<Fourth EST Forum in Seoul>

Environmentally Sustainable Transport Policies in Korea

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Overview

I. Transportation Condition and Strategies in Korea

II. Transportation Demand Management Measures

III. Non-Motorized Transport Measures

IV. Transport and Land-use Coordination Measures

Ⅰ. Transportation Condition and Strategies in Korea

1. Basic Statistics
2. Energy Consumption
3. Transport Strategies

1.Basic Statics in Korea (1998~2008)

Population

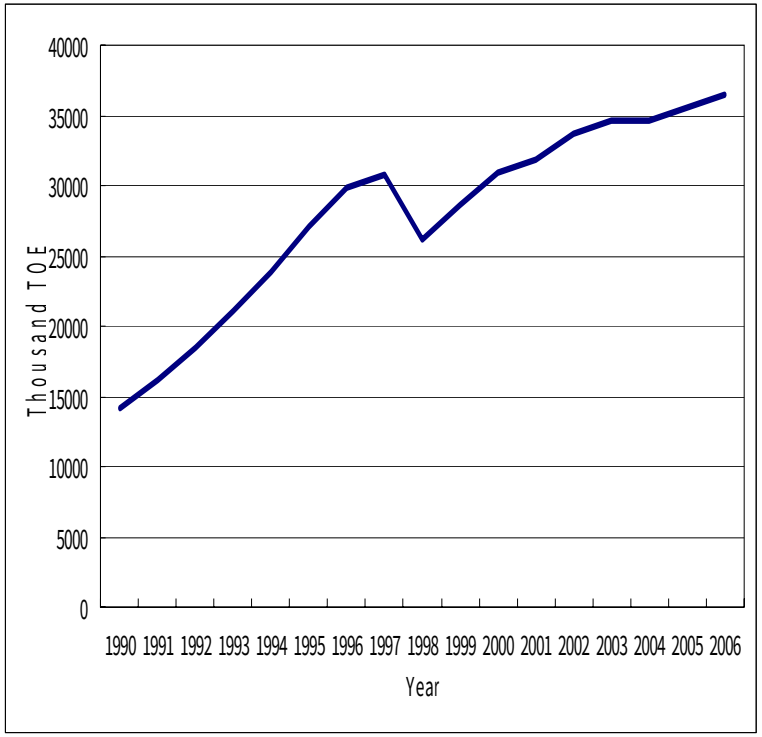
- About 50 mil. and Annual Increase of 0.53%
- 0.08% Annual Increase in 7 Big Cities

Number of Vehicles

- About 17 mil. and Annual Increase of 13.0%
- 42.7% of Total in 7 Big Cities, 57.3% in Other Area

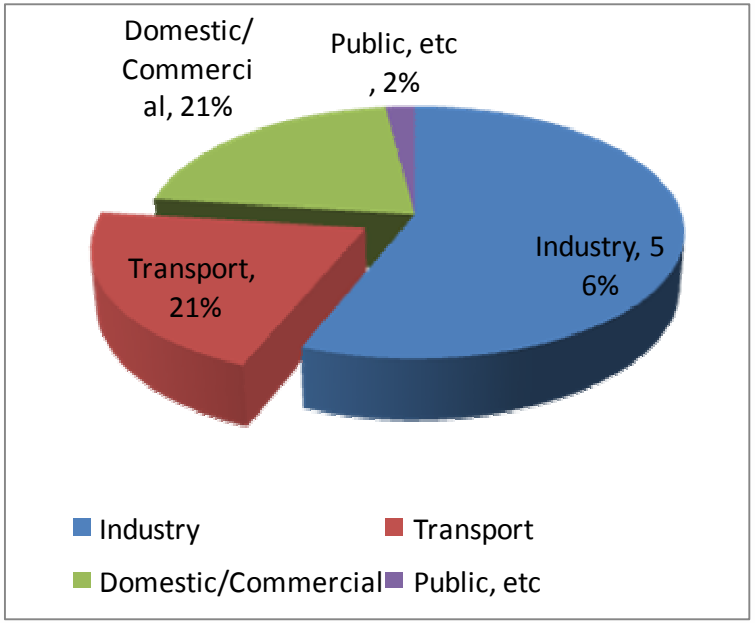
2.Energy Consumption in Korea

Energy Consumption Trend



-Average Increasing rate: 6.3%

Energy Consumption in Transport Sector



-Transportation: 21% of total energy Consumption

3. Transport Strategies in Korea

Vision: "Transportation System for Human & Environment

Objectives : improving 'Efficiency', 'Environment', 'Equity', 'Safety'

- Balanced investment for road & rail
- Vitalizing public & green transportation
- Improvement of facilities for the vulnerable
- Enhancement of traffic safety

- Travel Demand Mansgement Measures
- Non-Motovised Transport Measures
- Tranport & Land-use Coordination Measures

Source : PCSD (Presidential Commission on Sustainable Development, Republic of Korea)

Ⅱ. Transportation Demand Management Measures

1. Definition and Potential Effects
2. TDM Measures in Korea
3. Public Transit Reform in Seoul
4. Bus Rapid Transit in Seoul MA

1.TDM Definition & Effects

- TDM Measure – Policies to Promote Changes in Travel Pattern

Past : Predict–Provide
→Present : Predict-Manage

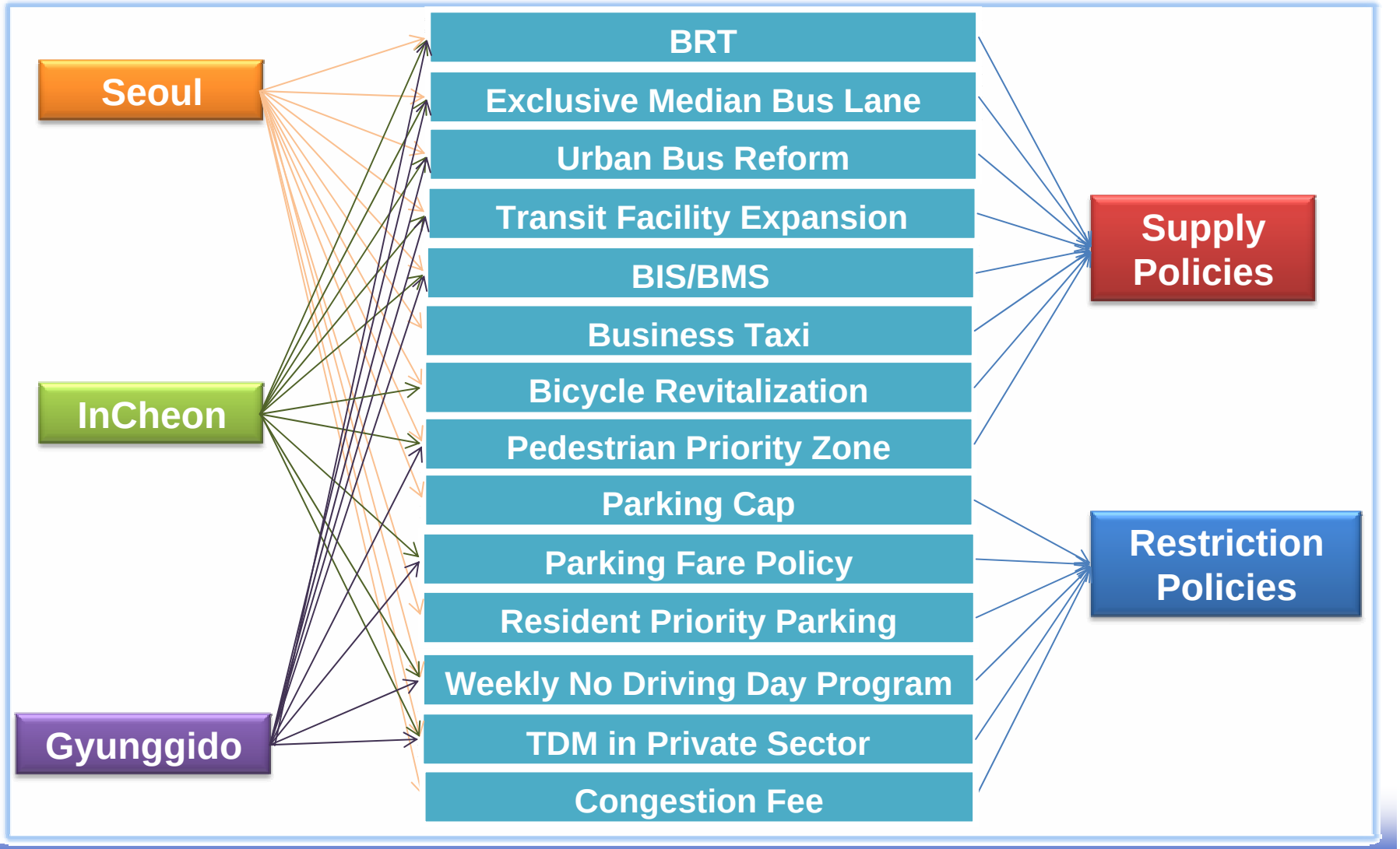
↳ More Realistic to Manage Traffic Demand by Prediction

Travel Pattern Changes in Automobile Ridership

Trip Generation Decrease,
Modal Shift,
Time Redistribution,
Trip Route Shift, etc.

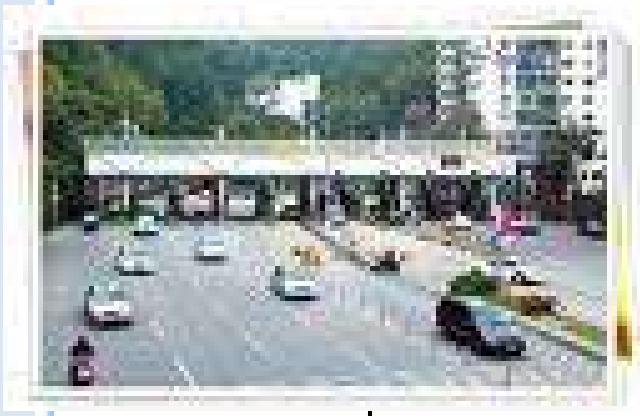
→ Personal Opportunity Cost Increase,
Fuel Use and Emission Decrease

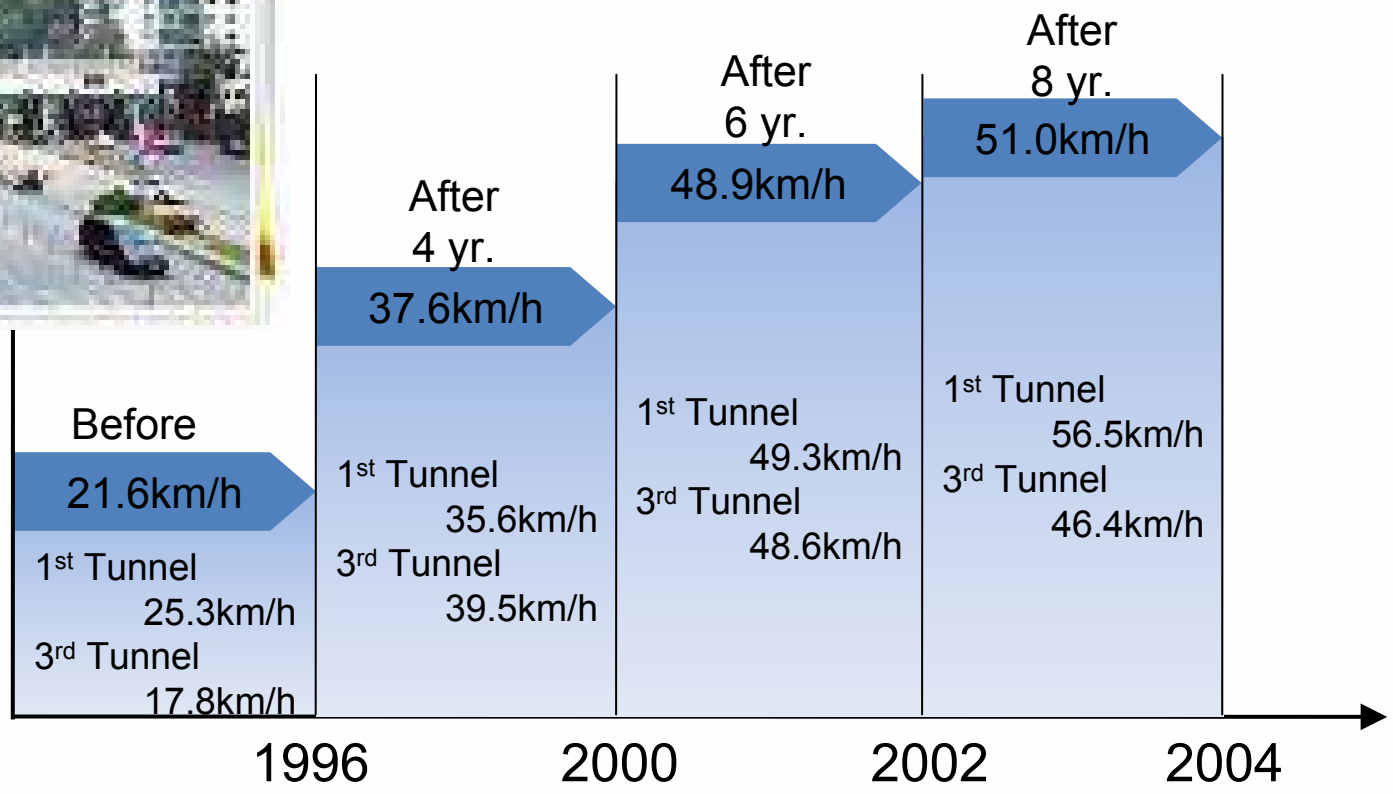
2.TDM Measures in Korea



2.TDM Measures in Korea

Congestion Toll Charge in Seoul (Namsan Tunnel)





3.Public Transit Reform in Seoul

Problems Before the Reform

Expansion of commuting area to Seoul

Traffic volume passing across Seoul boundary

▷ 2.68 M veh/day (1996) → 3.15 M veh/day (2003)

Increase of traffic congestion

Average speed of cars in downtown

▷20.04 km/h (1994) → 16.3 km/h (2002)

Decrease of bus passengers

Number of passengers per bus per day

▷ 1,069 passengers (1983) → : 504 passengers (2003)

3.Public Transit Reform in Seoul

Operation of 4-types of Buses

− Regional connection between suburbs and downtown area − Ensuring operation speed and punctuality	Trunk lines	Blue bus	
− Feeder to trunk lines and subways − Meeting local traffic demand	Feeder lines	Green bus	
− Local lines within downtown area −Serving for business and shopping trips	Circular lines	Yellow bus	
− Express connection between satellite cities and downtown area − Absorbing passenger car commuters	Wide area lines	Red bus	

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3.Public Transit Reform in Seoul

Restructuring Fare System

Distance Based Fare

- Subway single trips

: Fare according to distance-traveled (basic fare : 900 won up to 12 km; extra fare of 100 won for every additional 6 km)

- Bus single trips : single fare of 1,000 won

Free of Charge for Transfers

- For transferring trips

: accumulated distance-based fare system

→ basic fare up to 10km; extra fare for every additional 5 km

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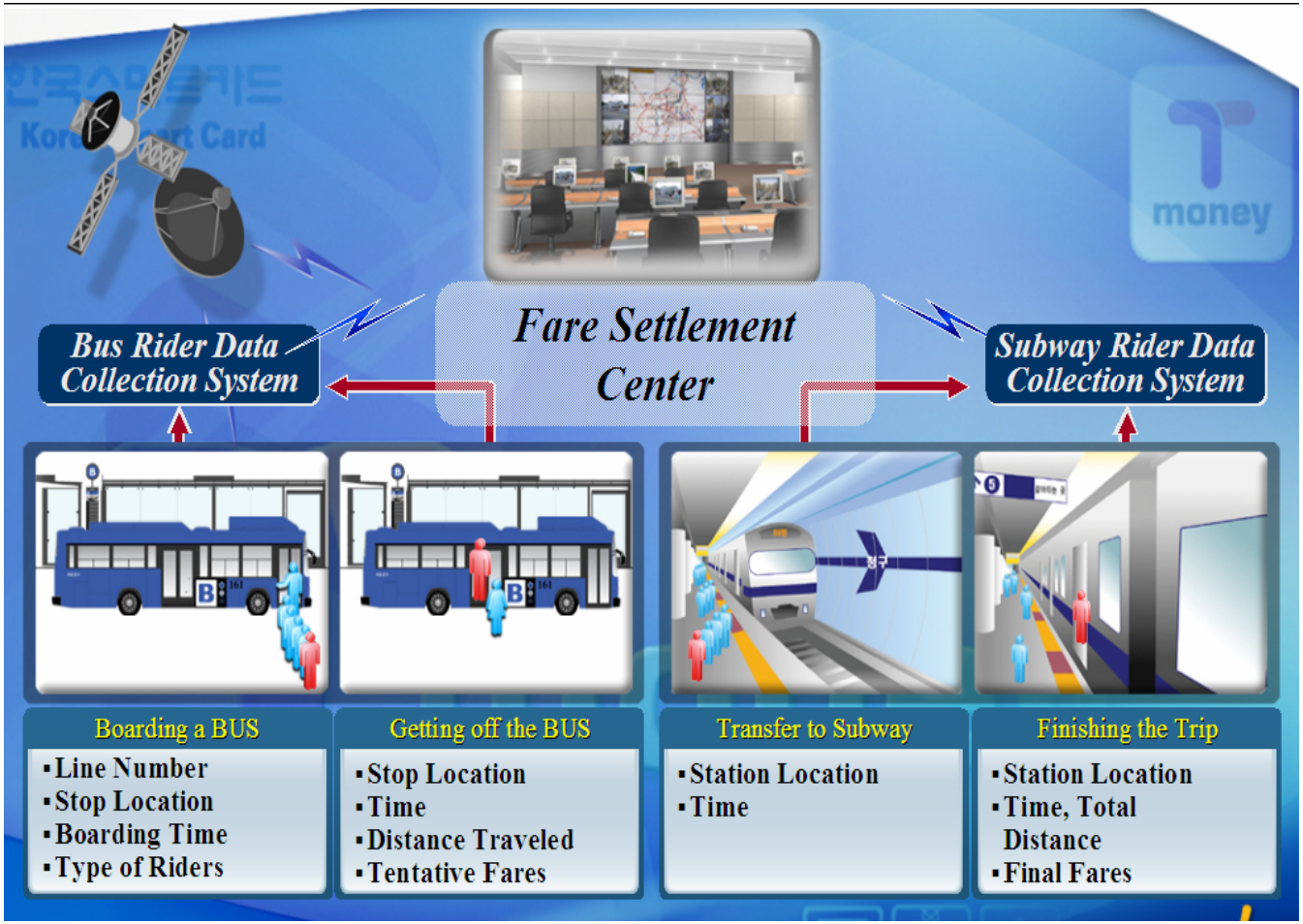
3.Public Transit Reform in Seoul

New Smart Card System



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3.Public Transit Reform in Seoul

Exclusive Median Bus lanes

Expansion Plan (13 lines/192㎞)

※ Status of Existing Bus Lanes(2005)

▷Exclusive median bus lanes: 7 lines/ 84㎞

▷Curbside bus lanes: 293.6㎞

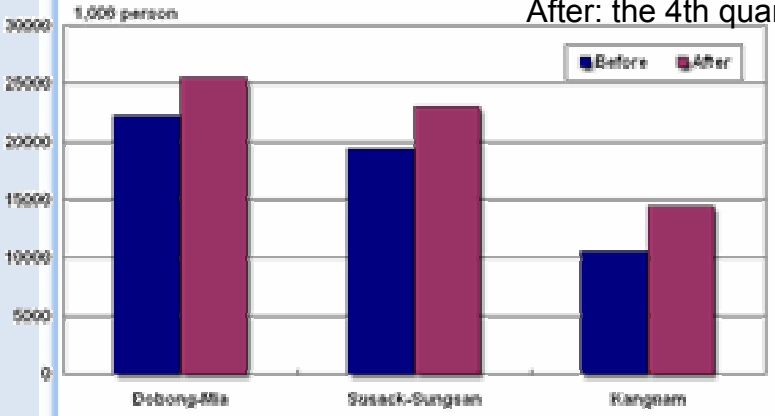
3.Public Transit Reform in Seoul

Evaluation 1yr before and after Seoul bus reform

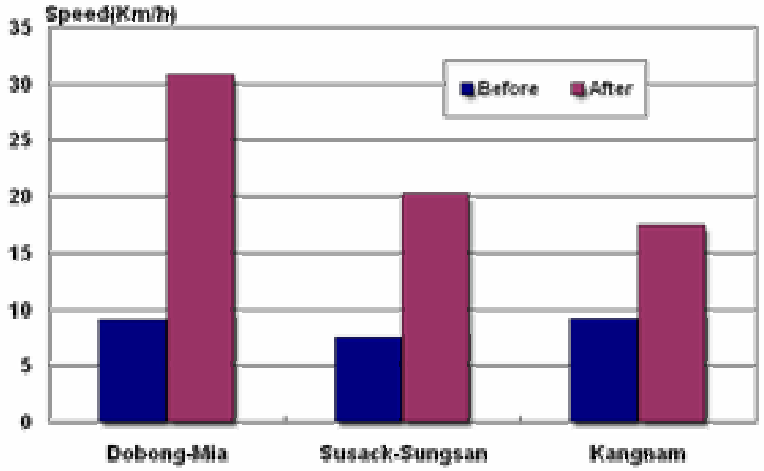
Ridership

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)

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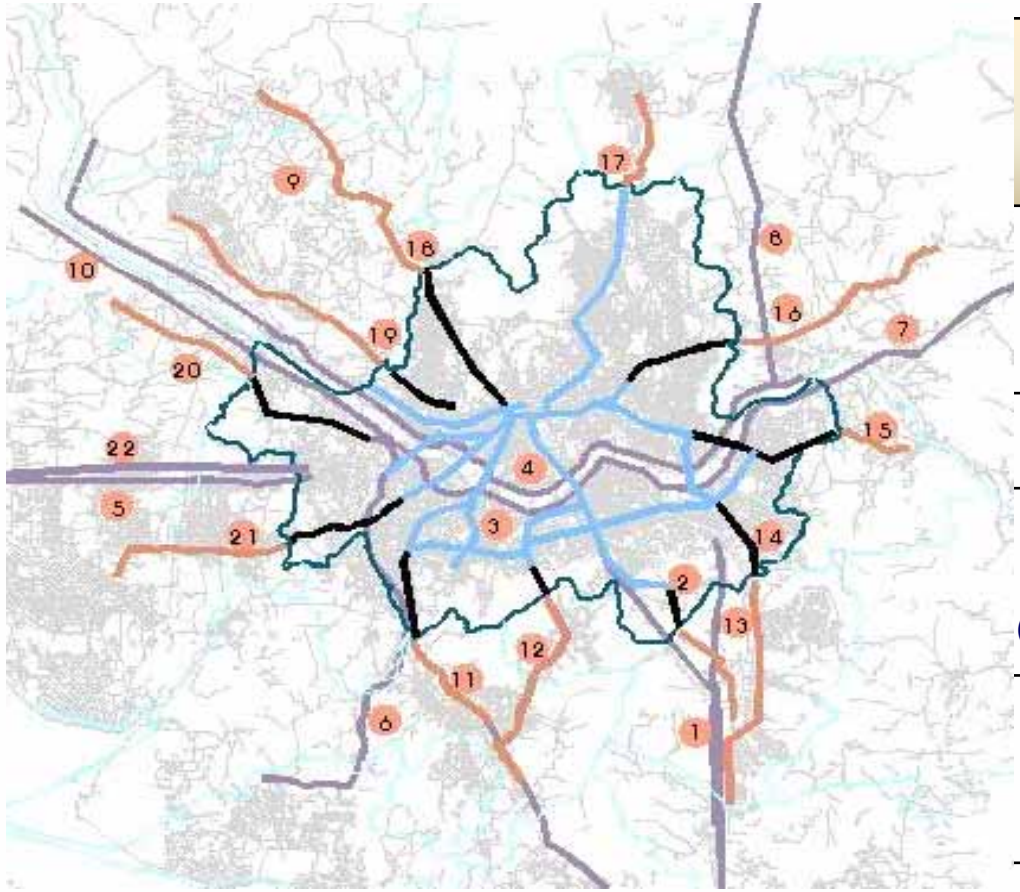
4. Bus Rapid Transit in Seoul MA

Total 22 regional BRT Lines (540km) Planned in 2004



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

Projects in Construction

4. Bus Rapid Transit in Seoul MA

Kyungbu Expressway BRT

- **Opening in Oct. 2008**
- **Total Length =44.8km**
- **Operating**

  from 7am to 9 pm
- **Trips per day**

  190,000 → 250,000

III. NMT Measures in Korea

1. Pedestrian Priority Zone
2. Public Bike System

1.Pedestrian Priority Zone

Characteristics of Walking Activity

- Most Fundamental Transport
- Supporting Mode to Use Different Mode
- For Leisure and Exercise

Walking as Transport

- Commuting, Shopping, Business, Leisure
  (Less than 15 minutes or 1km)
- Principle of the Shortest Path
- Speed : 1.2m/sec ~ 1.5m/sec
- Distribution : More than 20% of Total Trip Generated

1.Pedestrian Priority Zone

Road Width & Traffic Safety for Pedestrians

Death by Road Width

- 75.2% of Death in Traffic Accident occur on the road under 13m width

Width	Death
Under 13m	4,634
Over 13m	1,532

Road Types for Walking

1.Pedestrian Priority Zone

Guideline of Pedestrian Priority Zone

By Facility Installation (Physical)

- Pedestrian Facilities by ‘Act on Convenience Increase of Mobility Handicapped Person’ in Pedestrian Priority Zone

Speed Reduction Facility

Road Crossing Facility

Traffic Information Facility (BIS)

Transport Signal for Pedestrian Priority

Safety Fence for Pedestrian Path

Bollard

1.Pedestrian Priority Zone

Example of Pedestrian Facilities within the Zone











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2.Public Bike System

Bicycle Model Split

Country	Modal Split (%)	Highest Modal Split (%)		Country	Modal Split (%)	Highest Modal Split (%)	
Netherland	26	35-40	Groningen	France	5	12 10	Strasbourg Avignon
Denmark	20	20	Odense	U.K.	2	11-20	York and Hull Oxford and Cambridge
Germany	10	20 30	Munster, Freiburg	Switzerland	10	15 17 20	Bern Basel Winterthur
Belgium	8	15 20	Ghent Bruges	Sweden	7	20 33	Lund and Malmo Vasteras
Ireland	3-4	5	Dublin	Japan	14	24	Tokyo
Austria	9	14 19	Graz Salzburg	Korea	1.2	18.6	Sang-ju
Italy	5	15 20 30	Po Plains Florence Ferrara				

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2.Public Bike System

Public Bike System in Changwon City

NUBIJA : Nearby Useful Bike Interesting Joyful Attraction

- Feature : GPS(Real time tracking), Distance/Speed, RFID membership card, etc.

	Total	2008	2009	2010	2011	2012
Supply	5,000	500	2,000	1,000	1,000	500
Budget (Mil. Won)	12,700	1,200	5,000	2,500	2,500	1,500

IV. Transport & Land-Use Coordination Measures

(Transit-Oriented Development)

1. Definition and Potential Impacts
2. TOD Strategy in New Town Development

1.TOD Definition & Impacts

Definition

Integration of Transportation and Land Use in Neighborhood and Regional Area

Planning Factor

Transit Hub	Easy to approach
Density	High Density
Diversity	Mixed-Land use
Design	Pedestrian-friendly Network

Effect on Transportation

Modal Choice	NMT ↑
Trip Distance	VKT ↓
Trip Generation Frequency	Trip Chaining ↑

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2.TOD Strategy in New Town Development

■ New Town Development (A)

- Accommodation Increasing / Population Concentrating
- Active Reaction on Urban sprawl

■ TOD (B)

- Automobile Ridership Control by Supplying Public Transport
- Increase of Non-Motorized Transport
- Social Equity among Commuters

■ TOD in New Town Development (A+B)

- Development in Suburban Area
- Preservation of Farmland and Green Area
- Increase of Public Transport and NMT

TOD in New Town = Sustainable Transport and Urban Development

2.TOD Strategy in New Town Development

Case Study : Unjeong New Town TOD Prj.

Location

Development Plan

Time Span	2004.12~2009.12
Developer	Korea National Housing Corporation + Paju City
Develop. Outline	Area: 9,407,766㎡ Population: 124,898 persons (46,256 households) Density: 133 persons/ha

Land Use Plan	Area	Ratio
Total	9,407,766㎡	100.0%
Residential	3,248,327㎡	34.6%
Park& Green	2,851,160㎡	30.3%
Road	1,446,830㎡	15.3%
School	488,002㎡	5.2%
Commercial	411,502㎡	4.4%
Others	1,264,274㎡	13.4%

Source: Kim(2006)

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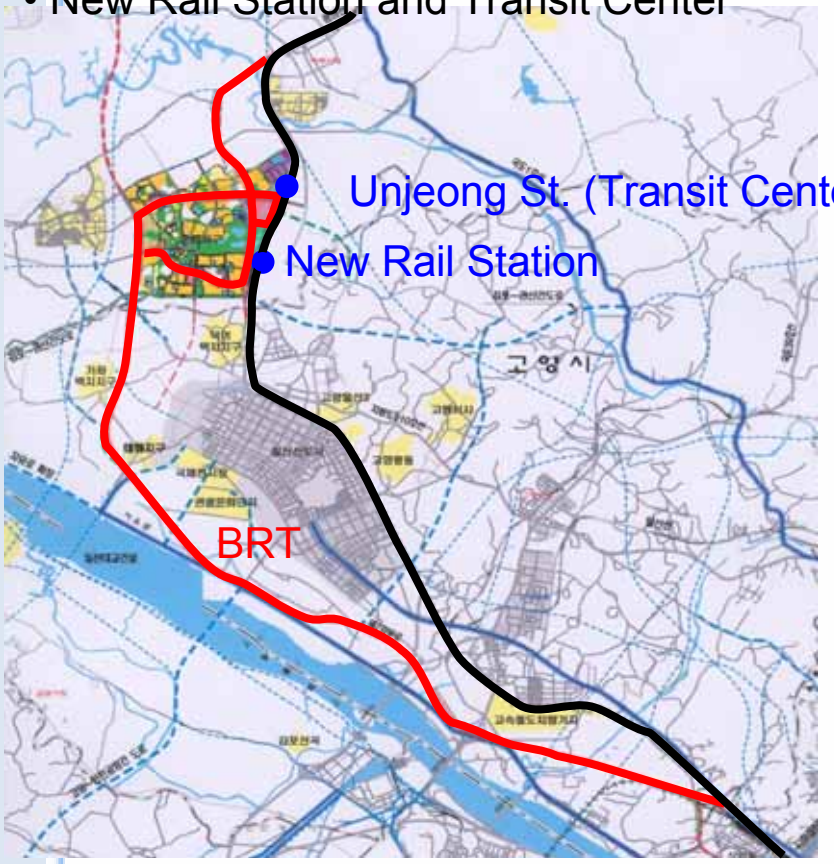
2.TOD Strategy in New Town Development

Regional Transport System Plan

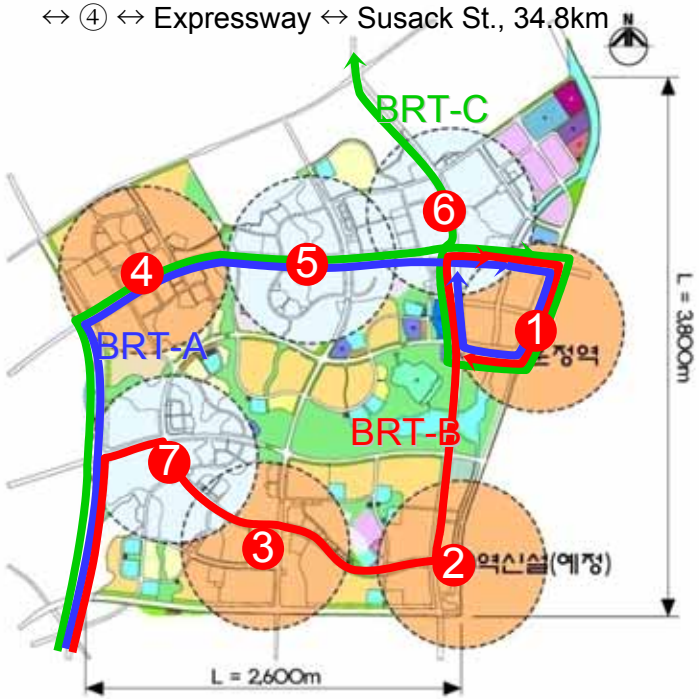
- High-Speed Kyungui Railway
- Regional BRT on Urban Expressway
- New Rail Station and Transit Center



BRT Route Plan within the New Town

▶ Line Plan

- BRT-A : CBD(Unjeong St.) ↔ ⑤ ↔ ④ ↔ Expressway ↔ Susack St., 33.0km
- BRT-B : CBD(Unjeong St.) ↔ New Rail St. ↔ ③ ↔ ⑦ ↔ Expressway ↔ Susack St., 33.6km
- BRT-C : Kyumcheon ↔ ⑥ ↔ CBD(Unjeong St.) ↔ ⑤ ↔ ④ ↔ Expressway ↔ Susack St., 34.8km



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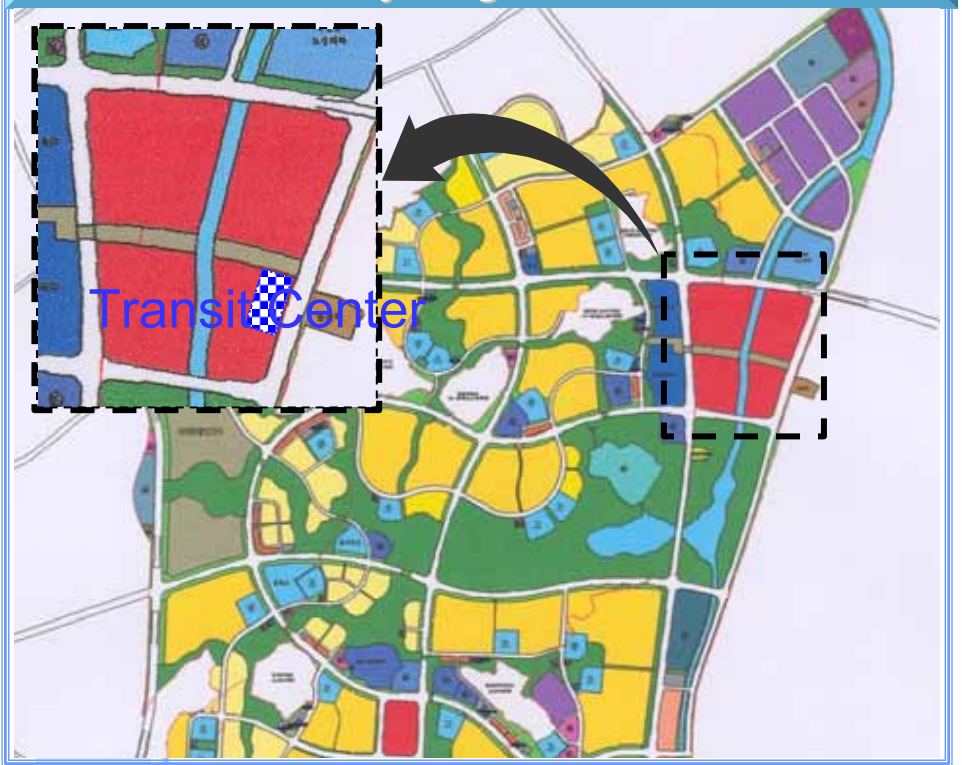
2.TOD Strategy in New Town Development

Unjeong St. Transit Center

Location of Unjeong St. Transit Center



Transit Center

Q&A

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