

Development and improving efficiency of the underground urban transport in Bucharest (Romania)

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ABSTRACT: The urban public transport in Bucharest, the capital city of Romania, is provided about 25 per cent by the underground transport network. The total length of the underground transport network is 63.5 km and has 45 passenger stations. The development and improved efficiency of the underground transport in view of becoming the main public transport mode is presented in this present paper. The paper deals with two major directions for action: development and modernization of the underground network as well as institutional restructuring.

RESUME : Le transport public à Bucarest , capitale de la Roumanie, repose pour 25% sur le métro. La longueur totale du réseau métropolitain est de 63,5 km, et il compte 45 stations. Le développement et l'amélioration de l'efficacité du transport par métro , qui pourrait ainsi devenir le principal mode de transport public, sont décrits dans cet exposé, qui présente deux grands axes d'action : le développement et la modernisation du réseau du métro d'une part, et des changements institutionnels d'autre part

1 GENERAL OVERVIEW

1.1. Regional context

Bucharest, the capital of Romania, has a population of over 2.3 million people plus another 250.000 living in the metropolitan area.

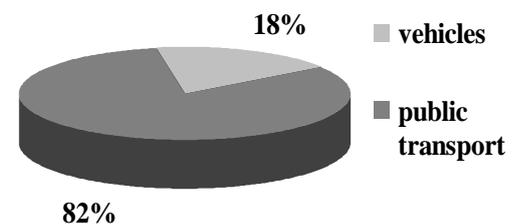
The high density of population (about 91 inhabitants/ha) offers excellent conditions for public transport.

The increased development of the city led to an increased development of the public transport especially between 1974 – 1990.

The public transport demand is met by the surface transportation (buses, trams, trolley-buses), to which an important subway network was gradually added since 1979.

- The income differences during the period of economic transition as well as the consumption trends that evolved towards new forms, such as car ownership, doubled the number of private cars in Bucharest in the last five years.
- This trend seems to continue in conjunction with the economic growth and it is forecasted that

during the next 15-20 years the number of private cars shall increase from 160 cars to 350 cars per



1000 inhabitants.

Figure 1 Motorized modals split

1.2. Transport infrastructure

The present road network is a result of Bucharest's historical development combined with the major changes arisen over the last decades.

The city features a ring-like character determined by the existence of a northeastern half-ring linking the city's former barriers with the southern ones.

In some areas the road network forms large loops making possible a classification of roads by their function.

The rest of street profiles have a spontaneous aspect.

New district roads are still not well integrated into the main network, many of them being not yet completed.

The total road network consists of 5,340 streets with a cumulated length of 1,820 km out of which the main road network is 600 km long.

1.3. Modal split

The answer to the transport requirements is given by the street transport network, which at the present consists of 41 tramlines, 113 bus lines and 16 trolley-bus lines, and the underground transport network represented by three main lines and one line extension.

The metro network has a circular and a diagonal route.

Although the subway network covers only about 2-3% of the total length of the public transportation network of the city; it carries more than 20% of the total passenger trips due to a good correlation based on the complementary relationship with the street transport.

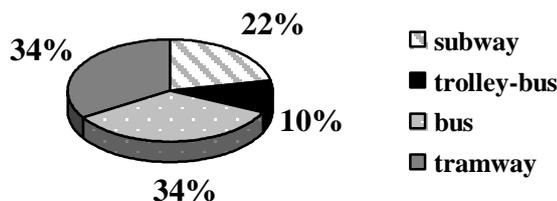


Figure 2 Modal split of public transport

Due to the economic recession, Bucharest could not benefit of the development and completion of the transport requirements.

The transport network, which makes the connection between the city and its neighboring areas, is showing a deficit although currently there is a trend of increasing the importance of the adjacent areas of the capital due to the changes that occurred in the social and economic life, the development of private agriculture, growth of the trade, and the preference for housing outside the main urban area.

1.4. Transport operators

A possible remedy for the critical condition of Bucharest's public transport is the integration of medium and long distance public transport systems with local and regional transport systems from the city and its adjacent areas through the extension of present and proposed urban metro lines outside city limits at grade, as a regional metro system.

The major drawback of the present network, the station density, could be turned into advantage for a mixed urban-regional network.

On the other hand, the integration of the transport system may lead to a good systematization of the public transport, by its two main operators in the town areas and between suburbs (Bucharest Autonomous Public Transport Company – RATB – for the street transport and METROREX Bucharest for the underground transport), thus facilitating interconnections in view of increasing the attractiveness of the public transport being achieved.

In this respect the elaboration of transport survey studies such as “Origin/Destination” – O/D – is needed as a basis for adequate restructuring of the public transport network in order to optimize the use of the existing infrastructure.

Another target is related to the prioritization of the investment projects for the development and modernization of the infrastructure and the improvement of the rolling stock fleet of the public transport for a better administration of the funds granted for this scope. Any parallelism that leads to the decrease of the efficiency of the respective investments should be avoided.

Public transport is, at the same time, provided by several maxi-taxi lines and buses, owned by private companies authorized by the Municipality of Bucharest, as well as by the regional railways.

2 DEVELOPMENT AND EFFECTIVENESS OF THE UNDERGROUND TRANSPORT

2.1. General strategy

The setting up of the democratic regime in Romania, in December 1989, and the opening to new international relations made possible the modernization of the underground network due to international cooperation.

In these circumstances, the following strategy of development and improvement of the underground transport in Bucharest has been adopted:

- Extension and development of the existing underground network;
- Modernization of the existing equipment and increased reliability in order to get improved operation results;

- reorganization for increased efficiency of operation while reducing the maintenance and modernization costs;
- preparation of feasible projects in order to obtain international financing for upgrading the equipment and the rolling stock;
- identify possible financial sources as to complete the local budget funds by loans granted by international financing bodies, public-private partnership, B.O.T., etc.

The main directions of action have been focused on modernization works in order to minimize the power consumption by replacing the D.C. drive system with a/c. drive system with direct effects on the costs and improvement of the urban public transport.

2.2. Metro network development

Underground network development is needed for the completion of the works started in 1988 and abandoned because of the lack of financial resources. Eight kilometers of double-track underground network, with 6 stations, will be added to the existing network and a transversal new line making the connection between the South-Western part of the town with the center and Eastern part will be constructed. A first project in this respect refers to the construction of a 6 km long line.

The extension of the underground transport network includes the completion of the southern ring, a rapid link with the two international airports - Baneasa and Otopeni – and the construction of a new transversal South-West North-East line that will make the connection with two big railway stations of the city. The total planned network will be about 132 km long.

The extensive development of the underground network aims that in the next decades the urban public transport to be taken over, to a large extent, by a mass transportation system which offers improved conditions in terms of speed, safety and comfort. An advantage of the underground transport is the reduction of pollution and traffic jams with favorable influences on the environment.

The completion of the future investment projects will be ensured both by direct financing and by leasing, B.O.T. or private-public partnership. The laws adopted in the last years are in favor of it.

The modernization programs include both the fixed equipment and the rolling stock.

2.3. Modernization of equipment

The Bucharest Metro is still tributary to outlooks of the period 1975-1989, when the communist dictatorship imposed the manufacturing of all equipment and machinery locally, without imports or transfers of technological know-how. That is why the existing equipment and particularly the rolling stock fleet are obsolete, their operational capabilities are low whereas the maintenance costs are high. The setting up of a democratic regime in Romania made possible the gradual modernization of the underground network, as in many other ex-communist countries from Eastern Europe, such as Poland, the Check Republic or Hungary.

Based on the feasibility studies performed, important loans have been obtained, as a result of agreements concluded with the European Investment Bank, for three major projects for the Bucharest metro modernization: one projects is referring to the telematics for the traffic and electric power equipment that was put into operation in the year 2000, and two other projects for the renewal and modernization of the rolling stock that are now implemented.

The increase of the quality of the metro transport is much improved due to the modernization of the fixed installations and of the rolling stock and this is the only way to achieve a public urban transport of large capacity, with increased safety and comfort.

2.4. Administrative measures

The organizational restructuring of the metro operation system represents another important factor for an improved operation of the metro system.

During the year 2001, actions were taken for externalizing the maintenance services in order to separate many of the auxiliary activities from the main operation tasks and to be gradually provided by a competitive system.

The organizational restructuring actions are specific to all ex-communist countries as they are confronted with the need of reducing the number of em-

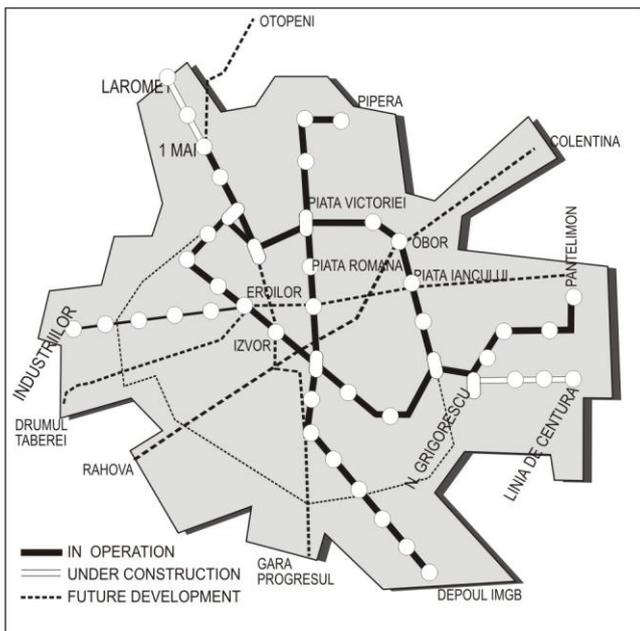


Figure 3 Metro network

ployees as a result of the modernization of the existing equipment.

3 INSTITUTIONAL RESTRUCTURING

3.1. Practics in other european cities

The results of studies based on a long experience in several European cities show the necessity to constitute an overall system of the transport means represented by metropolitan transport authorities like those from many cities in the world.

Such a study made in 2001 by the representatives of the transport authorities from nine important metropolises (Athens, Barcelona, Berlin, Brussels, Lisbon, London, Paris, Rome, and Vienna) highlighted some directions for action to meet the actual requirements of the European Commission, such as:

- Full support for the goals established by the Commission in terms of high quality, integration and efficiency of the public transport system.
- Recognition of the fact that direct relations between the operators and the authorities based on public service contracts are in most cases very efficient and this may be achieved without any delay in order to grant a fair and transparent allocation of public funds.
- Acceptance of the fact that the task of assessing the progress towards efficiency is now on the authority side. It is considered however that such transport authorities provide an effective mean for the political authorities to use for improving, either directly or indirectly, the quality and efficiency of the public transport in metropolises.
- Strong integration of devising, planning and control of the operations should be provided by a single entity.
- This entity should use to the maximum extent the competencies and knowledge available with the transport operators currently providing services in the major metropolises.
- These operators should change over time their approach taking into account the option of public ownership in case this is the most effective solution.
- The main transport capability should be in public-owned companies that normally should be competitive. This requires time for adaptation of the current structures as well as abandoning out-of-date practices.
- The metropolitan transport authorities represent the guarantee for achieving of the objectives adopted by the European Commission in order to increase the public transport offer and to make it more attractive to the passengers from all the areas of the city, including the integration of the

inhabitants of the peripheral districts into the city life.

3.2. The structure and responsibilities of MTA.

The overall improvement of the public transport in Bucharest city and the metropolitan area requires actions for better correlation of the offer with and specific transport demands, the coordination of the development and modernization of the existing equipment and improved operation by means of an efficient inter-modal transport.

Such a goal cannot be achieved without institutional measures devised to contribute to the integration of the urban and suburban public transport policies into the European practices in this domain.

The transition to a unified coordination of the subsystems, which currently exist nowadays, can be made only by the setting up of a Metropolitan Transport Authority, an independent body able to achieve the implementation of the strategy for increasing the quality of the public transport within the general framework of development and modernization of the city.

The institutional reorganization of the public transport system in Bucharest, based on the experience acquired in other European metropolises implies:

- The setting up of the Bucharest Metropolitan Transport Authority by a normative document approved by the Romanian Government, comprising 30-35 experts to ensure the link with the public transport authorities and their financing bodies, on one hand, and the links with the transport operators working in the public transport domain, on the other hand.

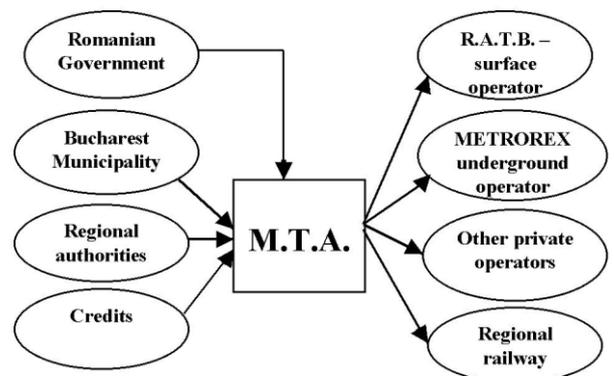


Figure 4 Financing systems

- The management of the Authority should be provided by a Managing Board made of 15-17 members, representatives of the Government, the Municipality, the local metropolitan administrations and other experts.

- The Authority should conclude contracts with the public and private operators and will negotiate the system operation conditions, within the framework of the responsibilities approved by the Managing Board.
- The main responsibilities of the Authority shall be as follows:
 - Drawing up of programs regarding the development of the public urban transport and submission for approval of the draft projects for investments;
 - Provision of the financial resources for the investments and partial coverage of the operation costs and a break down for different destinations;
 - Coordination of the implementation of the investment projects by organizing tenders in view for works and goods contracts awarded according to the law;
 - Elaboration of proposals regarding the tariff policy and coordination of the implementation of the ticketing integration;
 - Authorization of the public or private operators working in the public transport domain and contracting of the operation services performance based on performance standards set up with them and the contractual rights and obligations of the parties.
 - Organization of the activity for international relations, advertising, public relations and public information regarding the functioning of the public transport system.

4 CONCLUSION

The increase of the part played by the urban public transport in the economic development, in the improvement of the standard of life of the citizens, and for an increased mobility is seen in all major metropolises of Eastern Europe.

In Bucharest, the concern for the modernization and development of the underground transport network and for the institutional and organizational restructuring already proved its benefits and there are real opportunities for an overall improvement of the public urban transport system.

Urban public transport represents a major factor for the economic and social development of the City of Bucharest, the capital city of Romania, in order to fulfill the needs for mobility in a modern and safe urban and suburban transport system. The importance of this major component of the city life should be associated with the need for an improved environment by reducing pollution, mostly nourished by the uncontrolled and alarming growth of private cars traffic, partly due to the unsatisfactory quality of the public urban transport.

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