

# PLANNING AND DESIGN FOR SUSTAINABLE URBAN MOBILITY

## GLOBAL REPORT ON HUMAN SETTLEMENTS 2013

### The System is the Solution in Urban Transportation

To fully address urban mobility challenges city managers must go beyond the building of transport infrastructure and look at the interconnectivity of the different modes if they are to be successful, says the United Nations Human Settlements Programme, UN-Habitat.

The *Global Report on Human Settlements 2013 - Planning and Design for Sustainable Urban Mobility*, calls for a systematic approach, taking into consideration how people move from road to rail, from bus to metro, from bicycle to tram and so on, if they are to gain and keep users.

“The introduction of high-capacity public transport systems can potentially improve the efficiency of the urban economy by reducing travel cost and time; it can increase the level of city-centre activity, thereby enhancing agglomeration economies which are crucial for the prosperity of urban areas,” says UN Under-Secretary-General and UN-Habitat Executive Director, Dr Joan Clos. “But the most efficient and comprehensive train network in the world will have very little impact if people find there is no way to complete their journey when they alight from the station. The system as a whole is the solution to urban mobility, not one individual piece of infrastructure.”

Globally, a trend has begun in this direction. Systems are being installed in places as varied as Bangalore, Brasilia, Cairo and Shanghai. The shift in focus is due to the awareness that the collective cost of reliance on the car is making cities unsustainable. Everyone, including those who can afford private cars, are struggling with urban sprawl, air and noise pollution, congested roads, increasing traffic accidents and social segregation. High-capacity public transport systems are increasingly seen as a sustainable alternative and are now being installed in various cities around the world.

The report warns of the danger of seeing an individual piece of infrastructure as the panacea to all its urban mobility challenges. In Nairobi, for example, a commuter train was opened in 2012 to ease the congestion of cars but uptake has been slow. One reason for this is that to access the outlying stations you still need a car. The private ownership of the bus system means that there is little incentive to provide a route whereby commuters can access the railway.

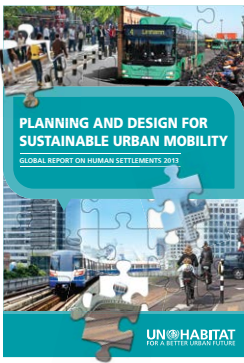
## The world's largest or most used metro systems are Tokyo (Japan), Seoul (South Korea) and Beijing China). Passengers daily: Tokyo - 8.5 million; Seoul – 6.9 million; Beijing 6.7 million

### Metro

The metro is generally an underground system capable of at least 20,000 passengers per hour, per direction. Globally, it carries an average 112 million passengers per day, the report says. Asian cities account for 46 per cent of global ridership, followed by European cities with 34 per cent. Although it is the most expensive public transport system to build, it offers clear advantages in terms of speed, low noise, low emissions of greenhouse gases and other air pollutants, high reliability and public safety. One major drawback, however, is the long distances between stations, necessary for trains to reach high speeds. Another is limited flexibility and the need for bus or intermediate public transport

### Light Rail

Electric light rail transport is a mode that can be developed in stages to increase capacity and speed. Such systems mostly operate at the surface level with overhead electrical connectors, and exclusive right-of-way lanes. Ridership is significantly lower than that of metros. Light rail may have high or low platform loading and multi or single car trains. They have traffic priority at road junctions, which increases their speed and service reliability. Some 400 light rail and tram systems are operational worldwide. These systems, though, are relatively costly and are mostly be found in relatively high-income cities.



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### Bus rapid transit (BRT)

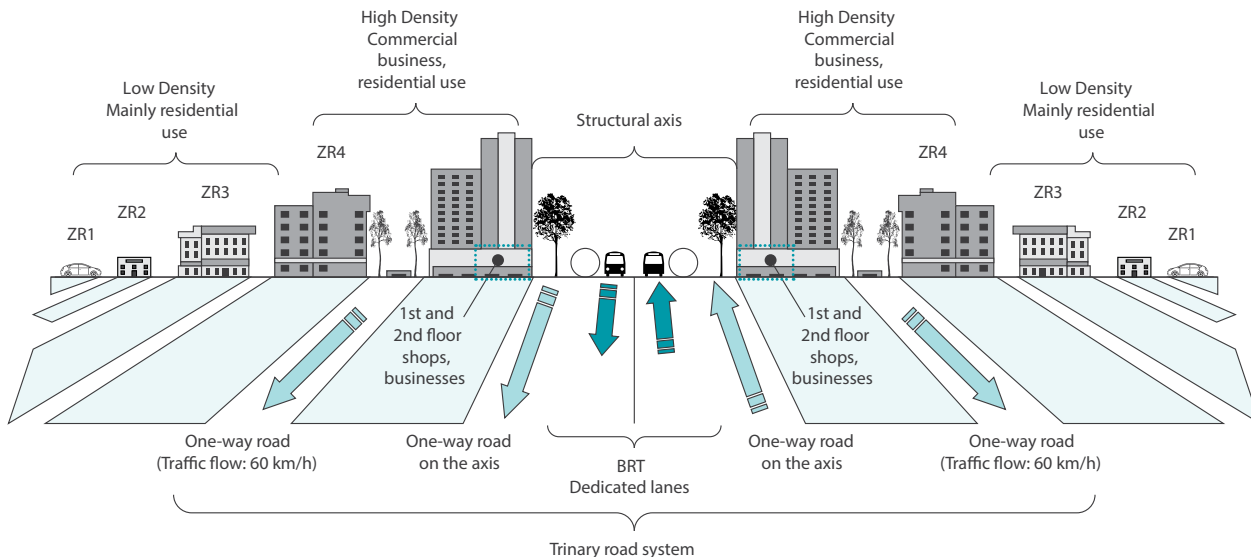
In terms of cost, the BRT capital costs can be 4 to 20 times less than light rail systems; and 10 to 100 less than those of the metro with similar capacity and service levels, according to the report. BRT runs along exclusive right-of-way road lanes at the surface. In dense city centres, underpasses or tunnels at intersections separate it from other traffic. BRTs provide high quality, fast, safe, comfortable, reliable and cost-effective services for the 26 million daily commuters in 156 cities worldwide. A good BRT system is flexible and it combines stations, bus services, busways and information technology in an integrated manner.

### Connecting people to the system

In addition to the physical intergration of urban mobility modes and service providers, operational and fare integration are essential aspects of an integrated and sustainable urban mobility systems. Public transport route schedules and fares have to be coordinated to facilitate the travel of individual passengers. Thus the report notes that public transport systems have to address four major parameters: affordability, availability, accessibility and acceptability.

In the final analysis, it is the ease with which the public can access these high-capacity transport facilities that will determine if they will be used. That is why transit-oriented development is vital; urban developments that are physically organized around public transport stations. It is done by considering the entire public transport system as a whole, looking at how the different modes intersect and how people will join the system at the beginning and end of their journeys. It is the effectiveness of how the bus, train or tram lines work together with safe pedestrian walk-ways, car parks, bicycle lanes and with each other that will determine whether they can pull people away from their private motor vehicles.

Figure 5.17: Curitiba's trinary road system, Brazil



### Box 6.1: Understanding the parameters of urban transport

Affordability refers to the extent to which the financial cost of journeys puts an individual or household in the position of having to make sacrifices to travel, or to the extent to which they can afford to travel when they want to.

Availability of transport is used to refer to route possibilities, timings and frequency.

Accessibility describes the ease with which all categories of passenger can use public transport. For example, buses with high steps are

difficult to board, particularly if they are one person operated and there is no assistance. Accessibility also includes ease of finding out about travel possibilities, i.e. the information function.

Acceptability is another important quality of public transport, either because of the transport or the standards of the traveller. For example, travellers may be deterred from using public transport due to lack of personal security on buses and trains.