MANAGING AND ASSESSING REGULATORY EVOLUTION IN LOCAL PUBLIC TRANSPORT OPERATIONS IN EUROPE

Rosário Macário

TIS.PT, Consultores em Transportes, Inovação e Sistemas, s.a.

Lisbon, Portugal

e-mail: rosario@tis.pt**, phone: + 351-21-359.30.20, fax: + 351-21-359.30.21**

ABSTRACT

The Urban Public Transport System (UPTS) is an indispensable element of the quality of life in most cities, providing direct service to its users and a global benefit to the community by allowing mobility with a more efficient use of space than with private cars. The political framework, for its existence and importance, has been evolving but has permanently justified a rather strong level of State intervention, sometimes though direct ownership of operating companies, and almost always through regulation and subsidization.

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 organization of the mobility-related agencies on the local administration, as well as in the co-ordination with other urban policies (e.g. Land-use, environment), that are very often ignored.

The last years have witnessed in a number of European countries significant changes in the legal and organizational frameworks of local public transport in order to ensure an improvement in transparency, economic efficiency and quality of the service. The European Commission promotes this development through the provision of an appropriate legal framework at European level, as originally suggested in the Citizens' Network Green Paper and later reinforced and clearly indicated in the Communication "Developing the Citizens Network". However, it should be made clear that whatever regulatory regime is in force, its success strongly depends on the effectiveness of the relationship between authorities and

operators. That is, one of the main functional roles of authorities is to induce operators to conduct their business towards the achievement of the strategic goals of the system (i.e. principal-agent theory), for which complementary schemes of incentives and penalties are an indispensable tool.

All these developments confirm the importance of the efficiency concept, both in the production and in consumption (i.e. efficiency from the users viewpoint), of local transport systems as one of the main building blocks for sustainable growth and employment in Europe, as well as to contribute to economic and social cohesion for which local transport services play a determinant role by being safe, affordable, easily available and reliable, and last but not least delivering a quality that fulfils citizens needs and expectations.

MARETOPE research[1] aims to analyze the management of these change processes along the three decision levels (Strategic, Tactic and Operational), by assessing in an integrated way the impacts of those changes on roles and activities of key players (i.e. PT operators and public authorities, citizens/customers and producers of transport means and systems), and providing guidelines for the "adaptation to change" of these groups, as well as to find possible solutions for the transition paths in order to overcome barriers to change. The final and main output of MARETOPE will be the production of a report on "Recommendations for the management and assessment of regulatory evolution in Urban Transport Operations in Europe". This paper resumes the context under which MARETOPE approach was defined and its on-going developments.

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[1] Research project commissioned within the framework of EC 5th RTD programme (DGTREN). The research is co-ordinated by TIS.PT and counts with the participation of a large consortia formed by the following entities:

1. INTRODUCTION

Urban Public Transport (UPT) in Europe is considered an indispensable element to support economic and social activities in modern cities, and this is probably the main reason why this sector is so politically sensitive and has been subject to State intervention all along its history, mainly through regulation and subsidisation.

However, dealing with UPT requires undertaking a more holistic view of the context under which these services are defined and operated – i.e the Urban Mobility System (UMS). Furthermore, the definition of an Urban Mobility policy is a complex issue since it is very much related with the specific characteristics of the local environment, as well as with the respective political options, which may change between localities within the same country, and even between neighbour communities served by the same transport system. The diversity of variables involved causes a wide diversity of approaches to Urban Mobility that are reflected in the definition of a number of elements of the system.

European policies aimed at improving efficiency and effectiveness of collective transport forced the in-depth revision of the regulatory and organisational settings of this sector, introducing competitive pressure in the awarding of contracts through tendering, while challenging old established monopolies to re-organise themselves.

Even the changes in structure and dimension of the urban environment itself, added to the congestion phenomenon, the scarcity of public money and, last but not least, a growing awareness of society about environmental problems, are among the main factors that have lead to stronger demands of efficiency in transport systems, and consequently to the use of pricing and competition policies, among the main instrument to achieve that aim.

All these movements of change led to rethink public service concepts and if some decades ago subsidies for public transport found political support today these services are confronted with severe state budget constraints encompassed by a better informed and more demanding set of clients.

Several sciences have been called upon to study different angles of this complex problem, and no doubt that valuable results have been achieved in several fields. Good examples are pricing policies, new market

access regulation, socio-economic studies to better define market segments and willingness to use public transport, contractual incentives for service provision, and so forth.

Despite the complexity of these issues, 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 organization of the mobility-related agencies on the local administration, as well as in the co-ordination with other urban policies (e.g. Land-use, environment), that are very often ignored.

The last years have witnessed in a number of European countries significant changes in the legal and organizational frameworks of local public transport in order to ensure an improvement in transparency, economic efficiency and quality of the service. The European Commission promotes this development through the provision of an appropriate legal framework at European level, as originally suggested in the Citizens' Network Green Paper and later reinforced and clearly indicated in the Communication "Developing the Citizens Network". However, it should be made clear that whatever regulatory regime is in force, its success strongly depends on the effectiveness of the relationship between authorities and operators. That is, one of the main functional roles of authorities is to induce operators to conduct their business towards the achievement of the strategic goals of the system (i.e. principal-agent theory), for which complementary schemes of incentives and penalties are an indispensable tool.

All these developments confirm the importance of the efficiency concept, both in the production and in consumption (i.e. efficiency from the users viewpoint), of local transport systems as one of the main building blocks for sustainable growth and employment in Europe, as well as to contribute to economic and social cohesion for which local transport services play a determinant role by being safe, affordable, easily available and reliable, and last but not least delivering a quality that fulfils citizens needs and expectations.

This paper brings together the findings of a number of European research projects[2], as well as individual research done by the author, that were used to define the context under which a new approach to manage change processes in the regulatory and organizational settings was developed in the recently commissioned research project MARETOPE.

[2] Such as ISOTOPE (4th RTD framework), QUATTRO and Public Service Obligations study to the European Commission.

2. REGULATORY FRAMEWORK IN URBAN PUBLIC TRANSPORT

Considerable progress has been made over the last years in deepening the Internal Market for transport services, with special emphasis in the following issues:

- particular relevance is given to the effort applied in the development of more integrated transport systems;
- an in-depth approach promoting the use of less environmental damaging technologies accompanied of the treatment of environmental protection as an integral part of the transport policy;
- the promotion of intermodality throughout the sector and of best practice in local and regional passenger transport.

The translation of these goals to the local environment is a function within the strategic decision level of the mobility system. A consensual strategic aim (also reflected in the Common Transport Policy) for local environments is to achieve a transport system configuration that respects the following four vital dimensions:

- Transport dimension – Adequate balance between public and private modes in order to satisfy the needs of all market segments.
- Environmental dimension – Keeping the total sum of pollution caused by the different modes below an acceptable threshold.
- Economic dimension – Potential to create new financial resources while delivering "value for money" solutions, and capacity to induce users behaviour through pricing mechanisms without discrimination.
- Social dimension – Assuring citizens are provided with a transport system adequate to their needs and that no exclusion through price or any other criteria will be imposed on base of economic or financial goals.

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 environment (urban area), and conditioned by the political options (and also respective financial support) 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 definition of objectives that provides an adequate answer to the stakeholders (individual and community) interests.

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. Its non-existence results in an urban transport system characterized by bilateral agreements formalized between operators, seeking the maximization of their own profit, and without offering a network that effectively provides economies of scale and scope for the users, in particular, and for the local society in general.

The form of organization at the tactical level is strongly determined by five main variables, three of them are internal to the mobility system itself and two others, which despite being external to that system, have a strong influence in its organizational structure. These are:

- Internal variables:
  - Legal possibility of having a plurality of initiatives on the market (i.e. degrees of freedom) and entrepreneurship for those initiatives (i.e. who takes the initiative);
  - Degree of competitive pressure and incentives in the system;
  - Level of technical competence of the interacting agents for planning complex networks;
- External variable:
  - Political-administrative organisation of the country/region.
  - Regulation externally imposed (valid for European Union only).

Within the domain of the internal variables, the main division is between regimes where the operator takes the initiative and the ones where the initiative of transport service creation is left to the authorities. The main advantage of the first ones, also known as market initiative regimes, is the fact that they enable an active participation of the operator in the service design, providing the stimulus for the improvement of the service and consequently a possibility for letting the operator carry most (or all) of the planning and revenue risks. This revenue risk is mostly related to patronage and fares, and the former is highly influenced by the quality and appropriateness of the service to the customer needs, the reason why the involvement of the operator to the design of the services is so important. The planning risks in turn can arise from three different sources: urban planning can change mobility patterns; road planning can either upgrade or downgrade the quality of the operation; the realization of transport system plans may benefit the system while dropping those plans may hinder it. Whatever their source these effects have a direct impact on production risks, which has been traditionally accepted by the operators as implicit to their core business.

Within this entrepreneurial classification we can find two different regulatory regimes according to the degree of competitive pressure imposed to the system: the deregulated regime (free competition) and the

authorization (or licensing) regime (which is one form of limited competition). The former provides a good example of the main disadvantage of market initiative systems, which is the reduced, or sometimes non-existing, network integration and co-ordination with the consequent lack of quality of the transport system. Whenever the initiative of creation of services lies freely and exclusively with the operator, this is done according to his own commercial and economic interest giving priority to cost efficiency objectives. In limited competition systems the authority can mitigate this drawback by subjecting the granting of the license, or authorization, to the compliance with specific requirements regarding system integration (e.g. physical, logical and tariff integration) and aiming to achieve this way a balance between efficiency in consumption, i.e. allocation of resources in accordance with the customer needs and preferences, and efficiency in production, i.e. for each efficient allocation in consumption, find the minimum cost of producing it.

Where the creation of the services is left to the authorities, i.e. authority initiative systems, the compliance with requirements established in accordance with the strategic goals can be, at least theoretically, more easily achieved, and enforcement should be possible at a lower cost function than in other regimes. The main advantage of these systems is that they give structural priority to integration and stability of supply, while seeking cost efficiency through other instruments. In these systems the degree of competitive pressure can still vary once the authority has several alternative ways to assure the planning and production functions [Macário and Viegas, 1999]

The figure bellow illustrates the variety of existing regulatory systems according to entrepreneurship and degree of competitive pressure that where identified in the ISOTOPE research and that are still valid.

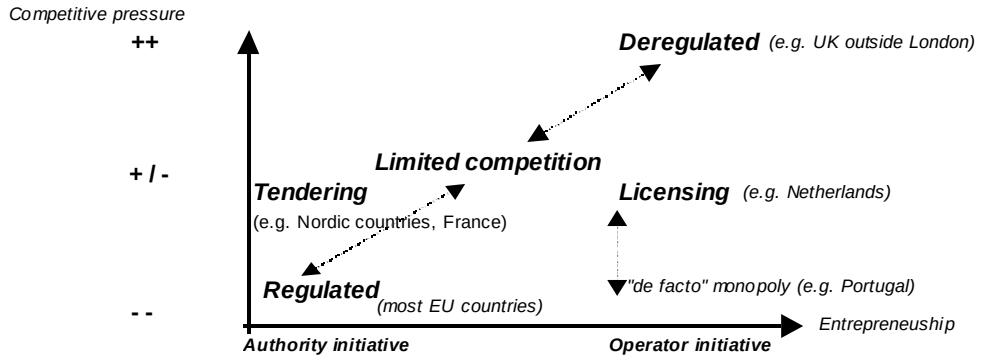

Figure 1: Classification of legal and regulatory regimes in Europe

In fact, based on research and consultancy studies done since 1995, it is now the limited competition regime (under a new designation of controlled competition) the one which gained the preference of the European Commission, reflected in the proposal to the Parliament for regulation of public service in land transport services [CEC,2000].

Indeed it is correct that those background studies revealed that productive efficiency pressure was more effectively applied through tendering processes, with the authorities taking the role of the entrepreneur by defining the services and trying to obtain the lowest cost from the best offers of the competing operators. In parallel, efficiency in consumption would be pursued through regular quality surveys on satisfaction of existing customers.

However, from those not so late years up to the current days, experience revealed that a deeper involvement of the operators was needed to cope with a "new mission" of public transport in the improvement of urban living conditions. As a consequence a general movement from gross costs to net cost contracts could be observed, confirming that the selection of operators just on the basis of the lowest price bid to produce a pre-defined service entails substantial risks of downgrading quality of service (or at least not enough stimulus to improve it).

Additionally, the complexity of the Urban Mobility System envelope requires the system to be flexible enough to cope both with the changes of the external variables (e.g. Land-use policy, budgetary constraints, etc) and with the internal changes of the system (e.g. regulatory changes, innovation in services, etc.) that have also to be considered in the fine tuning of the procedure for selection and monitoring of the operators [Macário , 1999]

Experiences worldwide have raise the common belief that net cost contracts have all the ingredients to become the ideal choice for authorities in the short-term, since they still have the option of specifying the service, while through the contract they can still assure the service will be provided at a fixed price, while leaving room for operators to innovate their services and make them more responsive to market wishes and needs.

Despite the validity of the previous statement, there are some pitfalls to consider, such as: dominant position of the operators through possession of market information; the impact of these contracts on the general contestability of the market; duration of contract versus ownership of assets at the term of the

contract, whenever capital intensity is high (e.g. railways); authorities' degrees of freedom in the design of the second tender and/or changes in the network design during the term of the contract, etc. [Viegas and Macário, 2001].

In what concerns the external variables influencing the tactic organization of the mobility system, the political and administrative organization of the country is also a determinant factor. A number of different solutions have been implemented across Europe and world-wide and there is strong evidence that in the trend has been to replicate the political-administrative division of the countries (i.e. national, regional and local division) into the organizational framework of the transport system. The distribution of the public budget has been clearly one of the main pragmatic reasons to match fiscal and financial autonomies with the organizational responsibilities.

Nowadays - as the size and shape of urban areas has developed and spread across sub-urban areas forcing the transport network configuration to loose its original radial shape and to extend beyond the administrative borders of the city - the need to extend the scope of intervention of the transport authority to all communities with a direct stake in the mobility system is more evident. However, though the reasoning behind the functional enlargement of the scope of intervention can be clearly understood from the perspective of mobility needs, the same cannot be said from the respective financial autonomies of those organizing authorities. This is an important constraint factor to set pricing and financing policies for the transport system, and consequently in the definition of the services offered.

In addition to these aspects there are still regulatory constraints that will be imposed soon by the European Commission, that despite leaving many degrees of freedom for local decision on financing and contracts awarding, are nevertheless another factor binding the local decision-makers.

The above largely confirms the complexity entailed in the definition of an Urban Mobility policy and its dependency on local context. Furthermore, there is still the challenge of consistency between different urban policies.

3. POLICY INTEGRATION ASPECTS IN URBAN MOBILITY SYSTEMS

In general, quality aims at customer satisfaction. In Urban Mobility Systems besides satisfying its direct customers the system has also public policy goals to satisfy, namely the increase of market share of public transport, relieve of public budget and environmental preservation.

Being the essential characteristic of a system the interaction of its parts, consequently the individual improvement in the performance of its components taken separately, although necessary, does not assure the overall improvement of its performance. A determinant factor of this performance is how well the different parts of the system will fit together, which is directly related with the interaction between the main enablers and processes identified in the urban mobility system. That is, control through co-ordination[3] is required in all decision levels, based on existing interlinkages and their impact in the way trans-organisational processes (i.e. processes managed across different intervening organizations or agents) have to be managed both in a steady state regime and under a changing environment.

These dynamic interaction mechanisms affects both organizations (or agents) and urban policies, and it is this dynamic characteristic that enables system flexibility to adapt no new demand patterns, creativity to conceive new services in order to increase patronage and, consequently, organizational change to adapt agents to the changing environment, while keeping congruence and consistency in their working methods, processes and organizational models.

Managing systems is a unique and dynamic task, with no fixed recipe or best system to be recommended. However, a main requirement to undertake smooth changes in a system is to clearly identify who will be affected by the change process and to which extent and dimension. In the management of the Urban Mobility Systems there are four main interlinked dimensions to consider as enablers of any successful change process, which are [Macário, 2001]:

- Regulatory and organisational of public transport services and other mobility services;
- Pricing and financing regimes supporting public transport services;
- Integration between mobility, land-use and environment policies;
- Information system to support management of urban mobility.

In addition, the more the levels of government and diversity of agents involved the more are the co-ordinating costs, as well as the complexity of the task, to assure consistency and coherence of action. Trade-offs will have thus to be considered between dimension and diversities of the organizations involved in the system.

Moreover, irrespective of the regulatory and organisational form, all urban mobility systems need to have their quality performance monitored. Longitudinal comparisons of Urban Transport Systems are relatively easy as long as the mix of transport modes remains stable and the extension of the networks does not vary suddenly. However, if the aim is to assess quality performance of an UPT system then the much more difficult question of transversal comparisons of performance between Public Transport systems in different cities (urban areas) as to be raised.

This comparison is difficult, even if done within clusters of cities (urban areas) of similar size because of different geographic characteristics (relief, rivers, etc.), different land-use patterns (uni- or multi- centred cities, levels of construction density, etc.) and different levels of availability of other transport modes, mainly the private car. Also, as long as we want to consider costs incurred to achieve certain results, the issue of unit costs of the basic resources must be considered. If we are to gain some understanding of the results of comparisons under this multitude of influencing factors, we must avoid the trap of producing a single index, and instead we should identify three main dimensions influencing the performance of a Public Transport System [Viegas, 2001] in order to assure the coherence of the system along its decision (or planning) levels:

- *Industrial Performance*, which covers the transformation of basic resources into transport production (vehicle.kms);
- *Network Organisation*, which covers the correspondence between those units of transport production (vehicle.kms) and the accessibility levels in the various parts of the territory served, and generally with the strategic goals of the system;
- *Commercial Performance*, which covers the potential represented by the accessibility levels into real consumption of public transport by its clients (passenger.kms).

Consequently any change process will have to consider the barriers that can be raised by the different agents, anticipate tools to overcome those barriers or at least mitigate the negative effects on the agents considered as "victims" of the process, and assess impacts of change at the level of the individual actors but also at the level of the overall mobility system.

[3] here understood as concerted decision making, since no hierarchical dependencies exist between interacting organizations

4. APPROACH TO CHANGE MANAGEMENT IN UPTS

Given the context and complexity described in the previous chapters, the approach adopted in MARETOPE research was the following one, illustrated in the diagram of figure 2:

- Based on selected case studies[4], understand:
  - Which factors are at the root of the different change processes;
  - Which regulatory change is at stake;
  - Identify the changing vectors;
  - Identify stakeholders affected by the change process;
  - Identify barriers raised by the different agents;
- Provide a systematic approach to analyse barriers to change;
- Develop tools to overcome or mitigated barriers to change;
- Provide guidelines on transitional paths;
- Assess impacts of change on the following dimensions:
  - Economic performance;
  - Social performance;
  - Financial performance.
- Assess long term impacts at the level of actors, system and wider.
- Finally, provide recommendations for the management and assessment of regulatory evolution in Urban Transport Operations in Europe

The following four groups of stakeholders are considered in the analysis according to their potential to raise barriers to change as a resistance attitude of protection of their status quo positions:

- Public transport operators and associations;
- Public authorities (political/transport);
- Producers of transport means and systems;
- Citizens/customers.

[4] The following 27 case study cities were selected: Aarhus, Bergen, Bern, Budapest, Copenhagen, Dublin, Groningen, Hague, Hannover, Innsbruch, Kan region, La Rochelle, Leeds, Lisbon, London, Malmo, Munich, Oslo, Oxford, Paris, Póznan, Rome, Stockholm, Sundsvall, Trieste, Turku, Vienna. A confidentiality agreement was signed between the consortium undertaking MARETOPE and the agents of each city assuring that no individual information will be revealed in such a way that either the city of the agent can be identified.

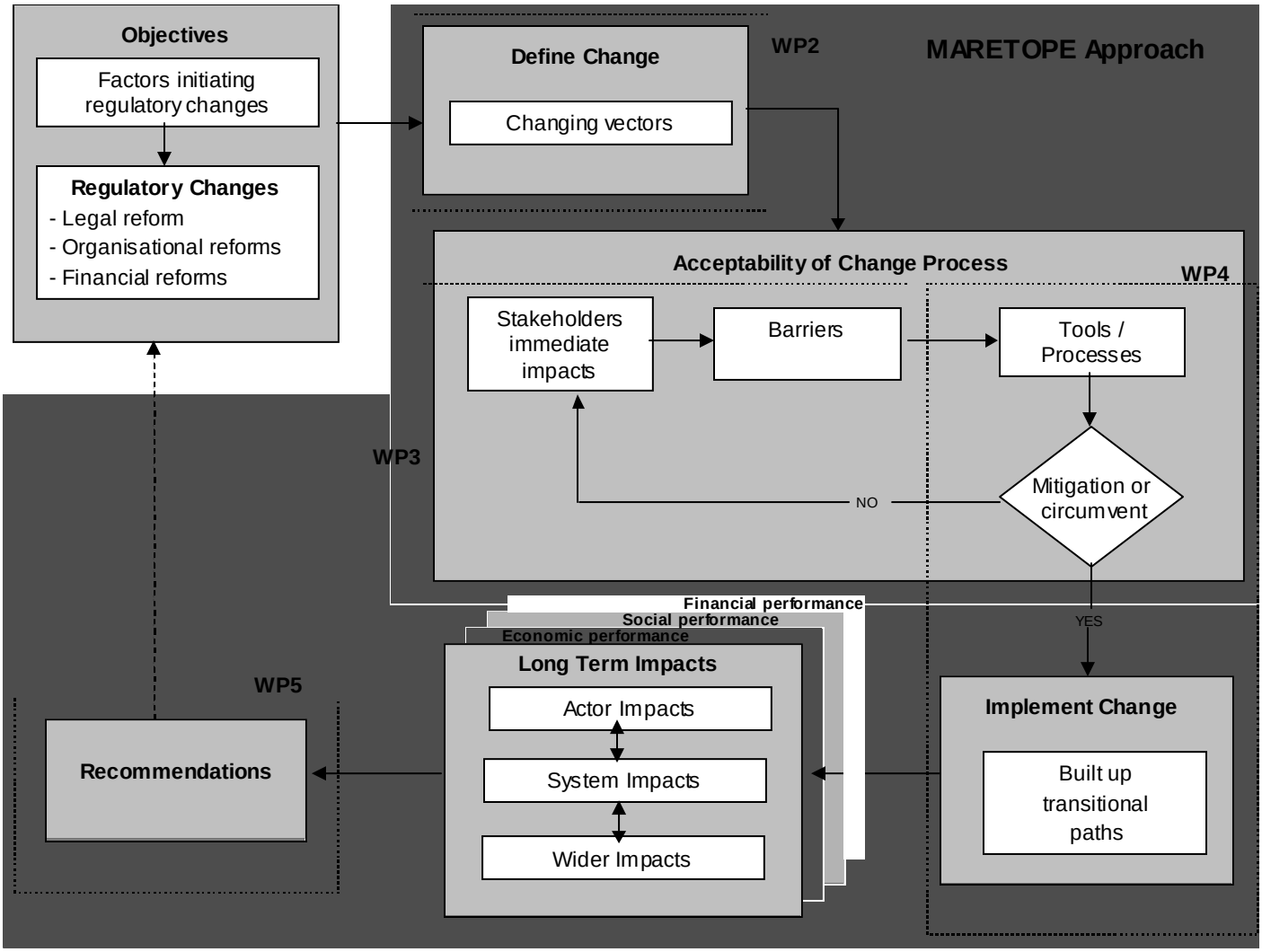

Figure 2 – MARETOPE methodological approach

Additional attention will be also paid to the role of potential new agents in the PT world, namely interchange managers, information providers, etc, as well as to the role of external financial benefits that can be collected through accessory activities such as publicity and other commercial and economic initiatives linked with the physical environment where the PT takes place. Such activities may render important tools onto the process for adaptation to foreseeable change.

The diagram provides a basic reference for the organizational models of the different agents. It illustrates the four main organizational models traditionally adopted by economic players (private or public) and it will be used as a starting point for the analysis since each of these models provides a different attitude towards change.

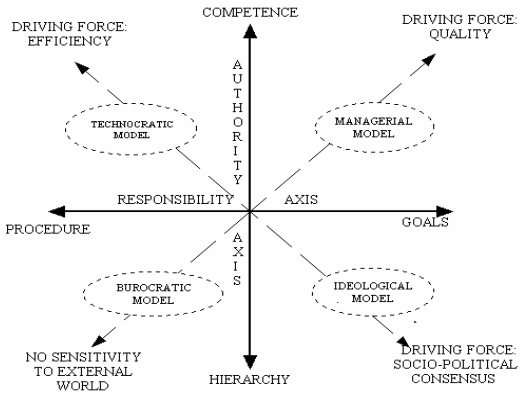

Figure 3: Traditional organisational models. Source (ISIS in MARETOPE)

In the bureaucratic model, the organization forms itself a closed system, external factors do not influence choices or strategies, authority is strictly assigned on hierarchical basis. The organization is focused on accomplishment of procedures and change driven by external factors is prone to be rejected. In the technocratic model efficiency in the driving force, although it remains largely procedure-based. Understanding and managing technological changes is to be a major goal in this type of organization, leaving other categories of change to a second priority. In the managerial model reactance to market requirements tends to be high, thus adaptation to change is seen as an instrument to achieve major objectives. The ideological model, typical of political and governance bodies, tend to assess change on basis of effectiveness of political action leaving efficiency concerns to be dealt through other mechanisms.

While facing a change process each stakeholder will adjust its position in the reference framework and can potentially raise barriers to maintain its incumbent position. It is likely that authorities are frequently to be found in the bureaucratic area or in the ideological area), while operators may theoretically be found in any of the reference areas (with the possible exception of the ideological model) and vehicle and equipment manufacturers are frequently found in the technocratic area and citizen/customers again in the ideological area.[5] Ideally all agents should aim at the managerial model, although reality is still far from this target.

Different path can be taken by any agent in its movement from one model to the others. Some movements will be stimulated by internal decision others by external forces. This dynamic is prone to raise conflicts of interests between agents and consequently form a barriers to system change. Figure 4 illustrates some of the relations between stakeholders that constitute potential fields where barriers can be originated.

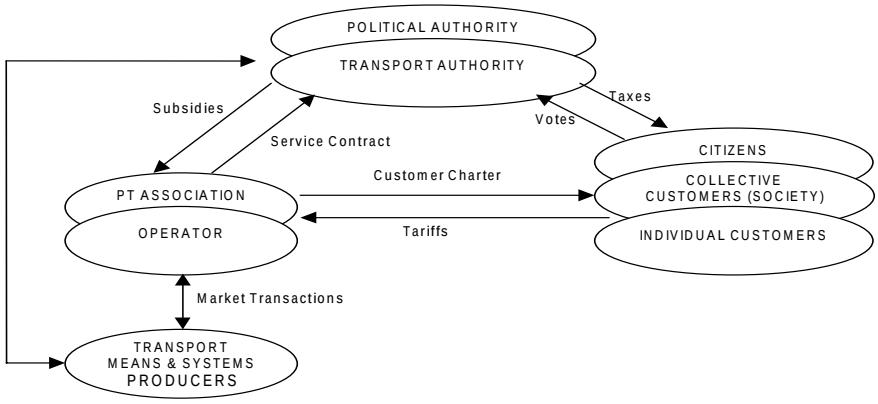

Figure 4: Conceptual simplified representation of stakeholders' relationships. Source: ISIS in MARETOPE

As demonstrated by previous research there is no general good or bad solution for progressing from one regulatory regime to another, not even a sequential order of evolution for the three basic regimes (i.e. regulated, limited competition, deregulated). Instead, different suitable solutions should at least be considered for different local context. However, it is important to create a typology of barriers to change that covers all possible paths and takes into consideration the following aspects:

- Which actor raises the barrier ?
- What type of barrier is raised ?
- In which stage of the change process is the barrier raised ?
- Is the barrier independent or is it likely to be complementary to other barriers ?

A barrier is this defined as anything that may hinder (delay or cancel) the development of the change process and represents a resistance attitude from one or more actors which are likely to see their interests negatively affected (or even simply with no additional advantage) as a consequence of the change process. In brief, a barriers prevents the change process to accomplish its own objectives. Barriers can be overcomed by tools (i.e. policies, measures, instruments, etc) that will enable the continuation of the change process by reducing the resistance previously raised.

[5] MARETOPE

5. CONCLUSIONS

The MARETOPE research aims to analyze in an integrated way the impacts of changes in the legal and organizational frameworks for local public transport on the roles and activities of the stakeholders: public transport operators and authorities, public authorities, citizens and customers as well as producers of transport means and systems. It will analyze the adaptation to change of these stakeholders and propose solutions to better cope with it. Basically, this means that the research is mainly aiming at facilitating the transition towards changing legal and organizational frameworks for local public transport that will in turn improve transparency, economic efficiency and quality of service, and that no judgement on which are the best changing choices is expected. Instead, guidelines to smoothen change paths will be provided.

As stated in previous chapters, the regulatory and organizational framework acts as an umbrella under which transport services are designed, planned and produced. The final configuration of a transport system depends on a number of decisions at the strategic (definition of mobility policy reflecting the needs of the citizens, which is usually performed by the political authorities), tactical (design of the transport system and defining the respective policies by translating the strategic goals into operational specifications) and operational (production and consumption of transport services) levels.

These decisions are dependent on local context and political choices and there is no unique solution for the definition of well-structured transport systems. The diversity of variables involved causes a wide diversity of approaches to urban mobility policy that are reflected in the definition of a number of elements of the system, among which the institutional relations , the diversity of interacting agents, and even the scope of competencies have a special role. In addition, the dynamics of the system make it prone to a continuous evolution and change to take place.

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