Energy Transition Strategy & NEA Cooperation

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Energy Policy Challenges in Korea: Status

[Supply] High Dependence on Fossil Fuel → Low Share of Renewable Energy

RE share of Power Generation in Major Countries

- Low renewable energy job creation → Renewable energy job only reached to 14,000 in 2016
  (Global renewable energy employment reached 10.3mil. in 2016)

[Demand] Continuous Increase in Energy Demand → Low Energy Efficiency

- Energy Intensity: Korea 0.159, US 0.123, Japan 0.089, OECD 0.105 (toe/1,000USD, ’17)
- Electricity has substituted the consumption of other energy sources

[Market/System] Market System

- Social/environmental costs are not fully reflected to the energy price.
- Low price level, Monopolistic supply structure → Impeding new energy service and saving consumption
Power Price of Residential (unit: US$/MWh)

Source: Bloomberg NEF
Industrial Power Price
(unit: US$/MWh)

Source: Bloomberg NEF
Energy Transition Policy of Korea

Nuclear Power phase out
- To Stop the building of new reactors, Not to permit the extension of reactor’s operation.
  - To stop the building of new 6 reactors (8.6GW)
  - Not to permit the operation extension: In 2030, expected to phase out 11 reactors (9.3GW)

Reducing reliance on coal and putting stricter regulation on emission
- Strengthen emission regulation (direct regulation, fuel tax)
  - Temporary shut down coal-fired power plants
  - Reforming fuel tax system to reflect environmental cost
- To stop construction of new coal power plants and shut down old plants
  - To Switch planned coal power plants to LNG
  - Shut down 10 old coal-fired power plants (3.3GW)

Expansion of Renewable Energy
- To increase up to 20% of renewable energy (of electricity generation) by 2030 (⇒ RE3020)
- To expand distributed energy resources
- To increase gas-fired generating capacity
“Energy Transition”

energy supply optimization + reforming energy consumption structure + new energy industry from the perspective on innovation-based growth

[Supply] Sustainable energy mix, not only diversify the power mix; energy supply optimization in electricity sector as well as gas and heating

[Demand] Development of new energy industry and new growth engine through transition of energy consumption structure in the sector of industry, building and transportation Energy

[Market/System] Reform of institutional system accommodating market oriented energy system.
Progress of Energy Transition in Korea

8th Basic Plan for Long-term Electricity Supply and Demand (Dec. 2017)


Revised 2030 GHG Reduction Roadmap (Jul. 2018)

Consistency

3rd Energy Master Plan (expected May. 2019)

9th Basic Plan for Long-term Electricity Supply and Demand (2019)
Decarbonization Target
Revised 2030 GHG Reduction Roadmap

- To reduce GHG emissions by 37% from BAU levels.
- To reduce additional 57.4 mil. ton domestically. (domestic target: 632 mil. Ton → 574 mil ton)
- To minimize the use of international mechanism (SDM etc.) from the target.
Target for RE 3020

- To increase current share of renewable energy generation to 20% by 2030
- To deploy **36.5GW of PV** and **17.7GW of wind** power generation by 2030

**Current and New Targets for Renewable Energy (%)**

- 2016: 7.2%
- Current Target: 11.7%
- 3020 Target: 20.0%

**Targets for Renewable Energy Mix by Source (cumulative, GW)**

- PV: 5.7 (2017), 36.5 (2030)
- Wind: 17.7 (2030)
- Bio-E
- Waste-E
- Etc.
## Target for 3rd Energy Master Plan (Working Group Recommendation)

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<tr>
<th></th>
<th>2017</th>
<th>2030</th>
<th>2040</th>
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<tbody>
<tr>
<td><strong>Demand</strong></td>
<td></td>
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<tr>
<td>Total Final Energy Consumption (mil. toe)</td>
<td>176.0</td>
<td>179.5</td>
<td>176.6</td>
</tr>
<tr>
<td>Energy Intensity (toe/mil. KRW)</td>
<td>0.113</td>
<td>0.084</td>
<td>0.072</td>
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<tr>
<td><strong>Supply</strong></td>
<td></td>
<td></td>
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<tr>
<td>Share of Renewable Energy in elec. Generation (%)</td>
<td>7.6 (est.)</td>
<td>20</td>
<td>25<del>40 (30</del>35)</td>
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<tr>
<td><strong>Environment</strong></td>
<td></td>
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<tr>
<td>GHG missions from fuel combustion (mil. ton)</td>
<td>601.0 ('15)</td>
<td>536.5</td>
<td></td>
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<tr>
<td>PM emissions in power sector (thousand ton)</td>
<td>34</td>
<td>13</td>
<td></td>
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<tr>
<td>PM emission in transportation sector (thousand ton)</td>
<td>34</td>
<td>27</td>
<td>21</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td></td>
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<td>Renewable energy power plants (ten thousand)</td>
<td>43</td>
<td>471</td>
<td>611~1,039</td>
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This is recommendation by Working Group.

The 3rd Energy Master Plan is under further consideration by the government.
‘Efficiency First’ Policy direction
- Transition form supply oriented to demand oriented energy policy
- Recognize the value of energy efficiency

3 Key direction to reform of energy consumption structure
- To promote ‘Market Transformation’ (promoting high efficiency product and appliances)
- To optimize energy use and strengthen management skills through ‘Platforms’
- Policy harmonization between regulations and incentives

5 Main Sectors & 12 Core Tasks

<table>
<thead>
<tr>
<th>Market Transformation</th>
<th>① Top runner initiative, ② Smart mobility</th>
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<td>Statistics</td>
<td>⑦ Benchmark in industry sector, ⑧ Benchmark in building sector</td>
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<tr>
<td>Cooling/Heating</td>
<td>⑨ Diversifying cooling/heating resources ⑩ Korea Heat Plan</td>
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<tr>
<td>Minimizing energy loss</td>
<td>⑪ Enhance Network Efficiency ⑫ Minimizing loss in each sector</td>
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NEA Cooperation
• Promotion of Trade through Expansion of LNG SWAP Transaction in Northeast Asia

• Analysis of the benefits of the (NEA) power grid connection

• Cooperation with the energy sector in response to climate change (e.g., energy efficiency, technology development)

• Cooperation with the energy sector in order to improve air quality (e.g., PM2.5) in Northeast Asia
Thank you
Media discourse of energy transition policy goals

- Economic Growth and Industrial Development
- Efforts to Tackle Climate Change
- Safety and Proportion of Nuclear Energy
- Increased Volatility of Electricity Rate
Media discourse of energy transition policy goals