

Trends in urban public transport

Transforming urban public transport

The [International Association of Public Transport \(IATP\)](#) is promoting the goal of doubling the market share of public transport worldwide by 2025. In most urban areas this challenge will involve radical transformation in ways that offer great opportunities for public transport workers, as IATP points out:

“Facing the demands of sustainable mobility and corporate social responsibility, the challenge of public transport companies is to provide high-quality integrated services to citizens, while balancing and conciliating environmental, social and economic aspects.

“This implies a fundamental overhaul of the mission of public transport companies, who have to move from a production activity to a service industry, and a change of the corporate culture. In this context the key of management is to define and implement a corporate strategy that responds to the needs of the customers, improves efficiency including financial efficiency at a moment where the financing of the activity may present some difficulties, conciliating the interests of employees, stakeholders, shareholders and partners.”

The IATP added (our emphasis):

“The mission of the staff and in particular the mission of those who are in contact with customers must be adapted. The objective is to turn public transport companies into a customer oriented organisation and an attractive employer, to strengthen the image of the sector and to reinforce staff motivation and loyalty. This implies to make staff sensitive to the evolution of the environment, to training, and to encourage employees to play their role in the service relationship.”

At the same time, there are technological trends in urban public transport that also pose significant challenges for transport workers. The potential effect of some of

qualitypublictransport

is a partnership between the International Transport Workers Federation (ITF) and Public World, with the support of Friedrich Ebert Stiftung.

Its purpose is to build the capacity of urban transport unions to campaign for quality services and build alliances with passengers and other civil society organisations to promote sustainable transport systems.

That means services that enable everyone to travel safely, comfortably and quickly, and employ enough securely employed, properly trained and fairly rewarded transport workers to achieve that.

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those trends, especially the potential of automation and electronic ticketing, have major implications for transport employment. The potential negative effects are greatly exacerbated by the effects of the economic crisis in many countries, by reducing public expenditure and/or fare revenue.

The IATP estimates that 80 per cent of all public transport journeys worldwide are made by bus, and points out: “The bus is a very efficient mode of transport, which is cheap, flexible and, in many cases, tailored to the needs of users both in terms of capacity and speed. Buses operate in mixed traffic and are easy to put in service. They do not require any infrastructure except a depot and workshop.

“From an economic, environmental and social point of view, the bus still remains the most universal solution for a balanced and sustainable urban development.

“Indeed, the bus is the only public transport mode in many of the world’s cities. It also plays a key supporting role in cities with rail transport modes.

One of the main factors in an individual’s choice of transport mode is ‘commercial speed’, or travel time. Increased urban congestion greatly reduces commercial speed as well as reliability, as well as increasing energy consumption. Therefore a major trend in cities is segregation of bus lanes, the most advanced and complete form of which is Bus Rapid Transit.

Bus Rapid Transit

Demarcated bus lanes go back to the 1930s in north America, and have spread internationally, but the BRT model developed in the 1970s in south America, and has the following features:

- Dedicated lanes or exclusive transit-ways
- Stations -- from small shelters to major transit centres
- High capacity vehicles with clean fuels
- High frequency
- Simple routes
- Pre boarding fare collection
- Use of IT technology

BRT “ties the speed and reliability of a rail service with the operating flexibility and lower cost of a conventional bus service”, says a 2011 study. (“Recent developments in Bus Rapid Transit” T. Deng and J.D. Nelson, Transport Reviews, Vol 31 No. 1 2011.) “BRT systems are flexible and can be built economically and incrementally compared with other forms of mass transit.”

The model was pioneered in the Brazilian city of Curitiba, which launched its BRT in 1974. A second generation of development also originated in south America following the launch of Transmilenio -- the most high density BRT in the world -- in Bogotá, the capital of Colombia.

Deng and Nelson claim: “The emergence of BRT has improved the overall image and performance of bus services. Case studies ... have demonstrated BRT can be a cost-effective way of providing high-quality service. It can significantly reduce

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journey times, increase ridership, provide sufficient capacity and induce transit-oriented development.”

That view echoes a 2008 study ('Bus Rapid Transit Systems in Latin America and Asia: Results and Difficulties in 11 Cities', Dario Hidalgo and Pierre Graftieux, in *Transportation Research Record*, Transportation Research Board, Washington, D.C.). The studies have shown increased commercial speed increases of as much as 26 km/h and that four Latin American systems can carry 20,000 passengers an hour, with Bogotá carrying more than double that many at peak times, 45,000 per hour.

BRT's popularity has grown also because its investment costs are between four and 20 times less than those of metropolitan railways, while operational costs can also be low: in the Brazilian city of Porto Alegre, the private operators make a profit although there is no public subsidy. (The same applies in Bogotá, where there have been concerns about affordability for the poorer citizens, and that might also be an issue in Porto Alegre and elsewhere; further research is required.)

In addition, BRT systems have been shown to lead to denser land use along the bus lanes, which can be a positive urban planning outcome in terms of sustainability but might but might also lead to higher rents and to lower income people being squeezed out of desirable areas, a negative social justice outcome.

BRT systems have spread rapidly not only in Latin America but also in Asia, north America and Europe. In 2010 alone, 16 cities completed new systems -- including 14 in developing countries -- and seven cities expanded their existing systems. In 2011 a further 49 cities are building systems, 16 are expanding their corridors and 31 cities in the initial planning stages

Africa has added its own innovation -- so-called 'BRT-Lite', developed in Lagos, Nigeria. This is essentially a much lower cost system than true BRT, and some would say it does not deserve any mention of BRT in its name because it does not involve physically segregated lanes. That means the separation has to be policed, and there are complaints in Lagos that, while providing a new source of corrupt revenue for some enforcement officers, it is not enforced effectively. However, the much lower investment costs mean it is a more attractive option in African countries.

You can see a [slideshow](#) summarising trends in BRT worldwide. There is also a [guide for BRT developers](#), produced by the Institute for Transport and Development Policy. However, neither of them deal with employment and human resources issues in any detail, and neither explores the costs as well as benefits of private sector operation.

Trends in urban rail transport

Urban rail transport consists of suburban rail services, metros and light railways.

Rail transport makes highly efficient use of space: a double-track rail line can carry more passengers per hour than a four-lane road. As a result, rail transport is a major form of public urban transport in many countries.

The IATP defines metropolitan railways -- or 'metros', 'subways', 'Underground' or 'tube' -- as "urban, electric transport systems with high capacity and a high frequency of service". It adds:

"Metropolitan railways are the optimal public transport mode for a high capacity line or network service. The first underground line opened in London in 1890. Since then, the

metro has spread worldwide; nearly 120 cities now have them, carrying more than 150 million passengers a day between them. Between 1990 and 2010 alone, 44 new metros were launched.”

IATP says that metro is the most efficient transport mode in terms of energy consumption and space occupancy, because to transport 50,000 passengers per hour and direction a metro needs a right-of-way measuring 9m in width, whereas a bus would require 35m, and cars 175m. One KEP (kg equivalent petrol) will allow a single person to travel more than 48km by metro or 38km by bus, but no more than 19km by car.

If a train is made up of up to 10 cars, the capacity can reach 1,800 passengers. Modern signalling allows headways as low as 90 seconds, which in turns leads to a hourly capacity of 72,000 passenger per hour per direction. Therefore, the proportion of people using public transport tends to be larger in cities with metros.

The major technological development of recent years, with obvious implications for transport workers, has been the emergence of driverless train operation. This allows not only for cheaper but also safer and more reliable operation, and better customer service, according to IATP. It is expected that 75% of new metro lines will be designed as driverless by 2020, and the technology also allows for retrofitting of existing infrastructure and rolling stock.

Light rail transit

A technological cousin of the metro is light rail transit (LRT), which includes everything from a tramway to a rapid transit system operated partially on its own right-of-way. Many cities developed them, particularly in the second half of the 20th century, as a cheaper and more flexible alternative to metro construction -- the construction costs are only about 25 per cent of those of metros -- and because they produce less noise and other local pollution than buses.

Trams were first developed in the 19th century, when they were horse-drawn, but took off with the application of electricity. There are around 400 systems in operation worldwide, with constructions in some 60 more and development plans in well above 200. According to IATP:

“Europe is the densest LRT continent with 170 systems in operation and nearly 100 more in construction or planning, but North America (30 in operation, 10 in construction) and Asia are also very active in opening new systems. The next emerging LRT region is the Middle East where the post-oil age is being actively anticipated.”

There has been an expansion of interest in LRT over the last 20 years or so, because of the quality of the best systems, such as Vienna’s. The advent of low- floor technology -- meaning high platforms are not required -- also contributed to the expansion of LRT, especially in France and Spain.

The IATP states: “One of the burning issues today is to ensure that long-existing tram systems in Central and Eastern European countries are revitalised. For example, in the former USSR, around 100 systems have to



Vienna trams. Pic: Martin Ortner

operate in very tough conditions, offering poor service and not a credible image compared to the car

“Such countries should learn from the past mistakes of Western countries who removed their systems in the 50s and 60s, only to realise their errors two to three decades later, when they re-introduced light rail at significantly higher costs.”

However, LRT is itself under challenge today from Bus Rapid Transit, which can be developed at lower costs and with less disruption to already congested cities.

Private sector participation

In BRT, LRT and metro, there is a trend towards involving the private sector in one way or another through ‘public-private partnerships’ (PPPs).

A useful definition and typology of PPPs for infrastructure development in urban public transport has been formulated by the [National Conference of State Legislatures](#) in the United States, which states:

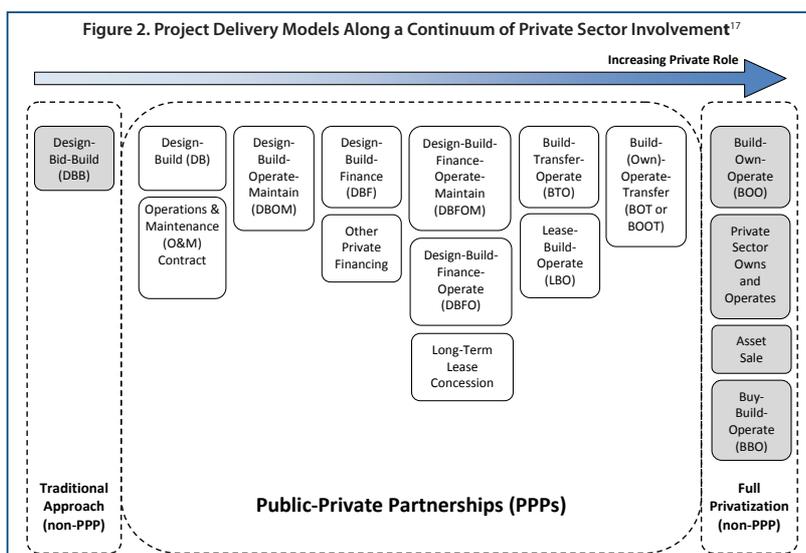
“At one extreme is traditional public project delivery, where the public sector finances, owns and retains control over the project throughout its life cycle. Such projects may outsource certain functions to the private sector -- through traditional design-bid-build contracting, for example -- but they are not PPPs.

“At the other extreme is privatization, where projects are privately financed, owned and controlled, subject only to overarching public laws and regulations. These, too, are not PPPs.

“Between these poles of public and private control lie a range of PPP options, where the public sector retains ultimate responsibility for and ownership of an asset, but the private sector assumes one or more traditionally public roles in and responsibilities for project delivery.”

Their toolkit also provides this graphic representation of the various types of PPP:

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In addition to PPPs for new infrastructure and maintenance, there are also PPPs for service operation. This has become the typical model for BRT systems in Latin America, and increasingly elsewhere, although PPPs for the infrastructure development of the kind outlined above are also occurring in BRT.

The Bogotá BRT is heavily promoted as a good model by the World Bank, partly because it is a privately operated system. This model involves a public authority taking responsible for the planning and overall supervision of the system, and for financing the investment in infrastructure (often through World Bank loans, as in Bogotá). Bus operations and fare collection are carried out by private companies through concession contracts, the terms of which vary.

In Curitiba and some other Latin American BRT systems, the operators of the previous bus services were allowed to take control of the BRT services, but in Bogotá, the new services were competitively tendered to four separate operating companies. The contracts provide incentives to the companies to increase ridership, as (in Bogotá) they retain 96 per cent of the fare box revenue, although they are also insulated from demand risk because they are also paid by the public authority per kilometre served regardless of the number of passengers carried. The public authority determines the fare levels, but has to compensate the private operators if they suffer losses as a result.

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