Norway Diplomatic Forum – Oslo

Thursday, January 10, 2019

Luis Bertrán Rafecas
Secretary General
International Gas Union
## Looking back at 2017 Developments in Global Gas

<table>
<thead>
<tr>
<th>Region</th>
<th>Consumption</th>
<th>Gas price</th>
<th>Production</th>
<th>Imports</th>
<th>Exports</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>6.7%</td>
<td>-</td>
<td>8.6%</td>
<td>-5.0%</td>
<td>8.9%</td>
<td>LNG liquefaction (Mozambique FID)</td>
</tr>
<tr>
<td>Asia</td>
<td>5.3%</td>
<td>+$1.1/MMBtu (Japan spot)</td>
<td>4.1%</td>
<td>10.0%</td>
<td>10.6%</td>
<td>Regional LNG and regas; Chinese developments</td>
</tr>
<tr>
<td>CIS</td>
<td>6.3%</td>
<td>-</td>
<td>6.8%</td>
<td>6.9%</td>
<td>7.8%</td>
<td>Russia LNG (Yamal)</td>
</tr>
<tr>
<td>Europe</td>
<td>6.1%</td>
<td>+$1.1/MMBtu (NBP)</td>
<td>1.9%</td>
<td>12.0%</td>
<td>14.3%</td>
<td>Pipeline development (TANAP)</td>
</tr>
<tr>
<td>Latin America</td>
<td>0.4%</td>
<td>-</td>
<td>0.1%</td>
<td>-7.7%</td>
<td>-7.7%</td>
<td>No key developments</td>
</tr>
<tr>
<td>Middle East</td>
<td>4.8%</td>
<td>-</td>
<td>4.1%</td>
<td>-3.7%</td>
<td>-0.1%</td>
<td>No key developments</td>
</tr>
<tr>
<td>North America</td>
<td>-0.8%</td>
<td>+$0.5/MMBtu (Henry Hub)</td>
<td>0.5%</td>
<td>8.0%</td>
<td>16.5%</td>
<td>US liquefaction and cross-border pipelines</td>
</tr>
</tbody>
</table>
Gas is projected to be the fastest growing fossil fuel...

1.6% (+)  
Annual gas growth to 2040

#2  
Source of global energy by 2040 (-)

... based on key growth regions and sectors ...

<table>
<thead>
<tr>
<th>Region</th>
<th>Share of Growth by 2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-OECD Asia</td>
<td>38%</td>
</tr>
<tr>
<td>Middle East</td>
<td>20%</td>
</tr>
<tr>
<td>Africa</td>
<td>10%</td>
</tr>
<tr>
<td>Industry</td>
<td>9%</td>
</tr>
<tr>
<td>Transport (Bunkers and N. Am.)</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>16%</td>
</tr>
</tbody>
</table>

... enabled by key market developments...

- Economic development/growth
- Increasing global gas supply
- Supportive government policies

2017 Y-Y Demand Growth 3.7%  
Rapid gas growth expected to continue
Key developments in 2018
Continued demand and supply growth

- Chinese demand has jumped 150 percent between 2017 and 2018, over half of the global gas demand increase
- China becomes the largest LNG importer surpassing Japan
- Asian LNG Spot prices spike to a 4-year high for the October 2018 delivery in Asia at $11.40 per mmBt; 2017 was at $6.00 mmBt
- Henry Hub annual 2018 average price closed at $3.16 mmBt, up from $2.99 mmBt in 2017
- LNG Freight rates reached a record high above 170,000$/day in November
- European Monthly Spot prices increased in 2018 and peaked at $9.52 mmBt in September
- Australia becomes the largest LNG exporter surpassing Qatar
- World’s largest floating LNG platform, Prelude, begun production in December, last of 8 LNG Australian projects
- In the first half of 2018, the US doubled its LNG exports, well on the way to reaching 60 Mt by the end of 2019
- Yamal LNG reached full capacity (16.5 mmtpa) in December, under budget and well ahead of schedule
- Major LNG FID was taken - Canadian LNG
- China placed a 10% tariff on US LNG in retaliation to ongoing tariff and trade disputes between the two countries
- Nord Stream 2 construction picks up speed while Germany accelerates plans to build its first LNG import terminal
- Progress to the Southern Gas Corridor made with the physical connection of Trans Adriatic Pipeline (TAP) and the Trans Anatolian Pipeline (TANAP) for scheduled gas deliveries to Europe in 2020
- Gazprom’s Power of Siberia natural gas pipeline from Russia to China nearing completion
The Sustainable Development Scenario reduces CO₂ emissions to address climate change while also tackling air pollution and achieving universal energy access.
Coal & oil demand drop in the Sustainable Development Scenario. Gas is the largest fossil fuel in 2040 while low-carbon technologies & improvements in efficiency expand rapidly.
Challenges to Overcome for Sustained Gas Growth

1. Cost competitiveness
   - 1A. Reducing LNG costs through the supply chain
   - 1B. Pricing environmental externalities
   - 1C. Development of local gas production

2. Security of supply
   - 2A. Expanding gas pipeline and storage infrastructure
   - 2B. More flexible LNG contracting
   - 2C. Development of new access-enabling technologies

3. Sustainability
   - 3A. Adoption of local air pollution policies
   - 3B. Development of low carbon technologies for gas
   - 3C. Addressing the methane emissions challenge

⚠ Industry action required  ⚠ Gov. action required
Thank you