CENTRO DE ESTUDOS DO DIREITO PÚBLICO E REGULAÇÃO
Coimbra, 6 de Abril 2001

II Painel - A Energia em Portugal
O Gás Natural

António Mexia
Presidente Executivo Galp Energia
Index

New Trends

European Market uniqueness

Portuguese context
Energy: Key Drivers of Change

Initiated by Government, Driven by Technology, Optimized by the Market
Gas: New Business Models

1. Increasing importance of Gas-to-Power
   +/-60% of power commissioned up to 2010 will be gas-fired
   40-50% of power produced from gas in 2020

2. Local Generation Growth
   Target of 18% for cogen by 2010

3. Transmission Bypass

   - Increased importance of Supply
   and of the
   Transportation Grid
Value Chain: new strategies, new drivers and new players

- Increased power of suppliers
- New Trading Skills
- Importance of new projects
- Potential economic disincentive from regulator?
- Economies of scale
- Flexibility
- Portfolio and risk management
- Economies of scope and scale
- Brand management
- Know how
- Focus from product to consumer
- Volume and/or price risk management
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New Trends

European Market uniqueness

Portugal in Iberia
Different liberalization processes are in different stages in member countries

- Different market stages (emerging vs mature)
- Physical barriers (Iberia, Greece)
Europe: Still a non integrated market

NG Trades among EU countries still limited
- about 42 bcm in 1998
- 12% of total EU15 consumption
- 2/3 are sales from Holland to Germany and France

A European NG integrated system could add flexibility to the markets
- allowing operators to sell excess NG
- giving them the chance to face sudden unexpected demand
- the liberalization will help to increase inter-European trades, but...

... such system requires infrastructure investment
- there are several regional areas isolated or facing severe constraints
- investing in high pressure pipelines network requires adequate tariff system
Europe: An unbalanced market

North America (incl. Mexico) - balanced

United Kingdom - balanced ...for now

EU15 (excl. UK) - dependent

Bcm
1998, IEA
Europe: Dependence will grow

1. Consumption will continue to grow, while...

2. ...internal production will decline

3. From 45% to 68%-74% of dependence

Source: Eurogas
Europe: Dependent from few suppliers

The issue is as much on country as on company power

LNG will play an increasing role...

- 1998 LNG consumption was about 20 bcm (50% of which by France)
- New investments in re-gasification capacity projected or under construction reached 26 bcm (excluding France, Ireland and Holland)

... but only slightly reduces supplier dependence

- LNG will hardly represent more than 20% of EU consumption (spot LNG even less)
- Requires tight long run commitments from buyer
Liberalization: lower margins ... and supply pressure

Distribution / wholesale

- Growing competition
- Growing demand

Distribution margin
- Transportation tariff
- Supply price

End user price

Distribution margin
- Transportation tariff

Regulator TPA at low cost?

Growing market power of suppliers

- Increasing need to secure access to NG - growing demand
- LNG investment - long run contracts required to assure investment return (both upstream and downstream)
- Concentrated upstream and disperse downstream players - harder negotiations
- Loss of contract flexibility (prices and quantities)
- Additional embedded cost (loss of flexibility)

Typical effects of liberalization processes reinforced by supply conditions

Double pressure on margins
...while additional risks are being supported
- market risk and insufficiently flexible supply contracts
- margin risk - gap between supply prices (oil linked) and end user competitive limitations
Transmission: the need for the right incentives

Are there incentives for pipeline investments in the short run?

- Cash flow is shrinking and so is investment capacity
- Priorities are to reduce supply dependence and to face growing demand (upstream, storage, LNG re-gasification)
- Return on transportation investment depends on TPA model and tariffs

**Pipeline Investment in EU15**

<table>
<thead>
<tr>
<th>Existing</th>
<th>Under construction</th>
<th>Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,420 km</td>
<td>4,263 km</td>
<td>2,023 km</td>
</tr>
</tbody>
</table>

**Long term vs short term transportation equilibrium**

<table>
<thead>
<tr>
<th>Short term</th>
<th>Long term</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPA based on investment return</td>
<td></td>
</tr>
<tr>
<td>• Investment in transportation is guaranteed from the start</td>
<td></td>
</tr>
<tr>
<td>TPA based on depreciated infrastructure O&amp;M costs</td>
<td></td>
</tr>
<tr>
<td>• Lack of transportation investment</td>
<td></td>
</tr>
<tr>
<td>• Transition period with transportation constraints</td>
<td></td>
</tr>
<tr>
<td>• Sharp rise in transportation tariffs to meet urgent investment needs</td>
<td></td>
</tr>
<tr>
<td>• Additional pressure on distribution margins and/or end user price rise</td>
<td></td>
</tr>
</tbody>
</table>

Source: EU Commission, 1998
Excludes France, Ireland and Holland
### European Gas Market: Issues to address

**• What incentives are there for putting in place the required infrastructure?**
- TPA tariffs are adequate to incentive pipeline investments?
- What is the long run effect of today’ transportation tariffs?

**• How to coordinate the need to access NG with increasing competition for end user market?**
- How to assure more flexibility and shorter term contracts with higher power from suppliers?
- How to avoid the effects of Integration?

**• What about supply flexibility?**
- How to share the potential cost of lack of flexibility (long run/short run)?

**• Of course margins will decrease. But what will happen to prices?**
- Will distribution margin be transferred to supply and, in the long run, to transportation companies?
- Will the end user prices be penalized for the potential lack of flexibility in supply contracts?
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New Trends

European Market uniqueness

Portuguese context
Portugal Gas Market

- LDCs covering more than 90% of population
- Underground storage (min. 4x90 Mcm)
- 10,000 Km of network - 2010
- 1 LNG terminal (min. 2.4 Bcm) by 2003
- 13 Satellite Supply Units

Backbone in place and a fast build up… but still just half way there

Portuguese Market Liberalisation
The Natural Gas industry in Portugal

- Start-up organisation chosen or the natural gas industry in Portugal ignored the size of the market
- Excess number of domestic and international players involved resulting in a clear lack of a global strategy

Potential Vicious Circle

High Network Investments /Low penetration
Low gas sales
Reduced bargaining power
Difficult market penetration
Competition LPG/fuel-oil
Expensive gas
Higher transportation costs

The need for a sharper build up with new model
The Natural Gas industry in Portugal - present & future

**CHALLENGES**

**MARKET**
Expand Demand

**SIZE**
Economies of Scale

**PROFITABILITY**
Operational Efficiency

**STRATEGIC PRIORITIES**

- Vertical integration
- LNG terminal, underground storage, 2nd combined cycle power plant
- Client driven culture
- Legal, regulatory and fiscal framework
- Product image

Fast Growth
Strategic Value / Economies of Scale
Focus
Fair Competition
Differentiation

A new strategy for growth
Supply

- Current source via Maghreb pipeline from Algeria
- LNG Terminal completed by 2003
  - base regasification capacity of 2.4 bcm
  - no constraints in further expansions

- Increases strategic value of the Portuguese system in the Iberian context
- Creates additional flexibility and negotiating power

50/50 target PipeGas / LNG mix by 2010

Important location premium over LNG imports and privileged access to the Peninsula
Investment Programme

Cumulative Investments

1998 1999 2000 2005 2010

230 230 550

LNG Terminal
Underground Storage
LDC’s Network and conversions 60%
Industrial Connections
Others
New pipelines

Significant investments in network and strategic assets
The current level of profitability is highly affected by the build up phase, when compared with mature markets.

\[*\text{ROCE} = \frac{\text{Operating Profit} \times (1-t)}{\text{Shareholders Equity} + \text{Financial Debt}}\]
A self-regulated system since the beginning

Algeria (Sonatrach)

- CIF price = FOB price + Redevance + Transportation costs + Losses

Nigeria (NLNG)

- CIF price = CIF price on the terminal + Regas cost + Transportation costs + Losses

Transgás

- CIF price + Transgás margin

Electricity market

- Fixed term + variable term

Industrial market

- Residential price (regulated)
- Industrial price

Distribution market

- CIF price + Transgás margin (regulated)
NG Prices in Portugal: competitiveness
(Euro/ 100 m3. VAT inc. July.2000)

Portugal vs. EU15

<table>
<thead>
<tr>
<th>Country</th>
<th>D1 Consumer (Eurostat)</th>
<th>I3-1 Consumer (Eurostat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>66.2</td>
<td>22.5</td>
</tr>
<tr>
<td>Espanha</td>
<td>72.0</td>
<td>20.3</td>
</tr>
<tr>
<td>Itália</td>
<td>61.3</td>
<td>24.1</td>
</tr>
<tr>
<td>França</td>
<td>65.9</td>
<td>21.4</td>
</tr>
<tr>
<td>UE 15</td>
<td>68.7</td>
<td>23.1</td>
</tr>
</tbody>
</table>

The average NG prices for typical residential customers and medium size industries are aligned with the average prices in EU 15.

* Average in the LDCs, including fixed term
Source: Eurostat. GDP Distribuição.
NG Prices in Portugal: competitiveness (2)
(Euro/ 100 m3. VAT inc. July.2000)

For a large industrial client NG price is 10% below the average price in EU 15.

* Average in the LDCs, including fixed term
Source: Eurostat. GDP Distribuição.
NG in Portugal: What kind of regulation?

Late start-up (min. 30 years) + NG without captive uses + Infrastructure investment + Supply rigidity (Take-or-pay)

CONCESSION CONTRACTS

DIFERENCIATED REGULATION

- Monitor concession contracts obligations
- Assure competition between NG and alternative energies
- Prepare liberalisation of the sector

After derogation…

- Drive liberalisation
- Adjust contracts to business evolution
Oil & Gas in the World ... The search for Size and scope

Exxon, 1st USA e 2nd world, acquires 2nd USA e 4th world
Becomes nr. 1 world

BP, 2nd Europe e 3rd world
merges with Amoco and
acquires ARCO and Castrol.
Becomes nr. 3 world

Total, 4th Europe, acquires Fina,
7th Europe and Elf, 5th Europe.
Becomes nr. 4 world

Repsol, 6th Europe, acquires
YPF. Becomes nr. 8 world

ENI acquires an independent
(British Borneo)

Ameralda Hess buys Lasmo Oil
(that had acquired Monument
Oil&Gas in 1997)

4th world operator
Natural Gas in Iberia ... in the middle of a corporate revolution

- M&A
- Swaps
- Convergence

New players with large dimension

Electricity
Natural Gas
Oil

3 (?) reference blocks
Natural Gas in Portugal … bare in mind the differences

1. NG and Power are increasingly related
2. NG and Power markets are different
3. NG and Power are at very different stages in Portugal
4. Limited NG players in Iberia
   • NG price system with a large component of auto-regulation
   • NG Prices in Portugal below EU

Joint Regulator … but with very different scopes on each market