriorated in the situations of congestion, prices must be higher then in order to induce some travellers to change destination, travelling time, or even to cancel that trip. This is very much in line with marginal cost pricing principles, but price is adjusted to reach certain pre-specified (and measurable) levels of service, not to exactly match instantly variable marginal costs;

- because preservation and upgrading of the mobility system require financing, general mobility pricing levels have to be set in such a way that current internal and external costs are covered and the necessary reserves for investment are still available.

The first argument is used to establish price differentials across modes and across time and space (according to levels of saturation), whereas the second is used to establish the global price level, from which those differentials are computed.

There is no general guarantee of a feasible solution for this problem along these lines, since it might happen that the fixed cost levels of the mobility system were so high that the necessary prices for cost coverage under the current demand volumes would drive most of that demand away. But the risk of such unbalances seems unjustified, as it is commonly found [FISCUS, 1998] that under some circumstances the current pricing and charging systems for mobility in urban areas are very close to full
cost coverage. In that case, it is more a problem of redistribution of prices and charges (and corresponding pricing signals) than of global increase or reduction of those prices and charges.

4.3. Integration

One of the main roles of the authorities is to stimulate and, if necessary, to enforce a high level of integration in the mobility system. The main aim of system integration is to offer a more attractive and easier to use urban transport system, leading to a better use of existing resources and consequently reduced congestion. Moreover, integration can also serve cost efficiency purposes (for the overall system) by avoiding duplication of services where customers don’t have any benefit out of it.

Integration plays a key role not only between public modes but also with private modes, namely in what concerns combined services and traffic management. The dimension and intensity of integration to be implemented in the system should be decided against its main strategic goals and considering the impact that each element of integration has in its global efficiency and effectiveness.

There are three main dimensions of integration in the urban mobility system [Viegas and Macário, 1998a]

- **Physical**: In space, time and technology, is reflected in the network design, existence of good interchange stations, timetable co-ordination;
- **Logical**: Involving global system information (all modes and all operators), focused information (from one specific mode and/or point of the system to the all network), reliability of connections provided by real time information;
- **Tariff**: Design and supply of packages of services with an integrated price that promote their adoption by customers thereby reducing transaction costs for them and adoption of individual behaviour that is in line with collective goals. Whenever these packages involve multiple supplying companies, they must be accompanied by the corresponding revenue sharing agreements.

A fourth dimension, less visible to the public, may be necessary to underpin the three quoted above: **Contractual integration**. By this we mean the formal commitments of all parties for the conjunction of efforts and allocation of responsibilities between authorities and operators and between operators of different modes for the quality of the service provided (including system integration initiatives).

It is consensual that system integration has numerous advantages and results in a positive overall benefit, but there are also some costs and disadvantages for individual clients and for the simplicity of operations of each operator, and those should be considered when chossing the path towards more complete integration. A synthetic analysis of those implications is provided in [Viegas and Macário, 1998a] for each of the dimensions considered.

In what concerns contractual integration the main elements to consider are:

- Scope of authorities competencies;
- Responsibilities of the different agents regarding initiatives towards system integration.

The existence of an authority that co-ordinates all mobility aspects, land-use and urban environment for that same territorial area allows the consideration of inter-relations among these types of decisions and the development of coherent policies.
Integration initiatives will normally involve several types of agents, with different responsibilities and expectations, as shown in the following table:

<table>
<thead>
<tr>
<th>Main agents</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport authorities</td>
<td>- Political and social objectives are better achieved</td>
<td>- Economic efficiency of the operators might be left as a second priority</td>
</tr>
<tr>
<td></td>
<td>- Economic efficiency of the operators might be left as a second priority</td>
<td></td>
</tr>
<tr>
<td>Other authorities</td>
<td>- Better integration with other urban policies</td>
<td>- Economic efficiency of the transport system might be considered as a second priority</td>
</tr>
<tr>
<td></td>
<td>- Allows for an integrated approach with other merit goods</td>
<td>- Integration benefits must be careful assessed to justify adhesion by operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Risk of lack of knowledge of real transport costs may lead to cross subsidisation with other activities</td>
</tr>
<tr>
<td>Operators</td>
<td>- Higher level of cost efficiency tend to be achieved</td>
<td>- May represent attempts to gain information about other’ operators markets or to create collusion of incumbents against new entrants.</td>
</tr>
<tr>
<td></td>
<td>- Represents the understanding that integration brings positive results</td>
<td></td>
</tr>
<tr>
<td>Users representatives</td>
<td>- Social objectives and user needs will be highly considered in both network design and productive organisation</td>
<td>- Risk of lack of knowledge of real transport costs, ignoring that integration should be matched by additional customers</td>
</tr>
</tbody>
</table>

4.4. Segmentation

In societies where individual preferences are valued very highly, it is increasingly difficult to achieve good market acceptance with a single type of product. At a time when the basic first wave of car ownership (one car per family) is essentially completed in most European countries, the motor car industry has orientated its efforts towards promotion of diversified lines of products, with the aim of fine-tuning one car for each member of the family, and sometimes even more than one car for some persons, one for each type of occasion. The levels of revenue available allow this kind of very fine segmentation even when a very expensive product is the object of the transaction.

Also the urban mobility system, and public transport within it, have to be able to segment their supply, in effect fine tuning their services to a demand that is already segmented, requiring different services for different people, and even to the same person in different occasions. The special difficulty is that this has to be done for a service with a long tradition of a “mass” service, essentially identical for everybody, everywhere and at all times [TRB,1995].

Public transport still carries the stereotype that the vast majority of its users make the same type of commuting trips everyday, and so promotes packages that essentially assume this regularity. It is possible that all remaining frequent users of public transport have such regular patterns of use, but certainly many of those that have left it had varying mobility needs that they felt poorly satisfied either by the services themselves or by the price deals available. It is good to organise basic solutions around regular patterns, but we should not impose such regularity or strongly penalise any deviation from it.

Because the basis of service still has to be a mass service, the solution for segmentation (and variability) has to be something like making available a range of complementary services on top of that common basis, similar to a range of different toppings on a common pizza bed. Each client chooses the basis according to his geographical range and frequency of displacements and is then encouraged to pick
up from a sampler of additional services, whenever he needs any of them. These should be easy to identify and grab (thanks to logical and physical integration) and made available at a favourable price to “loyal members” of the mobility club (thanks to tariff integration).

Two types of examples of these additional services could be:

- other upmarket mobility services like taxi rides, short-term car leasing, private car parking, etc, made available in special conditions (and on limited quantities) for public transport subscribers;

- value added information services, like alert for arriving public transport services, reservation for downstream services after a transfer, etc.

5. CONCLUSIONS

We have seen that the mission of Public Transport has changed during the last decades, but this change is often only hardly visible in the way it is operated. This inertia of the supply side, in contrast with the evolution on the demand side, is one of the main causes of the decline of its market share. In view of the new mission, that calls for a contribution of Public Transport for congestion relief, this decline generates strong feelings of disappointment.

Systematic approaches to Quality in Public Transport operations have come to the surface in recent years, although they may not yet be considered mainstream practice in the industry. But these approaches suffer from two main drawbacks: they consider only the needs and aspirations of the remaining clients, and the resources and goals of the Public Transport component of Urban Mobility.

It is argued that Quality has to be formulated at the level of the mobility system, considering not only the production of each of the engaged organisations, but also the mutual influences they have on each other, either through competition for scarce resources, or through principal-agent relationships. In doing this, a clear vision of the existing levels of decision in the mobility system and of the allocation of responsibilities at each level is paramount. These aspects are essential components of the legal and regulatory framework and of the contracts underlying the whole performance of the system.

Finally, four dimensions for improvement of urban mobility are addressed, in all of which there are still currently significant obstacles in most countries: efficiency, pricing, integration and segmentation. Action is necessary in all these fronts, but only under a joint consideration of the whole urban mobility system will those actions be consistent and lead to success in improving our quality of life on the short term and ensuring a more sustainable city for the long term.
6. REFERENCES


CEMT (1993), “Marketing and quality of service in public transport”, Round Table 92, Paris


