

Thredbo 12

Workshop 2

BUS RAPID TRANSIT (AS PART OF ENHANCED SERVICE PROVISION)



Findings

- **Cities urgently need mobility improvements.**
 - These improvements must meet the door to door connectivity.
 - BRT must be conceived as part of a multimodal mobility system.
 - All dimensions should be considered -institutional, financial, operational, etc.
- **Successful examples are vital as inspiration, but need to be customized.**
 - BRT transition and implementation may be difficult - too many agents
 - BRT has been often asked to solve too many problems and pick-up several bills
 - BRT projects tend to be scaled down to a point their impact is shrunk





Findings

- **To address the mobility challenge using BRT, we need to understand:**
 - **Transportation needs**
 - **Policy objectives for BRT implementation**
 - **That context matters implying constraints and opportunities to the process**
 - **Institution, urban, social, cultural, economic, political, timing**
 - **BRT needs to win the heart of the citizens**

- **Desirable ingredients for success**
 - **National transit policy and guidelines**
 - **Political leadership and support**
 - **Institutional framework**
 - **Stakeholder buy-in**
 - **Technical, legal, financial capacities (good process and project design and implementation)**
 - **Adequate level of funding (including possible subsidies)**



TransMilenio, Bogota



Photo: EMBARQ

Findings

- **The BRT concept is flexible and can be adapted to a wide variety of contexts.**
- **Capacity can reach over 45,000 pphpd – passing lanes, large stations**
- **Simulation shows capacities of up to 15,000 pphpd on a single lane.**
- **Stations usually become bottlenecks first**
- **Stations and intersections need to be properly engineered**
- **Express services are crucial to improve capacity!**
They also improve quality of the travel experience and reduce costs



Guangzhou, China



Findings

- **Headway control is crucial in the performance in terms of waiting time, travel time, reliability and comfort.**
- **Lack of control puts pressure on the authority for buying more buses.**
- **Leapfrogging is not needed – easy, safe operation**
- **Opportunity for ITS to be used in the most productive way to improve performance.**
- **There is much to lose if some elements are not in place!**



Delhi, India



Photo: EMBARQ

Findings

- **Capital investments requirements for BRT are significantly lower than rail-based modes**
 - Equivalent high quality BRT is a third cheaper than light rail to build (e.g.: Reading, UK)
- **BRT allows for staged conversion and could be less vulnerable to funding issues than 'all or nothing' LRT**
- **Emissions are similar if advanced BRT vehicles are used (CO2 very similar, NOx higher for BRT, particulates lower)**
- **Very high quality BRT can attract demand at a commercial fare**
(e.g.: Cambridge, UK)





Cambridge Busway, UK

Images: Potter



Findings

- **BRT is leaving its pioneering phase and needs some more formalization within our institutions and policies.**



Research questions

- **How effective is BRT in affecting car or motorcycle use or ownership? What policies can boost its effectiveness?**
- **What roles can para-transit play in a BRT-based transit network? Can we have a hybrid system? Can we formalize this sector without the need of BRT projects?**
- **Safety design and operational guidance is needed for BRT operation and infrastructure (e.g. buses transporting standees, interaction with pedestrians, etc.).**
- **How does system design affect universal accessibility?**
- **We need to understand better the needs of different user groups (children, elderly and women)**



Research questions

- How effective is BRT in land use densification?
- Evidence needs to be gathered regarding BRT economic and social impacts.
- Under which conditions BRT systems can recover all operational costs (including vehicles)? At what tariff? How does it compare with the modes BRT replaces?
- Are subsidies required (magnitude, focus)?
- Is market segmentation applicable (e.g. A/C, seat)? Is it desirable?
- What capacities are needed for the implementation agency?
- When is a trunk and feeder system preferable to one based on direct service?
- How complicated networks and services explained to a user?



Pereira, Colombia



Photos Courtesy Megabus, Pereira, Colombia



Types of Bus-based transit According to Transport Demand Needs and Urban Environment*

Type	Main Features	Throughput/ Performance	Application
Basic Bus Corridor	Median or curbside lanes, on board payment, conventional buses	500-5,000 pphpd 12-15 km/h	Low density corridors, suburbs
Bus of High Level of Service BHLS	Infrastructure, technology and advanced vehicles for enhanced service provision	500-2,500+ pphpd 15-35 km/h	Small urban areas, historic downtown, suburbs
Medium BRT	Single median lanes, off board payment, information technologies	5,000-15,000 pphpd 18-23 km/h	Medium density corridors, suburb/center connections
High Capacity BRT	Dual median lanes physically separated, large stations with prepayment, large buses, information technologies, combined services	15,000-45,000 pphpd 20-40 km/h	High demand, dense, mixed use corridors, central city

* Variations apply, need to design according to local context,