2-1. Natural Gas Utilization in APEC

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Research overview

• Background
  • Objective of the study
  • Why hasn’t “Golden Age of Gas” been realized yet?

• Challenges in expanding gas utilization

• Gas utilization in major consuming economies: What has been done and what should be done?
  • Case study -1: China
  • Case study -2: United Kingdom
  • Case study -3: Japan
  • Case study -4: Indonesia
  • Case study -5: Vietnam
  • Case study -6: Chile

• Conclusions and policy implications
Defining “Golden Age of Gas”: Forecast and actual demand in the “Golden Age of Gas” scenario in 2015

“Golden Age of Gas” happened in OECD North America and Middle East, but lags in other regions
Six factors have worked against the gas utilization:

- Slower than expected economic growth
- Relative gas/coal economics
- Policy support for renewable energy sources
- Traditional LNG trading practices, including oil price-linked pricing formulas
- Lack of infrastructure and limited efforts by government
- Decline of domestic gas production
Why hasn’t “Golden Age of Gas” been realized...Yet?

Slower than expected economic growth and relative economics against coal

Actual economic growth rates were not as high as initial expectations, while coal continues to be the preferred fuel because of resource abundances and cost
Renewable energy become top priority for many economies and reduced gas production

Competition from renewable energy, which is expected to fuel 25% of the world’s power generation by 2040, and decline in gas production in some economies hampered gas growth

Source: IEA (2016)
China has been directly and indirectly promoting gas usage

Gas market reform, domestic gas production (shale gas), and environmental policies will be crucial in improving gas demand growth in China

Source: IEA (2011 and 2016)
Case study 2: Chile

More potential for gas demand to support Chile’s renewable energy target

Natural gas and firewood usage in residential sector

<table>
<thead>
<tr>
<th>Region</th>
<th>Natural gas potential users</th>
<th>Gas grid capacity (residential)</th>
<th>Actual users</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM Region</td>
<td>1,709,490</td>
<td>767,568</td>
<td>496,978</td>
</tr>
<tr>
<td>VIII region</td>
<td>108,163</td>
<td>66,115</td>
<td>30,922</td>
</tr>
</tbody>
</table>

Source: CNE (2015) and APERC Analysis

Price of natural gas and LPG in Chile

Source: CNE (2015) and APERC Analysis

Improving market oversight, building new infrastructure, and potential shale gas production may improve gas demand in the future
Note: Since IEA and ESDM reports do not provide yearly data in their publication, APERC used simple AAGR derived from the forecast to determine 2013-2015 data.
Case study 4: Japan

Gas usage in Japan is highly influenced by past events

Lack of gas resources does not stop the government from providing a clear direction for future gas usage—transportation, power and residential.
Although gas demand declined in the UK, gas trade managed to sustain consumption.

Although UK has a robust electricity market, high renewable shares in power generation and declining domestic gas production pushed gas demand lower.

Source: Cedigaz (2016), BP (2016) and IEA (2008)
Gas demand in Viet Nam is highly dependent to domestic production

Viet Nam, as one of the economies with the largest untapped gas reserves in the APEC region, has a huge potential to increase its own gas production and consumption

PMVN – Prime Minister of Viet Nam. GMP – Gas Master Plan
1. Clear commitments by the government
   • Gasification cannot be realized without government commitments.
   • Desired share of natural gas needs to be determined or a market needs to be developed where the benefits of natural gas can be properly recognized.
   • Expected role for natural gas has to be specified.
   • Government’s commitment will facilitate financing investments by lowering investment risks.

2. Infrastructure development
   • Gasification can be achieved by “supply-push.”
   • Government has a large role in facilitating development.
   • Establishing a supply network is necessary to promote gasification for transportation use.
3. Reasonable pricing
   - Oil price linked formula hurt development of demand in Asian emerging economies.
   - Price benchmark based on gas vs. gas competition in Asia.
   - Carbon pricing may be an option, but the policy should be carefully designed to realize the desired outcome.

4. Expansion of wellhead production
   - Demand can be supply driven.
   - Domestic upstream investments can be promoted through regulatory arrangements and introduction of foreign capital and expertise.
Thank you for your kind attention

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