

Recommendations

Light rail has shown that it can reduce the dependence on the use of the private car in urban environments and has many positive attributes that benefit a town or city. Its development has been very successful over the last two decades, and there is every reason to expect that it will go on. It is obvious, however, that a minimum ridership (> 3000 pass/hour/direction) is necessary to ensure cost-effectiveness; below this threshold, buses or other intermediate modes could be more appropriate, securing capabilities for introduction of light rail at some later stage.

Light rail can only be implemented successfully if it is integrated with all other public transport modes in the city. A second criteria for success is that light rail must have the means to develop its full potential for speed and reliability; this means having separate right-of-way wherever possible and priority at traffic lights to get rid of external disruption.

This is beyond the means and responsibilities of operators alone. Authorities and decision-makers are also involved, and therefore it is necessary to create a good partnership between operators and decision-makers.

UITP recommends that transport authorities should, in particular:

- have a clear and solid urban development strategy to make sure that the proposed project is suited for longer term possible extensions,
- take the chance of a light rail construction to carry out some urban regeneration schemes: fair space allocation for "soft" modes (pedestrians, cyclists and public transport), end of chaotic parking, introduction of trees and urban furniture etc.,
- take the chance of a light rail construction to fuel housing, job and public equipment developments along the line,
- design innovative targeted financial instruments (such as versement transport, value capture, etc) which take the future benefit of light rail into account to provide part of the kick off capital needed, instead of the general tax instrument,
- build coherent transport policies, by using mutually the benefits of each mode (car/public transport/pedestrians), developing network knots and transfer points, focusing on complementarity of each mode through the principles of chain mobility.

Light rail promoters should, in particular:

- make information available about the benefit of the new infrastructure throughout the whole planning and construction phases, to support public acceptance,
- strive to respect construction work schedule and to reduce inconveniences for the direct neighbourhood during the critical construction phase,
- strive for full access stepless and gapless boarding between the kerb/platform and the vehicle threshold,
- work closely with manufacturers to reduce noise and vibration, which may affect the popularity of light rail schemes.
- strive to reduce rolling stock unit cost using standard modular design or ordering larger vehicle batches together with another company/city
- redesign the existing public transport system to feed light rail and get a more visible, integrated, understandable and consequently user-friendly structure

Manufacturers should in particular:

- pursue their efforts towards standardisation of rolling stock (ex: MARIE project)
- pursue their efforts to develop new train sets and easier systems requiring less or "lighter" infrastructure, which will help to reduce the cost per km of light rail systems.

UITP strongly believes in the importance of light rail and its positive contribution to sustainable mobility in the liveable cities of tomorrow, and recommends its further worldwide development.

For more information order the brand new comprehensive "Light Rail Guidelines" or surf to www.uitp.com, then click to the Light Rail Division.

This UITP Focus Position paper has been prepared by the Light Rail Committee and has been approved by the UITP Policy Board.



Union Internationale des Transports Publics
International Association of Public Transport
Internationaler Verband für öffentliches Verkehrswesen

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FOCUS

A UITP POSITION PAPER

"Light Rail for Liveable Cities"

In 1983, UITP's International Light Rail Commission issued the following definition: "Light rail is a rail-borne form of transport which can be developed in stages from a modern tramway to a rapid transit system operated on its own right-of-way, underground, at ground level or elevated."

In countries where tramways had survived the massive closures of the 50's and 60's, e.g. Germany, Switzerland, Belgium, many remaining systems have been modernised and upgraded and may now be called "light rail systems".

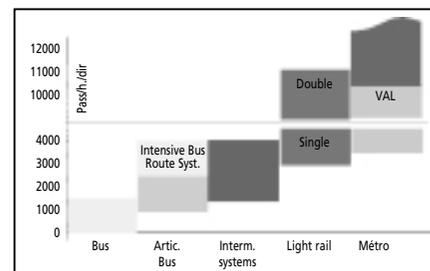
In many other countries, where tramways had disappeared from the streets, completely new systems have been developed since the mid-70's. This was the case in North America, in the Asia-Pacific area and in a few European countries such as the United Kingdom and France.

As a result, light rail systems can now be found on all continents. There are now over 400 light rail transit and tramway systems, in 50 countries. In addition, over 100 light rail systems are being planned worldwide.

Why is light rail such a successful transport mode ?

• Capacity

Investment costs are high, and thus the challenge is to develop the right mode in response to the right transport need. Light rail is the ideal mode for carrying between 3.000 and 11.000 passengers per hour per direction. Only metros and heavy rail have a higher transport capacity. Intense bus systems as in Latin America could partly reach similar capacity, but with far higher pollution and noise level.



• Speed and regularity

Thanks to their high performance, light rail vehicles accelerate quickly and can attain good service speeds. Together with good design features such as a segregated right-of-way and priority at crossings and traffic lights, which make light rail congestion-free, these will result in a good average commercial speed (between 20 and 30 km/h) and thus short journey times. Measures to reduce dwell times at stops (e.g. stepless and gapless boarding, wide doors, tickets sold off the vehicle) increase speed and regularity and also improve the accessibility of the system.

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.

• Reliability

Congestion-free transport is regular and hence reliable. Thanks to this reliability, high-frequency time tables at peak-hours can be designed, obtaining better passenger flows. Light rail can also continue to operate when adverse meteorological road conditions such as snow or ice affect road traffic.

• Comfort, accessibility and ease of use

Vehicles with good suspension and a well-maintained track together ensure a smooth ride. Low-floor vehicles in combination with gapless boarding points offer better accessibility for all categories of passengers (see UITP position paper on Transport provisions for people with reduced mobility)

Pleasant and well-designed stations and stops, as well as dynamic passenger information (e.g. in case of service-disruption), also contribute to passenger satisfaction.

• Safety

Light rail is many times safer than car travel. Segregated rights-of-way and priority at traffic lights reduce the risks of accidents with road transport. Input of scientific research in the field of passive safety, results in safer vehicle design (e.g. impact and energy absorption behaviour, distribution of passenger seats). Feelings of insecurity for passengers can be reduced by careful design of stations and stops and other appropriate measures by operators and authorities.

• Environment-friendly

With electric traction, light rail produces no emissions at street level. Modern traction equipment allows regeneration of braking energy and consequently considerable energy saving.

Light rail is a relatively silent transport mode, and rolling noise and vibration can be attenuated further by good maintenance of vehicles and track. "Green" (grass-covered) track reduces noise even more.

• Adaptability

Light rail can operate in every possible urban and suburban environment : ideally at ground level but underground or elevated if necessary, in the streets (mixed traffic) or preferably on segregated rights-of-way. It is an excellent transport mode to serve pedestrian areas in city centres. Light rail vehicles can leave the city-center and run on railway track, even in mixed operation with heavy rail traffic.

• Contribution to a positive image for the city

Light rail can be aesthetically pleasing, and gives a strong positive image to the city. Extensive experience shows that customers' response is more enthusiastic than with improved bus system. Its modern image encourages the use of public transport. Experience has shown that increases in ridership due to new or improved light rail systems come from other modes such as the car, therefore they can help reduce congestion, the need for parking and the use of the road infrastructure. Urban transport by light rail contributes positively to the social dimension of a city, improves the quality of life and makes it more liveable.



• Impact on urban life

Light Rail schemes are not only transport projects, but also city projects. In contrast to bus routes, light rail tracks are permanent and highly visible. Light rail is thus a strong long-term political commitment of the authorities in favour of public transport.

Light rail contributes to the regeneration and modernisation of urban centres and to the development of new areas. It attracts real estate development and the creation of new housing, new offices and commerce along its path. It increases the value of

existing real estate as well.

Light rail systems encourage the compact and dense development of towns and cities and avoids unnecessary urban sprawl, increasing their efficiency.

• Impact on the overall transport situation

As a transport mode, light rail is highly visible and easy to understand. Success depends on a well-thought redesign of the existing public transport lines, as feeders (not competitors) to light rail lines, to make the structure more visible, integrated, understandable and consequently user-friendly. It will lead to an increased use of public transport, and consequently has a positive impact on the modal split.

• Phased development

The development of a light rail system could be planned and executed in several stages, providing benefits to its clients and operator from the early beginning of the project. Initial street running operation or "basic" rolling stock could reduce high initial capital costs and attract private partnership with a reduced risk of overspending or prolonged start of operation. Hence, below the critical capacity threshold, buses or other intermediate transport modes could be more appropriate, securing capabilities for introduction of light rail at some later stage.

Future developments, new markets and applications

Light rail development has been spectacular over the last few decades. This is likely to continue, as the reasons for its success remain valid.

In addition, there are a few recent trends that can enhance the development of light rail in its usual environment but may also create new markets and applications.

• Technology

Over the last 15 years, low floor technology, AC chopper control and modular vehicle design concepts have been widely introduced. Trends for the near future will include the introduction of composite materials, and measures leading to lower energy consumption and simpler maintenance. Current collection at ground level may improve light rail's visual aspect in historic city centres. Complementary to "classic" light rail, new and innovative "intermediate" forms of guided transport are becoming available. Several types of "tramways on tyres" are being tested in France, and a first line has recently become operational in Nancy.

Dual-mode or hybrid drive systems, combined with on-board energy storage devices like batteries or flywheels, will allow circulation beyond the bounds of track and overhead line.

• Affordable light rail

High investment costs are often a deterrent to the planning and construction of a new light rail system. New financing

techniques such as Public Private Partnerships can help to fund new projects.

Harmonisation of light rail vehicle design should result in lower unit prices, and a Life Cycle Cost approach should lead to lower operational costs.

A simpler, more basic variant of light rail, both in terms of vehicle and infrastructure, could make light rail affordable in developing countries and be a serious alternative to the "bus only" transport systems. Successful examples of this principle are the systems in Istanbul, Konya (both in Turkey) and Tunis, where ridership is very high.

• New applications

Light rail does not have sufficient capacity for long-distance mass transport in big metropolitan areas. It can be very appropriate, however, as a complementary mode, e.g. for transport within suburbs or outlying areas, and for links between them by avoiding the urban centre.

"Tram-trains" running on railway tracks in rural areas and in the suburbs, and continuing into the city on classic light rail track, allow a seamless journey between town and country. This requires specific safety and operation regulations.



The above success factors and trends - all possible and valid reasons for choosing light rail - can be completed with :

- a set of longer term benefits, such as: enabling to make more acceptable city-centre-car-restraint-measures, social benefits of greater mobility for all (especially captives) and the potential benefit to suppress/slow down growth in car ownership and usage (reduce a family's perceived need to purchase a second car);
- a set of economic reasons, such as: refining capital costs by optimising major parameters, using existing (disaffected) rail alignments, lower operating costs-staffing through higher passenger/driver productivity ratio than bus or trolleybus, opportunity to re-plan and reassess roles of existing rail, bus or trolleybus routes and the possibility of local industry sharing in construction work or component supply (subject in EU countries to satisfying rules for competitive tendering);
- well planned multi-modal interchanges and connections with existing public transit modes as well as the on-street car system (parking lots) increase attractiveness and total patronage of all public transport;
- an increase in passenger throughput for a given roadway width (strategic level).