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Activities in the Fiscal Year 2005 in Korea

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1. Introduction

- The **deterioration of air quality** from rapid industrialization and the soaring number of vehicles on the road is one of the most striking changes that Korea experienced during the process of achieving unprecedented economic and social growth.

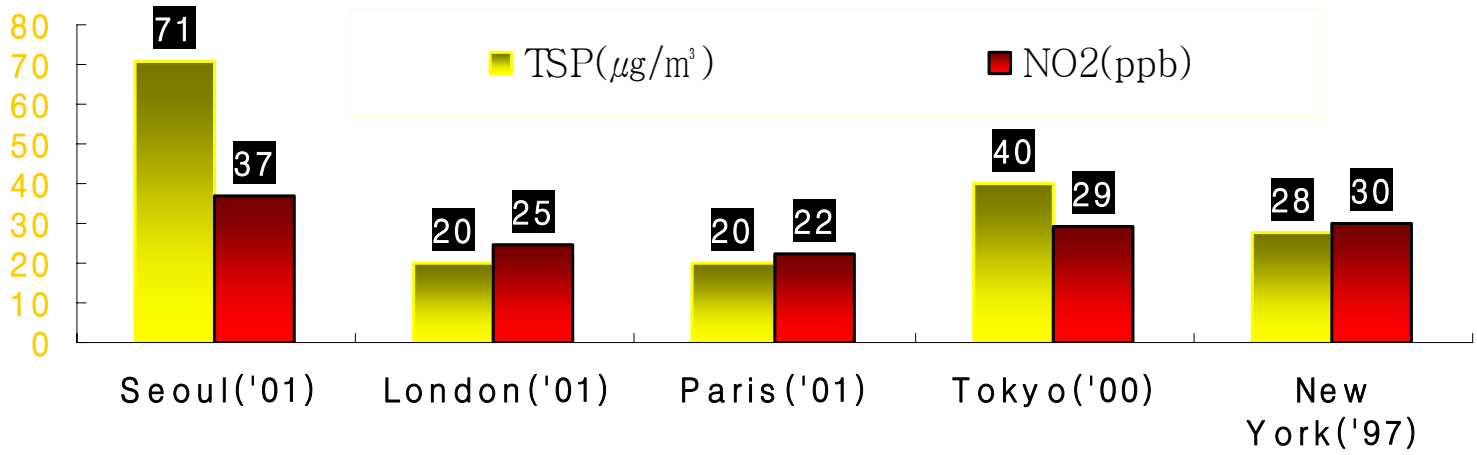
- The MoE sets up air quality improvement targets on 6 major air pollutants including carbon dioxide, ozone, and particulate matters, but also introduced practical measures to pave the way towards achieving these goals.

- **Special Measures for Metropolitan Air Quality Improvement**, a landmark policy that stipulates emission standards, a total air pollution load management system, an emissions trading system, and the supply of **low emission vehicles.**

- To analyzes the practical policies related to **low emission vehicles** scenarios along with projections of key determinants in the transport sector in this area.

2. General Situation

- Air quality in MA (metropolitan area) in Korea : the lowest among the OECD countries
- 96% in the rate of the number of ozone warning, 80% in the rate of excess environmental standard of NO2 and 64% of PM are happed in MA ('02)



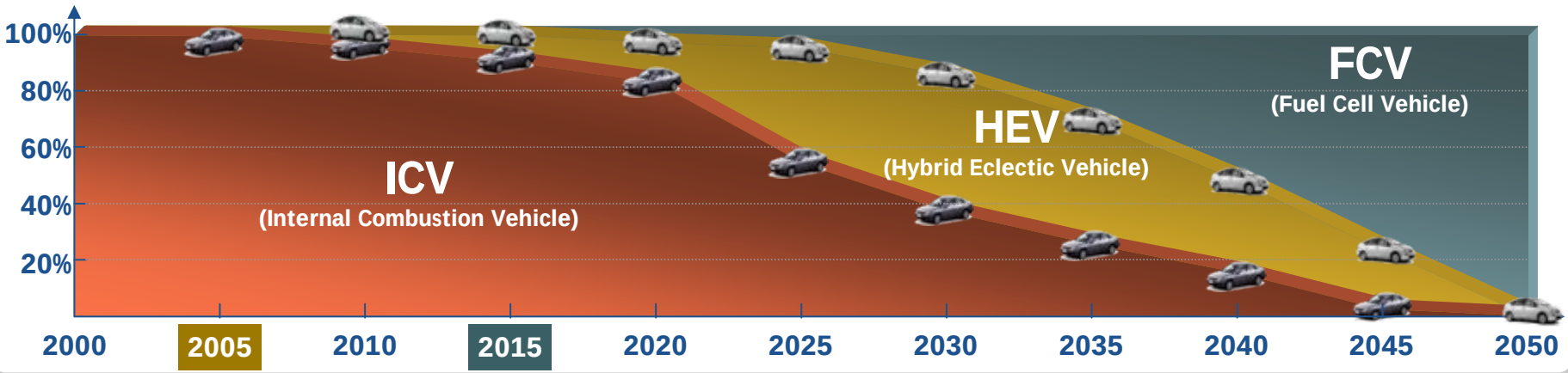
2. General Situation

- Number of V./km Road & Travel distance

	Korea	USA	England	Japan	Germany
Number of vehicle per 1km road	142	34	84	63	199
Travel distance (km) per one vehicle	21,266	20,313	16,503	10,220	-

2. General Situation

Mega Trend of Car Industry



Main device each vehicle

ICV

- Engine
- small Generator
- Battery

High voltage

HEV

- Engine
- Motor/Generator
- PCU(Power Control Unit)
- Battery/HV Relay

Engine Extinction

FCV

- Fuel Cell
- Motor
- PCU(Power Control Unit)
- Battery/HV Relay

2. General Situation

- Comparison with low emission Vehicles

	Electric V.	H V.	Fuel Cell V.	Hybrid V.
Mileage(km)	215	350	355(H 350bar)	Superior than general V.
Maximum Speed (kph)	125	226	140	165
Price	495 (ten thousand yen)		960(ten thousand yen)/year(lease cost)	226(ten thousand yen)

Ref. : KISTI(Korea Institute of Science and Technology Information) , 2004

3. Current Policies

- Hybrid car
  - The first Korean-made hybrid car ¥"Click¥" starts operation on November 8, 2004. Four hybrid-powered vehicles were delivered to the Ministry of Environment

  - Supply plan : '04-'06 : 780, → '07 : 1,195→ '08 2,195

  - The Ministry plans to provide financial assistance of 28 million Korean won in supplying hybrid cars to the Korean National Police Agency, Metropolitan Governments, NGOs, the Ministry of Transportation and Construction, and the Ministry of Health and Welfare.

3. Current Policies

- Comparison between hybrid V. and gasoline V. low emission V.

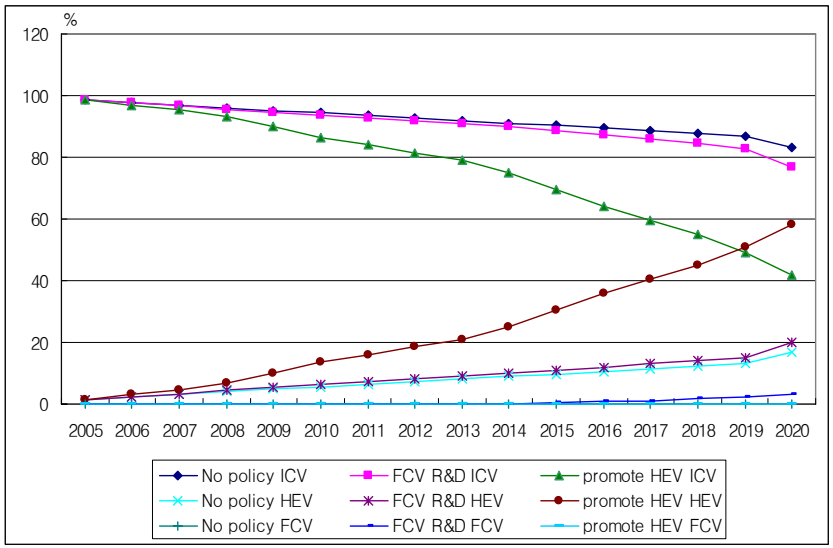
		Small passenger car (1,400cc)		Large passenger car (3,500cc)
		Hybrid	Gasoline vehicle	
Air pollutant Emission	Total (g/㎞)	0.199(100)	0.315(158)	0.95(477)
	CO	0.160	0.258	0.86
	NOx	0.025	0.031	0.02
	HC	0.014	0.026	0.07
Fuel Efficient (㎞/ℓ)		18.9	13.1	7.2
Air pollutant emission(㎏)		3.98	6.3	19
Energy use(ℓ)		1,058	1,527	2,778
Cost of energy use/year(1000won)		1,587(100)	2,291(144)	4,167(263)

3. Current Policies

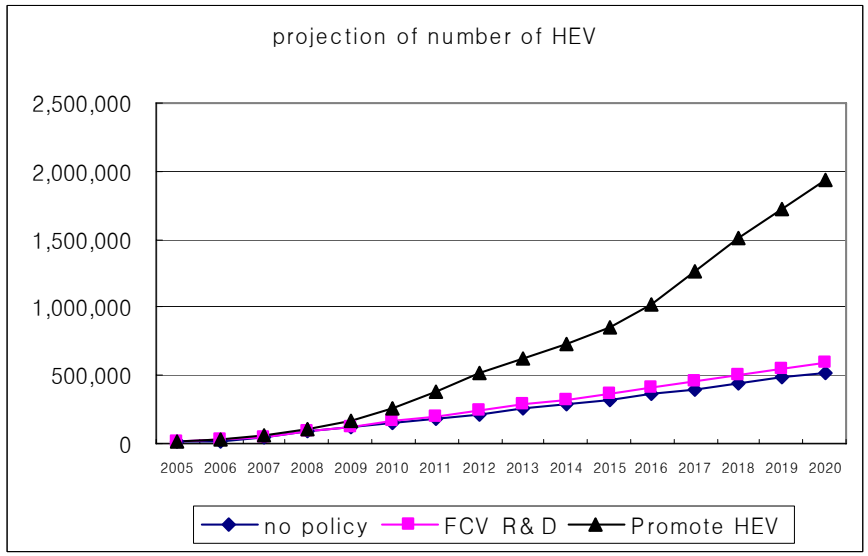
- Natural gas bus
  - MOE has started operating natural gas vehicles (NGVs) in replacement of diese buses with long operation length and high emissions discharge.
  - As of May 2004, 4,876 diesel vehicles were replaced with NGVs, and 20,000 diesel vehicles, which account for 48% of the total diesel vehicles nationwide, will be replaced with NGVs by 2007.
  - as a policy to control in-use diesel vehicles that are not subject to the replacement, the Ministry is promoting another project to encourage the attachment of Diesel Particulate Filters (DPF) and Diesel Oxidation Catalysts (DOC).

4. Scenario Setting

- Precondition for setting Scenario
  - Sc 1 : No policy
  - Sc 2 : FCV R&D
  - Sc 3 :Promote HEV
- Projection of market share



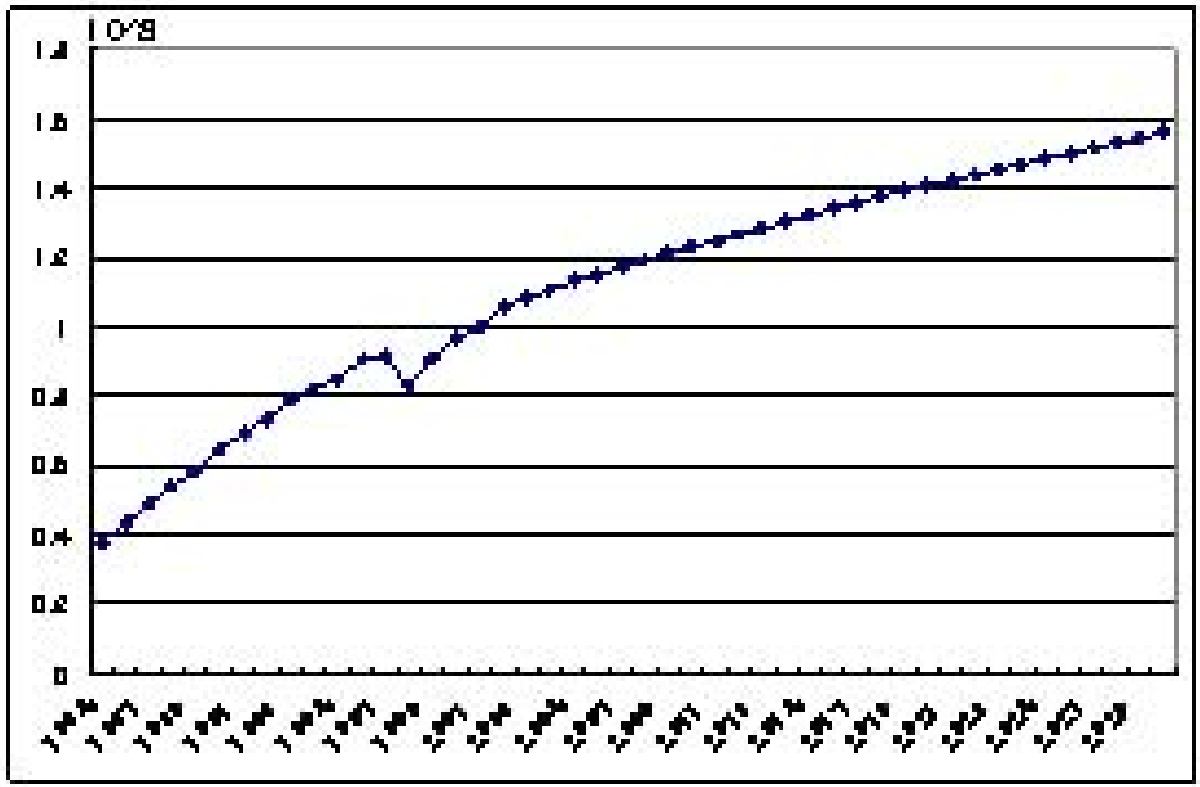
- Projection of number of HEV in Korea



Ref : Market Share - James Sweeney, Stanford University

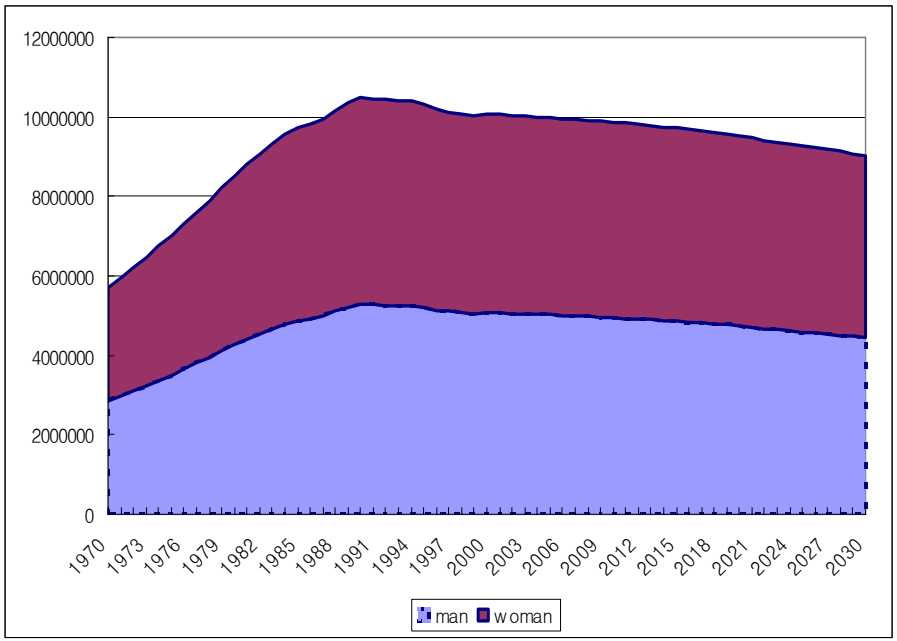
4. Scenario Setting

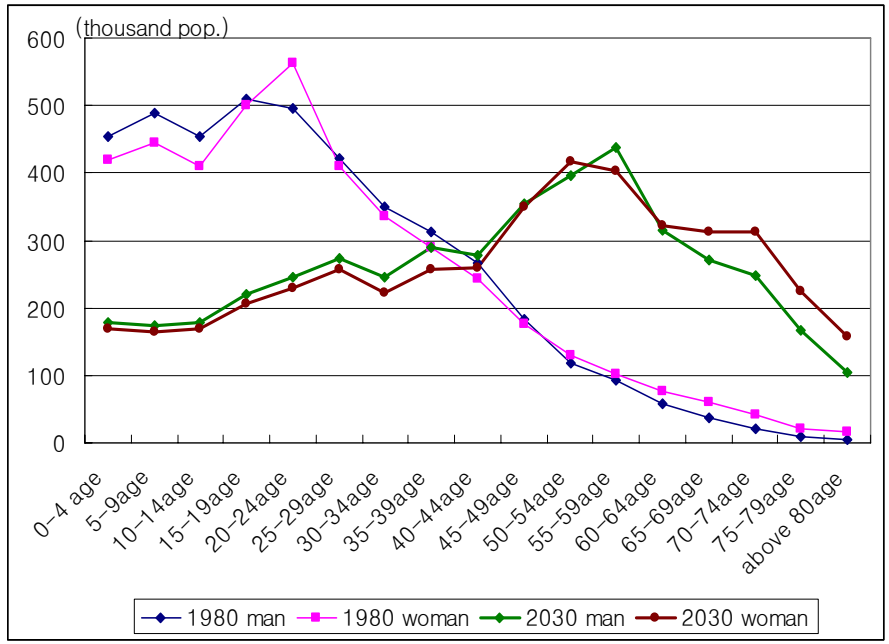
- Precondition for setting Scenario
  - GRDP



4. Scenario Setting

- Precondition for setting Scenario
  - Population





4. Scenario Setting

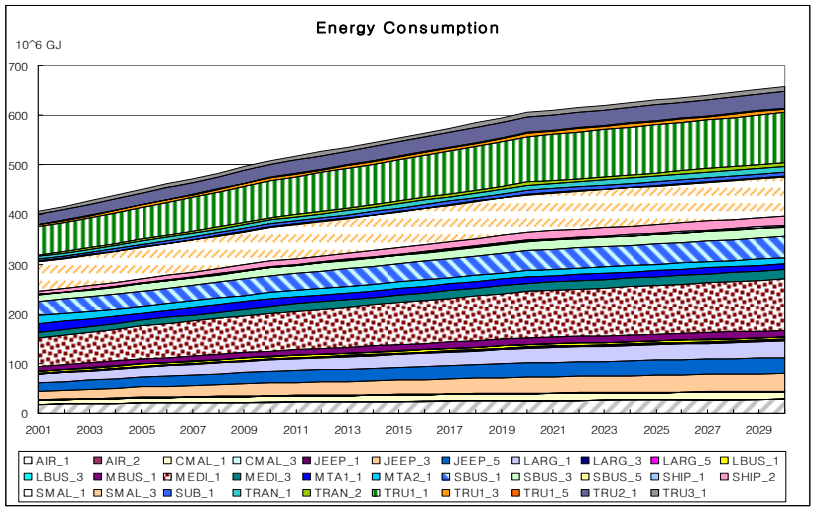
- Scenario Setting

Scenario	Description
No change	Present share will not change by 2030
compete	New car, hybrid car, fuel cell car compete by 2030
HEV	Hybrid electric vehicle will take 21.8% shares in 2030
HEV & FCV	Hybrid electric vehicle and fuel cell vehicle will take 26%, 7.7% shares in 2030
Promote HEV	Hybrid electric vehicle will take 100% shares in 2030

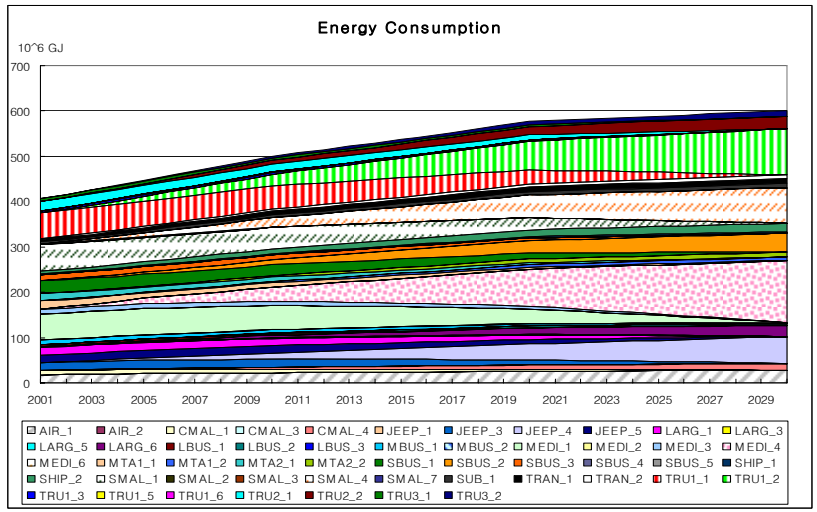
4. Scenario Results

- Energy Consumption

Keep the present (2001)



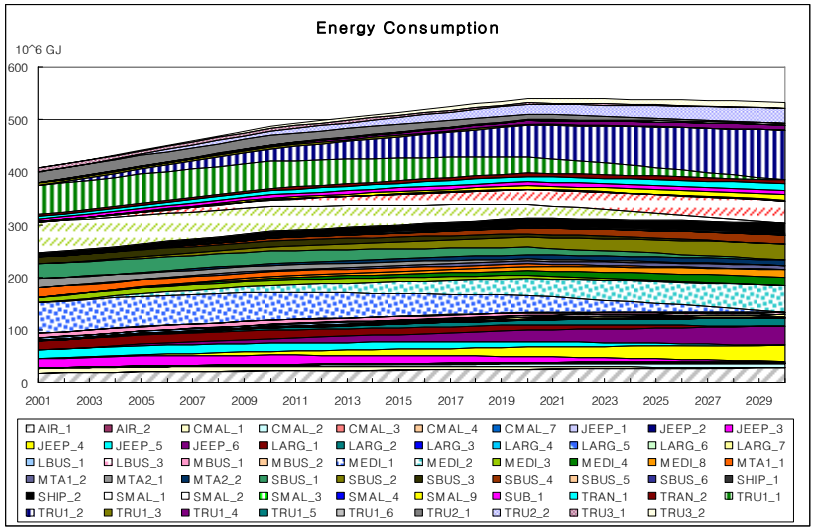
Compete



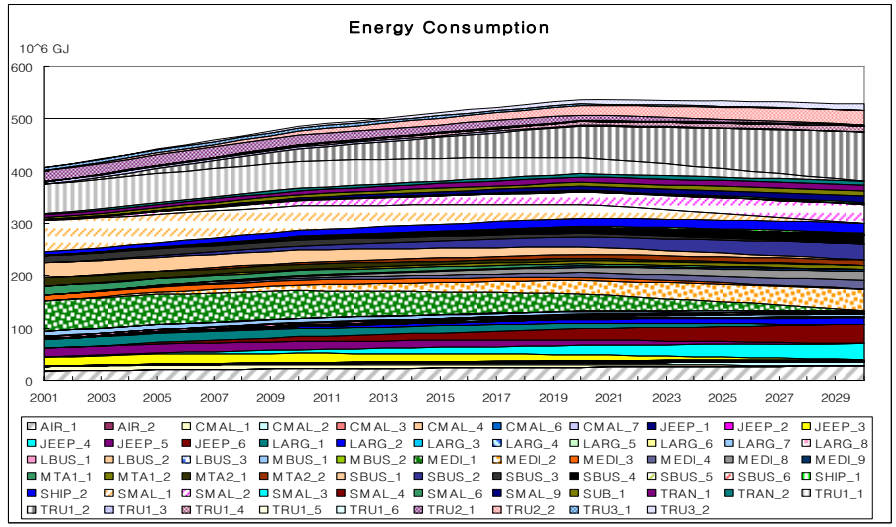
4. Scenario Results

- Energy Consumption

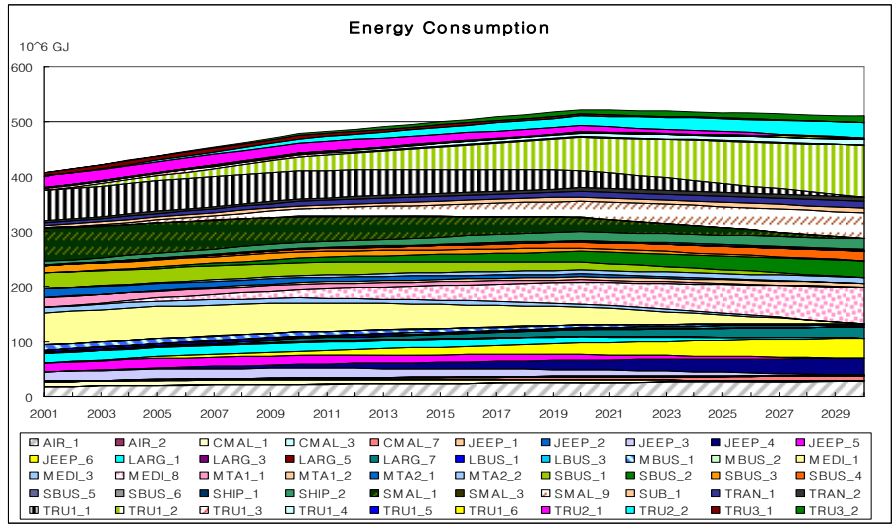
HEV



HEV & FCV

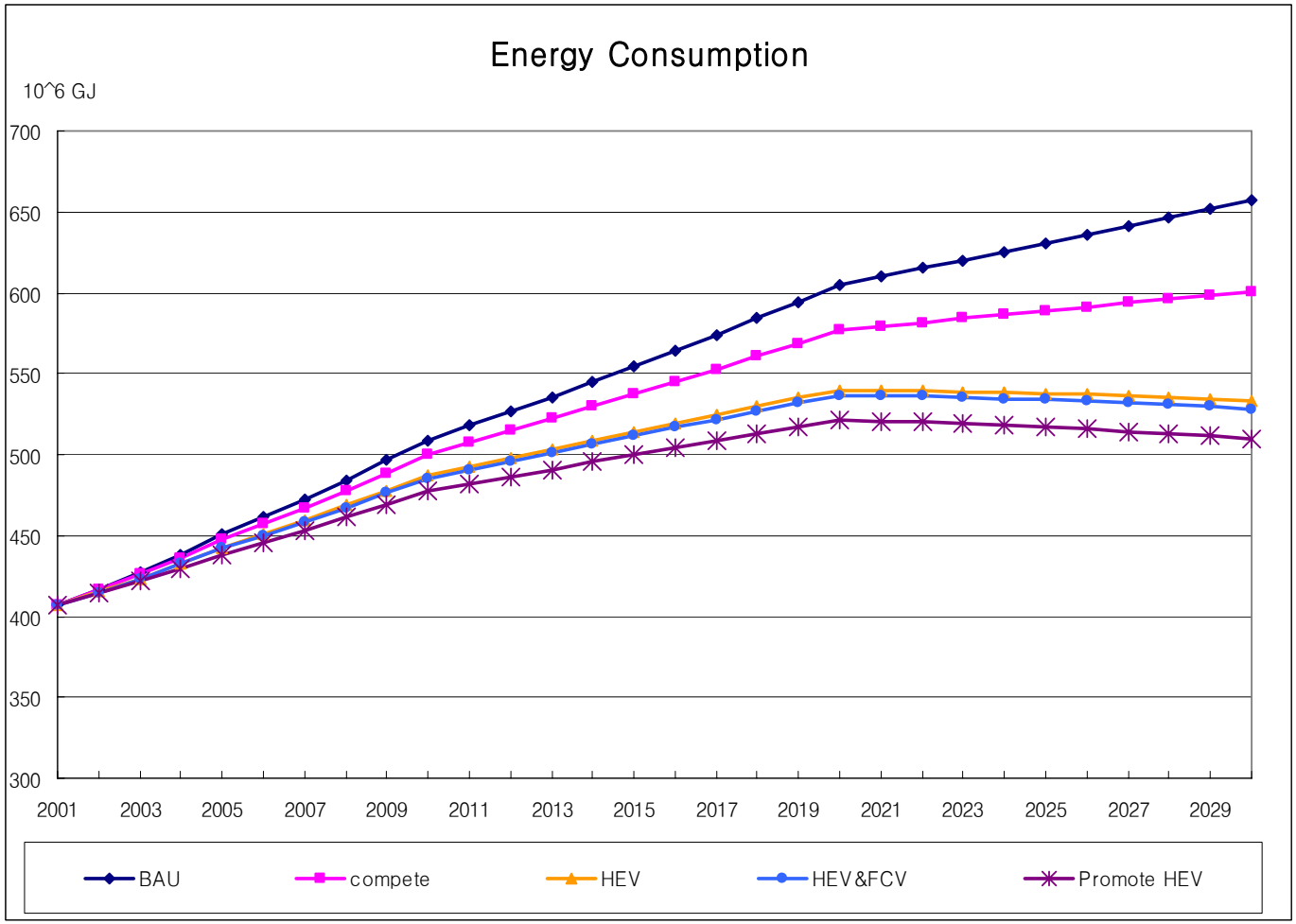


Promote HEV



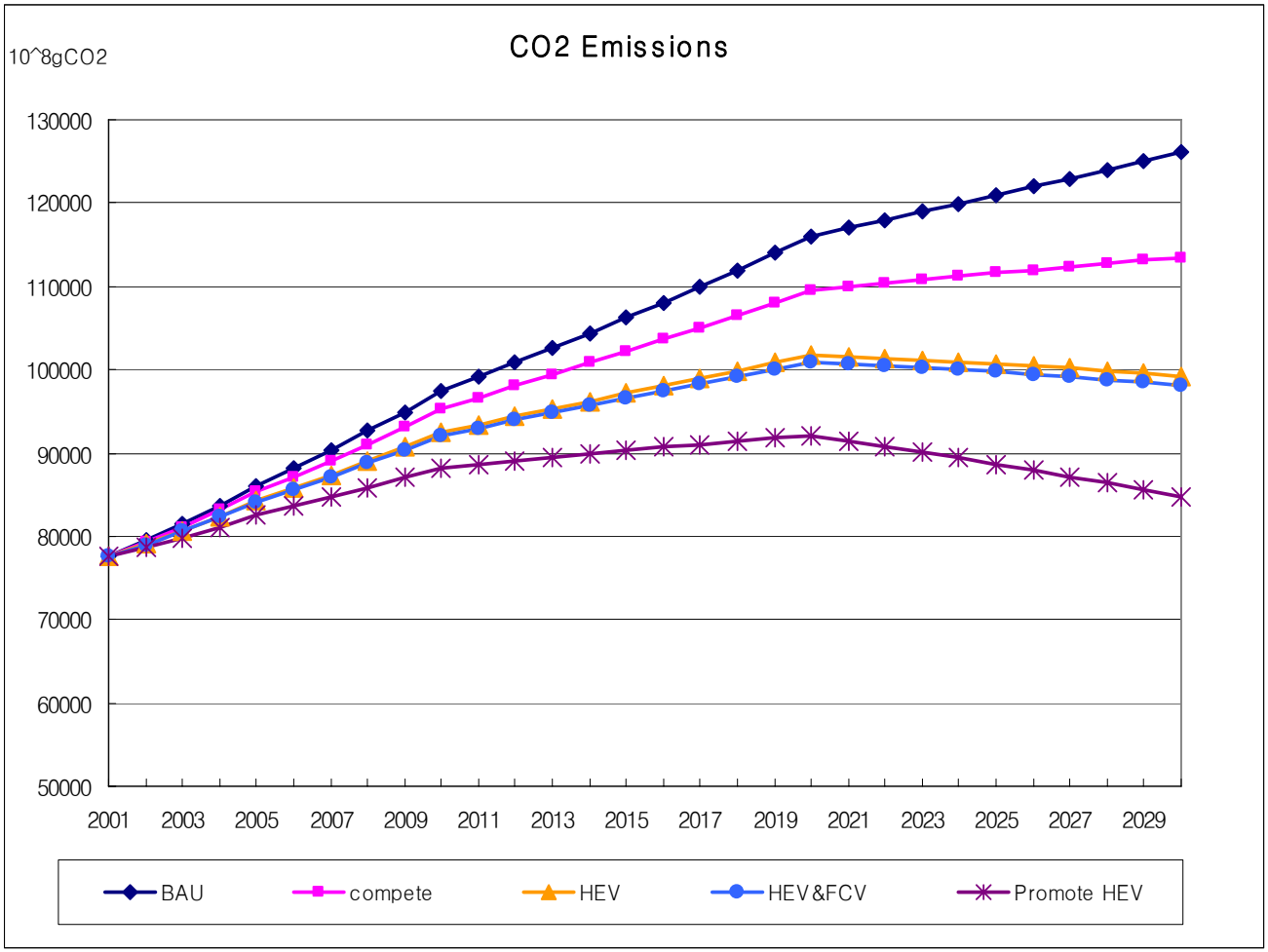
4. Scenario Results

- Energy Consumption



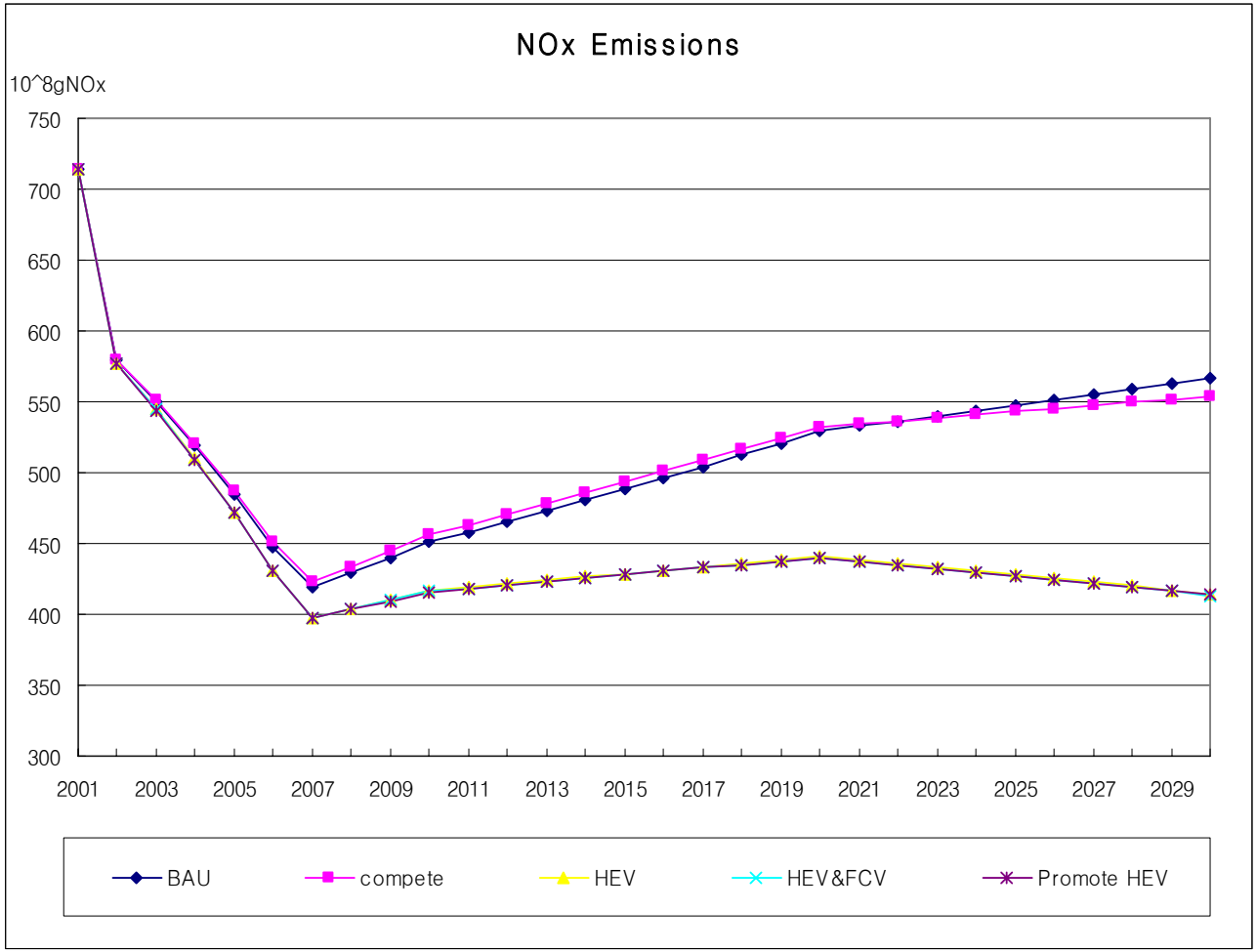
4. Scenario Results

- CO2 Emissions



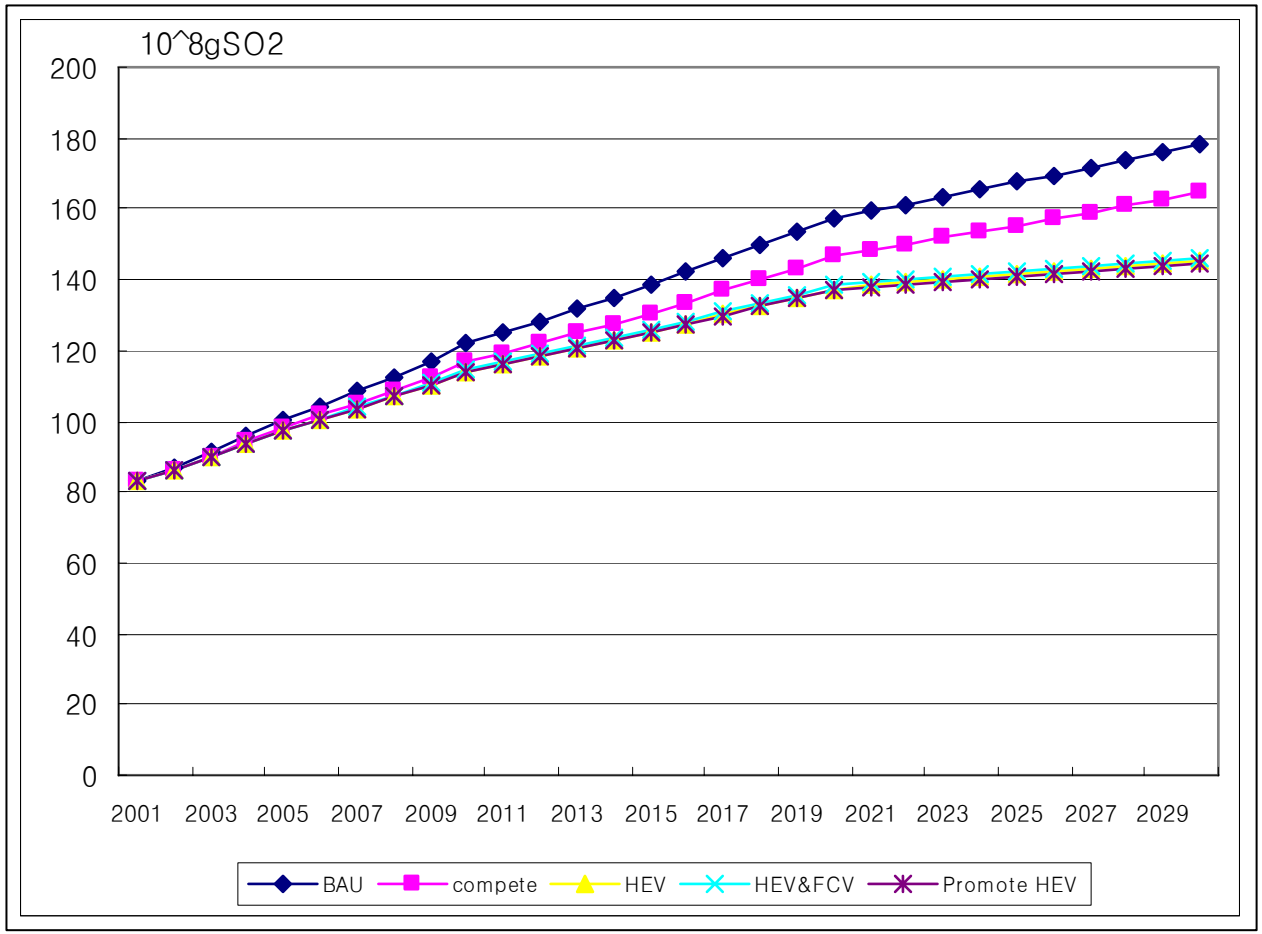
4. Scenario Results

- NOx Emissions

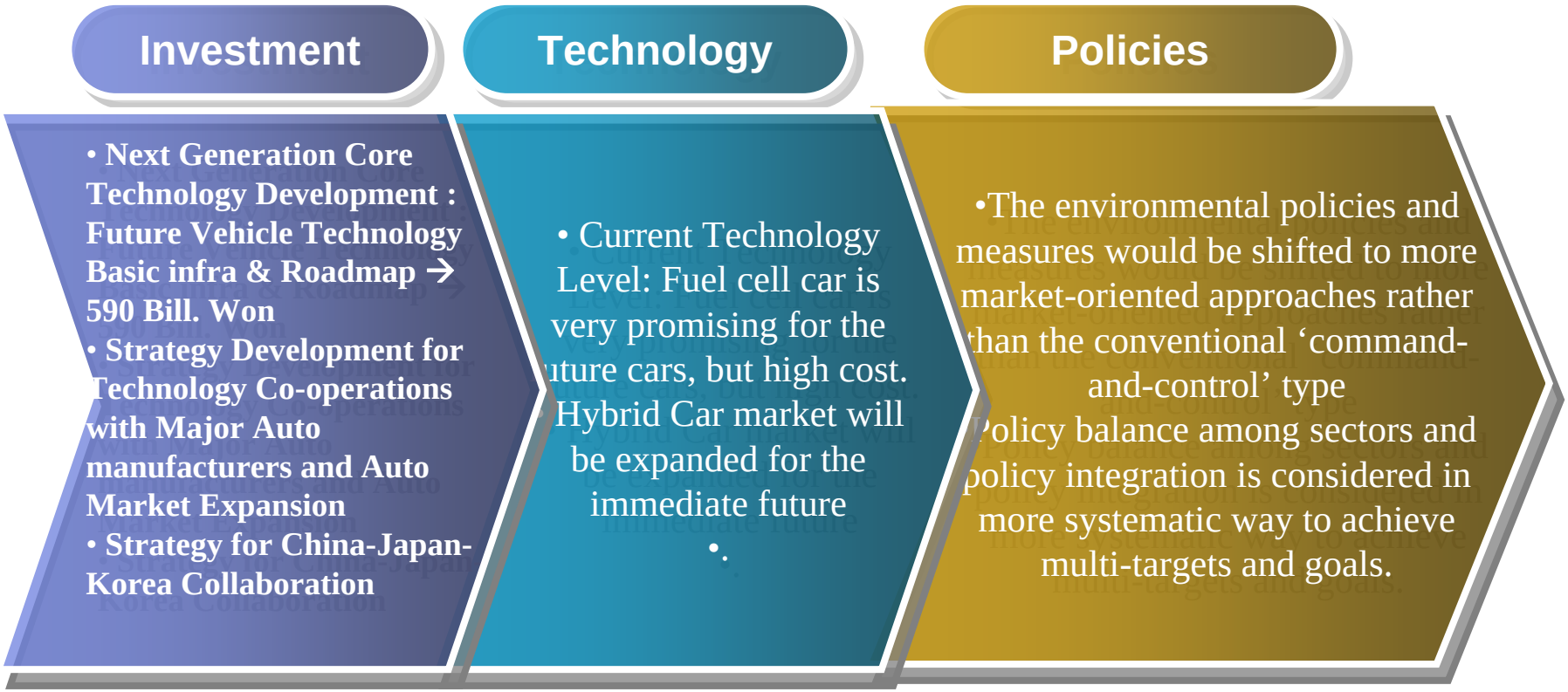


4. Scenario Results

- SO2 Emissions



5. Conclusion




Thank You !