Korean “Metropolitan” BRT Experiences and Policy Lessons

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Introduction

Current Status

Problems

Lessons
Introduction
Metropolitan BRT

BRT lines which connect more than two local governments, such as Seoul city and Gyeonggi province
Introduction of BRT System

❖ Necessity of BRT System

Road investment

Causes Overuse of Private Passenger Cars and cannot serve to reduce traffic congestion

MRT

Requires Excessive Construction Cost and leads to Huge Financial Burdens on Governments

BRT [‘Subway on Land’]

: On-Time Performance of Railway + Flexibility of Bus
: Restriction on the Overuse of Private Passenger Cars
# Introduction of BRT System

## Types of BRT in Korea

<table>
<thead>
<tr>
<th>Type</th>
<th>Vehicles</th>
<th>Runway</th>
<th>Intersection</th>
<th>Station</th>
<th>Transfer Facilities</th>
<th>Operation management system</th>
<th>Recommended average Speed (Km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Transport Type</td>
<td>Special vehicle</td>
<td>Exclusive road/separate</td>
<td>Elevated or Under-ground</td>
<td>Payment at the station</td>
<td>Included</td>
<td>Dedicated system for BRT</td>
<td>35</td>
</tr>
<tr>
<td>General Type</td>
<td>Regular bus</td>
<td>Exclusive lane/mixed with other buses</td>
<td>Partially/Priority signaling</td>
<td>Payment on the bus</td>
<td>Partially</td>
<td>BMS/BIS</td>
<td>20</td>
</tr>
</tbody>
</table>

MLTM, *Planning codes of BRT*, Korea, 2010
Current Status
Policies of Central Government

Promoting to handle metropolitan traffic demand and congestion

- Central Government’s subsidy ratio:
  Metropolitan BRT: 50%, City BRT: 25%(Seoul), 50%(Other cities but Seoul)

BRT considered as an effective public transport strategy with low cost and high efficiency

- Creation of a convenient and speedy public transport through the extensive implementation of BRT
# Current Status

## Metropolitan BRT Lines

<table>
<thead>
<tr>
<th>Classification</th>
<th>Period</th>
<th>Origin and destination</th>
<th>Length</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hanam ~ Cheonho</td>
<td>2006-2013</td>
<td>Changu-dong, Hanam ~ Cheonho station, Seoul</td>
<td>10.5km</td>
<td>General Type (Mixed)</td>
</tr>
<tr>
<td>Cheongla ~ Gangseo (1st phase)</td>
<td>2006-2013</td>
<td>Cheongla ~ Gayang, Seoul</td>
<td>19.6km</td>
<td>General Type (Separate)</td>
</tr>
<tr>
<td>Daejon ~ Osong</td>
<td>2009-2012</td>
<td>Daejeon Banseok station ~ Sejong ~ Osong KTX station</td>
<td>31.2km</td>
<td>New Transport Type (Elevated/underground)</td>
</tr>
</tbody>
</table>
Current Status

❖ Hanam – Cheonho BRT

- Opened in 2011.03
- Public transportation to reduce traffic jam
  - Increase of operation speed by 9.3%, ridership by 23.5%
  - Improvement in punctual services

Current Status

❖ Cheongla-Gangseo BRT (1st phase)

- Increase of operation speed: 6.1~15.2%
- Transfer rate from private passenger cars: 16.5%

Source: MTA, 2014
Current Status

❖ City BRT Lines

- 18 lines are running in Seoul, Gyeonggi, and Daejon area
  - Local city governments construct median bus lane with the operation of private bus companies

<table>
<thead>
<tr>
<th>Classification</th>
<th>Seoul</th>
<th>Gyeonggi</th>
<th>Daejeon</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Line</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Total Length (km)</td>
<td>110.2</td>
<td>26.8</td>
<td>8.1</td>
<td>145.1</td>
</tr>
</tbody>
</table>
CITY BRT in Seoul
Expansion Plan of Metropolitan BRT

- 『2nd Metropolitan BRT Expansion Plan』 in 2010
- The central government has chosen 20 BRT lines in Seoul metropolitan area as possible projects in the future
Problems
Problems

❖ Lowering of BRT Level

Planned as a new transport type of BRT

Over cost estimation of elevated and underground constructions
Declining of economic feasibility
Limitation from existing transport infrastructure

Downgraded to a general(low-level) type of BRT
Problems

- Local government prefer urban railway to BRT
  - Insufficient differentiation between BRT and bus services
- Lack of understanding of BRT’s role as an alternative to urban railways
  - Increase of citizens’ complaints due to the reduced lane for car users and the inconvenience from the prohibition of u-turn and left turn

❖ Negative Image of BRT
Problems

Low Subsidy Rate on BRT

- Low subsidy rate act as a hindrance factor for promoting BRT
  - Financial burden to local government
  - Gyeonggi province reduced its rate of BRT subsidy since 2010:
    25% $\Rightarrow$ 15%
  - Cost share ratio of BRT in Gyeonggi province = government (50) : province (15) : city (35)

<table>
<thead>
<tr>
<th>Classification</th>
<th>BRT</th>
<th>Urban Railway</th>
<th>MRT(Subway)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of State Subsidy (%)</td>
<td>50%(Metropolitan BRT)</td>
<td>70%</td>
<td>40%(Seoul)</td>
</tr>
<tr>
<td></td>
<td>25%(City BRT)</td>
<td></td>
<td>60%(Other area)</td>
</tr>
</tbody>
</table>
Problems

❖ Limitation of Using BRT Subsidy

- Difficulty of BRT subsidy use
  - Excluding the compensation costs of land and road-widening from using BRT subsidy
  - Road-widening is inevitable for the partial section of BRT line due to the obstacles (underground road way, four-lane road, space shortage, etc)

Problems

❖ Conflict among Local Governments

- Relatively low benefits of local governments which have passing BRT stations

  - Opposition from local governments with stopover stops and final stops.
  - Cause of objection
    : Co-sharing of the same portion of the construction costs by length
    Ex) Seoul and Buchon city against cost sharing with Incheon city for the construction of the Cheongla (Incheon) ~ Gangseo (Seoul) BRT

  : Citizens’ complaints mainly from private car users due to the reduction of street lane and inconvenience from the prohibition of U-turn and left turn
Problems

❖ Lack of Discussion about Operation and Management Plan

- Deficiency of serious research and discussion on operation and management strategy after construction
  - Delay of the Cheongla ~ Gangseo BRT project because of the lack of operation plan among three local government in
  - Absence of conflict resolution procedure leads to difficulty in implementation
Problems

❖ Absence of BRT Legal System

- Lack of legal system for supporting BRT Implementation
  - Transit operation business, road, transfer facility, fare, vehicle, and signal system are separately controlled by different laws
  - Existing laws and regulations are not securing BRT’s integration requirement for the success of BRT operation
Lessons

❖ **Selection of Highly Implementable Lines**

- BRT lines need to secure continuity & connectivity among local governments
  - Consideration of the changes of transport environment (urban redevelopment, delayed development of new towns etc)
  - Reflection of newly operation and plan of urban railway lines, housing development plan
  - BRT expansion plan requires a lot of changes, according to the strong will of local governments
Lessons

❖ Development of New Transport Type of BRT Line

- Looking for High-level BRT projects
  - Meet traffic demands by 2-phased implementation: First, BRT and second, Urban railways
  - Recommend new transport type of BRT at newly developing new towns
  - On existing roads in old towns, a general type of BRT needs to be built
Lessons

❖ Increase of Subsidy Ratio

- Increase of central government’s support for metropolitan BRT projects
  - Revise government subsidy rate upward according that of urban railways (50→70%)
  - Allow government to provide financial aids for operation deficits at an starting period
  - Permit government to use BRT subsidy for the costs of road widening or building
Lessons

❖ Operation and Management Plan

- Metropolitan BRT across more than 2 cities needs distinct agreement about its operation plan
  - Specification about operator and management, sharing financial burdens, and conflict resolution system
  - Clear recognition and licensing system of BRT lines for involved local governments
Lessons

- **Improved Policy Acceptance and Conflict management**
  - Secure policy acceptance and strategies for conflict management
    - Consider not only economic feasibility but also conflicts during the implementation (local government–central government, local government-local government)
    - Differentiate the cost sharing portion of local government by the size of benefits after completion
      - Local government of starting stop: revise 50% upward of cost sharing
      - Local government of stopover and last stop: revise 50% downward
Problems

❖ Creation of Metropolitan Transport Authority (MTA)

- Effectively construct, operate, manage metropolitan BRT lines
  - Cities involved in metropolitan BRT have different views of line, stop, starting and final stops, facilities etc
  - To solve fundamental problems of metropolitan transport, MTA is required to be created

EX) STIF of France, MTA of New York, WAMATA in Washington DC, RTA in Chicago area etc
Lessons

 Legislation of BRT Act

- **Enactment of BRT Law**
  - Including BRT planning, BRT licensing, revision of government subsidy ratio, operation management system, role assignment between central and local government, adjustment plan for BRT and ordinary bus lines, conflict resolution method between local governments, and performance management etc.
  - A Special Law on Construction and Operation of BRT has been enacted in Korea on June, 2014
Success Factors of BRT

- Increase of Speed
- On Time Performance
- Convenience of Passengers
- Implementation of Transport Demand Control
- Improvement of Accessibility through Transfer Facilities
- Increase of Efficiency through Route Reform
- TOD (Transit-oriented Development)
Thank You!
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