LNG: promoter of EU Security and Diversity of Supply?

Patrick-G. Wailliez - GDF Suez
1. European Gas context

2. LNG Market

3. European Gas Perspectives
European LNG Terminals

LNG terminals
- existing 16
- under construction 7
- proposed 35

Source: CERA 2007, GdF Suez
Hydrocarbons Worldwide

70 % of World’s Oil, 40 % of Natural Gas
Gas Supply for Europe
Gas Supply for Europe

In BCM

- NORWAY 3700
- UK 1000
- THE NETHERLANDS 1600
- ALGERIA 4500
- QATAR 26000
- NIGERIA 5100
- RUSIAN FEDERATION 57000
- IRAN 27000
- ABU-DHABI 5600
- VENEZUELA 4200

> 70% of the Proven Gas Reserves within economic Shipping Distance

Source: Cedigaz 2006
EU: Supply Capacities in 2006 & 2015

Source: IEA 2008, GIE, industry
EU : Natural Gas needs 2005-2025

Growing Needs & Supply Dependancy

Source: European Commission / DG-TREN, 2007
LNG imports 2007 = 53 bcm
≈ 10% consumption EU 27 + Turkey

Source: BP statistical review 2008
1. European Gas context

2. LNG Market

3. European Gas Perspectives
LNG Market Atlantic Bassin: Demand

Evolution (2007 ↔ 2006) = -28 in 2015 ≈ mainly due to USA

CAGR 12%

Others

Sources: Poten 2008, Industry
LNG Market Atlantic Bassin: Supply

25% of 2015 Demand covered by Planned Projects

Sources: Poten 2008, Industry
Similar Curves for Pacific Basin
Atlantic Basin: Terminal capacity vs. Supply

Regasification: Huge projected Spare Capacity

Sources: Poten 2008, Industry
LNG Regas Terminals in the Atlantic Bassin

Existing & Proposed North American LNG Terminals

Source: FERC Oct 2008

LNG terminals
- existing 16
- under construction 7
- proposed 35

Source: CERA 2007, GDF Suez
LNG Infrastructures Worldwide

≈ 170

60-70

- (58) Existing LNG Terminals
- (35-40) LNG Terminals under construction / committed
- (70-80) LNG Terminals planned/under study

- (21) Existing Liquefaction Terminals
- (40-50) Liquefaction Terminals under construction/planned/under study

Source: Petroleum Economist, LNG Journal, Enagas
Increasing importance of Spot & ST Trades

Sources: Poten 2008, Industry
Spot & Short-Term Trades by Importer

Sources: Poten 2008, Industry

Spot trades: important Increase with highly Varying Destinations
EU LNG Terminal: Utilisation Rate

Moving from Base Load to Flex Terminals

Source: GIIGNL 2008
LNG Supply Projections: recent evolution

- LNG supply projections continue to slide
- Supply will be tight if some projects are postponed: Nigeria, Australia, Iran...

Source: Poten & Partners 2008, Industry
LNG: Costs evolution

- **E&P**
  - Drilling Rigs $> x3$
  - Steel $> x2$

Over last 5 years time

- **Liquefaction:**
  
  *coming on stream* *Now* *within 4 years*

  $350-450 \, \$/t \rightarrow 600-800 \, \$/t$

  (Lowest specific cost was 250 \, \$/t only a few years ago)

- **Shipping:**
  $1,000 \, \$/m^3 \rightarrow 1,400 \, \$/m^3$

Up to recently: important Rising Costs

Credit Crunch $=>$ expected Cost Decrease …

… but Uncertainty not favorable for New Projects
Concerns about future Supply: LNG

- Evolution of Future Liquefaction Projects
- Geopolitical & safety constraints in some producing areas
- Rising internal demand (needs) in producing countries (competing with volumes for export)
- High incremental demand in some regions
- Environmental constraints
LNG Offshore Regas

Solution to Environnement Constraints & Security of Supply

Source: Project Calypso LNG - GdFSuez
LNG Offshore Regas

Solution to Environnement Constraints & to Security of Supply

Source: Project Calypso LNG - GdFSuez
Concerns about future Supply: LNG

- Evolution of Future Liquefaction Projects
- Geopolitical & safety constraints in some producing areas
- Rising internal demand (needs) in producing countries (competing with volumes for export)
- High incremental demand in some regions
- Environmental constraints
- Workload and potential bottlenecks for specialized contractors
- Impact of financial crisis

$\Rightarrow$ high competition for LNG
- already tight in case of severe winter
- potential inbalance needs $\leftrightarrow$ production after 2010-2012
1. European Gas context

2. LNG Market

3. European Gas Perspectives
Concern about future EU Gas Supply

- Sufficient & Timely Investments a.o. in the upstream
- Perceived Security of Supply
- Competing Offtakes
European Gas Supply Competing Offtakes

Source: IEA 2008 / TSGP
Concern about future EU Gas Supply

- Sufficient & Timely Investments a.o. in the upstream
- Perceived Security of Supply
- Competing Offtakes
- Predictability of demand and supply

NG consumption* change 2007/2006

- > 6 %
- 1,5 % <= 6 %
- 1,5 % <= 1,5 %
- -6 % <= -1,5 %
- -6 %

* Including stock variations

Impact of High Energy Prices + Financial Crisis (for the future)

Source: GdF Suez, Eurogas, Cedigaz

GIE Bucharest 2008 Patrick-G. Wailliez
EU strategy for Climate protection: 3 Pillars

Targets by 2020

- 20% reduction of greenhouse gases (*)
- 20% efficiency increase
- 20% = renewables share

(*) compared to 1990
Climate protection: 3 Energies for 3 Pillars

20% reduction of greenhouse gases (*) compared to 1990

(*) compared to 1990
Electricity Generation in the EU

IEA Scenario Outlook

- Nuclear
- Coal
- Oil
- Gas
- Hydro
- Renewables

TWh

2002: 3000
2010: 3400
2020: 3900
2030: 4300

IEA Scenario Outlook

- +1.3%/yr
- +3.7%/yr

GIE Bucharest 2008
Patrick-G. Wailliez
Electricity Generation in the EU

IEA Scenario Outlook

- **2002**: TWh = 3000
- **2010**: Gas for Power: 2/3 of gas demand increase!
- **2020**: Impact of extending Life of Nuclear power units
- **2030**: + 90 BCM

**IEA Scenario Outlook**

GIE Bucharest 2008

Patrick-G. Wailliez
Concern about future EU Gas Supply

• Sufficient & Timely Investments a.o. in the upstream
• Perceived Security of Supply
• Competing Offtakes
• Predictability of demand and supply

• Ability to Transfer Gas between the various regional grids
  • new Regulatory regime tends to Exhaust Spare Capacities
  • Gas Quality constraints
  • Heterogeneity of Operational Rules

• Shortage of Storage Capacity
  (growing needs as indigenous production replaced by long distance imports)

→ Measures have to be taken at EU level, Focusing on the Real Priorities
• Important Role of European authorities to
  - Define a Global Strong, Credible and Coherent EU Energy Policy
    (S.o.S., Competitiveness, Single Market & Climate)
  - Promote a New Type of Relationship with Historical Suppliers
    based on reciprocity and mutual trust & benefit
    (Leaving to the Industry the Entrepreneurial responsibilities)

• At regulatory level: promote a European Regulatory body
  - Create suitable framework to Stimulate Investments
    (predictability; rate of return; exemptions where appropriate)
  - Fill the regulatory Gap between the Countries
    and allow Real Interoperability
  - Avoid unnecessary Weakening of some elements
    of the gas chain & the creation of a Regulatory ‘Pancaking’
Strategy Trend at Industry Level

• Consolidation and search for Scale to cope with new challenges

⇒ Critical Mass to:
  - undertake the Huge Investments
  - negotiate with Producers
  - spread portfolio Risks
    (diversify sources & routes; balance LNG ↔ Pipe)
  - offer Competitive Conditions and Excellent Services to Customers

• Vertical integration (up & downstream)

• Development new type of Relationships with Producers
  (JV for commercialisation, joint investments, assets swaps,…)
Mergers and Acquisitions

- **Public takeover bid or repurchase (total or partial) achieved**
- **Merger or public takeover bid under way**
- **Takeover bid possible or mentioned**
- **Failure**

Source: Poweo, GdF Suez

GIE Bucharest 2008
Patrick-G. Wailliez
Gas in Europe: Conclusions

- Gas is abundant and Piped Gas together with LNG will continue to play a Key Role
- Increasing importance of LNG even if some uncertainties exist
  - Contributes to Diversification of Supply
  - Improves Arbitrage possibilities
- Important gas Quantities still have to be Contracted
- Europe will have to Compete in order to attract the necessary gas Supplies
- Market will be tight for the coming years and prices will become more volatile
  (as it is already the case for oil products)
- Compatibility between ‘Continuity of Supply’ & ‘Arbitrage opportunities’
  will have to be assured in such context
- A diversified portfolio based on Pipe Gas and Historical Supply sources
  remains the Corner Stone of a sound Supply Policy
- A Strong & consistent and a Stable & Predictable Framework are conducive to meeting
  required Timely Investments and Improve market Liquidity
GdF Suez putting its Energy at your Service and delivering the Essentials of Life
Diversified & optimized Natural Gas Supply portfolio over 100 bcm

2007 scope, without Distrigaz, including assets from ENI deal
GDF Suez : E&P and LNG Worldwide

- Reserves : 667 Mboe (end 2007)
- Leadership in LNG
- 1st Natural Gas Buyer in Europe

Regas
<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Under Construction</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity &amp; Equity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Liquefaction
<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Under Construction</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity &amp; Equity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Penuelas : Access through LT Sales

GIE Bucharest 2008 Patrick-G. Wailliez
### Strong H1 2008 Results, Solid Balance Sheet, in a Difficult Environment

<table>
<thead>
<tr>
<th>In € bn</th>
<th>H1 2007</th>
<th>H1 2008</th>
<th>H1 08/07Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>36.73</td>
<td>43.13</td>
<td>+17%</td>
</tr>
<tr>
<td>EBITDA</td>
<td>6.75</td>
<td>8.13</td>
<td>+20%</td>
</tr>
<tr>
<td>Current Operating Income</td>
<td>4.59</td>
<td>5.49</td>
<td>+20%</td>
</tr>
<tr>
<td>Net income, Group share</td>
<td>2.96</td>
<td>3.38</td>
<td>+14%</td>
</tr>
<tr>
<td>Per share</td>
<td>€1.36</td>
<td>€1.56</td>
<td></td>
</tr>
<tr>
<td>Net debt</td>
<td>15.8</td>
<td>18.8</td>
<td></td>
</tr>
<tr>
<td>Gearing</td>
<td></td>
<td>29.2%</td>
<td></td>
</tr>
</tbody>
</table>

At 12/31/07