Electric Mobility Policies of Korea

2022. 8. 11

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Background

● Mode of transportation

- Mobility in four different modes of on-road vehicles, trains, ships, and planes
- Mostly run on fossil fuels, especially on petroleum
- 32% of the oil used domestically is consumed by transportation sector

<table>
<thead>
<tr>
<th>Item</th>
<th>Road</th>
<th>Train</th>
<th>Ship</th>
<th>Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Passenger vehicle</td>
<td>Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>Gasoline (37%)</td>
<td>Diesel (99%)</td>
<td>Diesel (54%)</td>
<td>Diesel (29%)</td>
</tr>
<tr>
<td></td>
<td>Diesel (53%)</td>
<td>LPG (1%)</td>
<td>CNG (46%)</td>
<td></td>
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<tr>
<td></td>
<td>LPG (10%)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Energy use</td>
<td>42,796</td>
<td>343</td>
<td>454</td>
<td>613</td>
</tr>
<tr>
<td>(Unit: Thousand TOE)</td>
<td>(Passenger 78%, Truck 13%, Bus 9%)</td>
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<td></td>
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</tbody>
</table>

Emissions by mode of transportation

- Responsible for 14% of total GHG emissions in Korea
- Have increased by 2.8-fold in 2017 from 1990 level due to increased number of vehicles and expansion of road networks and freight logistics

Electric Vehicles: 8\textsuperscript{th} in the world (2020)

Hydrogen Vehicles: 1\textsuperscript{st} in the world (2020)
Key Challenges for ASEAN EV Market

- EV sales are expected to grow significantly
- However, due to high prices and huge cost for installing charging infrastructure, overall BEV sales are likely to be limited by 2025

<table>
<thead>
<tr>
<th>Factor</th>
<th>BEV</th>
<th>HEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Very uncompetitive Need high subsidy</td>
<td>Relatively high, but more competitive with support policy</td>
</tr>
<tr>
<td>Government Policy</td>
<td>Low emission regulation Difficult to tighten policy</td>
<td>Low emission regulation</td>
</tr>
<tr>
<td>Consumer</td>
<td>High maintenance cost Low resell value and technology acceptance</td>
<td>High maintenance cost Low resell value</td>
</tr>
<tr>
<td>Charging Infrastructure</td>
<td>Require a huge initial cost for installing infrastructure</td>
<td>-</td>
</tr>
</tbody>
</table>
Goal for Popularizing Zero-emission Vehicles

● Vision
  - Acceleration of carbon neutrality by 2050 by strengthening the base for popularizing zero-emission vehicles
EV Policy Options

- CO₂-based, technology-based differentiated taxation and rebates
- Feebates
- VAT exemptions

- Fuel economy standards
- Zero emission vehicle (ZEV) mandates
- Fuel taxes
- Public fleets, taxi fleets initiatives

Purchase incentives

Standards, regulations and mandates

Circulation Incentives

Charging infrastructure

- Differentiated plates
- Access to bus lanes
- Free/dedicated parking
- Circulation/congestion charge exemption

- Direct public investment
- Public-private partnerships
- Charger standards harmonization
- Fast and slow charging network planning
Government Role

- Set the roadmap for EV cooperated with
  - Ministry of environment,
  - Ministry of land and transport,
  - Ministry of trade, industry and energy
  - Korea electric power cooperation (Kepco), and
  - Local governments

- Set a standard for charging infrastructure
- Support for R&D for passenger car, and electric buses
- Revised regulations for charging and parking
3 Phases for deploying EVs during past years

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
Policies applied for EV

- R&D in core technologies in zero-emission vehicles
- Policies
  - Subsidies and tax benefit
  - Charging infrastructure
  - Parking and charging fee
  - Charging standard
  - EV-leading cities
- Pilot projects
  - Electric bus
  - Taxi for the handicapped
  - Car sharing
Zero-emission Vehicles (Electric Vehicles)

- Increased significantly in electric vehicles

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</thead>
<tbody>
<tr>
<td></td>
<td>Manufac</td>
<td>Model</td>
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<td>Model</td>
<td>Manufac</td>
<td>Model</td>
<td>Manufac</td>
<td>Model</td>
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<tr>
<td>Passenger</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>6</td>
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<tr>
<td>Bus</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Truck</td>
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<td>-</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>Two-wheeled vehicle</td>
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Zero-emission Vehicles (Hydrogen Vehicles)

- Increased significantly in hydrogen vehicles by supporting subsidy and expanding charging station
- Mostly in passenger car
Government Strategies

- Implementation strategies for zero-emission vehicles for the realization of carbon neutrality by 2050

1. **Expand the supply base**
   - Increase the supply of zero-emission vehicles
   - Create demands in the public and private sectors

2. **Decrease the price**
   - Focus supports on commercial vehicles
   - Accelerate the popularization

3. **Convenient charging**
   - Strengthen the establishment target
   - Expand the service base
Supply Policies for Zero-emission Vehicles

- Supply goal
  - Increase the target vehicles gradually and reorganize centering on the zero-emission vehicles
  - Target vehicle models: Electric vehicle, hydrogen vehicle, and plug-in vehicle

- Supply policies
  - Increase the mandatory purchase and rental requirements for the public sector from present 80% to 100% from 2023
  - Apply a mandatory requirement on business that possess large number of vehicles, such as vehicle rental business, logistics, public transport, etc for the private sector
  - Apply campaign for transition 100 to zero-emission vehicles by 2030 for the private sector by supporting purchase subsidies and installing of charging stations, and 217 companies have applied for the campaign
Price Policies for Zero-emission Vehicles

- Price goal
  - Increase the acceptability of price for the potential customers
  - Focus on supporting zero-emission commercial vehicles, and accelerating the popularization of EVs

- Price policies
  - Apply new subsidy scheme in line with newly released vehicle models: Electric bus, hydrogen bus, and medium and large electric cargo truck, etc
  - Apply different subsidy according to EV performance in order to encourage performance improvement:
    Passenger cars based on the performance of driving range and battery
  - Limit subsidies for high-cost vehicles by adjusting the maximum
  - Strengthen incentives for the supply target system and provide more incentives
Convenience Policies for Zero-emission Vehicles

● Convenience goal
  - Improve convenience and EV charging environments
  - Establish charging stations and relieve inconveniences related with charging

● Convenience policies
  - Install charging station at new buildings with ratio of 0.5%(2020) to 5%(2022), and existing buildings with ratio of 0%(2020) to public 2%(2022) and private 2%(2023)
  - Increase the number of chargers per rest area at expressway from 2.5(2020) to 15(2025)
  - Install charging station in optimal locations based on big data analysis and allocation method, and prepare a mid-term and long term roadmap for establishment of charging station
  - Provide real-time information and convenient payment methods
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