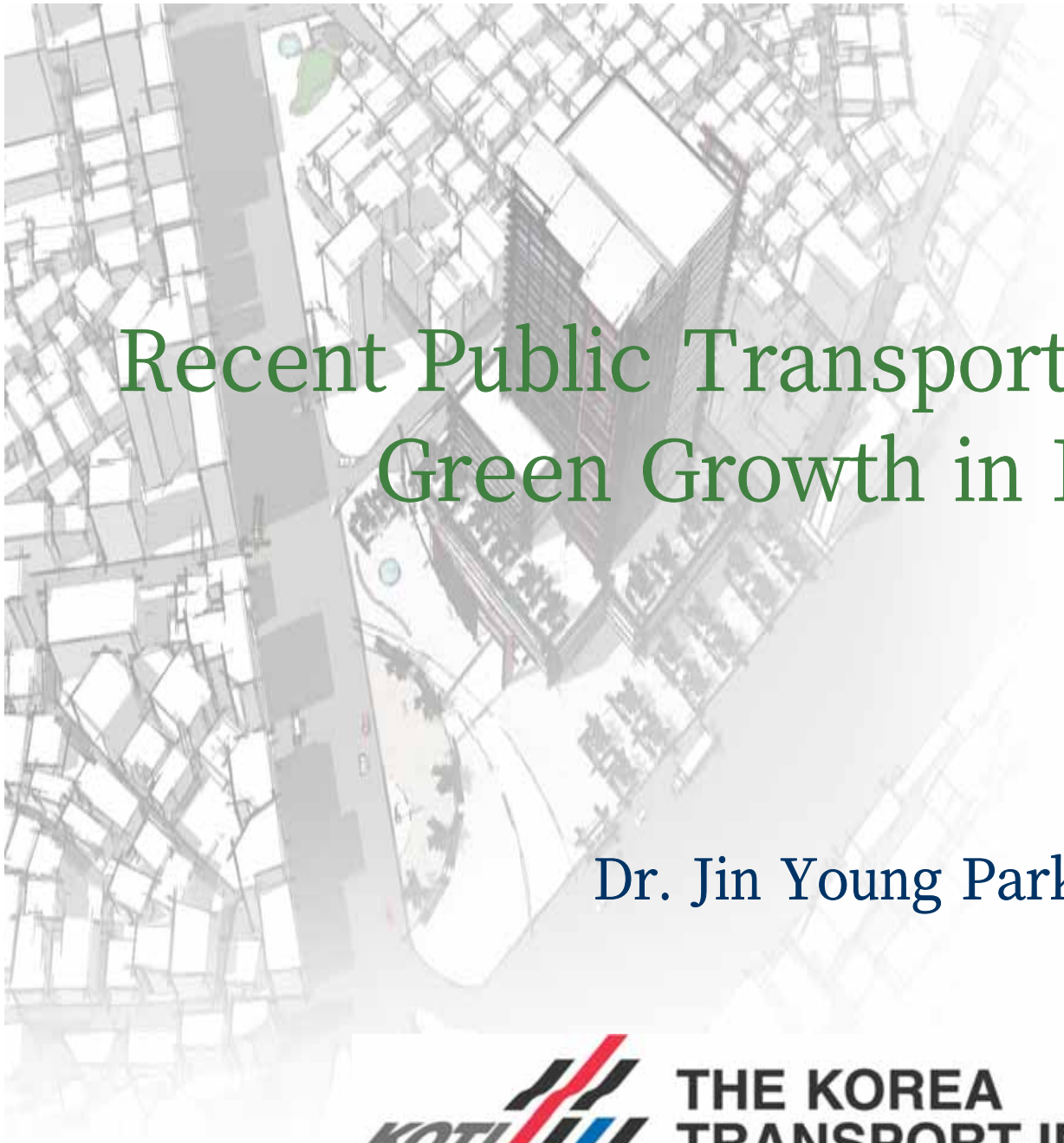


Recent Public Transport Policies for Green Growth in Korea

Dr. Jin Young Park

THE KOREA TRANSPORT INSTITUTE

1. Green Growth & EST

Green Growth

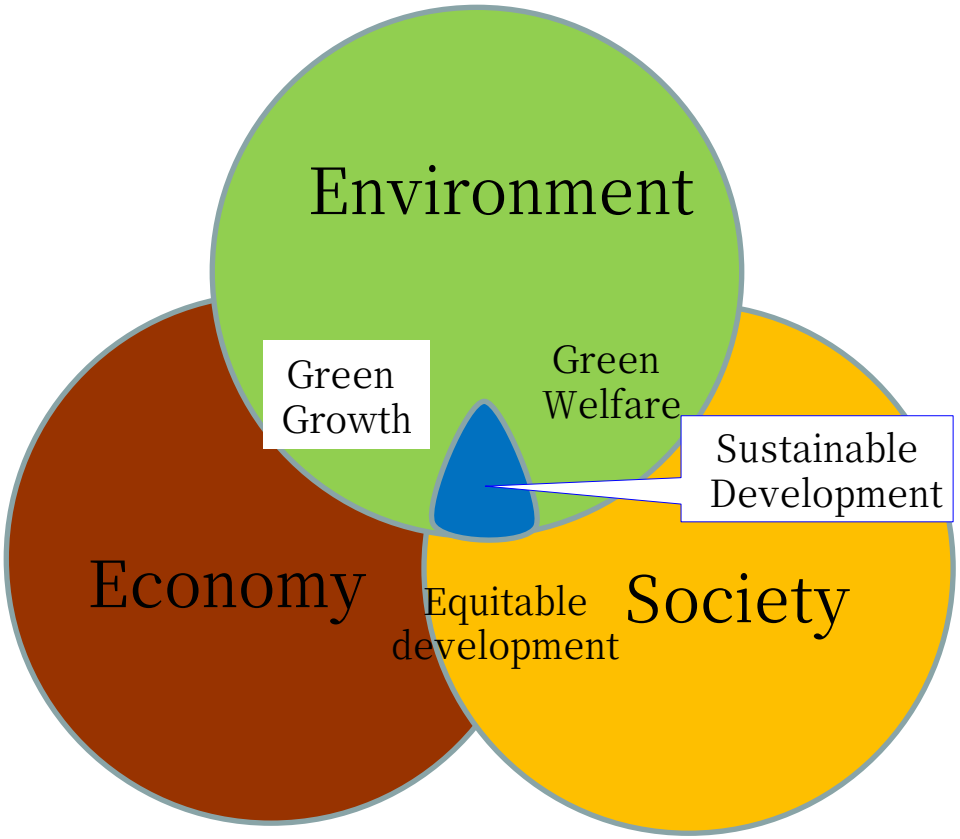
■ Green Growth in Korea

- President og Korea announced
'Low Carbon & Green Growth'as a National strategy for the future in August of 2008.
- Reduction of GHG (Green House Gas) & Emissions
- Development of industry for reduction of GHG & emissions as a new engine for Korean industry and society

■ Harmony of environment & economics

- To reduce GHG, developing new green technologies
- Development of green industry based on new green technologies, such as green car and clean energy

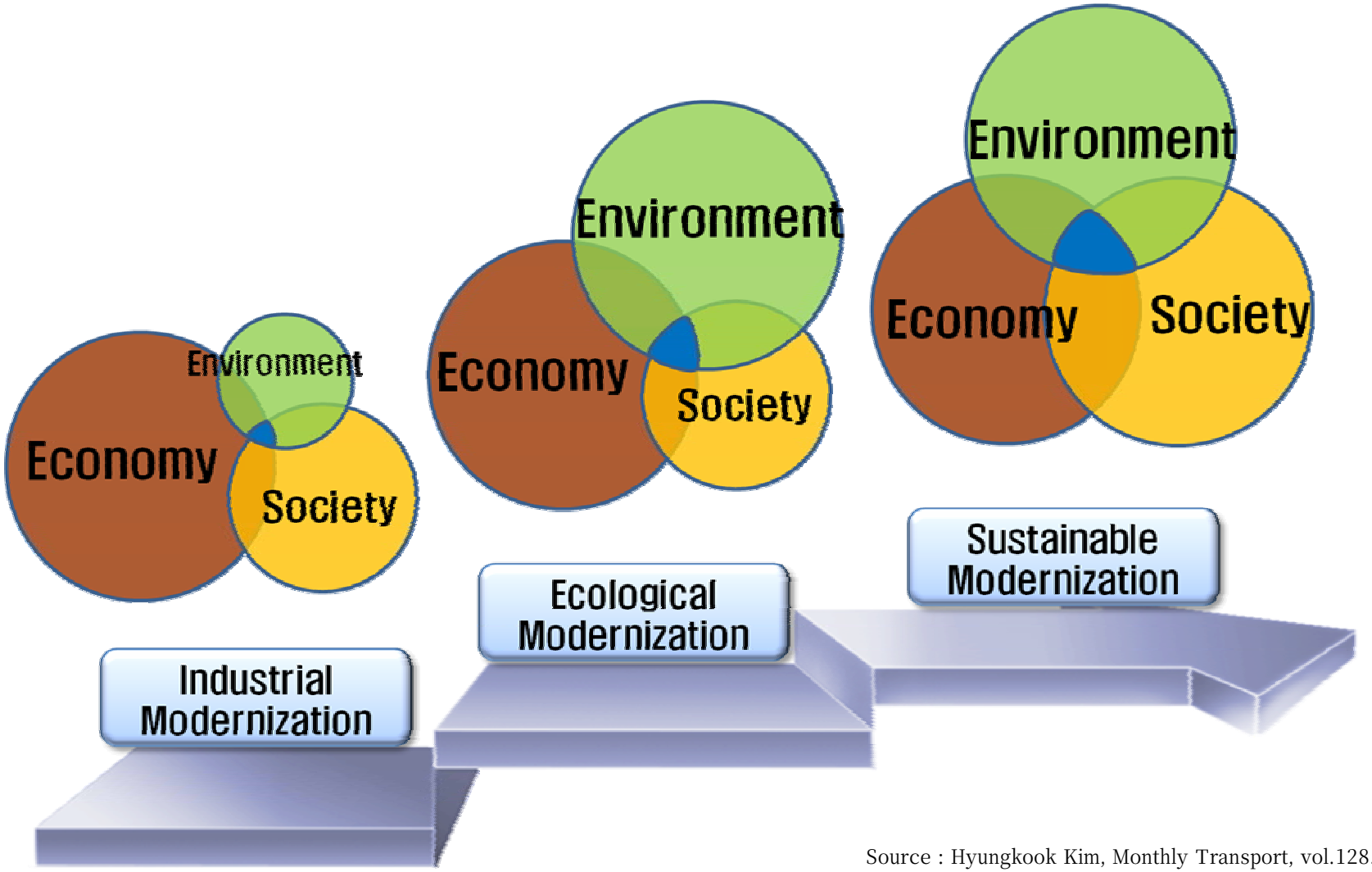
Positioning of Green Growth



Source : Hyungkook Kim, Monthly Transport, vol.128. KOTI

1. Green Growth & EST

Modernization & Green Growth



Source : Hyungkook Kim, Monthly Transport, vol.128. KOTI

2. GHG in Transport Sector of Korea

Comparison of Transport Activity

- Korean has similar number of car, and transport activity with other OECD countries

	Car ownership of OECD countries(2005)		Vehicle traffic of OECD countries(2004)	
Unit	car/person	GDP thousand car / US$	veh-km/person	GDP thousand veh-km /US$
Canada	0.58	0.48	9,691	8,026
USA	0.81	5.48	16,069	108,249
Japan	0.58	2.16	6,468	24,164
Korea	0.32	0.85	3,234	8,553
Austrailia	0.66	0.37	9,714	5,428
France	0.59	1.02	8,590	14,688
Germany	0.58	1.36	7,091	16,612
Italy	0.67	1.24	8,867	16,417
Spain	0.58	0.90	4,720	7,368
U.K.	0.54	0.82	8,225	12,587
OECD	0.56	20.75	8,361	312,123

자료 : OECD Environmental Data Compendium 2006/2007

2. GHG in Transport Sector of Korea

Future trends

- Continuous increase of vehicles about 22 million in 2019
- Passenger travel demand will increase 1. 5 times in 2019 than 2004
- Freight transport demand will increase 2.1 times in 2019 than 2004

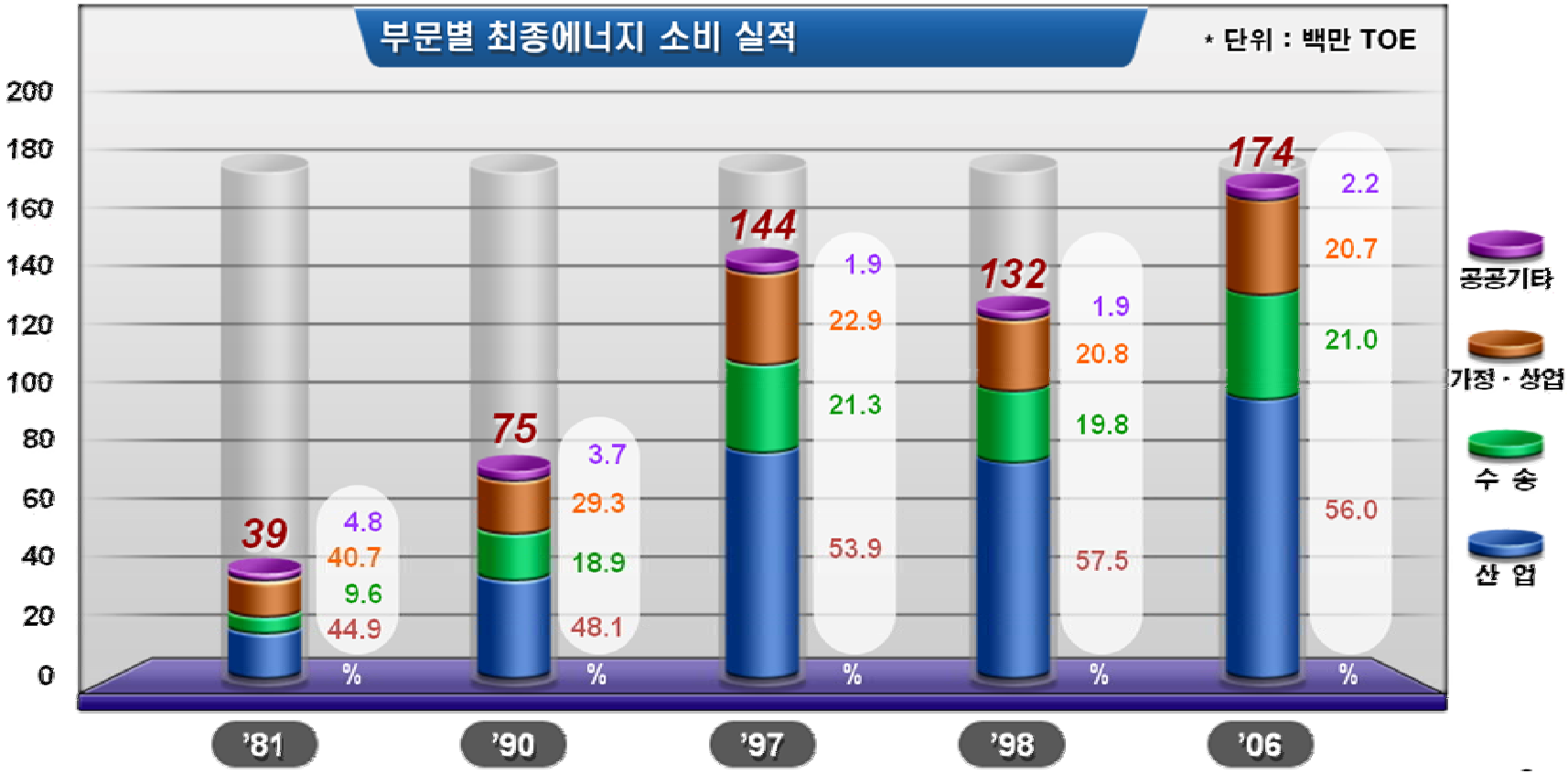
		2001	2004	2009	2014	2019
Vehicle ownership		12,914	14,934	18,213	20,510	21,900
DEMAND	domestic passenger (million passenger-km/year)	228,091	236,491	285,264	324,196	363,555
	domestic freight (million ton-km/year)	137,977	137,701	176,321	228,280	286,257
	International passenger (million passenger-km/year)	77,072	90,146	122,744	155,969	198,232
	International freight (million ton-km/year)	4,739,548	6,217,164	7,570,019	8,227,154	9,515,464

Source : National Transport Network study, KOTI, 2007.

2. GHG in Transport Sector of Korea

Domestic energy Consumption

■ Transport consists of 21 % in Domestic energy in 2006

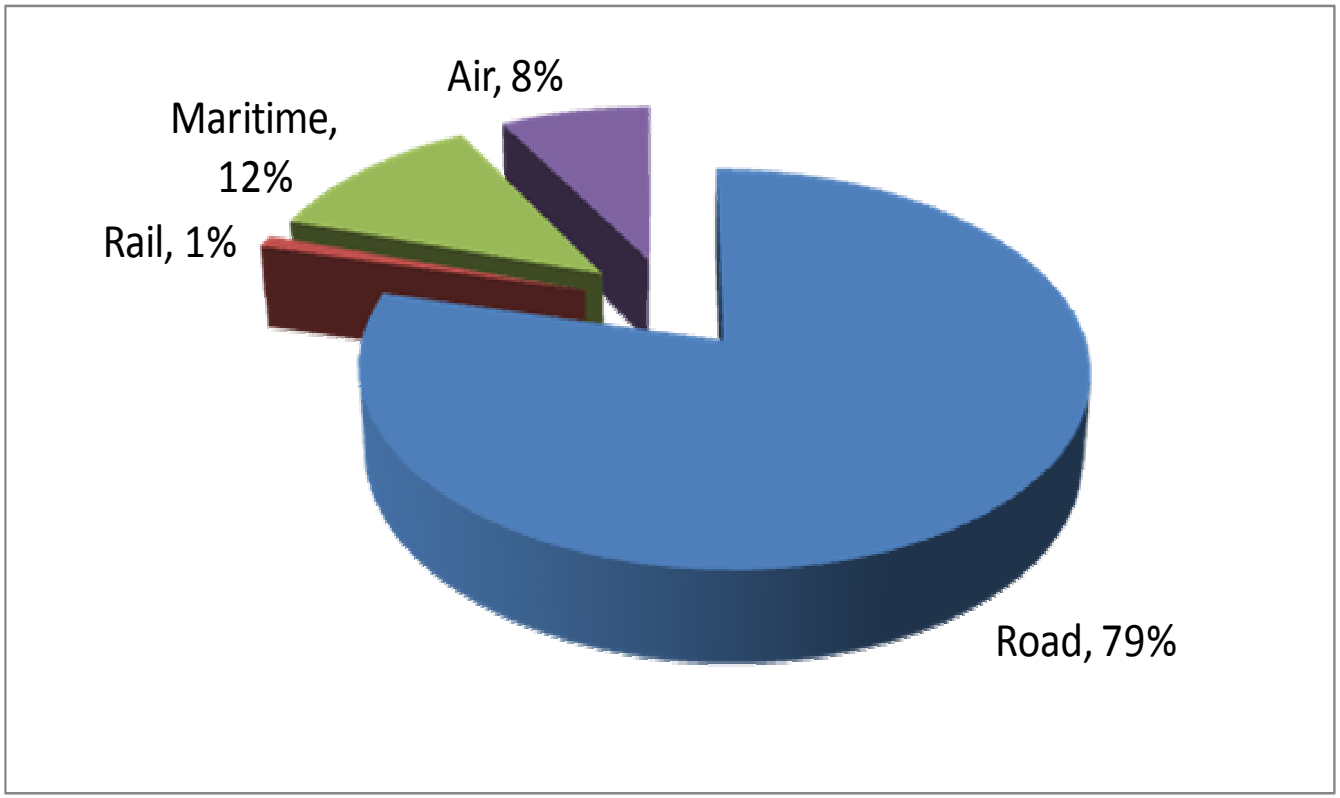


Source : Korea Energy Economic Institute

2. GHG in Transport Sector of Korea

Energy consumption in Transport sector

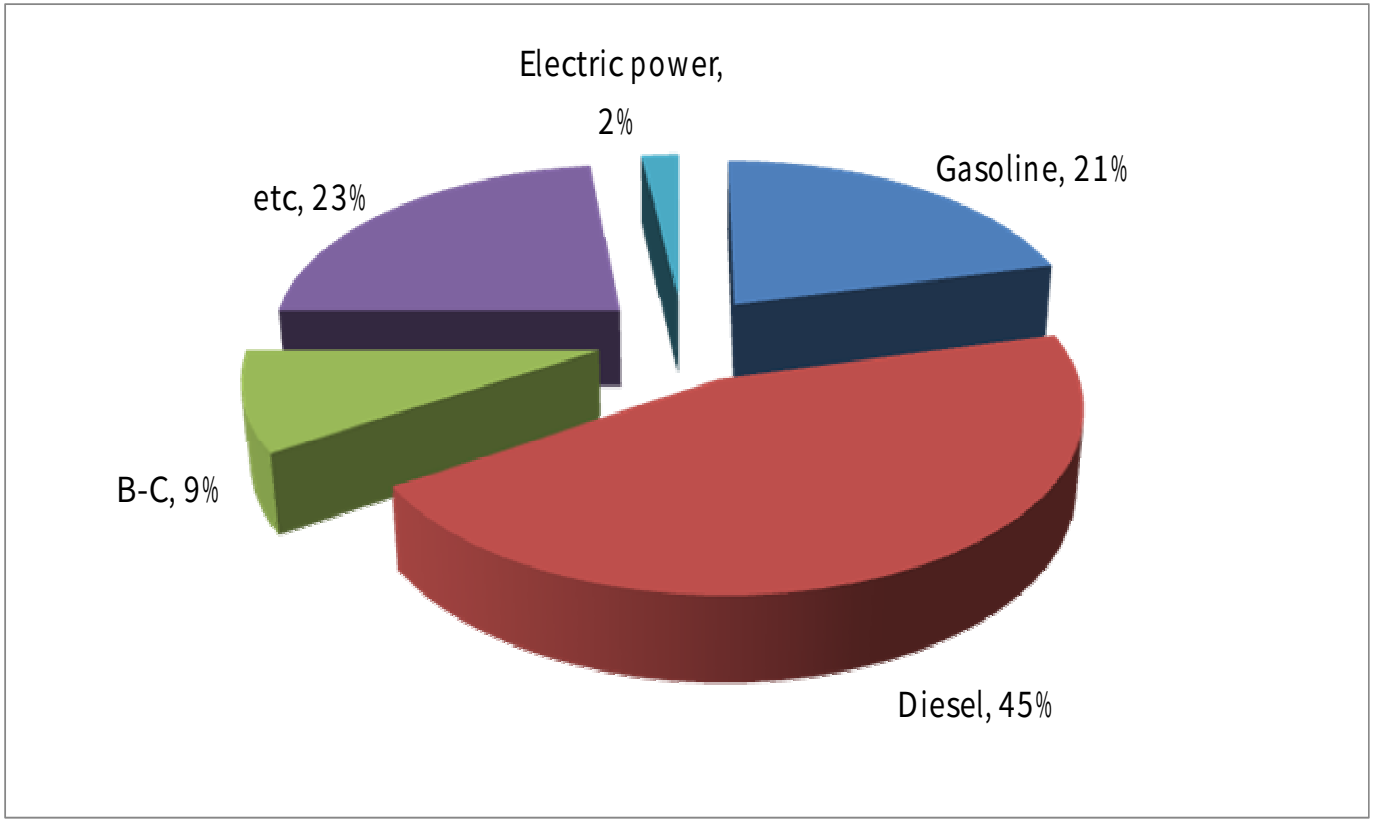
- Road traffic consists of 79% of energy consumption in transport sector in 2006



2. GHG in Transport Sector of Korea

Source of energy in transport sector

- Oil consists of more than 80%

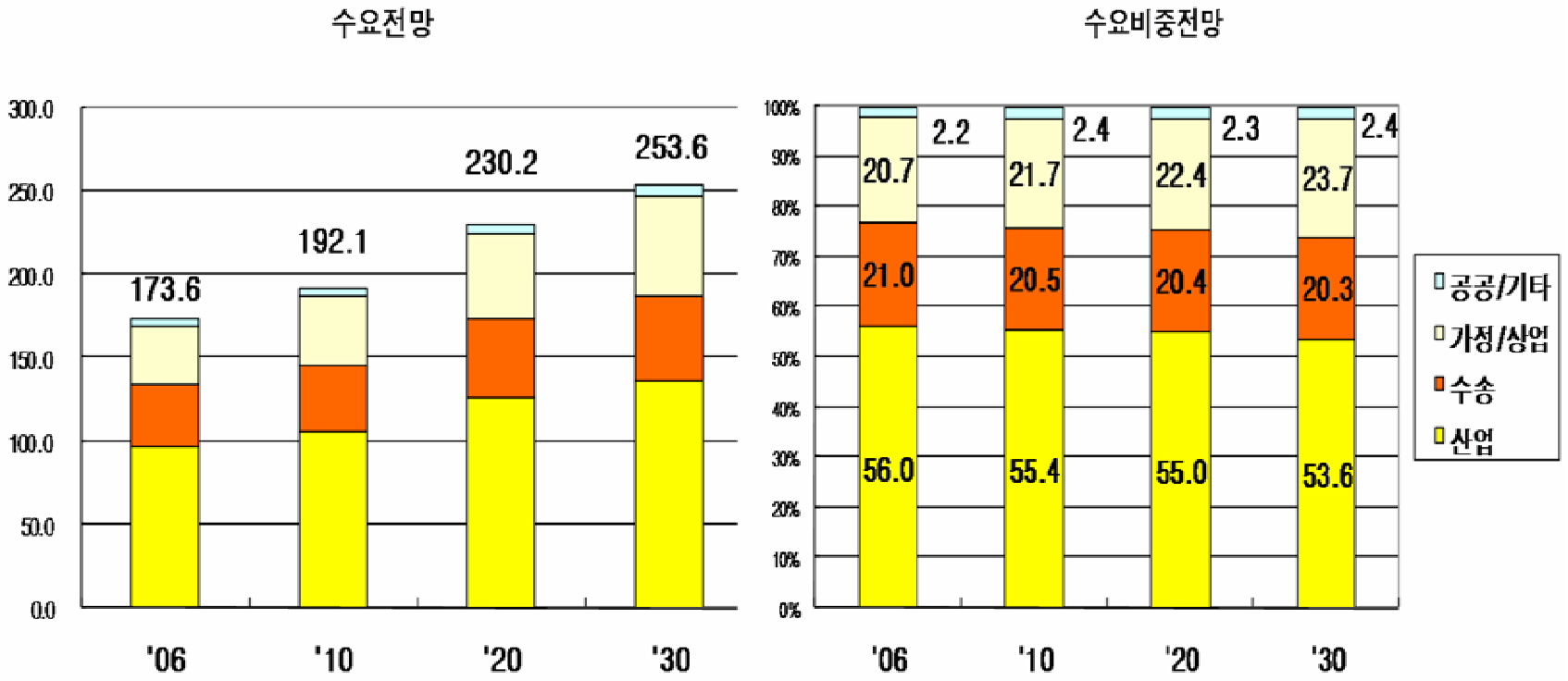


2. GHG in Transport Sector of Korea

Future trend in energy consumption

■ Energy consumption in transport sector will increase

1.4 times from 36 million TOE in 2006 to 51 million TOE in 2030.



* 단위: 백만 TOE, % 자료 : 에너지경제연구원

2. GHG in Transport Sector of Korea

Comparison of GHG in transport sector

- Korea has 2 times higher increase of GHG emissions from 1990 to 2005, comparing with other OECD countris

Country	1990(A)	2005(B)	amount of increase($MtCO_2$)	Increase rate (B/A)
Canada	129.84	164.66	34.8	1.3
USA	1553.78	1947.5	393.7	1.3
Japan	241.11	289.5	48.4	1.2
Korea	49.34	125.73	76.4	2.5
Australia	68.1	90.45	22.4	1.3
France	132.18	160.43	28.3	1.2
Germany	182.09	186.84	4.8	1
Italia	111.52	141.19	29.7	1.3
Spain	79.09	145.36	66.3	1.8
UK	143.84	172.6	28.8	1.2
OECD	3118.22	4066.56	948.3	1.3

자료 : Greenhouse Gas Reduction Strategies in the Transport Sector : Preliminary Report, OECD/ITF, 2008

3. Government Strategy

Vision & Objectives

■ Establishment of 'National Green Growth Committee '

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
- Enhance of traffic safety

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

1 Green Growth & EST

2 GHG in Transport Sector of Korea

3 Government Strategy

4 Improvement of Bus System

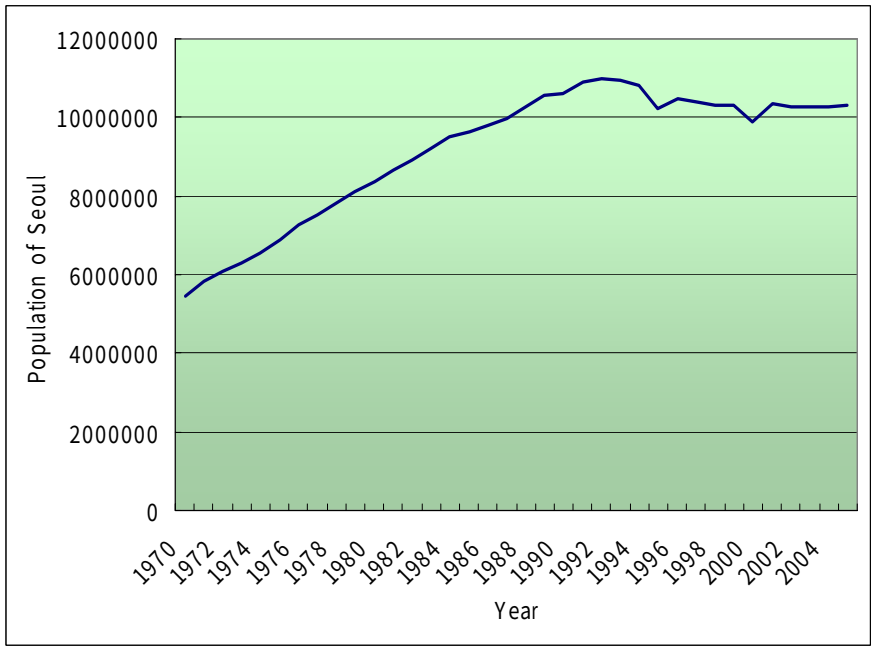
5 Fare & Smart Card Integration

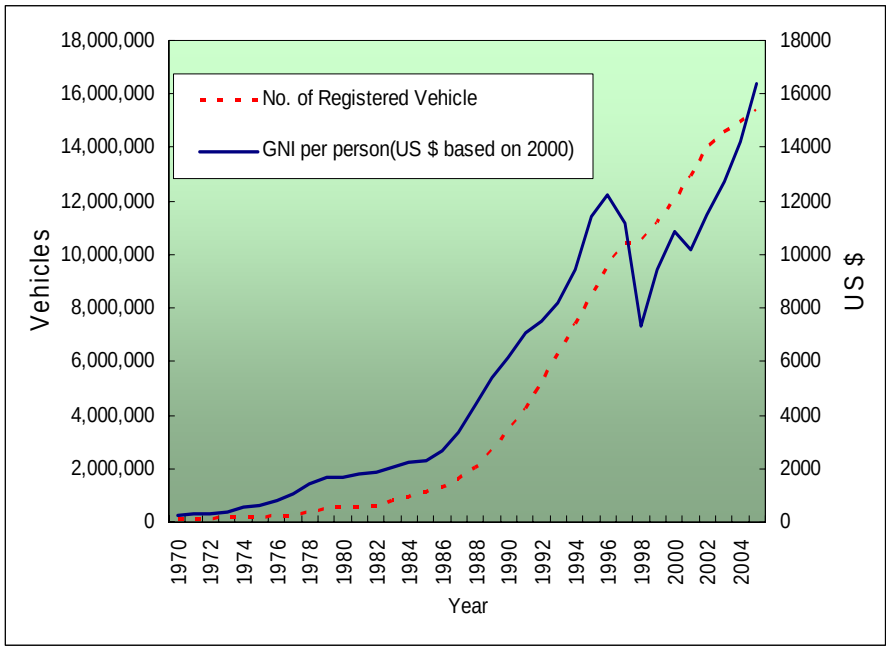
6 CDM in Transport Sector

4. Improvement of Bus System

Introduction

- Korea has rapid growth in travel demand.
  - Increased National Income and Car ownership





4. Improvement of Bus System

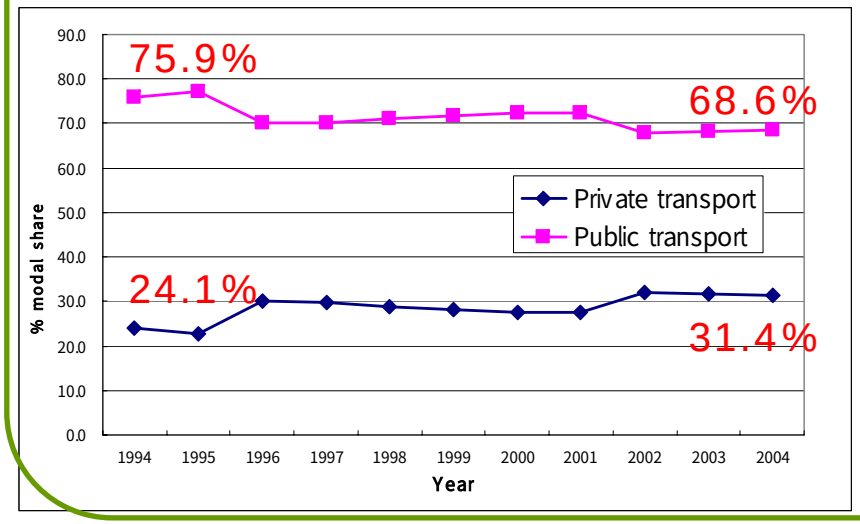
Public Transport in Korea

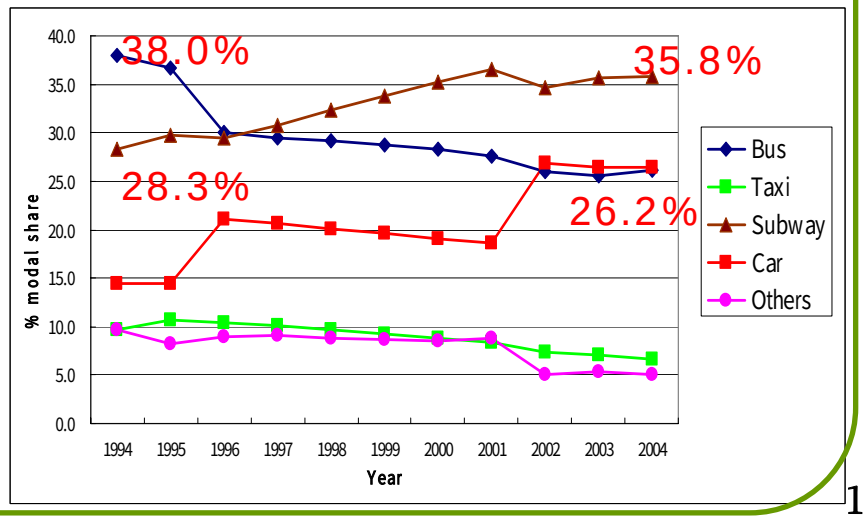
Trend of Public transport in Seoul

Public Transport

Low Modal Share
Despite of increased total trips in Seoul, significantly modal share of PT is decreased.

Drop in Bus passengers
Because The SMG* has focused in improvements to metro system, passengers and usage rate of bus has been quickly weakened.





4. Improvement of Bus System

Public Transport in Korea

- Buses in 60~70s

4. Improvement of Bus System

Public Transport in Korea

Decrease of bus passengers

Drop in The number of bus passengers

Financial difficulties in bus companies

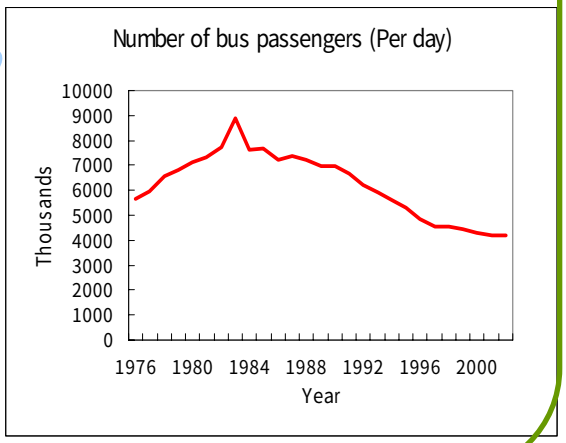
Problems in Bus system

Deterioration Of bus services

Public transport in Seoul

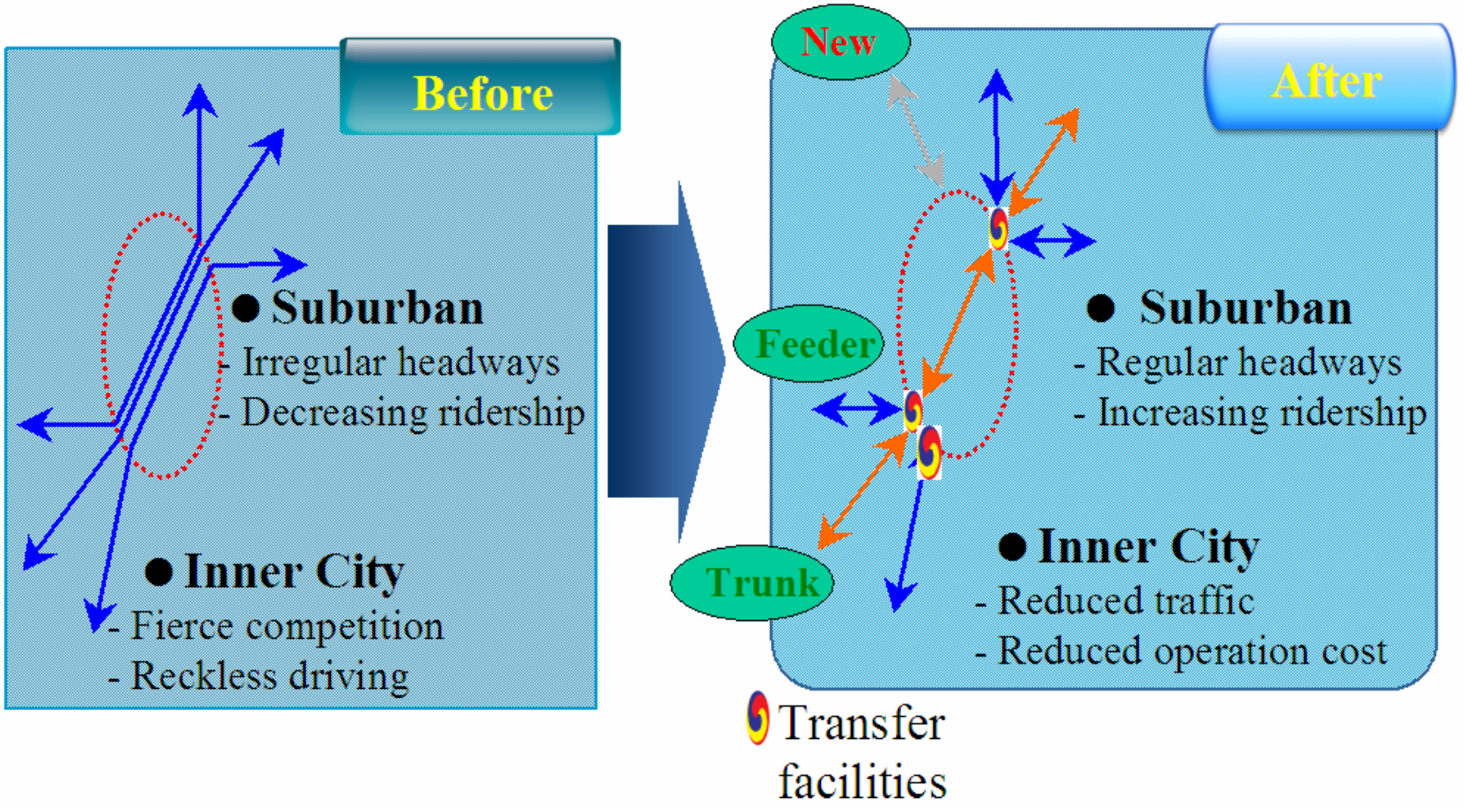
Bus industry operated by private company

Expansion of metro system



4. Improvement of Bus System

Bus Network Improvement



4. Improvement of Bus System

Bus System Improvement

• 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 the downtown area • Serving for business and shopping trips	Circular lines	Yellow bus	
• Express connection between satellite cities and downtown area • Absorbing passenger car commuters	Metro-politan lines	Red bus	

4. Improvement of Bus System

Bus Operating Scheme

- Introduction of bidding main routes
- Joint management of revenue
- Reform of revenue structure based on operating distance

Previous system	New system
Revenue based on number of passengers of each bus route owned by company	**Revenue based on service distance (Veh-km) : SMG compensates gap between revenue and cost**

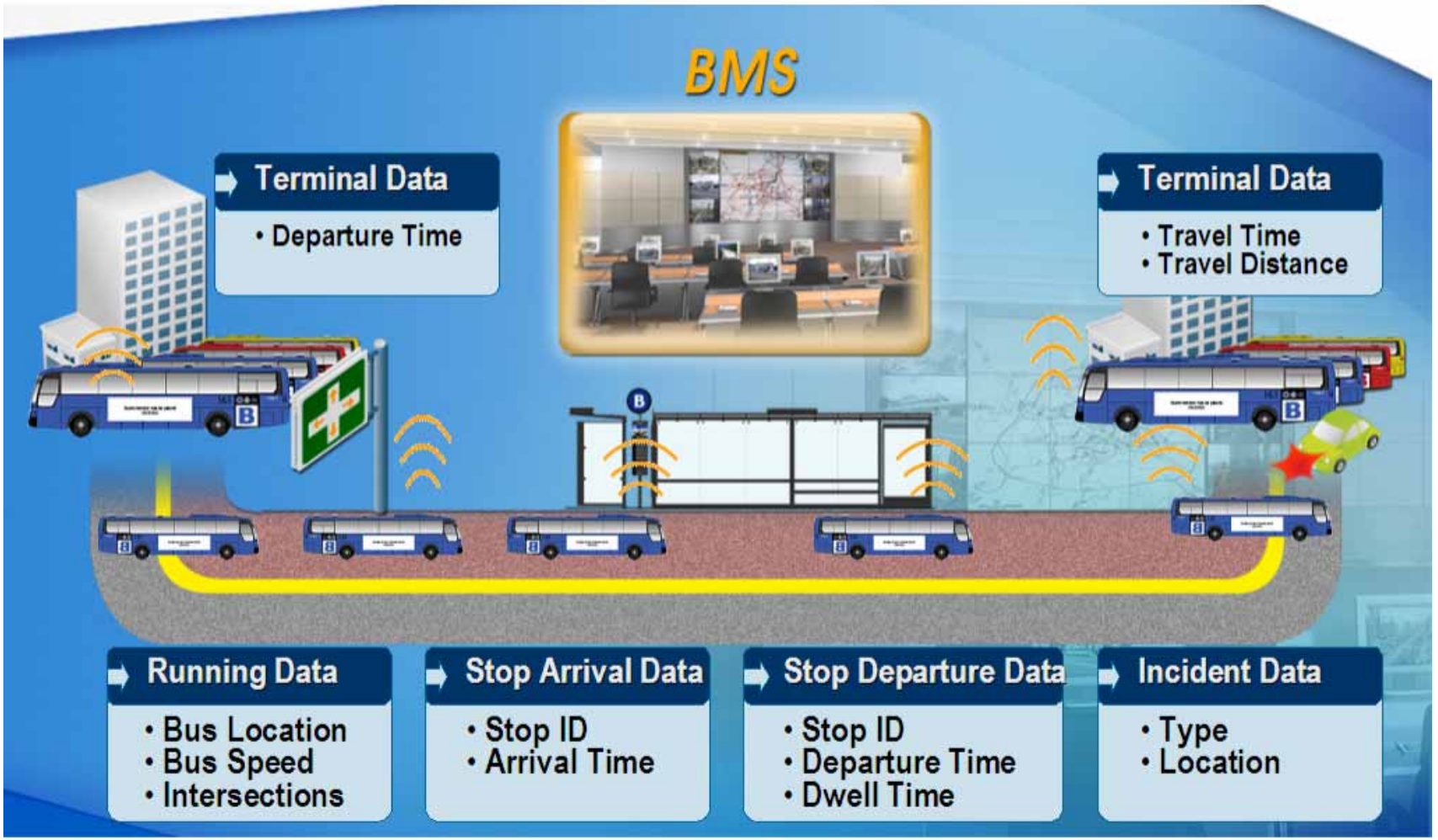
4. Improvement of Bus System

Bus System Improvement

Exclusive Median Bus Lanes

4. Improvement of Bus System

Bus Management System



4. Improvement of Bus System

Better Bus Stops

Shelter Improvement

Before

Shelter & Fence installation

After

Bus Information Service

Bus Shelter

ARS

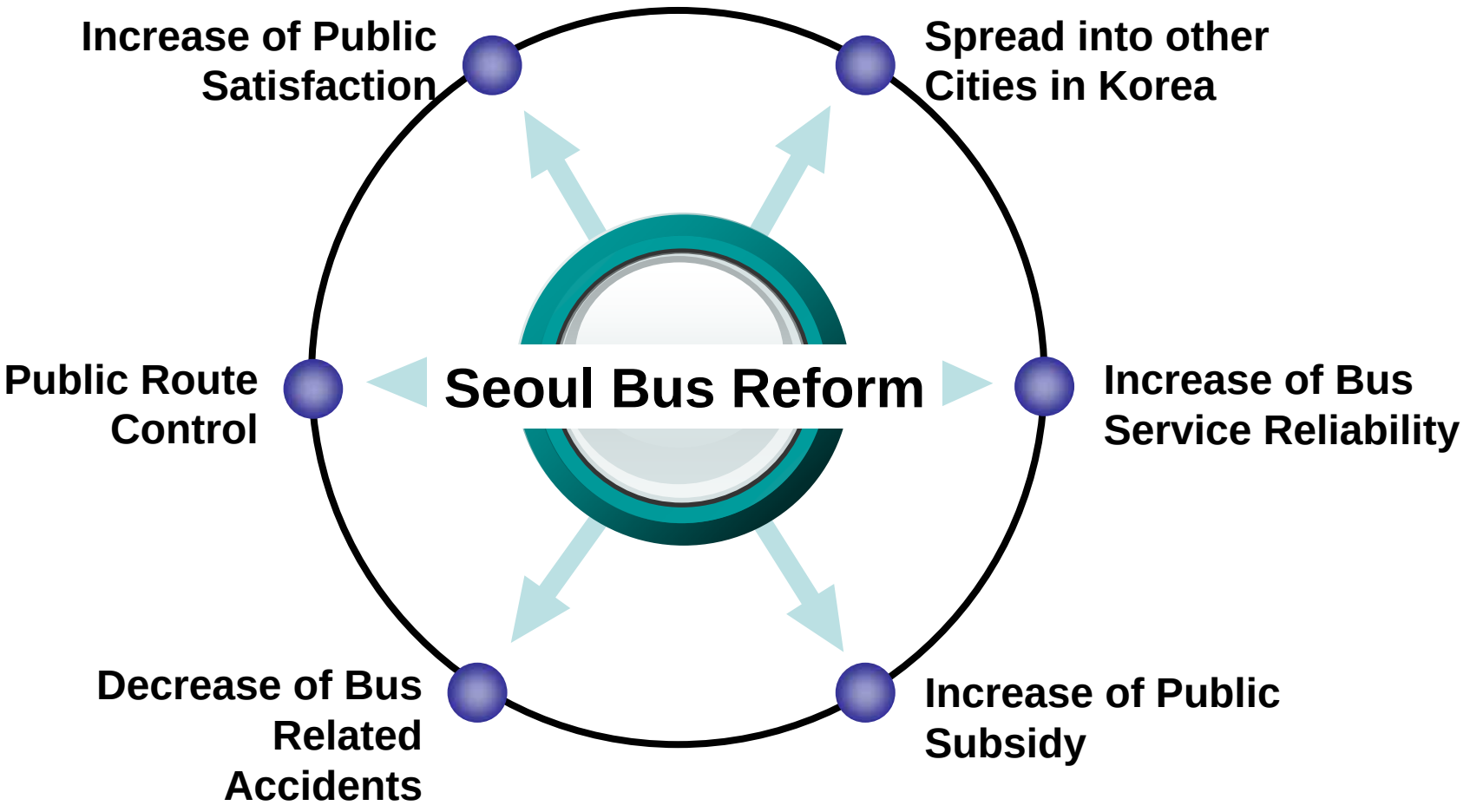
Real-time Bus Operation Information

Web

Mobile

4. Improvement of Bus System

Results of Bus System Improvement



4. Improvement of Bus System

Results of Bus system Improvement

Criteria		Seoul	Daejeon	Daegu	Gwangju
Number of bus passengers (thousands trip per day)	Before	4,870	352.5	657.7	424.4
	After	5,404	392.3	683.6	421.7
	Difference (%)	10.97	11.29	3.94	-0.65
Ratio of transfer trip (%)	Before	22.94	0.48	10.2	12.8
	After	38.20	11.53	12.6	19.1
	Difference (%)	66.52	2302.08	23.53	49.83
Smart card use (%)	Before	77.4	44.7	46.0	74.5
	After	88.3	64.5	84.3	80.5
	Difference (%)	14.08	44.30	83.26	8.10
Bus related accident (accident/month)	Before	663	671	97	N.A.
	After	466	660	87	N.A.
	Difference (%)	-32.73	-1.64	-10.31	N.A
Passenger' s level of satisfaction (%)	Before	22.4	13.0	N.A.	N.A.
	After	30.4	29.8	40.6	N.A.
	Difference (%)	35.71	129.23	N.A.	N.A.

4. Improvement of Bus System

Results of Bus system Improvement

Criteria		Seoul	Daejeon	Daegu	Gwangju
Number of passengers per bus (passenger/veh/day)	Before	666	365	383	455
	After	682	382	438	467
	Difference (%)	2.40	4.66	14.36	2.64
Standard operation cost (KW/veh/day)	Before	415,970	326,088	365,948	363,282
	After	560,485	416,767	463,984	406,010
	Difference (%)	34.74	27.81	26.79	11.76
Total number of passengers (passengers/day)	Before	4,180,292	284,263	844,502	439,171
	After	5,404,000	392,300	683,600	421,666
	Difference (%)	29.27	38.01	-19.05	-3.99
Number of buses	Before	7,360	926	1,718	894
	After	7,527	965	1,561	888
	Difference (%)	2.27	4.21	-9.14	-0.67
Operating cost for each passengers (KW/passenger)	Before	732	1,062	744	740
	After	781	950	1,050	869
	Difference (%)	6.64	-10.57	41.04	17.51

4. Improvement of Bus System

Results of Bus system Improvement

Criteria		Seoul	Daejeon	Daegu	Gwangju
Public subsidy (KW/day)	Before	174,030,137	12,893,151	28,002,740	12,205,479
	After	534,246,575	70,506,849	140,822,784	49,169,418
	Difference (%)	206.99	446.86	402.89	302.85
Public subsidy for each passenger (KW/person/day)	Before	42	45	33	28
	After	99	180	206	119
	Difference (%)	137.47	296.23	521.24	326.41
Public subsidy for bus (KW/veh./day)	Before	23,645	13,923	16,300	13,653
	After	70,977	73,064	90,213	55,371
	Difference (%)	200.18	424.77	453.46	305.56

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5. Fare and Smart Card system Integration

New Fare System

▷ Distance based fare

○ **For transferring trips**

: accumulated distance-based fare system

→(basic fare up to 10km;

extra fare for every additional 5 km)

▷ Free of charge for transfer

○ **Up to 5 times free transfers**

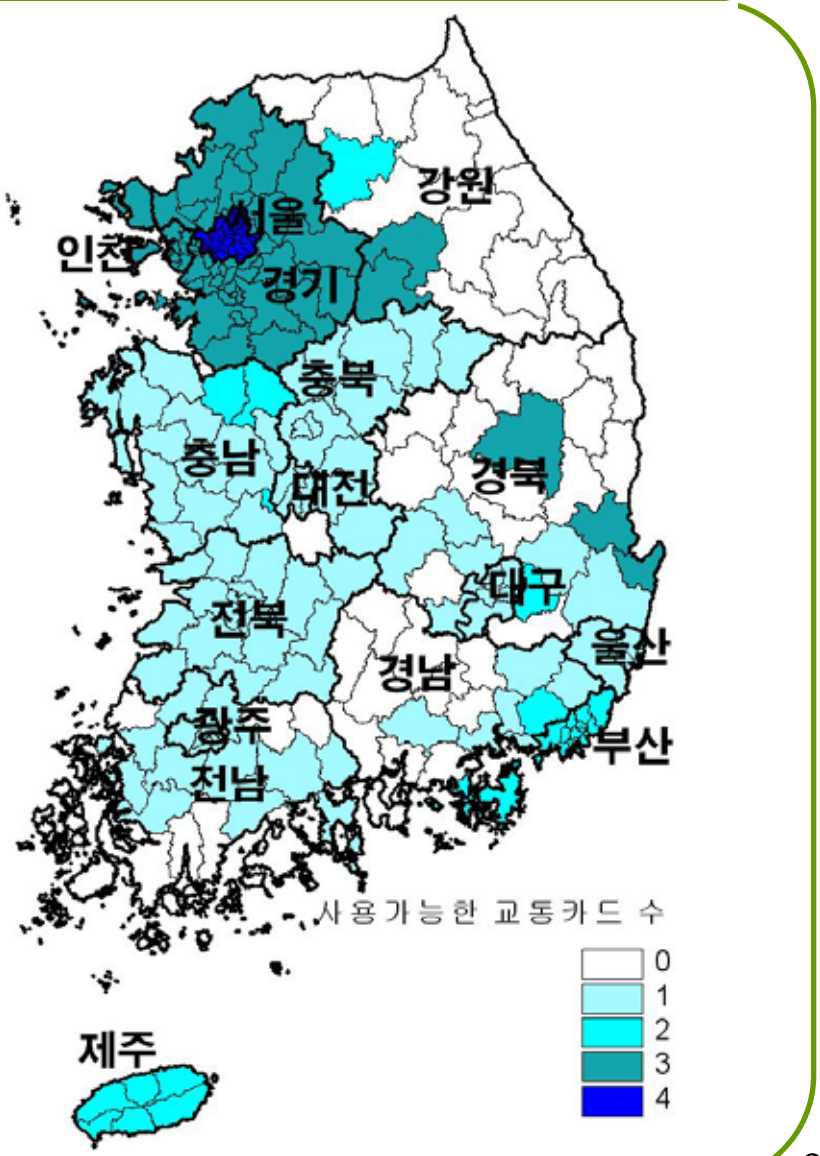
: free transfer with 30 minutes

○ **Integrated fare system in Seoul Metropolitan Area**

5. Fare and Smart Card system Integration

New Smart card system

- Smart card is used in 70% of Korea
- Up to 4 different cards are used in single area
- Hi-pass is used in Korean highway for toll collection. (Automatic Collection of toll at 30km/h speed of cars with RF (Radio Frequency) technology)



5. Fare and Smart Card system Integration

New Smart card system

5. Fare and Smart Card system Integration

Smart card system

Omnipresent e-Money Service

Transportation Card

- With just one card, travel by bus or subway, even taxi


Bus


Taxi


Metro

- Supporting various payment system
- Supporting scientific administration through collecting transport data

Public Service

- Parking, Congestion Charging and Civil SVC
- Palace, Museum and Public Facilitie

Payment

- Convenience Store
- Vending Machine

Entertainment & Shopping

- Theme Park, Movie
- Book Store, Fast Food

Mileage Service

- Converting allied companies' point/ membership mileages into T-money

6. CDM in Transport sector

CDM in Korea transport sector

- CDM (Clean Development Mechanism) an arrangement under the Kyoto Protocol allowing industrialised countries with a GHG reduction commitment to invest in projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries.

- Improvement of bus system in several cities are prepared as CDM.

- Other projects are currently discussed and processed as CDM.

감사합니다.

Thank you !