

# Seoul BRT

**- Innovative system of meeting the travel demand -**

2010. 8. 24

(The 5<sup>th</sup> EST Forum in Bangkok)

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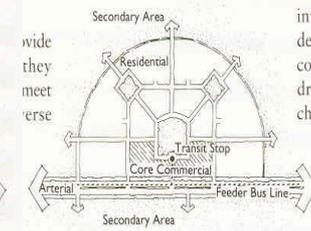
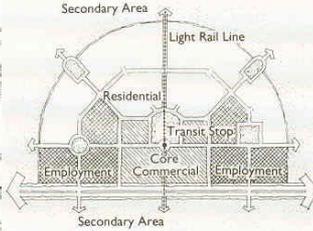
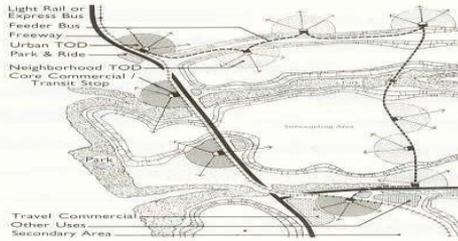
# Overview

**I. Introduction of the Seoul Metropolitan Areas**

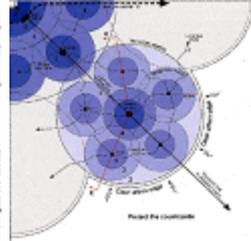
**II. Recent Travel Conditions and Patterns in the Seoul Metropolitan Areas**

**III. Bus Rapid Transit Policy in the Seoul Metropolitan Areas**





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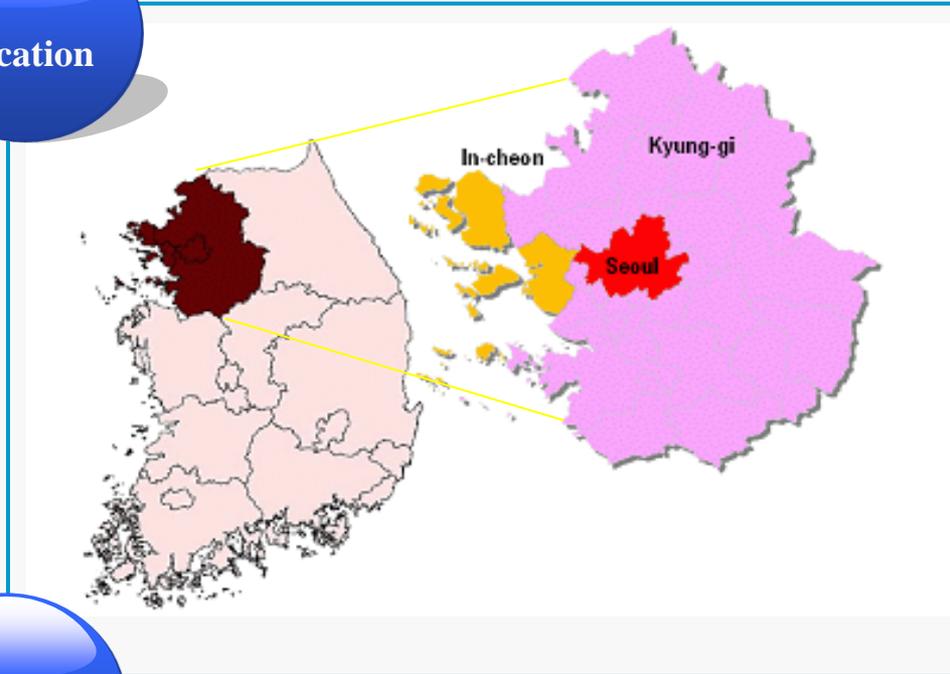


# I. Introduction of the Seoul Metropolitan Areas

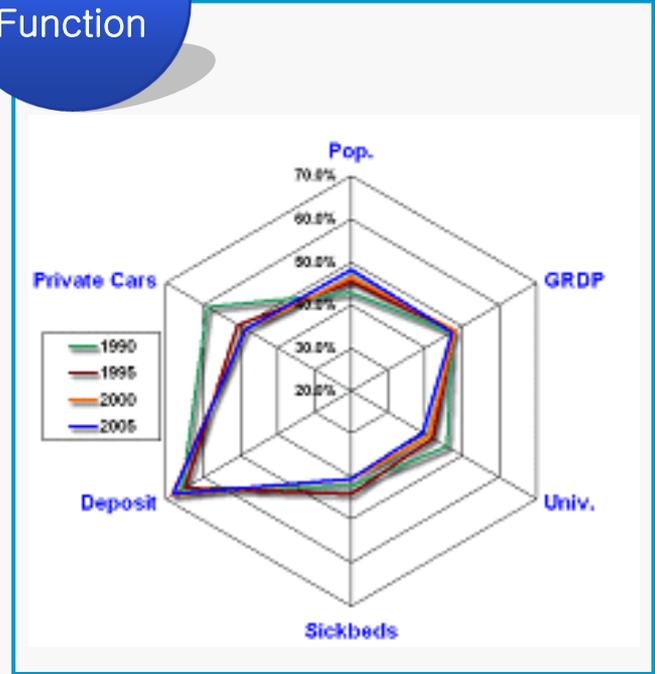
1. Area, Pop. and Economy
2. Suburbanization and Density

# 1. Location, Pop. and Economy

Location



Function



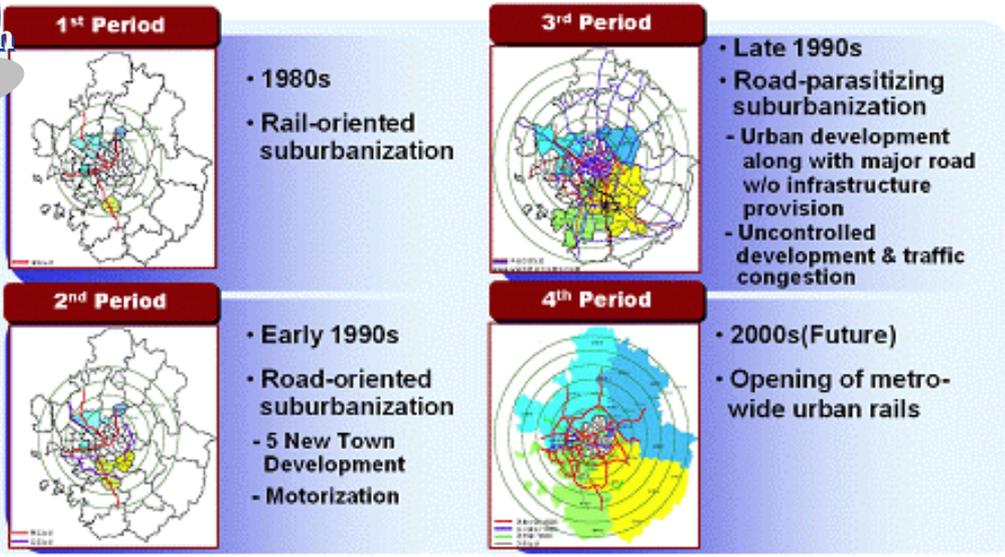
Pop., Area, & Economy

	Area (km <sup>2</sup> )	Population (1,000 person)	GRDP (billion \$)
Entire Korea	99,678 (100%)	49,624 (100%)	8,178 (100%)
SMA	11,739 (11.8%)	24,127 (48.6%)	3,870 (47.3%)
Seoul	605 (0.6%)	10,356 (20.9%)	1,851 (22.6%)
Incheon	1,002 (1.0%)	2,664 (5.4%)	379 (4.6%)
Kyunggi	10,132 (10.2%)	11,107 (22.4%)	1,640 (20.1%)



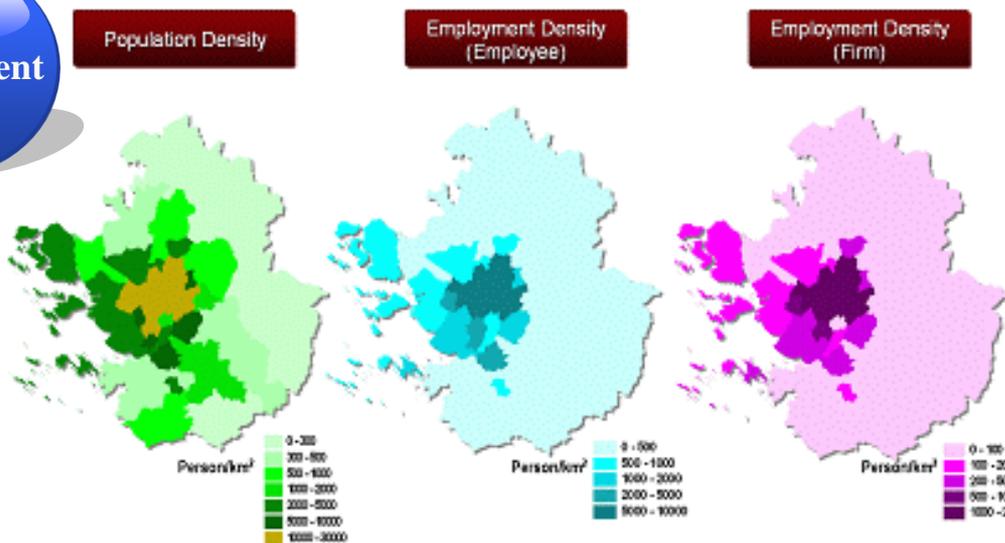
# 2. Suburbanization and Development Density

Suburbanization



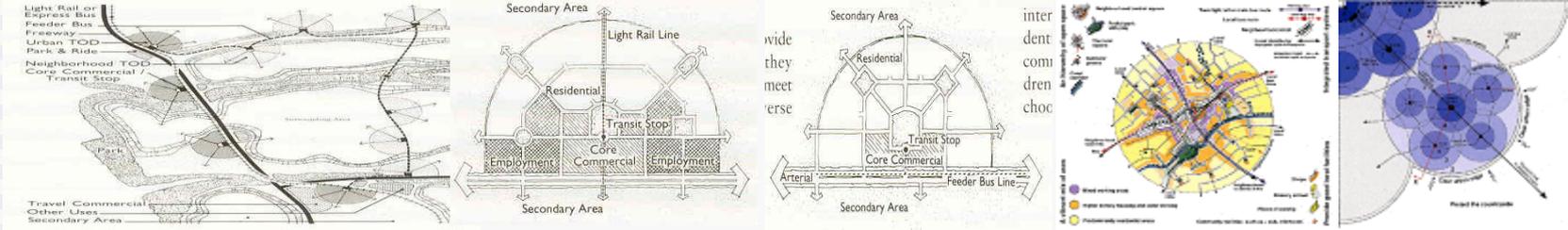
- **Early 1990s**
- **Housing-Oriented Sub.**
- **First-Dev. Then Transport**
- **Road-Oriented Tran. Pol.**

Development Density



	Pop. Density (1000 per./km <sup>2</sup> )	Employee Density (100Emp./km <sup>2</sup> )	Firm Density (100Firm/km <sup>2</sup> )
SMA	2.06	6.65	1.28
Seoul	17.12	64.37	12.13
Incheon	2.66	7.44	1.55
Kyunggi	1.10	3.12	0.61





## II. Recent Travel Conditions and Patterns in the Seoul Metropolitan Areas

1. Increasing Travel Demand and Modal Split
2. Increasing Travel Distance and Worsening Traffic Congestion

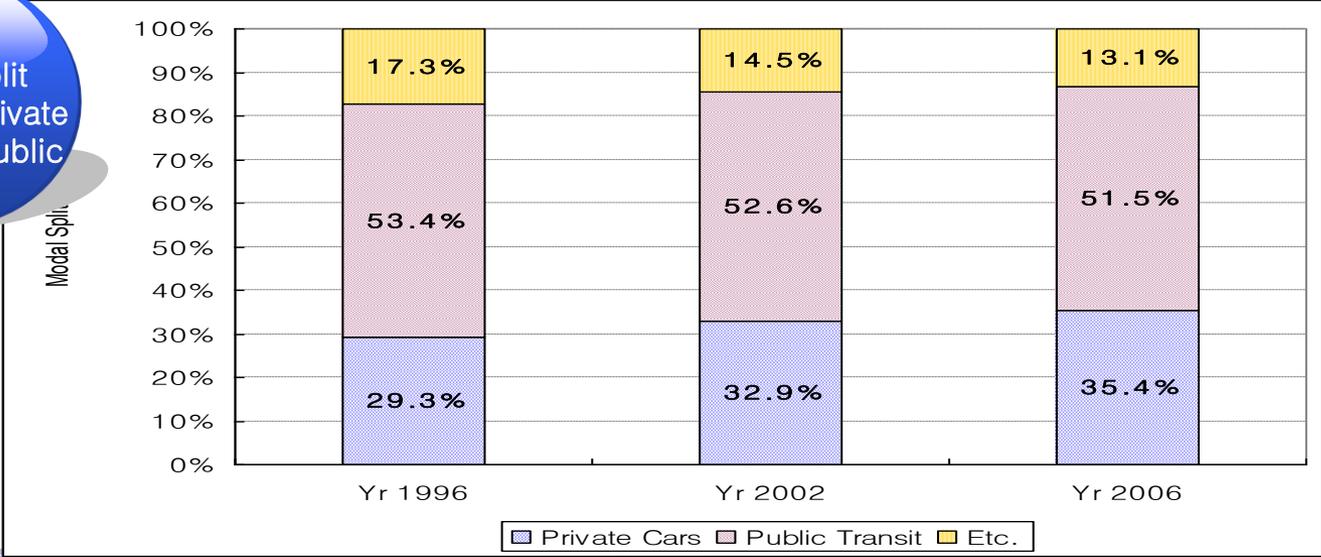
# 1. Increasing Travel Demand and Modal Split

II. Recent Travel Condition and Pattern in the Seoul Metropolitan Areas

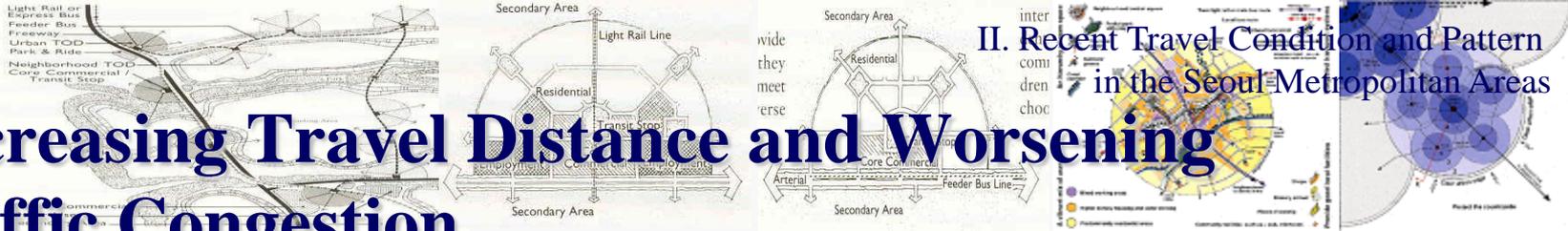
Trend of Population, Car Registration and Car Trips

		Population (1,000)	Car Registration (1,000)	Car Trips (1,000)
Metropolitan Area	Yr. 2002	22,877	6,484	4,748
	Yr. 2006	24,127	7,319	5,587
	Change (%)	5.5%	12.9%	17.7%
Seoul	Yr. 2002	10,281	2,691	2,054
	Yr. 2006	10,356	2,852	2,260
	Change (%)	0.7%	6.0%	10.0%

Modal Split  
Trend of Private Cars and Public Transit



# 2. Increasing Travel Distance and Worsening Traffic Congestion

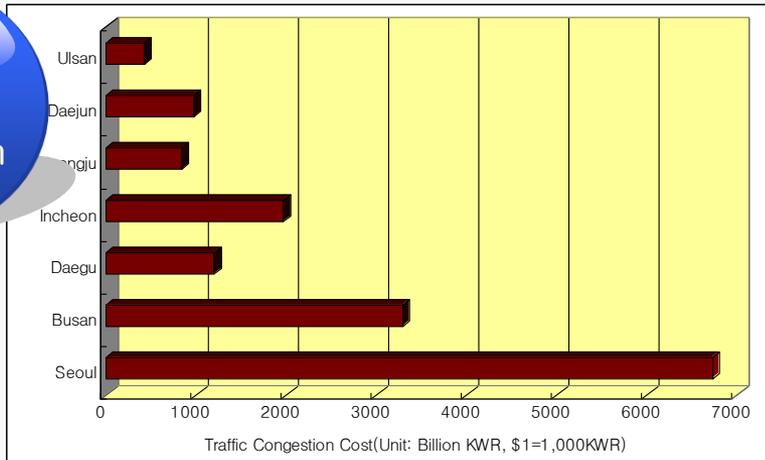


Change Trend of Commuting Distance

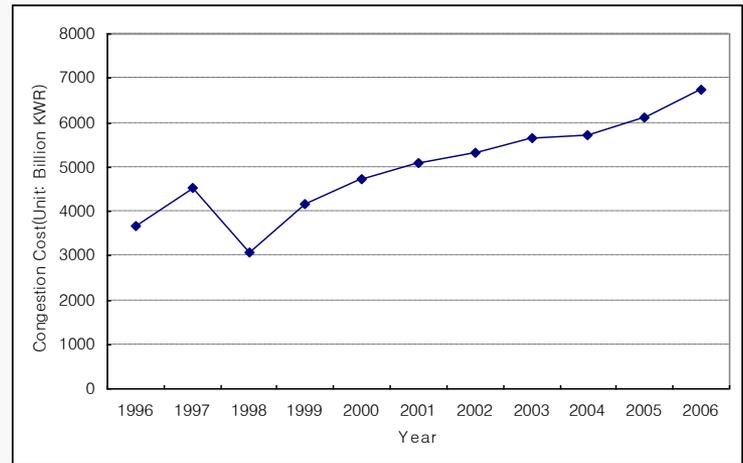
	Seoul	Incheon	Kyunggi	Metropolitan Area
Yr 1995	7.06km	6.31km	7.79km	7.37km
Yr 2000	6.58km	6.06km	8.19km	7.41km
Yr 2005	7.76km	6.92km	9.27km	8.49km
Change ('95~'05)	0.7km (110.02%)	0.61km (109.67%)	1.48km (119.00%)	1.12km (115.20%)

Source: Korea Transport Institute (2008) "Impacts of School Supply Policy on Transportation in the Seoul Metropolitan Area, Policy Meeting Report, p.53.

Road congestion costs

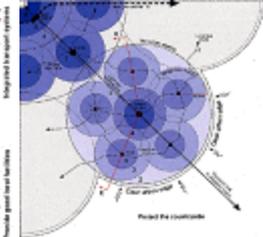
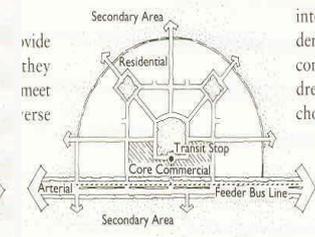
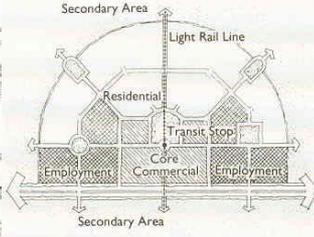
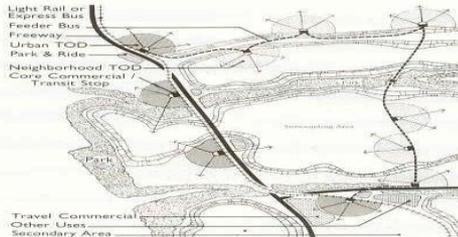


a) Congestion costs of major cities



(b) Trend of congestion costs for

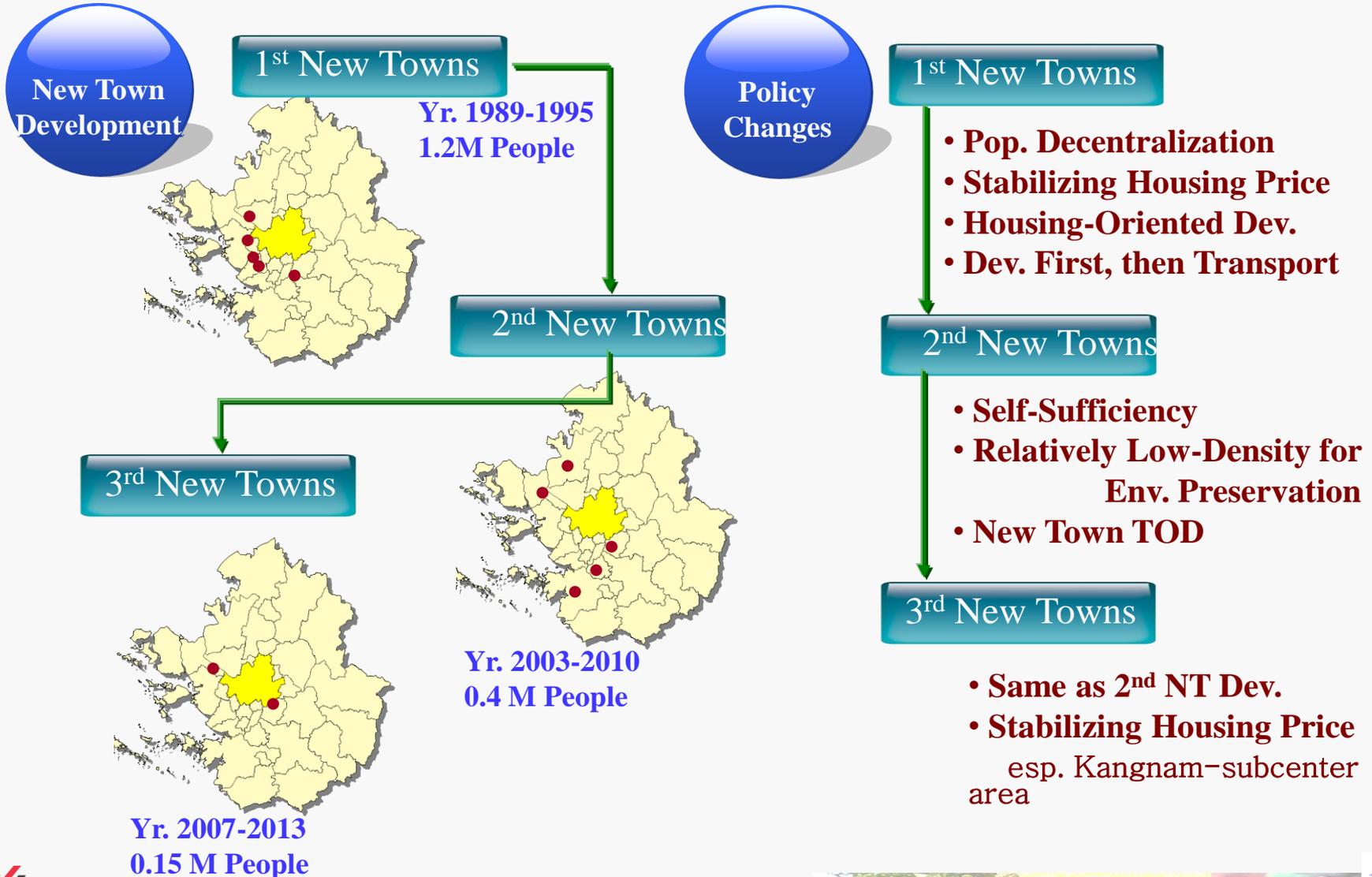
Source: Cho and Shim (2008)



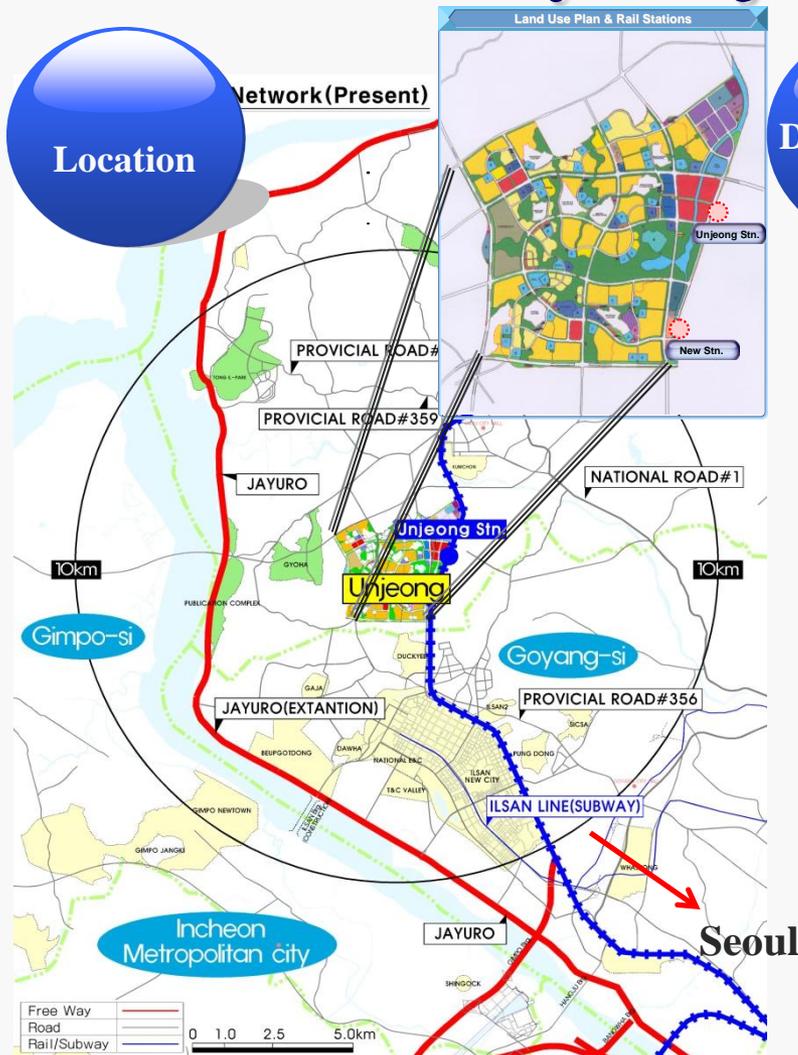
# III. Bus Rapid Transit Policy in the Seoul Metropolitan Areas

1. New Town Development and TOD
2. Case Study: Unjeong New Town TOD Project
3. TOD and Housing Policy in Seoul
4. Regional BRT Plan and Policy
5. BRT Operation and Construction Plan in the Seoul City

# 1. New Town Development and TOD



## 2. Case Study: Unjeong New Town TOD Prj.



Source: Kim(2006)

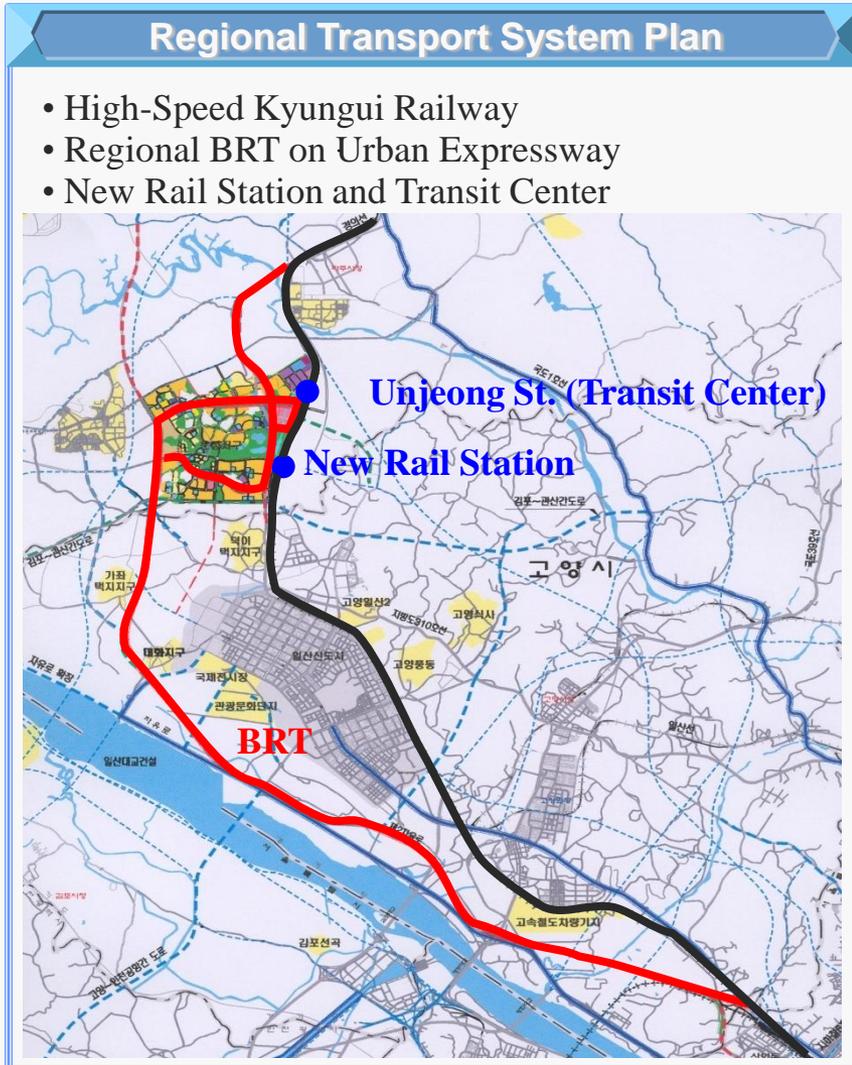


<b>Time Span</b>	2004.12~2009.12	
<b>Developer</b>	Korea National Housing Corporation + Paju City	
<b>Develop. Outline</b>	Area: 9,407,766 m <sup>2</sup> Population: 124,898 persons (46,256 households) Density: 133 persons/ha	
<b>Land Use Plan</b>	<b>Area</b>	<b>Ratio</b>
<b>Total</b>	9,407,766 m <sup>2</sup>	100.0%
<b>Residential</b>	3,248,327 m <sup>2</sup>	34.6%
<b>Park&amp; Green</b>	2,851,160 m <sup>2</sup>	30.3%
<b>Road</b>	1,446,830 m <sup>2</sup>	15.3%
<b>School</b>	488,002 m <sup>2</sup>	5.2%
<b>Commercial</b>	411,502 m <sup>2</sup>	4.4%
<b>Others</b>	1,264,274 m <sup>2</sup>	13.4%

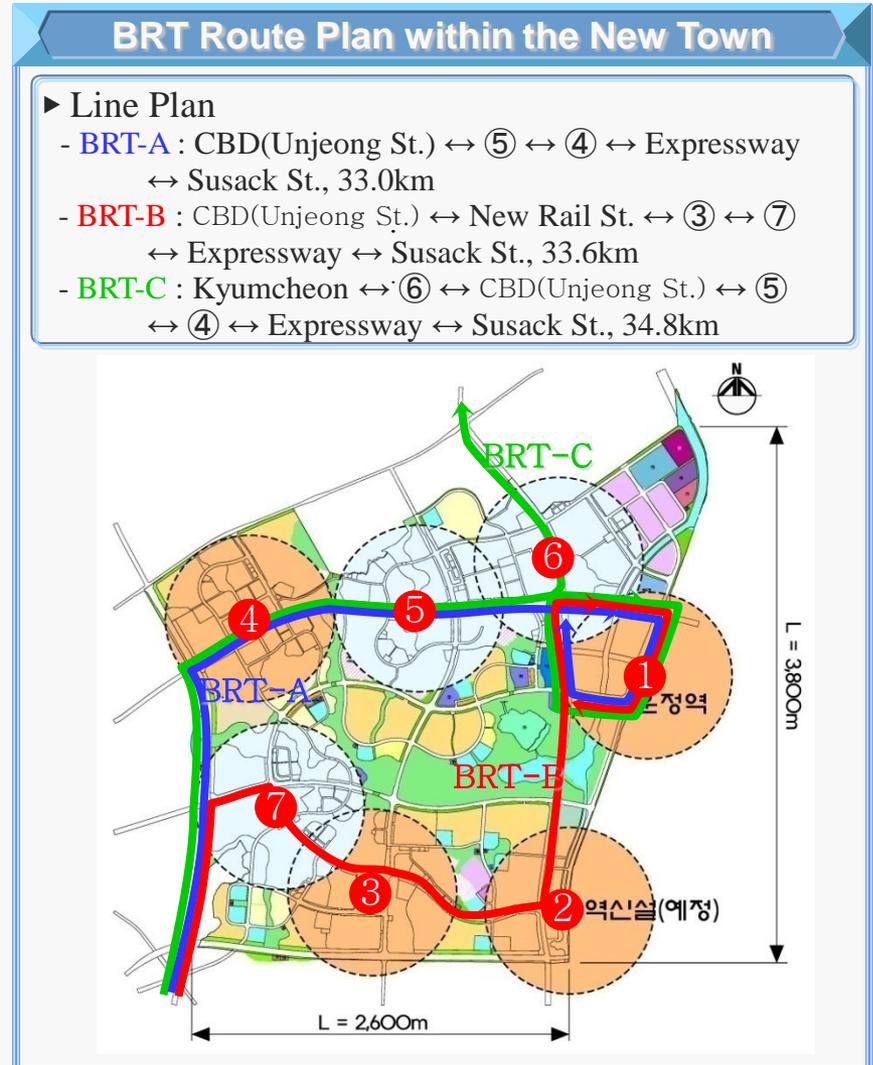
Source: Kho(2006)



## 2. Case Study: Unjeong New Town TOD Prj.



Source:Kho(2006)



Source:Kho(2006)



## 2. Case Study: Unjeong New Town TOD Prj.

### Unjeong St. Transit Center

#### ● Travel Demand of Unjeong St. in 2029

(Unit: Person/Day)

	Unjeong Station	Transfer Modes					
		Walking	Bus	Car		Taxi	Bike
				Park & Ride	Kiss & Ride		
Getting On	28,043	16,981	9,316	437	1,181	84	44
Getting Off	28,139	17,039	9,940	439		677	44

Location of Unjeong St. Transit Center



Source:Kho(2006)

Transit Center



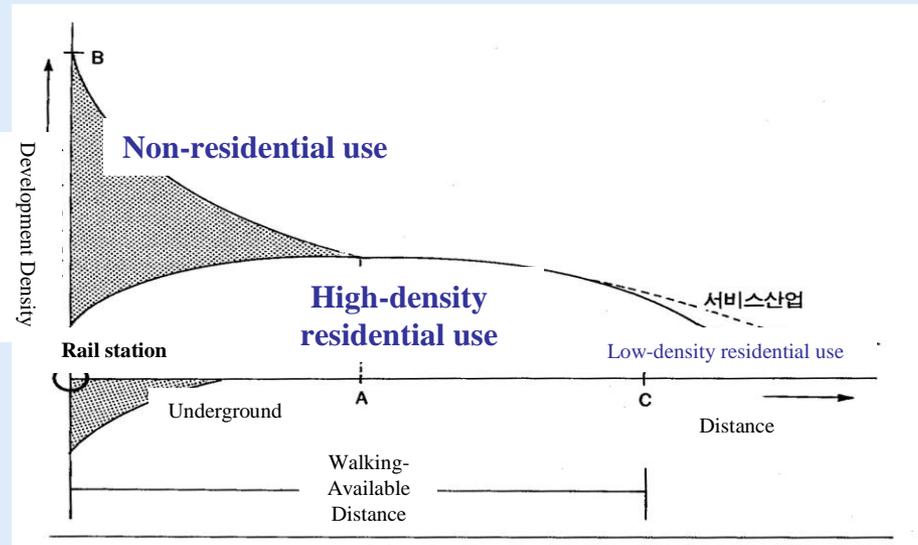
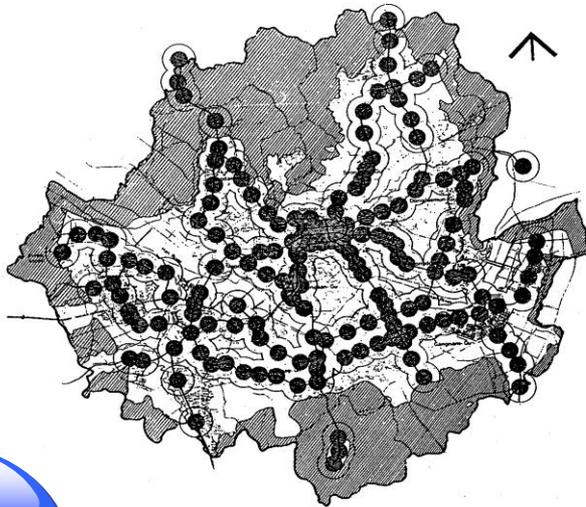
Source:Kho(2006)



# 3. TOD and Housing Supply Policy in the city of Seoul

## Rosario Concept

- Late Prof. Kang's "Rosario" Concept in 1980
- Coordination b/w subway construction plan and urban development within the city
- Inducing all development to accommodate population growth in 2000 (10 M people)
- Urban Comprehensive Plan (Yr 1992 and Yr 1997)
- However, not succeeded because of new town development by the central government



## Current Plan(2008)

- Housing Supply Plan for 160,000 HHs in the Rail Station Area until Yr. 2018
- Long-term rental housing for 30,000 HHs (Low-income group, the elderly, etc)
- Incentives: releasing such regulations as FAR, Height for development through upzoning

# 4. Regional BRT Plan and Policy

❖ Total 22 regional BRT Lines (540km) Planned in 2003

❖ Along with the areas not served by railways and to the city of Seoul

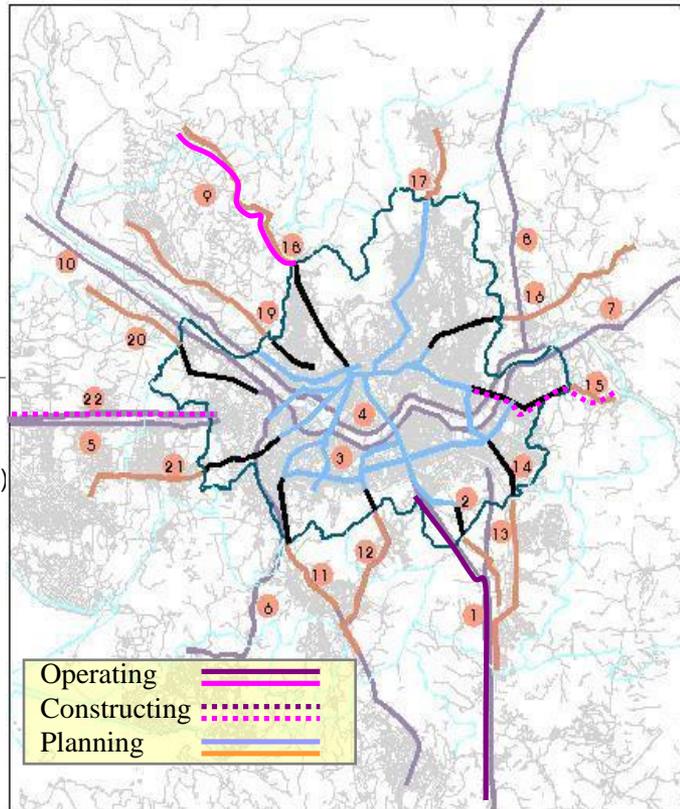
❖ Reflected to the 2nd Implementation Plan of Metropolitan Transportation (Yr. 2004~2008)

❖ 2 regional lines already operating and 2 regional lines constructing in 2008

### BRT Line Plans

- 1) Kyungbu Exp. (40.2km)
- 2) Bundang Urb. Exp. (9.8km)
- 3) Olympic Urb. Exp. (40.7km)
- 4) North Kangbyun Urb. Exp. (65.4km)
- 5) Kyungin Exp. (13.8km)
- 6) Ansan Exp. (29.8km)
- 7) Chuncheon Exp. (14.8km)
- 8) Phochun Exp. (53.4km)
- 9) Munsan Exp. (22.1km)
- 10) Kanghwa Exp. (17.4km)
- 11) National Road No.1 (14.8km)
- 12) Suwon~Sadang Road (30.0km)
- 13) National Support Road No.23 (18.8km)
- 14) Sungnam Road (22.2km)
- 15) Chunho Road (13.4km)
- 16) Seoul~Chuncheon Road (20.2km)
- 17) National Road No.3 (7.6km)
- 18) Tongil Road (29.5km)
- 19) Susak Road (19.5km)
- 20) National Road No.48 (25.5km)
- 21) Seoul~Incheon Road (19.2km)
- 22) Chungra~Hwagok Road (18.2km)

### BRT Routes and Plans



### BRT in Constructing

	Chungra BRT	Chunho BRT	Nangok BRT
Const. Period	2007 ~2012	2006 ~2010	2005 ~2009
Length	18.2km	10.5km	3.1 km
Total Cost (B KWR)	125.5 (73.5)	62.3 (24.9)	25.3 (17.1)
Developer	SMTA	SMTA	Seoul City

Note: The cost of ‘ ( ) ’ is financed by the central government; SMTA=Seoul Metropolitan Transportation Association

EXPRESSWAY

ARTERIAL ROAD



## 4. Regional BRT Plan and Policy

### Kyungbu Expressway BRT



- Opening in 2008
- Total Length = 44.8km
- Operating fr. 7 to 21 O'clock
- Kyungbu Inter-regional Expressway
- 190,000 → 250,000 trips per day

- Opening in 2006
- 24-hour operating on the arterial road
- Total Length = 15.6km
- Travel time decreased up to 11 min. for bus and 3 min. for car

### Susack BRT



## 5. BRT Planning and Policy in Seoul

- BRT in Seoul began with the reform of public transit system in 2004

### Bus System Reform in 2004



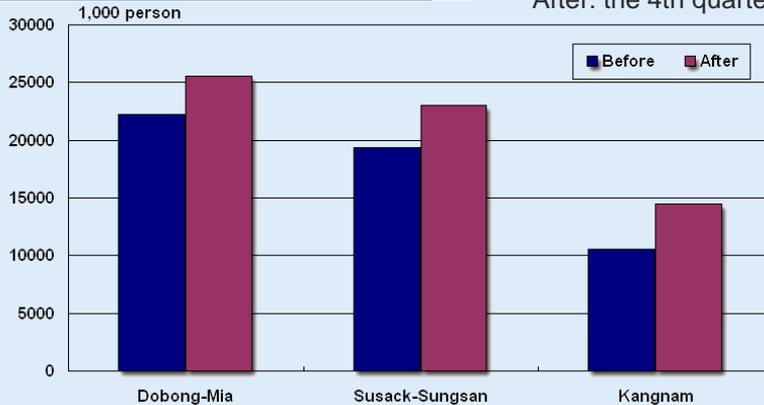
# 5. BRT Plan and Policy in Seoul

## Evaluation of BRT Operation Performance in the City of Seoul

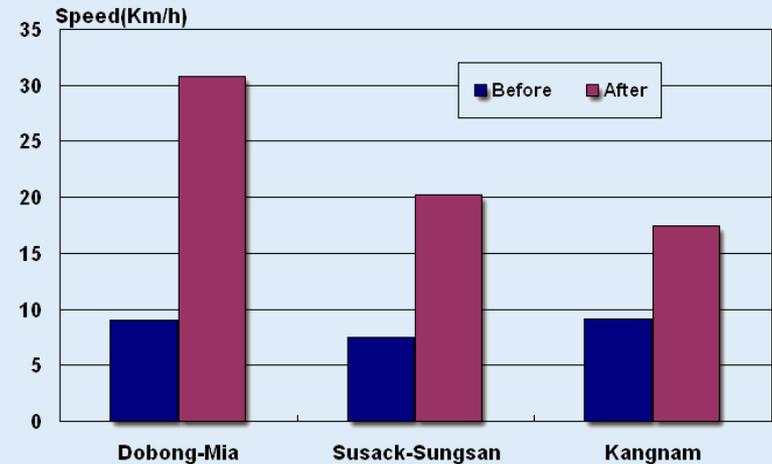
• Source : <http://www.seoul.go.kr>

### Ridership

Before: the 4th quarter of 2004  
After: the 4th quarter of 2005



### Speed



### Punctuality

Line	Dist (km)	T-time (min)	Deviation from Schedule (Bus_min)	Deviation from Schedule (Car_min)
Dobong-Mia	15.2	44.3	2.7	15.3
Susack-Sungsan	6.8	18.1	1.2	15.6
Kangnam	4.8	16.7	1.3	4.6

### Safety

- Number of Traffic Accident  
7,966 ⇒ 5,971 (25% decreased)
- Number of Deaths  
60 ⇒ 41 (31.7% decreased)

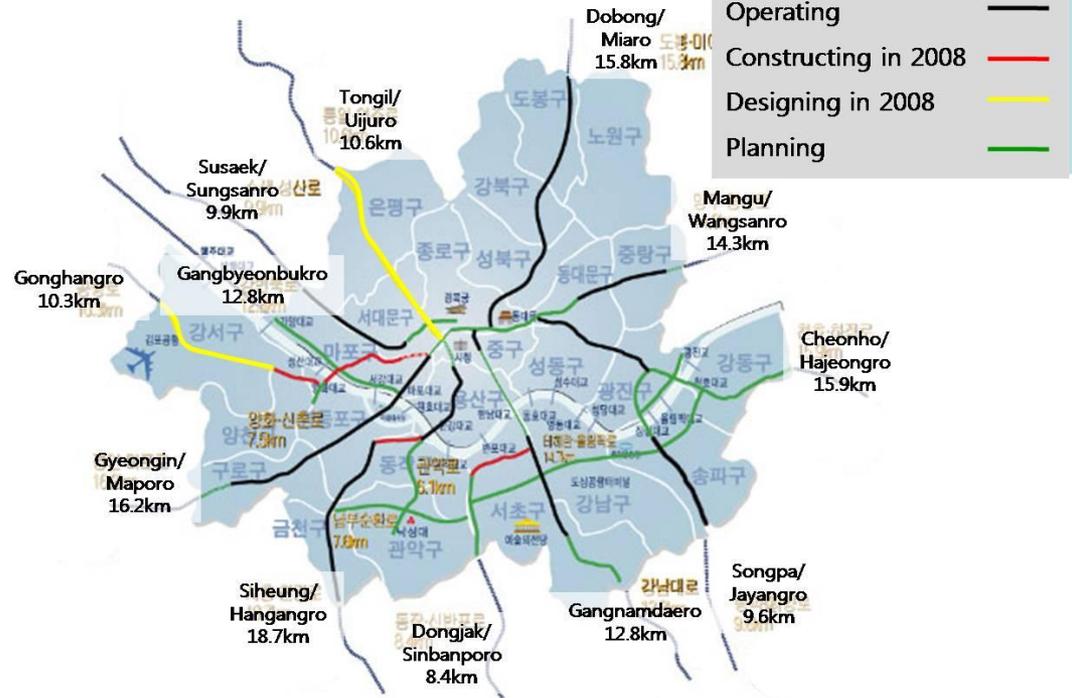


# 5. BRT Plan and Policy in Seoul

## Additional BRT Lines and Plan in the city of Seoul

- Total BRT lines = 10 in 2008
- Total BRT Length = 73.5 km in 2008
- Add 5 lines (44.1km) in 2009

BRT Line	Opening Time	Length
Chunho-Hajeong	2003.7	7.6Km
Dobond-Mia	2004.7	15.8Km
Susack-Sungsan		6.8 Km
Kangnam(Samil Road)		5.9 Km
Mangou	2005.7	4.8 Km
Kyungin		6.8 Km
Sheung-Daebang	2005.12	9.4 Km
Hangang	2006.12	5.5 Km
Mapho		5.3 Km
Songpa	2007..1	5.6 Km



**End....**

*Thanks !*

