Japan and Asian Oil Market Outlook

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1. Japan’s oil market
Japan’s Energy Supply Structure (Long term trend)

- Japan’s main energy source is shifting from Coal to Oil until the first oil shock, and then from Oil to Natural Gas and Nuclear.

* "Renewables etc." consists of solar power (0.1%), wind power (0.2%), geothermal heat (0.1%), and biomass (3.6%).

Source: Prepared based on “Comprehensive Energy Statistics (Preliminary Report for 2013)” issued by the Agency for Natural Resources and Energy.”
Japan’s Energy Supply Structure (after the earthquake)

- Oil and LNG increase compensates for the decline of nuclear power.
- Energy demand had shown steep decline after the earthquake, because of economic downturn and strong energy/electricity saving measures.
- If we will be able to restart nuclear, oil, highest cost energy, and natural gas demand is expected to decline sharply.

![Energy Supply Structure Chart](image-url)
Long term outlook : Reference Scenario

【Reference : NPP-40Years decommissioning scenario】

<table>
<thead>
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<th>Year</th>
<th>Generated elec. From NPP [TWh]</th>
<th>Number of working NPP</th>
<th>Working Ratio [%]</th>
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<td>83</td>
<td>31</td>
<td>80</td>
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<td>1990</td>
<td>202</td>
<td>22</td>
<td>80</td>
</tr>
<tr>
<td>2000</td>
<td>322</td>
<td>18</td>
<td>80</td>
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<tr>
<td>2012</td>
<td>16</td>
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<tr>
<td>2020</td>
<td>227</td>
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<tr>
<td>2030</td>
<td>169</td>
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<tr>
<td>2040</td>
<td>141</td>
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- Primary Energy Demand will slightly decrease from 9.2Mbd(452Mtoe) in 2012 to 8.2Mbd(416Mtoe) in 2040 for Reference Case.

- Oil demand may continuously decrease more than other energy.

【Adv. Tech. : NPP-50Years decommissioning scenario】

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<tr>
<td>Working Ratio [%]</td>
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</table>

【Primary Energy Demand】

- Primary Energy Demand will drastically decrease from 9.2Mbd(452Mtoe) in 2012 to 7.3Mbd(362Mtoe) in 2040 for Adv. Tech. Case.
- Fossil energy (Oil, Natural Gas & Coal) demand may continuously decrease. On the other hand, Renewable energy will increase.
Long term outlook: Oil Demand in Japan among Asia

- The Japanese share will decrease with both cases.
- But, Japanese oil demand will keep large market among Asian countries.

Reference: Projections are based on actual values in 2012.
2. Perspective for East Asian oil market
Oil Demand Will Grow in Asia

- Although the vehicles’ fuel efficiency is improving and clean energy vehicles are expanding, oil demand in Asia will increase due mainly to its escalating vehicle ownership.
- In the Adv. Tech. Scenario, projected oil demand saving will be equal to 17%.
China vehicle stock expands substantially due to an increase in the income level. The stock of vehicle in China increases from 109 million units in 2012 to 374 million units in 2040. India’s vehicle stock surpasses that of Japan around 2025, increasing from 29 million units in 2012 to 190 million units in 2040.
Concern Over Rising Import Dependency

- Net oil import in Asia will expand continuously.
- Oil production in Asia (such as China, India, Indonesia and Malaysia) will marginally increase, not keeping pace with the steady increase in oil demand.
- Therefore, net oil import ratio will reach 81% in the Reference Scenario, and 78% in the Adv. Tech. Scenario by 2040 (compared with 69% in 2012).

![Graph showing net oil import ratio from 1980 to 2040]

Source: IEEJ

Net Oil Import

2012
17.57 MB/D
↓
2040
Reference
34.91 MB/D
(2.0 times)
28.52 MB/D
(1.6 times)
Who will supply to Asia?

- Crude oil export from Middle East to Asia is projected to increase in the reference scenario.
- However, possible unconventional oil development and US crude export has big implication for future landscape.

* E.D.S.: Enhanced Development Scenario

(Mb/d)