Electric Vehicle Program in Korea

Dr. Chung Youl, Lee

Eco Harmonist
Korea Environment Corporation
1. Introduction

Why supply of electric vehicle is needed?

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

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

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

*1st : Sufficient material that can lead to cancer
1. Introduction

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
  
  \[
  12 \rightarrow 53 \rightarrow 339 \rightarrow 1,205 \rightarrow 1,887 \text{ (Unit: 10 thousand)}
  \]

- The major eco-friendly vehicle is Hybrid
  
  * account for 3% in total sales of vehicle (2012)

- Launch electric vehicle and fuel cell vehicle recently
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

[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

- 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

[ Supply state of eco friendly car ]
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

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3. Policy Direction of Korea’s Electric Vehicle

• 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)

<table>
<thead>
<tr>
<th></th>
<th>Slow speed car</th>
<th>High speed car</th>
<th>Electric buses</th>
</tr>
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<tbody>
<tr>
<td>in ten thousand</td>
<td>578</td>
<td>1,500</td>
<td>10,000</td>
</tr>
</tbody>
</table>

+ Slow charger 880

• Expand intensive such as tax benefit (Maximum 4,200,000 won)
3. Policy Direction of Korea’s Electric Vehicle

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
3. Policy Direction of Korea’s Electric Vehicle

### Business model of Electric Vehicle

#### for Cities with short driving distance but heavy traffic

- **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 taxis for the disabled**
  - Electric taxis especially for disabled and handicapped people

#### for defined premises & neighborhood facilities

- **Yeonggwang County**
  - Models for defined premises & neighborhoods
  - Slow chargers
  - Quick chargers
  - Welfare services for senior citizens & physically-challenged people
  - Delivery services
  - Short distance commutes
  - Maintaining tourist sites
  - Supporting sporting events and festivals
  - Buses & taxis

- **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
  - Eco-friendly tours around tourist hubs (Carbon Free Tours)
  - Build slow chargers in tourist spots & accommodations
  - Build infrastructure for quick chargers at gas stations

- **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 subside

- 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)
4. Lately Trends and Issues of Electric Vehicle

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

<table>
<thead>
<tr>
<th>Classification</th>
<th>1 phase (2012~2015)</th>
<th>2 phase (2016~2020)</th>
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<tbody>
<tr>
<td>Europe</td>
<td>GHG 130g/km</td>
<td>GHG 95g/km</td>
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<tr>
<td>Korea</td>
<td>GHG 140g/km</td>
<td>GHG (exp.)(100g/km)</td>
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<tr>
<td></td>
<td>(Fuel efficiency 17km/L)</td>
<td>(Fuel efficiency (exp.)(25km/L)</td>
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4. Lately Trends and Issues of Electric Vehicle

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

Purchase system

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

Introduction System in Japan

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