Smart Transport for Smart Cities

ASHWANI KUMAR

Smart cities need a people-centric, proactive transport planning with public transport as the hub and non-motorised transport as spokes. It is high time we redefine public transport as the transport required by the public and not just publicly-funded transport.

Views are personal.

Ashwani Kumar (*ashwanikumar@nus.edu.sg*), an Indian Railway Traffic Service officer, is a doctoral fellow with the "future mobility" group at Singapore–MIT alliance for research and technology.

The Narendra Modi government has put special emphasis on urban development by committing to develop 100 smart cities. However, cities thrive on a big and diversified labour market, which requires efficient mobility. Hence, a smart intra-city transport system is a sine qua non for smart cities.

Rapid urbanisation, coupled with increasing private motorisation, is exacerbating traffic congestion and pollution in most Indian cities. Development of efficient mass transport (transit) and promotion of non-motorised transport (NMT) modes, like walking and cycling, are widely suggested as solutions to improve the situation. Hence, many cities are planning new metro rail systems on the pattern of Delhi Metro, though the attempts to promote NMTs are at best sporadic.

Last-Mile Trips

Delhi Metro is a resounding "project management" success story in an environment where time and cost overrun in projects is a norm. Its operational performance over last decade has also been good. However, it is important to critically evaluate the effectiveness of metro rail systems and other public transport alternatives to improve mobility in our cities.

Despite peak-hour crowding due to capacity constraints, Delhi Metro supports less than one-sixth of all commuting trips. The metro ridership and its modal share are quite low in Delhi as compared to metro systems in most of the big cities like Tokyo, New York and Hong Kong. One plausible reason for low ridership could be the low density of the network, but the other real reason is a costly and inconvenient last-mile trip (trip from home or office to the metro station and vice versa). A survey on lines 5 and 6, commissioned by Delhi Metro in 2011, supports this finding. In a dense but sprawled-out city like Delhi, an efficient last-mile is important to increase the effective catchment area of metro stations.

The project reports for Delhi metro included an extensive feeder bus planning about the routes and the number of buses. However, the actual number of buses is less than one-tenth of the recommended numbers. Walking and cycling are considered the most efficient last-mile modes but there is hardly any infrastructure for safe cycling or walking in Delhi. Only the poor people are compelled to cycle under unsafe conditions due to lack of an affordable alternative.

Overall, cycling has a modal share of about 5% in Delhi but less than 1% of metro commuters choose to cycle for the last-mile. It also suggests that the metro fares are unaffordable for a large section of the poor and they rather need better NMT infrastructure and a cheaper public transport option like buses. Even the commuters, who can afford metro fares, have no choice but to depend on a costly and unreliable auto/cycle-rickshaw for the last-mile trip. It drives them away from the metro unless they stand to make significant gains in travel time due to metro's speed advantage.

This fact is brought out by an unusually high average trip length on Delhi Metro which, at 15 km, is the highest amongst the major metro systems in the world (see Figure, p 25). Emergence of e-rickshaws in Delhi over 2011–13, as a popular mode during last two years further indicates existence of a huge unfulfilled

Figure: Average Metro Trip Lengths across Cities
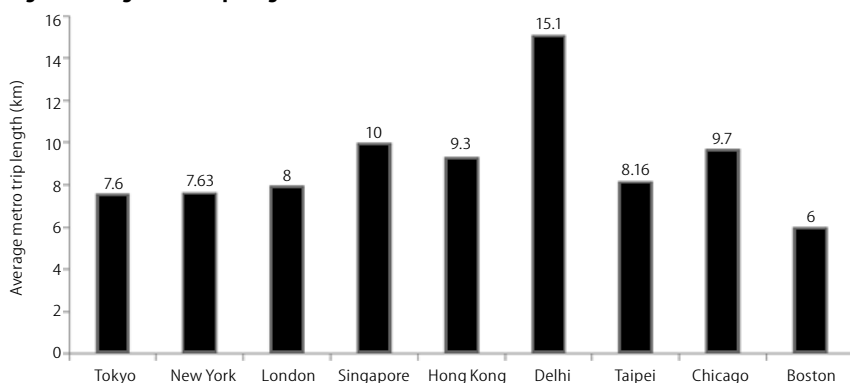
demand for a cheap last-mile mode. It is no sheer coincidence that the Delhi metro registered a more than 30% jump in ridership over the last two years (without commissioning of any new line) suggesting a causative link with the e-rickshaws.

Besides Delhi Metro, there are many examples of commuter rail projects being underutilised due to a poor last-mile access. Delhi ring rail is a case in point.

Transport Planning

Lack of good last-mile infrastructure is the result of a systemic malaise in our urban transport planning. To compete successfully with cars and motorcycles, public transport must strive to provide a door-to-door service to commuters, but our transport planning is based on aggregate flows. This flawed approach not only results in an inappropriate choice of mass transport system, but also leads to neglect of the last-mile infrastructure. It is assumed that the municipal authorities will develop walking and cycling infrastructure, while the feeder buses are planned without making any financial commitment in the metro budget.

National Urban Transport Policy (NUTP) as laid out by the Ministry of Urban Development in 2006 makes all the right noises about promotion of public transport, walking and cycling. Though NUTP discusses suitability of different mass transport systems like metro rail, bus rapid transit (BRT) and sky bus in different urban contexts, it does not mandate a minimum investment on the last-mile infrastructure as a part of different mass transport projects. Nevertheless, there are a few initiatives by some cities like Chennai where the municipal corporation has earmarked 60% of its

transport budget to improving NMT infrastructure with a special focus on the last-mile access to mass transits. It is a step in the right direction which other cities should emulate. Ideally, last-mile infrastructure should be developed as an integral part of a mass transport project to avoid the problems in retrofitting.

The central government has suggested population based norms to propose metro rail or BRT systems in cities. It is a reactionary approach. Urban transport is an integral part of urban planning. A proactive mass transit policy, coupled with a transit-oriented development (TOD), can obviate the haphazard growth as witnessed in our cities. Besides, choice of a mass transit system should depend on the urban form, space availability and travel patterns in a city rather than just the population numbers. For example, BRT could be an efficient and cost-effective choice to handle urban growth in new areas due to its low fixed cost and easy scalability. A smart public transport system is a sine qua non for a

smart city. There are many successful examples of mass-transport-centred urban planning all over the world ranging from Singapore to Copenhagen. There are also many instances of failures, especially satellite cities, due to a poor public transport.

Transport Demand Management

Besides a good public transport, curbing demand for car travel is crucial. Congestion pricing, vehicle quotas and parking restrictions are some of the tools for managing private vehicle usage. However, there are political and technical difficulties in implementing these policies. Out of these, parking policy is a powerful tool which is relatively easy to implement. By controlling the supply and pricing of parking spaces, commuters can be nudged to use public transport.

However, our cities have not used parking policies effectively due to lack of good public transport options. With improvements in public transport and NMT infrastructure, municipal authorities get an opportunity to tweak parking policies. A city should have different parking requirements and rates for different areas depending on the ease and quality of public transport access. It can be done objectively by using an index similar to the public transport accessibility level as used in London.

In short, smart cities need a people-centric, proactive transport planning with public transport as the hub and NMT as spokes. It is high time we redefine public transport as the transport required by the public and not just publicly-funded transport.