The Spanish Gas Industry 2014
WOC 4 IGU March 5th 2014

Mr. Carlos Villalonga – Vice-Secretary Spanish Gas Association (Sedigas)
Summary

1. Natural Gas in Spain. Figures 2013
2. Power Generation
3. Natural Gas Supply - Security of Supply
4. Infrastructures
5. Present Key Issues for the Spanish Gas Industry
1. **Natural Gas in Spain. Figures 2013**

2. *Liberalization of the Spanish Gas Market*

3. **Natural Gas Supply - Security of Supply**

4. **Infrastructures**

5. **Present Key Issues for the Spanish Gas Industry**
In 2013 natural gas demand in Spain decreased by 8.1% due mainly to lower consumption in CCGT.

Source: Actual data Enagás GTS and forecast 2014 Enagás GTS January 2014
Natural Gas demand in other European Countries

Source: Enagás GTS
Breakdown of natural gas consumption by markets (GWh)

Natural Gas sales 2013 (28,5 bcm)

- Residential-Commercial: 17.0%
- Power Generation: 17.0%
- Industrial: 64.1%
- Raw Material: 1.9%

Natural gas accounts for 21.6% of the primary energy mix in Spain
**Breakdown of natural gas consumption by markets (GWh)**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Residential &amp; Commercial</td>
<td>59.617</td>
<td>55.945</td>
<td>64.328</td>
<td>52.433</td>
<td>56.776</td>
<td>56.597</td>
<td>- 0.3 %</td>
</tr>
<tr>
<td>Industry</td>
<td>197.256</td>
<td>180.264</td>
<td>194.089</td>
<td>203.626</td>
<td>216.923</td>
<td>212.733</td>
<td>- 1.5 %</td>
</tr>
<tr>
<td>Power Generation</td>
<td>256.300</td>
<td>160.888</td>
<td>135.625</td>
<td>109.875</td>
<td>84.600</td>
<td>56.844</td>
<td>-32.8 %</td>
</tr>
<tr>
<td>Raw material</td>
<td>5.033</td>
<td>4.874</td>
<td>6.131</td>
<td>6.319</td>
<td>4.339</td>
<td>6.260</td>
<td>+44.3 %</td>
</tr>
<tr>
<td>Total (bcm)</td>
<td>38.4</td>
<td>34.3</td>
<td>34.2</td>
<td>31.8</td>
<td>31.0</td>
<td>28.5</td>
<td>-8.1 %</td>
</tr>
</tbody>
</table>

**Residential market consumption most affected by climate conditions**

- Coldest year in wintertime: 2010
- 2013: similar temperatures than 2012 in winter but colder in April, May and June

![Average daily temperature last decade: 12.2 °C](sedigas)
Power generation mix 2013

- In 2008 the contribution of CCGTs to the Power Generation Mix was 32 %
- 5 % of the coal consumption is regulated to give priority to domestic coal
- About 80 % of CHP consumption is supplied with natural gas
Natural Gas consumption for Power Generation has decreased by 67% since 2008

Wind generation + 6.350 GWh

Electricity consumption - 5.646 GWh

Hydro-generation + 14.518 GWh

Source: REE
Thermal gap for power generation. Coal and Gas Shares

Lower natural gas consumption:

- Priority is given to domestic coal;
- Low coal prices;
- Low cost of CO₂ emissions.
Current key issues regarding natural gas consumption

– There is still room for natural gas to replace more pollutant energies like gasoil for heating use;

– But not available yet for all Spanish citizens

– Natural gas is a cost competitive energy which also contributes to reduce carbon emissions:
  - Backup of intermittent renewables;
  - High security of supply in Spain;

![](chart.png)
Advantages for companies and families

The use of gas would allow up to 50 % savings on the non-electric energy bill

<table>
<thead>
<tr>
<th></th>
<th>Single-family home</th>
<th>50-family home</th>
<th>Small Industry</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy consumption</strong></td>
<td>15 MWh/year</td>
<td>500 MWh/year</td>
<td>2.000 MWh/year</td>
<td>10.000 MWh/year</td>
</tr>
<tr>
<td><strong>Energy costs using gasoil</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>€1,714/year</td>
<td>€48,570/year</td>
<td>€196,000/year</td>
<td>€980,000/year</td>
</tr>
<tr>
<td><strong>Energy costs using natural gas</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>€1,089/year</td>
<td>€33,619/year</td>
<td>€100,000/year</td>
<td>€490,000/year</td>
</tr>
<tr>
<td><strong>Savings</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>€625/year (36 %)</td>
<td>€14,951/year (31 %)</td>
<td>€96,000/year (49 %)</td>
<td>€490,000/year (50 %)</td>
</tr>
</tbody>
</table>

The replacement plan would allow estimated savings of 17 M€ in 2017 on the State’s bill<sup>2</sup>

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<sup>1</sup>Including taxes. Assumes that the State’s energy bill is concentrated on the commercial sector and that the energy consumption in this sector is proportional to the employment. Assumes a 17% of public employment over total employment.

<sup>2</sup>Source: GNF, OIT, Analysis BCG
### Other figures of the Spanish Gas Industry

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection points</strong></td>
<td>2.776.000</td>
<td>4.203.000</td>
<td>7.297.090</td>
<td>7.393.816</td>
<td>7.473.451</td>
</tr>
<tr>
<td><strong>Network (km) Transmission + Distribution</strong></td>
<td>21.200</td>
<td>37.000</td>
<td>76.108</td>
<td>79.041</td>
<td>81.188</td>
</tr>
<tr>
<td><strong>Towns</strong></td>
<td>544</td>
<td>948</td>
<td>1.549</td>
<td>1.579</td>
<td>1.600</td>
</tr>
<tr>
<td><strong>Consumption (bcm)</strong></td>
<td>12,2</td>
<td>16,7</td>
<td>31,8</td>
<td>31,0</td>
<td>28,5</td>
</tr>
</tbody>
</table>

Source: Sedigas

About 70% of the population lives in cities with available supply of natural gas, but natural gas is only used by 30% of Spanish households.
1. Natural Gas in Spain. Figures 2013
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5. Present Key Issues for the Spanish Gas Industry
Liberalization - Customers

Last Resort Tariff for clients P up to 4 bar with consumption up to 50 MWh/year, not interested in the offers of the liberalized market
Liberalization - Consumption

Last Resort Tariff for clients P up to 4 bar with consumption up to 50 MWh/year, not interested in the offers of the liberalized market.
### Liberalization – Figures of the Spanish Retail Market (2012)

<table>
<thead>
<tr>
<th>Indicator</th>
<th></th>
<th>Variation 2012-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Suppliers</td>
<td>37</td>
<td>+ 5</td>
</tr>
<tr>
<td>Suppliers with sales &gt; 5 %</td>
<td>6</td>
<td>+ 1</td>
</tr>
<tr>
<td>Suppliers with clients &gt; 5 %</td>
<td>4</td>
<td>=</td>
</tr>
<tr>
<td>Switching Rate</td>
<td>18.5%</td>
<td>- 0.3%</td>
</tr>
<tr>
<td>% Customers LRTariff</td>
<td>31%</td>
<td>- 4.4%</td>
</tr>
<tr>
<td>HHI (Sales)</td>
<td>2.250</td>
<td>+ 278</td>
</tr>
<tr>
<td>HHI (Clients)</td>
<td>3.793</td>
<td>- 253</td>
</tr>
<tr>
<td>Disconnections (Bad debt)</td>
<td>40.336</td>
<td>+ 6.780</td>
</tr>
<tr>
<td>Number of offers in the liberalized market (2012.12)</td>
<td>101</td>
<td>- 7</td>
</tr>
</tbody>
</table>

HHI: Herfindahl and Hirschman Index
Liberalization – Share of retail market (Sales 2012)
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Natural Gas Imports 12 origins (32 bcm 2013)
Natural Gas Exports (3,6 bcm 2013)

46,3 % of the natural gas imported as LNG  
2,7 bcm exported as LNG
Gas Flows 2013

- 202 TWh
  - 77% Algeria
  - 22% France

- 0.5 TWh
  - 0.1% of total supply

- 173.9 TWh
  - 228 Tankers
  - 10 Origins

- 32 TWh
  - LNG Exports

- 11.9 TWh
  - Tankers-trucks
  - 3.6% of total demand

- 173.9 TWh
  - LNG Terminals
  - 131.1 TWh Regasification

- 56.8 TWh
  - Power generation

- 265.1 TWh
  - Conventional demand

- 9 TWh
  - Injection

- 9 TWh
  - Extraction

- 10.6 TWh
  - NG Exports

- 56.8 TWh
  - Power generation

- 265.1 TWh
  - Conventional demand

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  - Injection

- 9 TWh
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- 9 TWh
  - Extraction

- 10.6 TWh
  - NG Exports

- 56.8 TWh
  - Power generation

- 265.1 TWh
  - Conventional demand
LNG Satellite Plants

- 725 Single-Consumer Plants
- 80 Plants supplying Distribution networks
- 12 TWh in 2013
- Transport by tankers (39,240 in 2013)
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Natural Gas Infrastructures 2013

Source: Enagás
Natural Gas Infrastructures 2013

- 81,000 km of transmission and distribution networks
- 18 Compressor Stations
- 6 LNG Terminals in operation

<table>
<thead>
<tr>
<th>MOP</th>
<th>T/D</th>
<th>Steel</th>
<th>Polyethylene</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 16 bar</td>
<td>T/D</td>
<td>Steel</td>
<td>Polyethylene</td>
<td>Other</td>
</tr>
<tr>
<td>Transmission</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Distribution</td>
<td>14%</td>
<td>84%</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>

International Connections

<table>
<thead>
<tr>
<th>Year</th>
<th>Portugal-Spain</th>
<th>Spain-Portugal</th>
<th>France-Spain</th>
<th>Spain-France</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>3,7 bcm/year</td>
<td>6 bcm/year</td>
<td>5,2 bcm/year</td>
<td>5,2 bcm/year</td>
</tr>
<tr>
<td>2015</td>
<td>3,7 bcm/year</td>
<td>6 bcm/year</td>
<td>7,1 bcm/year</td>
<td>7,1 bcm/year</td>
</tr>
<tr>
<td>?</td>
<td>7,7 bcm/year</td>
<td>10 bcm/year</td>
<td>12,7 bcm/year</td>
<td>14,3 bcm/year</td>
</tr>
</tbody>
</table>

Including the 3rd IP with Portugal (4) and the 3rd IP with France (5) (East connection – Midcat) both approved as PCI
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5. Present Key Issues for the Spanish Gas Industry
Grid Extension and increase of Natural Gas consumption

- There is still room for natural gas to replace more pollutant energies like gasoil and coal for heating use, but for some renewables local harmful emissions are not taken into account;
- Relatively low penetration of natural gas in households in Spain (30 %);
- EED requires 1,5 %/year of final consumption decrease. Suppliers responsible. Opportunity for natural gas to replace less efficient energies;
- New markets in development: Road and Maritime Transport.
Gas Target Model - Iberian gas Hub

- Spanish and Portuguese markets suppose 37 bcm/year;
- Enough entry points due to LNG supplies;
- Works are in place to prepare the rules of the future Iberian Hub.
3rd Energy Package - Effect on Spanish NSOs

- Ownership Unbundling and ISO Models for TSOs
- Legal unbundling requirements complied by all Spanish DSOs;
- Different safety regulations create different activities of DSOs in different MS (i.e: check up of installations for commissioning or periodic check up);
- Common IT platform owned by all Spanish DSOs (SCTD) providing to all suppliers:
  - Information on all Connections (Situation, Supplier, Gas Consumption, etc.);
  - Switching services (switching rate 2012 – 18,8 %);
  - Moving in and moving out services;
  - Nomination and allocation information services;
  - New services designed together with suppliers at the switching office (OCSUM).
- Compliance with 3rd package switching provisions (3 weeks);
- Some requirements arising from different Network Codes like Balancing (Intraday information provisions) will impact the Spanish DSOs activity; other NCs like Interoperability also have a potential impact on the distribution activity.
Thank you for your attention

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