The Dar es Salaam Bus Rapid Transit (BRT) system

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Outline

• Context
• BRT Network Design
• Dar BRT Implementation
• BRT Operations and Impacts
• Challenges – Teething problems
• TOD Piloting
• Scaling up
• Road safety
• Impact Evaluation Pilots
African Cities are Crowded, Disconnected & Costly (2017 Report)

Typical African cities share three features that constrain urban development and create daily challenges for residents:

Crowded, not economically dense — investments in infrastructure, industrial and commercial structures have not kept pace with the concentration of people, nor have investments in affordable formal housing; congestion and its costs overwhelm the benefits of urban concentration.

Disconnected — cities have developed as collections of small and fragmented neighborhoods, lacking reliable transportation and limiting workers' job opportunities while preventing firms from reaping scale and agglomeration benefits.

Costly for households and for firms — high nominal wages and transaction costs deter investors and trading partners, especially in regionally and internationally tradable sectors; workers' high food, housing, and transport costs increase labor costs to firms and thus reduce expected returns on investment.
Dar es Salaam

- 3rd Most Rapidly Urbanizing City in Africa
- Outdated Land-use Master -> dated 1979
- Massive Traffic Congestion
Deep-diving to Appreciate Root causes!

Conclusion: Disproportionate allocation of Road Space exacerbate traffic Congestion and Commuter Frustrations!
An **Integrated** BRT Trunk Network Developed & Approved by Government in 2007

Implementation Plan!

- Phase 1 (2009) – 20.9 km
- Phase 2 (2013) – 19.3 km
- Phase 3 (2017) – 22.6 km
- Phase 4 (2021) –
- Phase 5 (2025) –
- Phase 6 (2035) –
- Total: 137 km

<table>
<thead>
<tr>
<th>Location</th>
<th>System</th>
<th>Peak passengers per hour per direction</th>
<th>Passengers per day</th>
<th>Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bogotá</td>
<td>TransMilenio</td>
<td>35,000 - 40,000</td>
<td>2,154,981</td>
<td>106</td>
</tr>
<tr>
<td>Guangzhou</td>
<td>Guangzhou Bus Rapid Transit</td>
<td>28,900</td>
<td>1,000,000</td>
<td>22</td>
</tr>
<tr>
<td>Curitiba, Brazil</td>
<td>Rede Integrada de transporte</td>
<td>13,900 – 24,100</td>
<td>508,000 (2,260,000 inc. feeder lines)</td>
<td>81</td>
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<tr>
<td>Mexico City, Mexico</td>
<td>Mexico City Metrobus</td>
<td>18,500 (Station based)</td>
<td>1,800,000</td>
<td>140</td>
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<tr>
<td>Belo Horizonte, Brazil</td>
<td>Sistema MOVE</td>
<td>15,800 – 20,300</td>
<td>1,100,000</td>
<td>24</td>
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<tr>
<td>Istanbul</td>
<td>Metrolbus (Istanbul)</td>
<td>7,300 – 19,500</td>
<td>800,000</td>
<td>52</td>
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<tr>
<td>New Jersey</td>
<td>Lincoln Tunnel XBL</td>
<td>15,500</td>
<td>62,000 (4 hour morning peak only)</td>
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<tr>
<td>Brisbane</td>
<td>South East Busway</td>
<td>15,000</td>
<td></td>
<td>23</td>
</tr>
</tbody>
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**Adopt and Adapt! V**
Governance

• BRT Conceived by Dar es Salaam City Council – Mayor’s Vision
• DCC Project Implementation Team led Preparation
• DCC capacity & mandate challenges

• Dar Rapid Transit Agency (DART) created under Ministry of Local Government
• Oversight by Ministerial Advisory Board reporting to Ministry

Implementation: City Council & Municipal Roles Overshadowed by Central Government (TANROADS – Infra; DART – RAP & Operations)
BRT Phase 1: 2008 - 2016

Infrastructure:
• 21km trunk corridor
• 27 stations;
• 5 terminals
• 1 depot; 4 transfer stations
Infra Implementation Challenges

• Delays in the implementation of Resettlement Action Plan
  – Capacity, Coordination, Fund Release, Change of Land-use, BRT Only street

• Failures in initial Procurement process in 2008

• Inadequate Engineering Designs
  – Unmapped ground utilities
  – Weak supervision engineer

• Infrastructure Cost overruns
Preparations for BRT Operations

- Private Sector Operators (PPP)
  - Bus Operator 1 (Interim Operator)
  - Bus Operator 2 (Competitively selected)
  - Fare Collector & ITS Operator (Competitive)
  - Fund Manager (Competitive)
- Transaction Advisors hired 2014
- Road Show – June 2014
- Buses (305 Nos total):
  - Trunk (150psgr) – 177 Nos.
  - Feeder Buses (80psgr) – 128 Nos
- PPP Process for Competitive Packages is yet to be Concluded!
Contracting of an Interim BRT Operator

- Interim Service Providers (ISP) for Trial Services
- Existing Minibus Operators – under former public operator (UDA)
- ISP Contract signed on April 24, 2015 for supply of:
  - 5 BRT Trunk Articulated Buses (18-m of 150psgrs)
  - 71 BRT Feeder Buses (12-m of 80psgrs)
  - Simple Electronic Ticketing system (Not AFCS)
- Mismatch with Actual Supplied Services (Aug. 2015):
  - 39 Trunk Articulated Buses; 101 Feeder BRT Buses & AFCS with ITS

Contract Renegotiated to accommodate all services 2016 & Services Commenced in May 2016
Impact of Interim Operations (200,000 psgrs/day)
Dar es Salaam secured ITDP Sustainable Transport Award 2018
First African City to be awarded (Mobilize Conf. June 26-29, 2018)
Reputational Challenges – Teething Problems

- Deterioration of Operations
  - Overcrowded Buses
    - Discomfort
    - GBV
  - Long Ticketing Queues
  - Unreliability of Services
  - High Driver Turnover
- Inadequate DART Capacity
- Court Injunctions by the ISP
- Hesitation in PPP processing
- Flooding along the Trunk line
- Inadequate Communication
Mountains of Challenges: => Power of Social Media
Climate Resilience? Passenger Frustrations, etc
BRT as Launch Pad for Land-use Planning - TOD
Intensive Engagement (Two Years)

8 Key Principles!

1. Integrated land use and transport planning
2. Create a range of densities and opportunities
3. A focus on mixed use development
4. Quality, high capacity, fast transport services
5. Excellent access and walkability
6. Quality placemaking and vibrant communities
7. Viable and suitable for the local context
8. Return on investment for infrastructure spending

Stakeholders Consultation & Public Exhibition
Corridor Analysis – Ridership, Accessibility
Phase 1 Corridor Development Framework
Framework Land-use, Employment & Residential Density

Land Use Framework

- Structure for investment and growth

Employment Density

- Accessible jobs for all communities

Residential Density

- Focused at stations and nodes
- Along corridor and feeders
- New affordable homes beyond Ubungo
- Risk areas prioritised and mitigated
- Better slum homes and infrastructure
Scaling up BRT Support through WB & AfDB support

Supporting BRT1 infra & Operations; Implement BRT 3 & 4 (WB) and BRT2 (AfDB)
Road Safety Improvements with BRT: iRAP
Star Ratings for BRT 2, 3 & 4
BRT Impact Evaluation

Does BRT Operations:
• Reduce travel times?
• Improve safety and security of commuters?
• Create jobs and boost income?
• Encourage firm productivity, trade and growth?
• Improve property values?
• Increase the health, wealth and happiness of Dar residents – especially the poor?
Dar BRT is Still Works-in-Progress!  
A Continuous Learning Process and Pushing ahead!