

Electric Vehicle Program in Korea



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1. Introduction

Why supply of electric vehicle is needed?

Resource Depletion



Rise of oil Price, Limited resource
: Oil by 40 & Gas by 58 years
(World Resource Institute)

Emission of
Greenhouse Gases



Greenhouse gases emissions
: Transport accounted for 17 %
(78.2 % as Road transport)
(Greenhouse Gas Information Center)

Risk of Automobile
emissions



Carcinogenicity of diesel emission
: change in dangerous Index
(2A → 1st, 06. 2012)
(WHO IARC)

*1st : Sufficient material that can lead to cancer

However, is it dissatisfied with supply of eco friendly cars?

- **Because of eco friendly cars, is it OK even expensive?**

- * **Size like as small car, but price as much expensive as mid or full size car. When Eco-friendly cars will be supplied more cheaper?**

- **Because of eco friendly cars, is it OK even uncomfortable?**

- * **When we do not worried about concerning such as anxiety about technology, lack of infrastructure and recharging?**

- **When the timely development of eco friendly cars? Now or after preparing for development and economics?**

- * **Do you think that environment will be improved though few eco-friendly cars are supplied?**

 So, It is important that the leading role and support of government for supply of eco friendly cars

2. Status of Korea's Vehicle Market

Under continuous growth, but it still requires support!

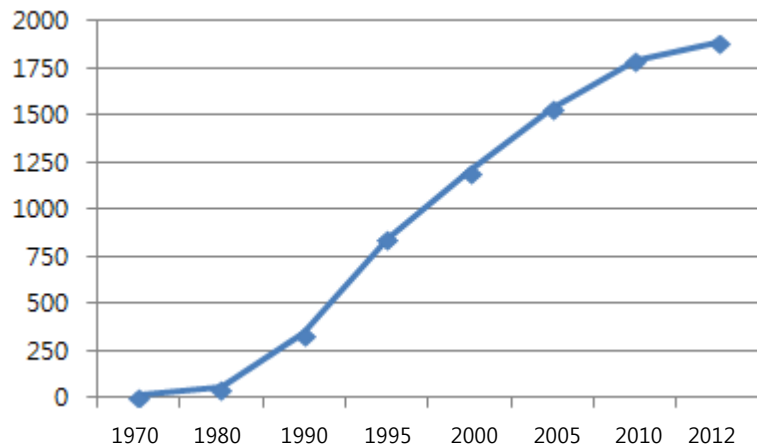
- Continuous growth in domestic automobile market

* 12 (1970) ⇒ 53 (1980) ⇒ 339 (1990) ⇒ 1,205 (2000) ⇒ 1,887 (2012) (Unit : 10 thousand)

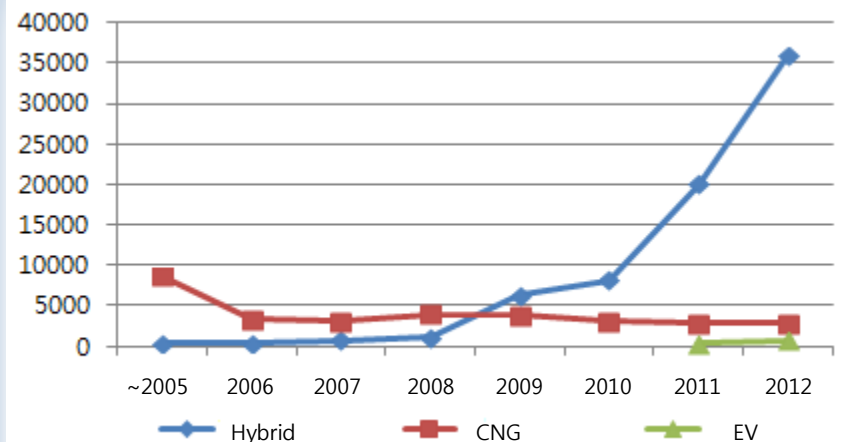
- The major eco-friendly vehicle is Hybrid

* account for 3 % in total sales of vehicle (2012)

- Launch electric vehicle and fuel cell vehicle recently



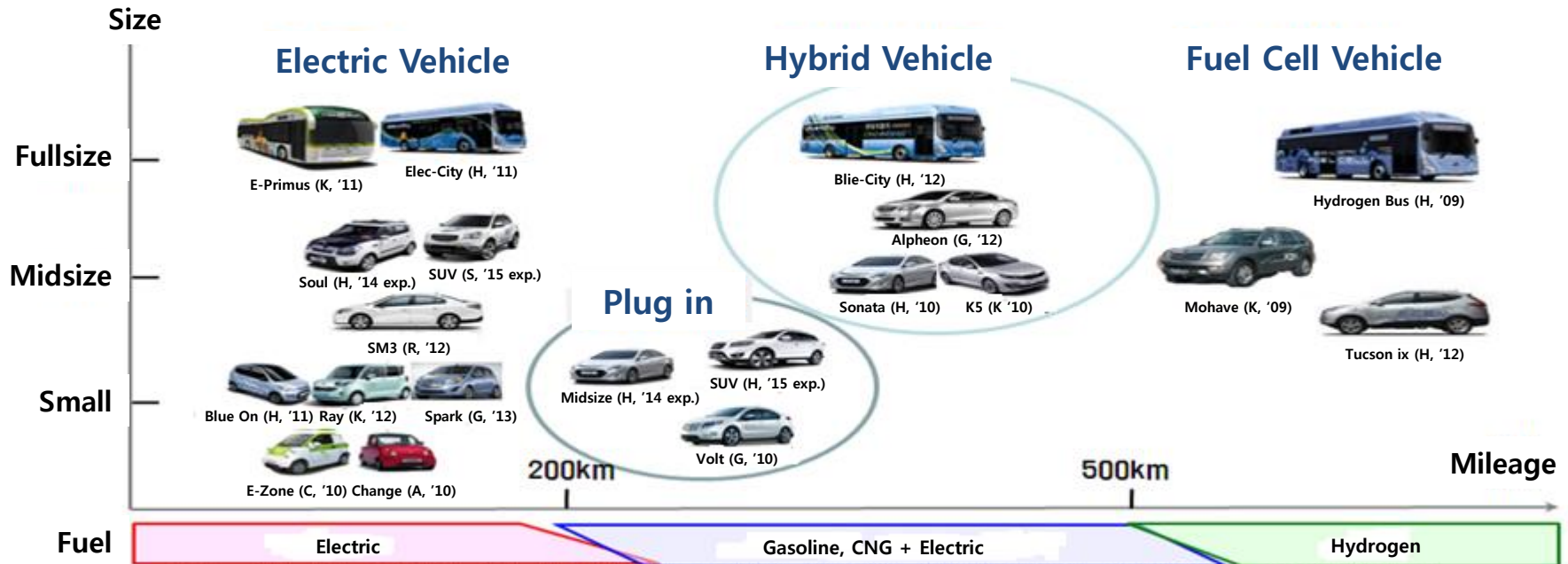
[Registration status of eco-friendly vehicle]



[Sales status of eco-friendly vehicle]

Supply of eco-friendly vehicle

- Since supply of eco friendly and low emission vehicles from Special Measures on Seoul Metropolitan Air Quality Improvement in 2005
- Launch the Natural Gas Vehicles, Hybrid cars, Electric cars and Fuel cell vehicles
- KIA Soul BMW i3 (electric car) will be launched in our domestic electric vehicle market in 05. 2014



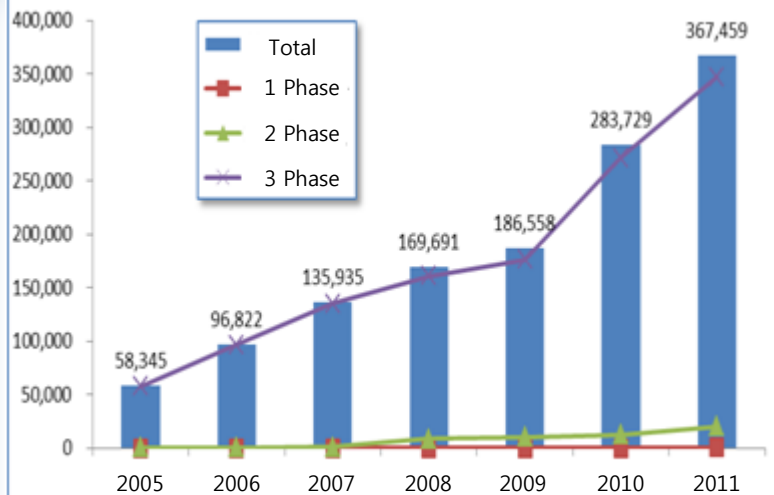
*Note : (H) Hyundai, (K) Kia, (G) GM-Korea, (R) Renault SamSung (F) Fiber Hankuk, (C) City & T, (A) AT Motors

[Development (expectation) Status of Eco-Friendly Vehicle]

3. Policy Direction of Korea's Electric Vehicle

① System enforcement on supply & purchase of eco-friendly and low emissions vehicle

- As part of the Seoul Metropolitan Air Quality Improvement Measures (2005~)
- Supply of eco-friendly vehicle as 360,000 especially including 180,000 in Seoul Metropolitan
- * Because of initial development conditions, recently launched Hybrid and electric vehicle



[Supply state of eco friendly car]

- Impose duty on sales on eco-friendly low emission vehicle as 8.5 %in Seoul Metropolitan (2012)
- *Average sales records over 3,000 for compact car or 300 for mid and fullsize car
- Expand of purchase duty to administration and public agency
- Support incentive at purchase and use phase

② Supply of electric vehicle

- Invigorate R&D and supply of electric automobile for being among the world's top four
- Focus on creation of a initial market concentration public sector through support of subsidy and infrastructure construction of public recharging

* Supplied 1,424 electric cars and 1,497 public charge facility at by 2013. 06



• Promote EV leading city

* Build low CO₂ emissions local transport system

- Increase of usability by building public charge facility and charge information system in city

• Support purchase aid (electric car, recharger)

Slow speed car	High speed car	Electric buses	Slow charger
578	1,500	10,000	880

Unit : 10 thousand

- Expand intensive such as tax benefit (Maximum 4,200,000 won)

NOTE

< Strategies for Electric Vehicle Supply >

1 Phase

2010~2012

Build supply base
focus on public sector

- *Establish the initial market on public sector
 - Demonstration in 2010
 - Supply of main model in 2011~2012
- *Build public recharge facility
 - Build recharge information system, supply of public low & high speed battery charger in 2011~2012
- *Modify related system
 - Establish the notification and guidelines on subsidy

2 Phase

2013~2015

Private supply and
Build mass-production

- *Institutionalization of incentive considering life cycle
- *Tax exemption (Maximum 4.2 million won)
- *Execute of demonstration business on private common use since 2013
- *Supply of Car sharing, Rentar car and business use in industry

3 Phase

2016~2020

Popularization of
Electric Vehicle

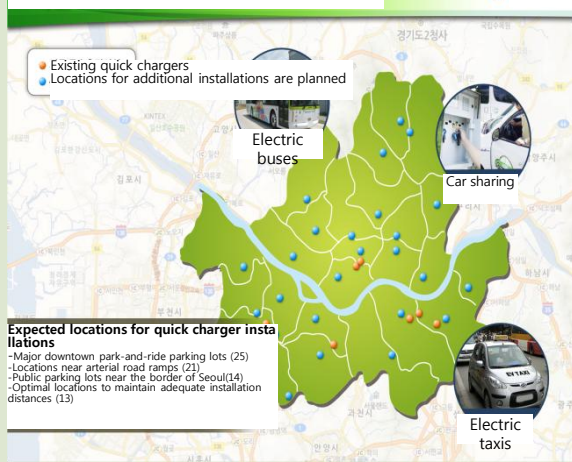
- *Diversify of products and expand private market
 - Supply of electric vehicle on small and midsize car
 - Membership system on charge management
 - New charge service market on fusion industry such as car sharing, gas station and mart

NOTE

<Business model of Electric Vehicle>

for Cities with short driving distance but heavy traffic

Seoul – Models for cities



Electric buses

► Change buses, which are currently the main means of transportation, into electric buses

Car sharing

► **Park-and-ride parking lots and downtown public parking lots**

- Vehicles shared by all citizens

Call taxi for the disabled

► Electric taxis especially for disabled and handicapped people

for defined premises & neighborhood facilities

Yeonggwang County – Models for defined premises & neighborhoods



Green U-City Plan

► To deploy 200 EVs by 2014
 - 20 high-speed & 175 low-speed passenger cars, and 5 electric buses
 ► To install 210 EV chargers by 2014
 - 30 quick chargers and 180 slow chargers

for tourist and ecological sites

Jeju Special Self-Governing Province – Models for tourist and ecological sites



Rental car service for tourists

► EV-only rental service at Jeju Airport
 - Install quick chargers and secure an exclusive parking lot at the airport
 - Plans to expand to ports in the future

4. Lately Trends and Issues of EV

① Introduction of system on low-carbon vehicle subsidy

- Support government subsidy who purchase low CO₂ emissions (impose burden charge other case)
 - * Execution schedule in 2015 (Based on Clean Air Conservation Act 13. 04. 05)
- Effect on technology development promotion and increase in sales of eco-friendly & low GHG emissions cars
 - * Annual CO₂ emissions decreased as 4.1 g/km in France since implementation 'Bonus Malus'
- Car and Van (Below than 10 passengers, 3.5 ton)
 - * Support or Impose by commensurate with emissions such as subsidy-neutrality-burden charge)
- Discussion on detail plan by 10. 2013
 - * considering GHG effluent quality standard, recent in sales, GHG reduction target

② Promote standardization of EV fast charger

- Difference of charge type among launch models in 2013 (over four type of International standard)
 - * KIA-Ray,Soul(DC CHAdeMO type), Renault Samsung-SM3(AC 3 Phase), GM Korea-Spark(DC Combo type 1), BMW-i3,i8(DC Combo type 1 or DC Combo type 2)
- Build with multi type fast charger as DC CHAdeMO and AC 3 Phase
- Promote DC Combo type 1 (international standard)

③ Reinforcement of car GHG & fuel efficiency standard

Present

- Application to below than 3.5 ton of total weight in car & van below than 10 passengers
 - Adopt average GHG (140g/km) based on empty vehicle weight in 2015 or fuel efficiency (17km/L)
- * (phase-in) 2012 (30%) → 2013 (60%) → 2014 (80%) → 2015 (100%)

Future

- Found GHG standard of small cars in the future (2016~ 2020)
- * Discussion on scope of application GHG managed object; midsize and fullsize cars by 2014

Classification	1 phase (2012~2015)	2 phase (2016~2020)
Europe	GHG 130g/km	GHG 95g/km
Korea	GHG 140g/km (Fuel efficiency 17km/L)	GHG (exp.)(100g/km) (Fuel efficiency (exp.)(25km/L)

④ Improvement on supply system of eco-friend & low emissions vehicle [2nd Seoul Metropolitan air improvement measures (2015~2024)]

Supply system

- Change of 'Maker supply system' based on None or low emissions car such as electric or hybrid car
- * Set up supply purposes considering state of development between 1 and 2 phase low emissions car, sales forecasts of Seoul metropolitan

ZEV in California

- Duty on sales in None emissions car
- Penalty, \$5,000 per 1 credit

Introduction System in Japan

- Enterprise operating over 200 cars
- Obligatory possession over 5 %

Purchase system

- Expand institution from administration & public agency to large enterprise
- * Applied to Seoul Metropolitan such as taxi and rental