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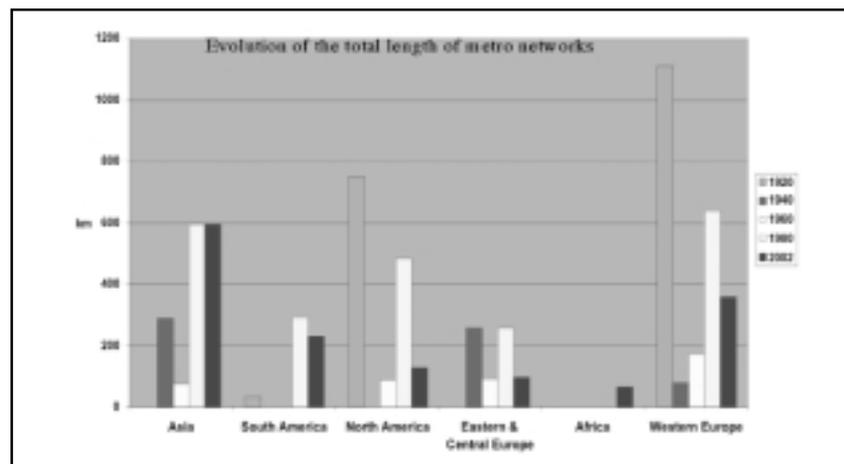
A UITP POSITION PAPER

The Metro: an opportunity for sustainable development in large cities

Originally designed to combat urban traffic congestion in large cities, metro systems are no longer confined to the role of providing transport infrastructure. Nowadays, they are becoming an urban structuring tool, around which mobility policy is developed, and a key factor in improving quality of life.

The birth of metro, by which we mean an electrically powered train operating on reserved tracks in urban areas, dates back to 1890, the year which saw the official opening of the first underground line in London. Since then, some 120 conurbations in Europe, Asia and America have joined the ranks of cities with their own metro system. In Africa, Cairo is the only city with a metro system, while Oceania only has tramway and light rail systems. However, the development potential of metro systems is far from of saturation point since there will be some 560 cities, 300 of them in Asia, with populations of over one million by 2015.

In 2002, metro networks carried some 150 million passengers per day, or 34 times the average daily number of air passengers. On its own, this comparison demonstrates the economic and social importance of developing, organising and operating metro systems. For over a century, the metro has experienced significant transformations that today have turned it into a shop window for both industrial and technological innovations as well as others in relation to operations and customer services.



This is an official position of UITP, the International Association of Public Transport. UITP has over 2000 members in 80 countries throughout the world and represents the interests of key players in this sector. Its membership includes transport authorities, operators, both private and public, in all modes of collective passenger transport, and the industry. UITP addresses the economic, technical, organisation and management aspects of passenger transport, as well as, the development of policy for mobility and public transport world-wide.



Metro: clean, energy-efficient and space-saving

All transport modes use energy in order to move from point to point and require space in which to function and park. The metro, through its combination of electrical traction and high capacity, is the most efficient transport mode in terms of energy consumption and space occupancy. In contrast, calculations produced by the RATP (Paris) show that, in order to transport 50,000 passengers per hour and direction, metro needs a right-of-way measuring 9 metres in width whereas a bus would require 35 metres, and cars 175 metres. The same projections show that one kEP (kg equivalent petrol) will allow a single person to travel more than 48 km by metro or 38 km by bus, but no more than 19 km by car. Similarly, advances in terms of traction now make it possible for the metro to recover energy during braking, producing a significant drop in energy consumption. Moreover, the metro does not produce any local pollutant emissions or greenhouse gases. Its contribution to climate change is confined to the effects linked to electricity production. Finally, as a transport mode that runs mostly underground, metro frees surface space for developments that allow the quality of urban life to be improved.



Metro: the integration leader

As a high-capacity transport mode, metro has a structuring influence on cities. It provides the backbone for the development of residential zones alongside economic and socio-cultural activities into which other transport modes are able to converge. In this way, metro perfectly fulfils its role as integration leader within a city's transport and urban-planning policies. More than just a transport mode, it is an urban structuring tool and a key factor in providing better quality of life.

The metro can also contribute to better integration if it has interchanges designed to offer bustling, user-friendly and safe locations that are an integral part of the city. They can also provide social, commercial and cultural activities that allow transit passengers to make the most of waiting time, and also

draw in other citizens.

Modal integration is reflected in the development of common fares for all modes and all operators, thus making it easier to use public transport. Within this framework, metro networks were among the first to develop contactless ticketing as a multi-modal payment method. These are now becoming fully-fledged electronic purses that include transport alongside other urban services. Within the same scheme of things, passenger information is becoming dynamic, multimodal and accessible everywhere (before and during the journey), making public transport more accessible. However, integration between ticketing and information is only possible if there is real coordination between operators and other modes. To this end, metro has a leading role to play.



New technologies: for metro old and new

Above all other modes, the metro system is certainly the one that seamlessly incorporates new technologies in order to improve its operating performances. Its history is dotted with numerous technological developments. For instance, innovations in the design and manufacture of rolling stock and fixed installations have made it possible to facilitate maintenance and, conversely, ensure better interoperability between different systems. Innovation also helps make metro more reliable and improves rail safety.

Automation and driverless operation are producing huge changes with their multiple impact on service production and provision. In fact, the productivity gains, enhanced safety and better service reliability through automation allow staff to then provide better customer care and meet customer expectations. However, it is not just newly-built lines that are able to benefit from modern technology: lines that were built many decades ago may be revamped and modernised in order to reap the benefits of new technologies.

Appropriate funding methods

Metro systems are heavy infrastructures that require high levels of investment in order to be built and maintained. In addition to conventional forms of direct investment by the public authorities, the parties involved – the authorities themselves, operators, manufacturers and financial institutions – are endeavouring to develop new partnerships. These involve contributions from direct and indirect beneficiaries, deriving optimal value from property and real-estate assets along metro lines and around metro stations, not to mention stock market flotations of operating companies, staff contributions to company capital or, quite simply, the involvement of private partners in investment and operations. Given the high stakes involved, metro is prompting the search for new, innovative approaches in the case of public transport. Although this is an opportunity for metro, it is one that must form part of a proper institutional framework that guarantees the social dimension of this public service.

Safety: a permanent concern

Given the high passenger numbers it carries, the metro is a vulnerable setting in terms of safety. Despite being the world's safest transport mode, the latter-day accidents, fires and terrorist attacks experienced by some networks have received blanket media coverage of the sort that can trigger negative emotional reactions among public opinion. This is why all the parties involved are mobilising themselves in order to make the metro safer. This firstly entails advances in manufacturing and operational improvements, which have produced greater technical safety. In terms of public safety and security, operators are cooperating closely with the public authorities and the police in order to combat anti-social behaviour, assaults and the risk of terrorist attack. Here again, new technologies are playing a major role in improving prevention.



UITP Recommendations

All of these developments clearly illustrate that metros strongly contribute to sustainable mobility in major conurbations and cities with a high population density. Nevertheless, building a metro system must take account of the population affected, the existing and potential transport capacity, the level of investment, the institutional framework and the operating conditions.

1. The decision to build a metro system fundamentally comes in answer to public-interest political objectives, not only the conventional criteria of financial returns. The political authority will decide whether or not to build a metro and, when all is said and done, be responsible for its existence. On the other hand, actual operations may be provided by companies/bodies with public, private or mixed capital under fair and transparent contractual arrangements.

2. Construction of a metro system must make allowance for the project's potential beneficiaries (e.g. employers, property owners) so that the appropriate instruments are developed in order for these people to contribute to the system's funding.

3. Metro lines provide a structuring network, along and close to which it is necessary to promote the development of places for people to live, work and learn along with economic and socio-cultural activities.

4. Where they exist, metro lines are the backbone of a public transport system towards which other transport modes must converge (e.g. feeder routes, Park + Ride), thereby creating an integrated transport network. Interchange locations must be attractive and safe.

5. Construction of an underground metro system and the reorganisation of transport networks free surface space that needs to be used for urban developments that improve the quality of life 'in town'.

6. Above and beyond physical integration, the metro provides an opportunity to develop integration of services, tariffs and passenger information.

7. Metro safety is a matter for all parties involved, and concerted measures for preventing or combating insecurity must be defined and implemented.

8. Manufacturers must make every effort to design innovative and efficient solutions. Collaboration with operators in order to minimise problems that are likely to occur during the commissioning phase, is of permanent necessity.

UITP sees the metro as an opportunity for sustainable development in large cities.

This Focus paper has been prepared by the Metro Committee

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