Stratégies d’investissement et de portefeuille GNL
Laurent Vivier – Directeur du Gaz – TOTAL
MARKET OUTLOOK
WORLD GAS DEMAND

World gas demand sectoral shares in 2016*

<table>
<thead>
<tr>
<th>Segment</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Gen.</td>
<td>41%</td>
</tr>
<tr>
<td>Industry</td>
<td>26%</td>
</tr>
<tr>
<td>Res. &amp; Com.</td>
<td>20%</td>
</tr>
<tr>
<td>Others</td>
<td>12%</td>
</tr>
<tr>
<td>Transport</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

And no major change by 2035:

- Power Gen.: 38%
- Industry: 28%
- Res. & Com.: 18%
- Others: 11%
- Transport: 5%

World gas demand in WEO-2017 scenarios

- CAGR 2016-35:
  - CPS: 1.9%
  - NPS: 1.6%
  - SDS: 0.8%

Range of growth in WEO scenarios (2016-35):
- Oil: +1.0% / -1.0%
- Coal: +1.2% / -3.1%

Sources: IEA, Total analysis

* Total gas demand (including Oil & Gas sector)
** 8cm normalized at 40 MJ/m³

- Gas is the smallest of all fossil fuels today...
- ... but gas is the fossil fuel that grows the most in the future
- Global trade = 1/3 gas demand and LNG = 1/3 of global gas trade
MARKET OUTLOOK
LNG, A FAST GROWING MARKET

**LNG demand**

- **Mt/y**
- **2005:** Source: IHS
- **2015:**
- **2025:**

- **Other**
- **Middle East**
- **Europe**
- **Rest of Asia**
- **China**
- **Japan**
- **Korea**
- **Taiwan**

**+5% per year**

**+6% per year**

**LNG production**

- **Mt/y**
- **2015**
- **2020**
- **2025**
- **2030**

- **Futurs projects**
- **Projects under construction**
- **Existing**

**Source:** IHS
Optimizing the full value chain
Driving down costs in all segments

- **Production**: Focusing on low cost gas (onshore) - 0.5-2 $/Mbtu
- **Liquefaction**: Simplifying designs (modular, small scale, brownfields) - 1-2 $/Mbtu
- **Trading**: Increasing flexibility of portfolio - 0.2-0.4 $/Mbtu
- **Shipping**: Reducing Boil-off - 0.5-3 $/Mbtu DES Asia
- **Regasification**: Operating floating regas (FSRU) - ~0.5 $/Mbtu
- **Marketing**: Leveraging digital platforms - B2B: 0.2-0.4 $/Mbtu, B2C: 1.5-2.5 $/Mbtu
MARKET OUTLOOK
FSRU’S OPENING NEW MARKETS

Floating Storage & Regasification Units (FSRU)
World overview

Middle East, Asia, and South America emerging LNG markets thanks to FSRU solutions

New LNG markets
Mt

FSRU Market segment size to triple by 2025

0 20 40 60 80 100

Latin America Asia Middle East Africa

Under construction
Existing
Proposed

2016
2020
2025
Long term contracts are still preponderant, Spot markets are developing.
TOWARDS A HIGHER CONCENTRATION?

Global sales in 2020 (MT - internal sources)

40

TOTAL

TOWARDS A HIGHER CONCENTRATION?
TOTAL + ENGIE COMPLEMENTARY LNG PORTFOLIO

Stratégies d’investissement et de portefeuille GNL - 12 avril 2018 - TOTAL
Base case: Sabine Pass cargo to be delivered to Fos Cavaou
Panama slots are booked 12 months in advance on a rolling basis in case arbitrage opened with Asia (portfolio optionality)

- TOTAL sold the cargo to Company A in Japan as arbitrage opened
- TOTAL vessel sailed via Panama canal (using an already booked slot)

- Tender to buy 1 cargo for delivery in 3 days
- TGP sold its SP cargo
- Position: short 1 cargo in Japan for delivery 2 weeks later to Company A in Japan

- TOTAL bought a Bintulu cargo DES Japan to cover the short in Japan with Company A

This complex set of spot transactions involved 4 counterparties, It allowed Trading to generate additional revenues by leveraging its control of the LNG carrier.