Global LNG Trade – Expectations Few Years Back

EXPANDING FLOW TRENDS

Source: NPC 2007, consolidated forecasts

LNG Trade Grew

Recession dampened demand growth

Source: CEE calculations based on BP Statistical Review of World Energy

Growing LNG Export Capacity

- Export capacity in 2009 was >10 TCF (versus 8.5 TCF imported)
- Export capacity grew by >60% between 2005 and 2010
- It is expected to grow another 25-30% by 2015
Softening Markets

- Excess LNG supply
- Weak U.S. price impacting UK and Europe
- Pressure on oil indexed contracts
- LNG displacing pipeline gas in Europe: Russia and Algeria lose market share
- 25%-50% decrease in prices from 2008 to 2009

Much Idle Capacity in NA

Global Natural Gas Trade Growing

US LNG Exports Not Likely

- Gas feedstock in the U.S. is more expensive, especially in the Atlantic Basin
  - Panama canal expansion may render exports to Pacific Basin a possibility
- Excess LNG export capacity globally
- Gas is quite abundant globally
- The U.S. may need all of its domestic gas (consumption in 2010 surpassed 24 TCF for the first time in history)
Changing World LNG Trade – Importers Mix

- Asia dominated LNG trade for a long time (1995)
- Many new players entered the market (Mexico, Canada, Brazil, Chile, Argentina, Portugal, Greece) and others needed LNG again (UK since the late 1990s)

Changing World LNG Trade – Exporters Mix

- Small group dominated by Asian suppliers (1995)
- Much more diversified, emerging Middle East suppliers led by Qatar (2009)

Some Changes in LNG Trade – Arbitrage opportunities

- Increased flexibility in terms of:
  - Contract duration (5-10 years versus 25-30 years)
  - Shifting away from oil-based formulas to gas-based pricing (at least in the Atlantic Basin)
  - Less than 100% take-or-pay obligations
  - Ability to divert cargoes
  - Ability to share windfall profits
- Increased arbitrage opportunities (16% of trade was in the short-term market in 2009)
  - With more suppliers, especially from the Middle East
  - Panama Canal?
LNG Netbacks: Algeria Example

<table>
<thead>
<tr>
<th>Date</th>
<th>Barcelona</th>
<th>Everett</th>
<th>Isle of Grain</th>
<th>Lake Charles</th>
<th>Sodegaura</th>
<th>Zeebrugge</th>
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<td>1/1/2010</td>
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<td>6.70</td>
<td>2.44</td>
<td>2.99</td>
<td>2.31</td>
<td>2.59</td>
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</table>

Late 2005 to early 2006: Hurricane Katrina, UK became a net importer, hydro shortage in Spain, cold weather in Europe, tightness in Asian markets.

Still an Expensive Business

- $4-10 billion for the value chain
- Project financing requires cash flow security
- Long-term contracts provide anchor
- Flexibility will help with taking advantage of arbitrage opportunities

LNG Value Chain Costs

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cost Range</th>
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</thead>
<tbody>
<tr>
<td>Exploration &amp; Production</td>
<td>$0.65-$1.30/MMBtu</td>
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<tr>
<td>Liquefaction</td>
<td>$1.04-$1.56/MMBtu</td>
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<tr>
<td>Shipping</td>
<td>$0.53-$1.30/MMBtu</td>
</tr>
<tr>
<td>Regasification &amp; Storage</td>
<td>$0.39-$0.65/MMBtu</td>
</tr>
</tbody>
</table>

Total 2002 = $2.00 - $3.70
Total 2007 (with cost escalation) = $2.60 - $4.80

Sources: Industry (estimates exclude some O&M and tax costs)