



# **Transportation Policy for Reducing GHG Emissions in Korea**

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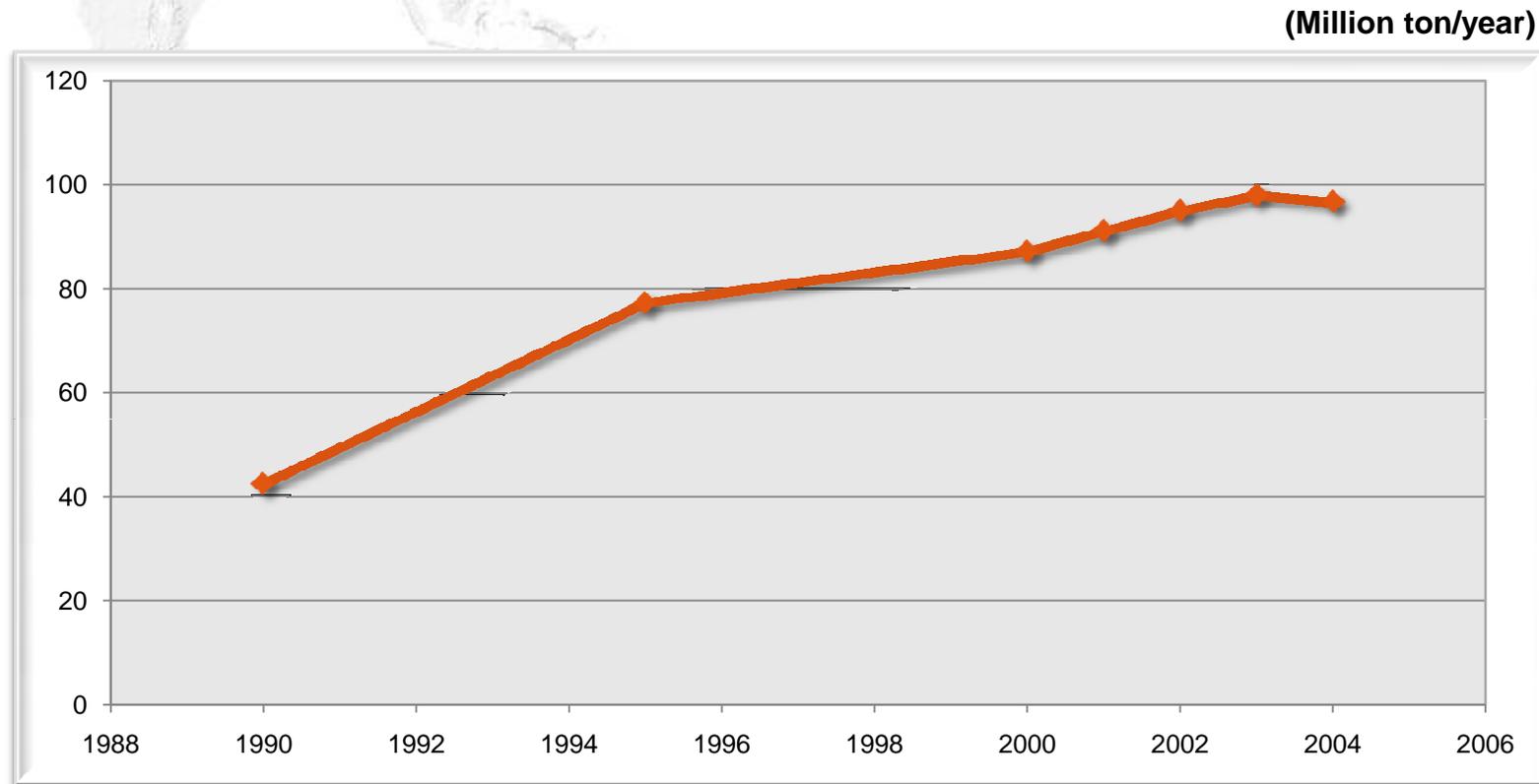
THE KOREA TRANSPORT INSTITUTE

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# CO<sub>2</sub> Emission Trends in Transportation Sector of Korea



- Average annual increase
  - 1990 ~ 2004 : 6.1%
  - 2000 ~ 2004 : 2.6%

# Transportation Policy Measures in Korea

## Transit Improvements

- **BRT (Bus Rapid Transit) System**
- **Integrated Transit Fare System**
- Improvement of Park-and-Ride Lots

## Demand Management

- **Weekly Car-Free Day at Public Organizations**
- **Voluntary Weekly Car-Free Day**

- Decreasing Empty Ratio of Trucks (Using Information Tech.)
- Electronic Toll Collection System
- Improvement of Cargo Terminals

- **Low Emission Car Requirement for Government Owned Vehicles**
- Supply of CNG Buses and Subsidies
- Promotion of Small Engine Displacement Cars

## Efficiency Improvement

## Promotion of Low Emission Vehicles

## BRT System (Transit Improvements)

- Introduced in July 2004 in Seoul
  - Exclusive median bus lanes
  - 7 major corridors (69.9km)
  - Will be expanded to 16 corridors (191.2km)
  - \* speed: 11.8km/h → 20.7km/h
  - \* No. of passengers: 32.5% increase
- Goyang City Adopted in Oct 2006
  - Exclusive median bus lanes (15.6km)
  - \* construction cost: 2.15 mil. US\$/km



## Integrated Transit Fare System (Transit Improvements)

- Unified and coordinated fare structure
  - modes: rail, bus
  - regions: Seoul, Incheon, Gyeonggi
- Flat fare system -> Distance-based fare system
  - Free transfer within 30 minutes
  - Only in cases of bus fare card use  
(passengers should touch the pad with card whenever get on/off the vehicle)
- Each municipality subsidizes the loss caused by new fare system
  - Gyeonggi will subsidize 65 mil. US\$ in second half of 2007

# Weekly Car-Free Day at Public Organizations (Demand Management)

- Introduced in Sept. 2000
  - Once every 10 days based on the last digit of registered license plate number
  - On that day, those cars cannot enter public organizations
- Tightened in June 2006
  - Once in every week
  - Only for the public organizations
  - Mon (1, 6) Tue (2, 7) Wed (3, 8)  
Thu (4, 9) Fri (5, 0)



# Voluntary Weekly Car-Free Day (Demand Management)

- Introduced in July 2003 in Seoul
  - Attach electronic tag to car for Identification
- Incentive
  - car registration tax: 5% cut
  - tunnel congestion fee/toll: 50% cut
  - insurance: 2.7% cut



# Low-Emission Car Requirement for Government-Owned Vehicles (Low Emission Veh. Promotion)

Promotion)

- Since 2005, public organizations by law must buy more than 20% of low emission cars, like hybrids
- The government subsidizes the differences in price
- Subsidy Plan:

(units: veh., mil. US\$)

		2007	2008	2009	2010	2011	2012	2013	2014	Total
Electric Bus	vehicles	500	500	2,000	2,000	2,000	2,000	2,000	2,000	13,000
	subsidy	2.58	2.58	10.32	10.32	10.32	10.32	10.32	10.32	67.10
Hybrid Car	vehicles	10,000	10,000	10,000	20,000	20,000	20,000	20,000	20,000	130,000
	subsidy	10.75	10.75	10.75	21.51	21.51	21.51	21.51	21.51	139.78

## Effectiveness of Implemented Measures

Measures	Emission Reduction (tCO <sub>2</sub> /year)	Cost Effectiveness (US\$/tCO <sub>2</sub> )
BRT (Bus Rapid Transit) System	9,529	3,147
Integrated Transit Fare System	8,042	4,777
Electronic Toll Collection System	4,300	3,483
Improvement of Park-and-Ride Lots	11,036	7,395
Improvement of Cargo Terminals	1,935	33,707

- **Base year : 2005**
- Cost was discounted by the interest rate (6%)
- Estimated based on survey data
- source : The Korea Transport Institute 2006.

## Policy Direction

- Enhance Transit System
  - Nationwide Expansion of BRT System
  - Nationwide Expansion of Integrated Transit Fare System
- Curb Car Usage
  - Promote Voluntary Weekly Car-Free Day nationwide
  - Promote Small Engine Displacement Cars

		1995	2000	2002	2004	Annual Increasing rate(%)
Supply	No. of Buses (vehicle)	27,585	30,310	31,567	31,757	1.58%
	Length of Subway (km)	194.6	393.4	411.5	423.5	9.02%
Demand (mil. person/day)	Bus	5,688	4,824	4,523	4,452	-2.42
	Subway	1,693	2,235	2,012	2,033	1.85
	Total	7,381	7,059	6,535	6,485	-1.29

## The Way to Expand BRT System

- Legislating a new law: **Transit Promotion Law (2005)**
  - The minister should establish a **Comprehensive Transit Plan** every 5 year
  - Mayors should establish a **Local Comprehensive Transit Plan** every 5 year
    - Show the way to a **Transit Oriented Transportation System**
- Transit Improvement Plan in the Comprehensive Transit Plan (2007-2011)
  - LRT Construction: 8 corridors, 149.9km
  - BRT Construction: 50 corridors, 476.3km
  - Transfer Facilities: 46(15 Centers, 11 Terminals, 20 Park-and-ride buildings)
- Subsidy for Municipalities
  - LRT, BRT: 40% of Construction Cost
  - Transfer Facilities: 30% of Construction Cost

# BRT/LRT Construction Plan

City Size	Mode	No. of Corridors	Length (km)	Cost (million \$)
Big Cities	LRT	5	102.1	5,535.91
	BRT	40	390.5	2,383.33
	Sub total	45	492.6	7,919.25
Middle Sized Cities	LRT	2	24.3	543.01
	BRT	4	49.4	265.59
	Sub total	6	73.7	808.60
Small Cities	LRT	1	23.5	832.47
	BRT	6	36.4	87.20
	Sub total	7	59.9	919.68
Total		58	626.2	9,647.53

## Policy Implications

- Successful case of Seoul stimulated municipalities
  - It removed the doubt of municipalities about the new system
  - They could learn details from the experience of Seoul
- The role of central government is also important
  - Timely legislation of the [Transit Promotion Law](#)
  - sufficient subsidies to the municipalities
- Improving transit is not enough
  - Curbing car usage should be introduced simultaneously
  - [The more they are exposed to transit, the more they use it](#)

**Thank you**

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