LNG: Powering Progress in an Evolving Industry

Jefferson Edwards
General Manager - Shell Energy
Royal Dutch Shell
Gas and renewables to play a critical role in meeting the energy challenge

Global energy demand growth by fuel type

Gas growth in the energy mix 2018-2035

Source: Shell interpretation of Wood Mackenzie Q4 2018 data

CAGR - Compound annual growth rate
LNG continues to be the fastest-growing gas supply source

Global gas supply by source

LNG imports by region

LNG imports in Asia

Source: Shell interpretation of Wood Mackenzie Q4 2018 data
Government policies being implemented encouraging a cleaner energy mix

South Korean taxes to favour gas over coal

Chinese Government policies target

EU carbon pricing supported by policy changes

Source: Shell interpretation of IHS Markit and ICE Q4 2018 data and announced public policy
Coal-to-gas switching in China achieves blue skies and reduces CO₂ emissions

Air quality improvements in Beijing

176 MT CO₂ saving from China’s air quality programme in 2018

Source: Shell interpretation of IHS Markit, Beijing Gas Group and US Embassy Beijing (US State Department) 2018 data
Gas demand growth not reliant on the power sector

Global gas demand growth by sector 2016 - 2018

Source: Shell interpretation of Wood Mackenzie Q4 2018 data
Economic and environmental benefits increasing the use of LNG in road transport

**China LNG fuelled heavy-duty transport**

- Number of LNG trucks and buses in 1000

<table>
<thead>
<tr>
<th>Year</th>
<th>LNG HD trucks</th>
<th>LNG buses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>6.7 MT of LNG consumed in China for road transport in 2018</td>
<td>2,552 LNG fuel stations in 2018</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
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<td>2015</td>
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<td>2016</td>
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<td>2017</td>
<td>0</td>
<td>0</td>
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<tr>
<td>2018</td>
<td>0</td>
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</tbody>
</table>

Source: Shell analysis of Woodmac, SCI, and NGVA data

**Europe moving to LNG fuelled heavy-duty transport**

- Number of LNG trucks

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of LNG trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1532</td>
</tr>
<tr>
<td>2017</td>
<td>4000</td>
</tr>
<tr>
<td>2018</td>
<td>5,500</td>
</tr>
</tbody>
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Co-financed by EU, BioLNG EuroNet is building 39 LNG stations, 2,000 LNG trucks and a BioLNG production plant

280,000 LNG trucks expected by 2030

155 LNG fuel stations in 2018
Resurgence of longer term contracts supports new supply projects

Average contract length

Total LNG contract volumes by seller type

Source: Shell interpretation of IHS Markit Q4 2018 data
Spot market gains momentum with volume growth

Spot LNG Supply

Spot LNG deliveries

ICE JKM LNG (Platts) futures

Source: Shell interpretation of IHS Markit Q4 2018, S&P Global Platts and the ICE data
Supply investment still needed to meet continued LNG demand growth

Emerging LNG supply-demand gap

Investment in liquefaction capacity

* Assumption - 5 years FID to be onstream

**Source:** Shell interpretation of IHS Markit, Wood Mackenzie, FGE and Poten & Partners Q4 2018 data