Better Mobility in Urban Areas

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UITP references

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Better Mobility in Urban Areas

The past fifty years has been characterised by the explosive growth in urban population and car use. Urbanisation is now heavily influenced by the car and many households have moved out to the ‘green’ suburbs and need several cars to satisfy their mobility needs. The resulting consequences of this urban sprawl are well known: the degeneration of social and neighbourhood links, greater car dependence, longer journeys and increased transport costs.

Those cities that have been able to keep their historic centres, and maintain their commercial and cultural activities, are now threatened by the unsustainable growth of traffic and congestion. Interurban and intercontinental journeys are becoming quicker but cities themselves are being almost paralysed by traffic. Unrestricted car use in towns and cities has a negative economic impact on efficiency, uses non-renewable energy sources, contributes to the ‘greenhouse’ effect and their citizens suffer from high levels of noise and pollution.

Sustainable development of urban areas is therefore no longer a theoretical subject for conferences and debate, but now needs to be put into practise. Citizens today realise that their future, and that of the next generations, depends on the decisions made by politicians responsible for urban planning and the mobility measures put in place by them. To ensure access to all the activities on offer, even for those without a car, and still respect the environment, car use in cities must be mastered and priority be given to public transport, pedestrians and cyclists - all measures which will improve the quality of life in urban areas.

There has been progress and we can see good examples of regenerated areas giving citizens greater pleasure and pride in their city’s heritage, but the process needs to go on. This brochure shows not only the extent of the problem, but also the solutions that can be applied, as well as success stories from around the world.

The private car has brought undreamed levels of mobility and liberty to individuals, but its unlimited use in urban areas has a negative effect on society and the economy.

Jean-Paul Bailly
President UITP

Hans Rat
Secretary General UITP
Problem 1: More and more people are living in urban areas

Growth in the size of cities is a world-wide trend. In developing countries, traffic congestion is increasing, due to the exponential growth of the number of inhabitants and cars.

Between now and the year 2020, it is estimated that urban mobility worldwide will grow by 50%. Most of this will happen in the large urban conurbations, especially in less developed cities that already suffer from congestion, an alarming number of road accidents and high atmospheric levels of pollution.

Dehli’s bus company carries 4.5 million passengers daily.

Today, more than 50% of the world’s population live in urban areas.
Problem 2: Urban communities are becoming larger and less dense

In industrialised countries, the rise in the standard of living has led to urban sprawl and high levels of car dependency. If city dwellers move from the city to the suburbs, more frequent and longer journeys are made by car.

In addition, as shown below, the lower the density, the more gasoline is consumed.

The total cost for urban journeys is directly related to density - the lower the density the higher the cost. This varies between 5% of the Gross Domestic Product (GDP) for dense cities such as Tokyo, Singapore, Copenhagen or Munich, and 15% for low-density North American cities.

Urban sprawl brings traffic congestion, pollution, and high transport costs for the community.
Traffic congestion has important economic consequences.

- Every day many hours of productive time are lost through traffic congestion.
- Commerce suffers through difficult, late and more expensive deliveries.
- Public transport suffers with reduced speeds of service and disruption to the timetable.
- Stationary, or nearly stationary, cars with their engines still running give out the highest levels of exhaust emission.
- The quality of life for those living along the suffocated roads is reduced.

Traffic jams are no longer confined to the peak hours in large cities. They cause a huge loss of productive time, and make journey times irregular throughout the day.

It is estimated that traffic delays in developed countries represent a loss of €500 bn per year based on comparing average speeds with those at 5.00 am. The cost of congestion in London alone is at least €3.5 bn per annum. (Source: London First)
Problem 4: **Quicker between cities - but slower in the cities**

In many countries, huge sums are spent to improve national and international road and rail networks. It is not surprising that, with new technology, rail travel from Paris to Marseille takes only one third of the time that it took 50 years ago.

But not enough is spent on tackling congestion, although 75% of the population of Europe live in urban areas and are victims of daily delays. The time needed to get to an airport from the city centre is sometimes more than the time needed for the actual flight!

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating speed of trains between Paris and Marseille</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>95 km/h</td>
</tr>
<tr>
<td>1955</td>
<td>165 km/h</td>
</tr>
<tr>
<td>1960</td>
<td>250 km/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Commercial speed of buses in the evening rush hour in Paris</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>9.8 km/h</td>
</tr>
<tr>
<td>1955</td>
<td>12.4 km/h</td>
</tr>
<tr>
<td>1960</td>
<td>19.5 km/h</td>
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</tbody>
</table>

Investment in urban public transport should be high because the great majority of people live in cities where congestion is a daily occurrence.
Problem 5: Moving cars take up precious urban space

To carry 50,000 people per hour per direction, you need:
- a 175 m wide road used only by cars, or
- a 35 m wide road used only by buses, or
- a 9 m wide railway track bed for metro.

A GO Transit suburban train in Toronto, Canada carries the same number of passengers as 800 – 1000 cars, more cars than this picture shows.

Should urban roads be built according to traffic demand, or should traffic, with the help of public transport, be adapted to existing urban road space?
Employees need approximately the same amount of space to work in their offices as they need to park their car (about 20m² per person). But unlike their car, which stays in a car park all day not serving any purpose, employees have a more productive day!

Office car parks contribute little to the economic viability of an area and are also visually unattractive.

Problem 6: Parked cars use valuable urban space uneconomically

Cars are parked for about 95% of their life, and parked cars take up as much space as their driver’s offices.

If everybody travelled to work by car, the total space needed for parking cars would be as great as the space needed for business activities.
Every mode of transport uses space for moving and parking over a period of time.

Moving and parking can be aggregated into one unit of measurement: space x time expressed in m² x hour.

The most demanding mode of transport in terms of space is the private car.

For example, a journey home/work by car consumes 90 times more space than if the same journey was taken by metro and 20 times more if it was taken by bus or tram.

75 people are carried either by 60 cars

or, only 1 bus.

Cars use enormous quantities of valuable urban space uneconomically.
Problem 8: **Cars waste a lot of energy**

All forms of transport need to make efficient use of energy.

It is certainly not energy efficient to carry an average of 1.2 - 1.4 people in a car which itself weighs more than 1000 kg. Buses and trams are more energy efficient and consume 3 to 5 times less energy per passenger.

If the commitment from the Rio and Kyoto conferences to reduce CO₂ emission is to be observed, a reduction in energy consumption is necessary.

How many kilometres a passenger can be carried with 1 kilogram of fuel (= kep) by different modes:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Trip x km/kep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Car</td>
<td>18.6</td>
</tr>
<tr>
<td>Suburban Trains</td>
<td>35.2</td>
</tr>
<tr>
<td>Regional Bus</td>
<td>38.7</td>
</tr>
<tr>
<td>RATP Bus</td>
<td>47.0</td>
</tr>
<tr>
<td>Metro Park</td>
<td>48.1</td>
</tr>
</tbody>
</table>

These figures take into account the effective fill-up rates of the different modes.

It doesn’t matter how environmentally friendly you make cars through technology: they consume 3 times more energy and produce 3 times more CO₂ per passenger than public transport.
Problem 9: **Pollution, mainly from car traffic, is destroying the quality of air in urban areas**

In developed countries, the cost of pollution is between 1% and 2% of GDP. The car and lorry industry have made technical advances to reduce emissions, but nevertheless, road traffic is still the greatest source of pollution in urban areas. This is due to the increasing total number of cars and the length of journeys.

Despite the technological progress over the past few years, public transport remains ‘cleaner’ than the car for transporting large quantities of people.

Comparison of specific average emissions (grams/passenger x km) of bus and car (all fuels)

![Graph showing comparison of specific average emissions (grams/passenger x km) of bus and car (all fuels)](image)

Only a ‘no growth’ policy for car traffic can reduce pollution, health risks and the world-wide greenhouse problem due to CO₂ emissions.

Even with the best catalytic converters, the CO₂ problem remains.
Problem 10: **Noise destroys the quality of life in urban communities**

Noise can really affect life in the city. There is a hidden cost to both the health and the daily life of citizens living in communities with permanently high levels of noise. Along freeways, noise can be reduced by protecting walls, but people walking or sitting on city streets remain fully exposed to traffic noise.

In addition, major infrastructures are visually intrusive and create physical barriers, which are difficult for local citizens to cross with ease.

The WHO reports that more than 30% of European citizens are exposed to levels of noise which disturbs sleep; and 5-15% of all citizens suffer serious noise-induced sleep disturbance.

Without traffic reduction and more pedestrianized areas, urban life for inhabitants and commerce is at risk.

Urban life can only develop in cities if they are attractive and pleasant to live in.
Problem 11: Traffic accidents kill 45,000 people per year in Europe

The total number of deaths in Europe per year due to traffic accidents are equivalent to a small war. In urban areas, pedestrians and cyclists represent nearly half the number of victims.

There is a direct relation between the number of people killed on the roads in towns and the number of journeys made by car. In towns where there are well developed public transport systems, the number of deaths are half as many as in towns where almost all journeys are made by car. Accident statistics for public transport for badly injured or fatal incidents, are between 10 to 20 times less per passenger x kilometre than for cars.

Traffic accidents are the first cause of death for young people aged 1-25 in European Union countries; far more than suicide.

Public transport has more respect for citizens’ lives than the private car.
Problem 12: Not everyone has a car or access to a car

Although the number of cars is steadily increasing, not every household has a car. In many developing countries the majority of the population still depends on public transport.

Even in highly industrialised countries, as many as 25% of households have no car and more than 50% of the population has no access to a car at certain times of the day, even if the household owns a car.

Schoolchildren, elderly people, those without a driving license, as well as the socially underprivileged, need collective transportation.

In addition, if they live in a city well-served by public transport, more citizens make the choice not to own a car for environmental reasons.

Everyone should have access to transport for essential trips such as for work, education and health as well as for shopping and leisure.
Problem 13: The decision maker’s perception of public opinion

A large-scale population survey in 12 European countries has shown that:

- Car traffic is the most important local problem.
- 59% of the population say car traffic has already reached unbearable or hardly bearable levels.
- 84% of the population would opt for priority for public transport, even if it conflicts with private traffic needs.

Where citizens can make decisions on transport, as in some US States or in Switzerland, they generally approve investments in public transport and restrictions of private traffic in urban areas.

Half of the political decision-makers underestimate the wish of their electorate to give buses and trams priority.
The vicious cycle of urban decline

More people choose the car

More cars
More road traffic

More traffic jams
shortage of parking spaces

More investment in road and parking

Decrease in the Public Transport Offer

Decrease in the use of Public Transport

Buses and trams are slower, less effective and therefore less attractive

Inner city residential areas decline and inhabitants move to the outskirts

The city becomes less pleasant to live in

Increase of air pollution, noise, accidents

Employment possibilities move from the city to the outskirts

Urban employment areas are less accessible
Solution 1: **Urban density is more cost-effective than urban sprawl**

In low-density areas the car dominates the choice of transport, and the cost of providing public transport is high. In these sprawling cities almost all journeys are made by car.

The Millennium Cities Database for Sustainable Transport, prepared by UITP and Murdoch University (Aus.), shows that the cost of passenger transport for the community, as a proportion of GDP, is as low as the density is high. The reason is that in dense urban communities, the share of journeys made by public transport is the highest.

A comprehensive study for the Paris region shows, that in the outer city area where there are less than 30 inhabitants and employees/ha the cost of journeys made by car are 3 times higher than those made in the centre of Paris by metro or RER, where the density is as high as 400 inhabitants and employees/ha.

<table>
<thead>
<tr>
<th>Urban Areas in</th>
<th>Density Inhabitants/ Hectare</th>
<th>Share of journeys on foot, bicycle and by Public Transport</th>
<th>Cost of journeys (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA, Canada Oceania</td>
<td>18</td>
<td>15%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Western Europe</td>
<td>55</td>
<td>52%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Japan, Hong Kong, Singapore</td>
<td>134</td>
<td>62%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Source: UITP Millennium Cities Database

**Put an end to urban sprawl; the cost of journeys is low when public transport is the dominant mode of transport in a high or medium density city.**
Solution 2: Urban development around public transport stations

Taking public transport into account in urban planning decisions is an effective way to stop the increase in private car traffic and daily traffic congestion. One of the best incentives for leaving the car at home is a short walk to an attractive public transport station.

The graph below, from a small town in Switzerland, shows that the number of public transport users is doubled when the walking distance to the nearest stop is reduced from 7 minutes to 2 minutes.

Siting offices next to stations reduces walking distances and encourages the use of public transport, as can be seen here in San Diego.

**Public transport stops should be no more than a short walk from home and as close as the parking lot to the office.**
It is not the purpose of city centres to attract cars, but to attract residents, shoppers and visitors for commercial, cultural or leisure activities.

Concentration of these activities in a small space imposes strict limits on access in order to preserve a peaceful environment.

Several cities have been able to keep the attractiveness of their centres using the following well-known solutions:

- Reduce on-road parking to a minimum.
- Adopt traffic plans that stop through car traffic except for buses, trams and bicycles.
- Restrict access to the centre by car except for residents and limited deliveries.

Central areas, liberated from traffic jams and parking, become available for walking, shopping, and leisure.

60 Italian cities, such as Bologna, have closed their centres to general traffic, allowing only buses and delivery vehicles at certain times.

Allow public transport access to city centres but restrict other transport.
Solution 4: More trade after pedestrianization

Many shopkeepers believe that parking spaces in front of their shops are essential for sales. But experience in many cities shows that converting streets into pedestrian areas, allowing access only to public transport vehicles and for deliveries, has increased turnover for local commerce.

International experience shows that pedestrian-friendly areas, with attractive public transport access gives shops a boost.
Solution 5: **Strict parking policies in city centres reduces traffic jams**

Contrary to popular belief, more parking spaces often means more traffic congestion. Restricting the availability of parking - especially for commuters - is the most effective (and cheapest) way to convince drivers to leave their cars at home. They then change to less space-consuming modes of transport.

Parking policies are a major tool for successful city traffic management.

UITP recommends the following actions: limit the creation of parking spaces in new office buildings; discourage free parking at people’s places of work; limit parking capacity in centres; optimise parking use (eliminate on-road parking for commuters through the use of time restriction ‘blue’ zones...) and ensure that the restrictions are enforced.

Pedestrianization of a city road (as seen here in Lüneburg Germany) enhances local trade, despite the loss of parking spaces.

**Making more parking space available than the road network can handle is as illogical as training the muscles of the body when the heart does not have the appropriate capacity to cope.**
Solution 6: **Park + Ride complements parking restrictions in city centres**

Not everybody lives a short walk from a station, so other modes need to be used to get to the station. The private car is an important feeder to public transport interchanges and in many countries Park + Ride facilities have shown good results getting people to use public transport to get into the city.

P+R schemes must be consistent with parking measures in city centres e.g. each new parking place in a P+R should mean one parking place in the city centre.

To be attractive, Park + Ride must offer connections to frequent, fast public transport services and they must be well managed. Real-time passenger information, comfortable waiting and transfer areas increase their attraction.

A car parked in a suburban station means one parking space less in the city and two car journeys less on the access roads.
Solution 7: Fast, reliable public transport can attract passengers from other modes

Public transport needs to be as fast and reliable as the private car.

The Metrolink light rail in Manchester has taken 3 million car journeys off its roads per year.

The growth of traffic in Geneva is directly related to the length of the dedicated bus lanes.

Car drivers, blocked by congestion, see buses and trams passing and begin to consider a change of mode, as in Stuttgart, Germany.

Increasing the speed and reliability of public transport attracts new passengers, and improves its image.
Solution 8: **Give public transport a reserved right-of-way**

Space is at a premium in urban areas so it needs to be used sensibly. Buses and trams use nearly 20 times less space to transport the same number of people than the private car.

One of the most cost effective measures for successful public transport is giving it dedicated rights-of-way.

The resulting increase in speed and reliability:

- Reduces operating costs, mainly through a reduction in the total number of vehicles needed and fewer spare vehicles needed to compensate for running late.
- Improves the frequency of the service.

Increasing the vehicle speed and reducing waiting times results in a shorter overall journey time for passengers.

Speed and reliability are important factors to make customers change to public transport. Nice, France has a dedicated bus lane parallel to the popular beach front.

**Giving buses and trams dedicated infrastructure gives a good pay-back by reducing operating costs and increasing farebox revenue.**
Solution 9:  Low floor means easy access

Easy boarding is a must for all sorts of customers: children, shoppers with heavy bags, parents with strollers, the elderly. Good accessibility is required to satisfy the needs of those with reduced mobility.

Level boarding is a long-time feature of underground railways. 15 years ago surface vehicles started to have this type of access and nearly all new buses and light rail vehicles are now low-floor, offering near level-boarding.

Many European cities have low-floor trams and buses allowing quick and easy boarding to and from the platform as shown here in Dresden, Germany.

Public transport vehicles are more accessible than 15 years ago.
Solution 10: For heavy traffic demand, metros and suburban rail are the answer

In major cities of the developed world, metros and heavy rail are the least expensive mode of public transport for access to and around the city centres.

Although the level of investment in metro, RER or heavy rail is often high, in the long term it offers the most efficient solution for moving thousands of passengers during the busy peak hours.

Therefore, the number of metro systems is still increasing in large cities and in the emerging nations, whose populations are growing fast.

The large quantity of people travelling by metro in Singapore keeps the roads more clear.

Metros or suburban trains can carry more than 50,000 passengers on one line per hour and direction. No other mode can beat that!
Solution 11: Attractive Interchanges are key to successful public transport

The larger the city, the more passengers have to change between buses, metros, trams or other modes. This waste of time can be a great inconvenience, if these interchanges are not well planned and made attractive.

In good interchange areas, passengers should be able to use their time in an enjoyable way, to dine and shop for instance, and these areas can become a dynamic part of a city.

Interchanges should not be only used for transport purposes, but should be developed as interesting and lively parts of a city.
Solution 12: Good passenger information is essential for seamless travel

Providing the customer with easy to follow information on timetables, fares, routes and services makes public transport more accessible.

Good integrated and intermodal information systems allow door-to-door journey planning. Advanced technologies make it possible to provide real-time information at the customer’s exact location.

A balanced mix of pre-trip information (printed leaflets and posters, travel enquiry offices, call centres, public interactive terminals, Internet web sites) and information provided during the journey (at stops, interchanges, on-board vehicles) facilitates public transport use and makes the journey more comfortable and less stressful.

Dynamic passenger information makes public transport easier for passengers to use, as can be seen here in West Yorkshire, UK.

To satisfy customers' needs information systems should be multi-modal, area-wide, and offer door-to-door information via one single medium.
Solution 13: Electronic ticketing helps make public transport easier to use

Tickets should allow easy transfer between modes and operators, either over a designated area or country wide.

Developments in electronic ticketing add a new dimension for regular and season ticket holders.

Automatic fare collection systems and contactless smart cards offer high performance alternatives to traditional ticketing. They are simple to use, allow fares based on actual travel length or on period of the day (peak, off-peak), permit transactions in total security, avoid handling cash, reduce fare evasion, allow inter-modal fares and leave the way clear for new electronic purse applications.

Contactless technology offers significant advantages in terms of cost, reliability, security, and speed of transaction compared to other forms of ticketing.

Smartcards and electronic ticketing make Public Transport easier to use and therefore more attractive.
Solution 14: Urban car journeys should be properly charged

Excessive car use in towns and cities is encouraged by the free use of roads and under-charging for parking. Moreover, car drivers do not pay for the external costs that they cause such as: congestion, atmospheric pollution and noise.

Therefore UITP recommends that charging for car use in urban communities be increased by:

- expanding the area covered for paying for on-road parking,
- increasing parking charges for non-residents,
- stepping up parking controls and improving the efficiency for the recovery of fines,
- adopting fiscal measures that discourage the provision of company cars and free private parking at the work place,
- introducing urban road tolls whenever the previous measures prove to be inadequate. The technology exists for this, and assorted trials show encouraging results.

A toll is charged in Singapore for entering the Central Business District (CBD). This toll eliminates the daily, city-centre congestion, experienced in many other megapolises.

The final aim is not to increase car taxation, but to use carefully selected taxes or tolls to stop unnecessary car use in cities.
Investment in a good public transport system benefits all citizens. The advantages of good public transport networks are not only confined to their passengers. Therefore, investments in infrastructure and all operational costs should not be entirely paid for from the farebox revenue. Non-users should also contribute, as they also benefit from having an attractive public transport system and roads less congested.

There are many ways to link public and private financing and to raise funds for public transport:

- Property developers’s contributions (e.g. Hong Kong, USA, Docklands GB).
- Taxes on salaries (e.g. the Transport Levy in France) are spent on improving public transport.
- Tax on fuel e.g. in Germany is dedicated to local transport investment.

Each country has different ways to fund Public Transport projects, but investment should be made where it benefits the most citizens.
Solution 16: **Success breeds success**

Investments in public transport alone cannot curb the increase in road traffic. It needs an integrated transport plan including land-use planning, parking policies and other measures. Success depends on a combination of political commitment and operational efficiency.

Public transport services must be developed to get people to switch to public transport, as is shown in this graph from a small town in Switzerland.

Cities such as Bern, Switzerland have applied these policies with success.

A combination of measures based on land-use planning, restriction of private car use and the promotion of public transport helps to overcome growth in traffic and congestion.
Three pillars for a balanced traffic system in urban areas

Only a combination of solutions is successful
Best Practice 1: Public transport adds value to developing new areas

In 2002, a new automatic metro line financed by private funding will link the new town of Orestad to the centre of Copenhagen. A company owned jointly by Copenhagen City and the Government of Denmark is in charge of building and operating the new metro line. It borrowed capital based on floating state and city backed bonds which are paid back by selling the land to property developers.

The London Docklands light rail was jointly financed by the developers of this new area.

Investment in providing a high quality public transport system increases the value of real-estate.

Finance new public transport investments with the land-owners, who are able to build up undeveloped areas, as in Copenhagen.
Best Practice 2: Light rail regenerates city centres

Many cities have successfully combined public transport projects with a policy of revival of its city centre. Well designed public transport such as light rail systems are successful and attractive to passengers, even in car dominated low density US and Canadian cities.

In the last 20 years, 14 cities in USA and Canada have introduced new light rail systems: Baltimore, Buffalo, Calgary, Dallas, Denver, Edmonton, Los Angeles, New Jersey, Portland, Sacramento, Saint Louis, Salt Lake City, San Diego, San Jose.

Building ‘transit malls’ with light rail access, trees and pedestrian zones encourages private investment in city centre office blocks, shops and apartments.

The attractive “transit” mall of prosperous San Jose (CA).

New public transport systems are a good starting point for commercial development and a better urban environment.
Best Practice 3: **Pedestrians, cyclists, buses and trams make a good combination for inner city centres**

Even in narrow streets where cars are banned, pedestrians, cyclists, deliveries, buses and trams can coexist.

In Italy, more than 60 cities have restricted access to their historic city centres except for buses and trams, for most of the day. In Rome this zone extends from the east of the Tiber as far as the Termini station, encompassing the historic city centre, with its high density of employment, commerce and habitation.

Prague has used concrete humps in the city centre to separate car lanes from tram tracks and prevent cars and trucks from driving on the rails. An 800 m section with humps has eliminated former regular delays of 7 - 10 minutes and reduced the circuit time of 5 tram routes.

This cost-effective solution together with appropriate parking policies helps:
- keeping the track free for trams
- delays resulting from congestion
- reduction of circuit time
- increased smooth flow of tram traffic
- energy savings

In Amsterdam, the narrow Leidestraat, is a pedestrianized zone where trams are allowed.

Trams and buses can adapt to the narrow streets of historic city centres.
Best Practice 4: Attractive rail and bus services to out-of-town shopping and leisure centres

The car is not the only way to reach out-of-town shopping and leisure centres. Attractive public transport well adapted to the needs of the visitors to these centres can offer a good alternative.

Such as in Oberhausen (Germany) where the new out-of-town centre with shopping and leisure activities is linked to the town centre and main station by a right-of-way exclusively dedicated to buses and trams. Most of the investment for this was financed from the German federal fuel tax.

In Oberhausen (Germany), 28% of visitors to the big out-of-town shopping and leisure centre arrive by bus and tram due to the fast dedicated routes.

Out of town facilities should also be served by public transport.
Best Practice 5: Fast reliable links from city centres to airports

Fast, reliable access to airports is of fundamental importance. Neither passengers on their way to catch a plane nor airport employees can afford to be delayed by congestion. In some cities public transport carries as much as 40% of all airport passengers. The station needs to be very close to the arrival and departure terminals, with easy access for people and luggage.

Heathrow Express, a rapid rail link has taken an estimated 3 000 vehicles per day off the local roads.

The airport becomes more accessible, benefits from a higher image due to the rail access and there is less need to provide parking places.

<table>
<thead>
<tr>
<th>Country</th>
<th>Existing</th>
<th>Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>40</td>
<td>49</td>
</tr>
<tr>
<td>North America</td>
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<td>32</td>
</tr>
<tr>
<td>Asia</td>
<td>7</td>
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<tr>
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<td>2</td>
</tr>
<tr>
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</tr>
<tr>
<td>South America</td>
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<tr>
<td>Total</td>
<td>62</td>
<td>116</td>
</tr>
</tbody>
</table>

This table shows the number of rail links to airports at the beginning of 1998 including speed networks, high speed dedicated links, regional links or metro style links or a combination of them.
The market share of public transport has risen by 10% in 4 years in Vienna, the capital of Austria. The reasons are:
- A common ticket for all modes in the metropolitan area,
- Well planned interchange stations to encourage making easy changes from one mode to another.
- Expansion of metro and suburban rail.
- Modern light rail system in city streets.
- New tramline to a new housing area.
- Personalised marketing in new residential areas.

Low floor tram in Vienna - after high levels of investment citizens of Vienna now benefit from a comprehensive and well-used public transport network.

A fully integrated public transport system contributes to the social and economic development of a city.
Best Practice 7: New technology can be used to better inform passengers

OVR, Openbaar Vervoer Reisinformatie, is the intermodal source of passenger information for The Netherlands. A single telephone number for the call centres gives access to all the timetables of any mode of public transport, as well as, a ‘door-to-door’ itinerary showing the best way to the chosen destination. OVR also takes reservations and payment, and the information it gives out includes taxis and walking or cycling itineraries. OVR receives more than 10 million calls per year.

Göteborg, Sweden, has a network wide real-time passenger information system. The information centre monitors the position of vehicles on their routes allowing real-time information of the next service to be given at stops, including any disruption to service. This information is also available in the vehicles themselves and is accessible via the Internet and mobile telephone (WAP – wireless application process).

London Underground is one of the leading transport companies in the field of information technology, with its real-time information giving next train arrival times.

Good passenger information is a deciding factor to increase the competitiveness of public transport.
Best Practice 8: Easy access to all modes by ‘e-ticket’

A contactless smartcard in Hong-Kong has been in operation since 1997. This contactless ticketing system integrates all modes of public transport (trains, metro, light rail, bus and ferries).

Used by 85% of passengers, the Smartcard reduces access time to platforms and vehicles. Its use is not limited to public transport and electronic purse applications have been added so that other services such as parking, taxis, and the telephone can also be paid for. The overwhelming success is attributed to its convenience.

New marketing applications and revenue streams are being developed and transport applications are being called the ‘killer application’ for contactless smartcards.

Nearly 80% of the total population of Hong Kong possess at least one smartcard. Each day 4.5 million transactions for public transport are made – a remarkable technical success for improving client service.

New electronic tickets make journeys easier for public transport users.
A key component of Dublin’s Transportation Strategy is the introduction of Quality Bus Corridors. Twelve such corridors comprise the first phase of QBCs, with others planned to follow. The package of measures along a main corridor includes:

- priority right of way – dedicated road space for buses,
- direct alignment of bus route,
- a bus every one to three minutes at peak periods,
- a modern fully accessible bus fleet,
- trained staff committed to quality and customer care,
- real-time information with expected time of arrival of next bus,
- illuminated shelters with seats at every stop.

The results so far are very successful. Bus journey times have been reduced by 30% to 50% and 60% of the passengers are new clients who formerly made the trip by car.

The Stillorgan Quality Bus Corridor in Dublin has a frequency of one bus every minute during the critical peak periods and since its introduction there has been a 200% increase in ridership during the morning peak time band.

Improving bus routes on corridor alignments can be cost effective and produce rapid short-term benefits.
When demand is high but investment funds are scarce, a bus system on dedicated roads provides a good solution. Curitiba and Sao Paulo (Brazil) have high quality rapid bus services. Rapid bus systems, such as the one in Sao Paulo, have a capacity of 20,000 passengers in each direction per hour.

This example is being followed by more and more South-American cities. Measures include improvements in their bus system, reserved roads and specially designed stops.

In Quito (Ecuador), a new trolleybus trunk route has been introduced, serving stations with high platforms for easy and quick boarding.

Expensive infrastructure is not always possible and adapting existing networks creatively can improve the service and increase patronage, as in Quito, Ecuador.

Emerging and developing countries need to invest in urban transport systems that are sustainable and respond to their growing needs for mobility.
Best Practice 11: **Light rail can also satisfy heavy demand**

Istanbul, Tunis and Manila have efficient tramways with a frequent service on dedicated right of ways.

Istanbul has two lines, tram and light rail, with a total of 30 km which is used by more than 300,000 passengers every day.

Tunis, with 4 radial tram lines and a total length of 37 km, transports 250,000 passengers daily.

In Manila, one 15 km light rail line carries nearly 400,000 passengers daily.

These light rail networks are among the most patronised systems in the world.

The citizens of Tunis and Istanbul rely heavily on the tram and light rail services to get to the city centre.

**Tramways on dedicated rights-of-way provide an economic and effective solution for emerging countries.**
20 years ago, only 3 cities in France still had trams, and each retained only one line. But many French cities have now found that they can keep their character and increase their commercial activities by building a modern tram or in today’s terms light rail system.

Totally new systems have been successfully introduced in: Nantes, Grenoble, Strasbourg, Paris, Rouen, Montpellier, Lyon, and Orléans.

Existing tram networks are being extended and new ones are being built such as in Bordeaux. Other cities, such as Nancy, have chosen to invest in the ‘tramway on tyres’.

None of this would have been possible without the ‘transport levy’, a tax paid by employers and used for investment in and the operation of collective passenger transport.

Light rail can become part of the unique identity of a city and be an object of civic pride for its citizens.
Best Practice 13: **Tram-train, a new concept using both light and heavy rail lines**

Karlsruhe (Germany) has a main railway station which is not in the city centre. Trams can be run on the same railway lines used for regional services, linking the city centre with the outer city region. Passengers benefit from a fast rail journey and continue into the centre, without changing modes.

The overwhelming success of the scheme in Karlsruhe has led other cities such as Saarbrücken to adopt the same principle.

The examples of Karlsruhe and Saarbrücken show that the problems of compatibility between heavy and light rail can be overcome. The high number of Tram-train projects either being planned or in progress confirms this.

A Karlsruhe city tram on DB tracks next to a high-speed ICE train.

**Connecting urban trams and regional railways is an excellent way to increase the accessibility of cities.**
Best Practice 14: Metro can rapidly move a large number of passengers

In large cities the metro or RER is unrivalled in its capacity to rapidly move large numbers of people: 20,000 passengers per hour in each direction is the average, rising to over 80,000, on some networks.

Several metros such as New York, Sao Paulo, London, Paris, Hong Kong, Seoul, Osaka, Mexico City, St Petersburg carry 1 billion passengers or more per year. In Tokyo and Moscow the annual figures are even higher with more than 3 billion passenger trips per year.

Madrid (5.0 inhabitants) had 112 km of metro line in 1993, today boasts 171 km with further extensions planned bringing the total up to 225 km by the year 2003. The network will have effectively doubled its length in a period of 10 years, averaging 11 km of new lines constructed per year. During this time an orbital line has allowed to the metro to now serve several districts in the surrounding area of the city, and a new metropolitan orbital line 40 km long is in construction.

With a rhythm of 10 km of metro line built per year, the costs of construction are drastically reduced - to only 32 million euros per km of metro as in Madrid.
Best Practice 15: Art brings light underground

In the nineties, as part of the expansion of the Lisbon metro extra investment was also made in art and architecture to create a modern dynamic environment. This transformed the stations and made each one radically distinctive showing how art and culture adds an extra dimension to the attractiveness of a system.

As a result, the Lisbon Metro can now be considered to be a contemporary art gallery with works from architects and artists from many continents.

Other cities such as Sao Paulo, Stockholm, Paris and Brussels are doing the same.

Art and modern architecture brings new life to underground transport systems.

Citizens look to their Metro systems as a reference of public transport quality and including art improves its positive image.
Best Practice 16:  
Wealth and public transport go together!

In Zurich - as in other banking and service centres worldwide - an attractive public transport system fulfils the demanding needs of its highly paid managers. The concentration of jobs, in financial districts such as Wall Street, New York, The City of London and Frankfurt need high capacity attractive transport systems.

Public transport becomes the preferred choice for everyone if it is quick and comfortable and if parking capacity is limited, as is often the case in central business districts.

Paradeplatz in Zurich, where two world-leading banks have their headquarter is reserved for pedestrians and the blue Zurich tram.

Public transport is the intelligent choice for all classes of people and can be used for professional as well as for leisure purposes.
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It is a point of REFERENCE for the industry and studies all aspects of mobility to encourage the development of more efficient and attractive collective passenger transport, and informs its members of best practices worldwide. It provides research and analysis on all aspects of urban and regional passenger transport including infrastructure, rolling stock, organisation and management.

UITP acts as an international FORUM for the transport sector to exchange knowledge and experience to further the position of public transport and maintains close contact between the industry, operators and authorities.

It promotes public transport through close contact with decision-makers and the media to develop a favourable climate of opinion and acts as an ADVOCATE for public transport. It represents the interests of its members through its dealings with international organisations such as the European Institutions, the UN, the OECD and the World Bank as well as giving its members opportunities to network with other national and international transport associations.

UITP's Mission Statement
UITP, the International association of Public Transport is the:

- World-wide NETWORK of public transport professionals
- Point of REFERENCE for the industry
- International FORUM for transport policy
- ADVOCATE of public transport

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