Gas Regional Investment Plan
South Region
Second Edition
Stakeholders Consultation
GRIP WS – 26 November 2013
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Perimeter /Objectives

- 3 Countries (FR, SP, PT) and 4 TSOs
- Main drivers/objectives
  - Complementing the EU-TYNDP 2013
  - Feedbacks received:
    -> updated information / TYNDP
    -> More harmonization (with ENTSOG assistance)
    -> More communication/consultation
    -> More comprehensive approach on the system needs and on remedies (projects)
  - EU energy policy, “Trans-European energy infrastructure” (17/04/13)

“The strategic concept of the North-South Corridor in Western Europe, that is to better interconnect the Mediterranean area and thus supplies from Africa and the Northern supply Corridor with supplies from Norway and Russia.” (EC, EIP for 2020)
Weight/size of the South Region: 18% of EU gas demand

Focus on the Power generation sector:
- Growing sector
- Lost of competitiveness / coal
- Differences / countries

Electricity generation by technology (ENTSO-E)

South Region: 855.855 GWh
- Hydro: 14%
- Nuclear: 6%
- Renewables: 5%
- Lignite: 2%
- Coal: 9%
- Gas: 19%
- Oil: 56%

France: 524.947 GWh
- Fossil Fuels: 9%
- Renewables: 9%
- Nuclear: 25%
- Hydro: 78%

Portugal: 48.423 GWh
- Fossil Fuels: 51%
- Renewables: 30%
- Nuclear: 19%
- Hydro: 24%

Spain: 264.485 GWh
- Fossil Fuels: 46%
- Renewables: 21%
- Nuclear: 21%
- Hydro: 12%

Total gas demand South Region: 908.157 GWh
- Residential & Commercial & Industrial & Others: 18%
- Power generation: 82%

Total gas demand France: 478.215 GWh
- Residential & Commercial & Industrial & Others: 95%
- Power generation: 5%

Total gas demand Portugal: 56.799 GWh
- Residential & Commercial & Industrial & Others: 71%
- Power generation: 29%

Total gas demand Spain: 373.061 GWh
- Residential & Commercial & Industrial & Others: 71%
- Power generation: 29%
GRIP South – Demand
Other analyses & Forecasts

Modulation analysis
(Ratio Day/Year in 2011)

France

Portugal

Spain

Demand forecasts:
➢ **Updated:** yearly volumes, peak days and cold period
➢ **Analyzed:**
  - By sectors (power gen.)
  - Evolution / TYNDP

Residential + Commercial + Industrial
Power Generation

[Graph showing demand forecasts for France, Portugal, and Spain]
GRIP South – Supply Overview

- **Imports** (99%)
- **48% LNG** (16% at EU level)
- Very diversified portfolio (14) but not homogeneous by countries
- Word LNG market but currently more attractive prices in Asia

**Chart:**
- Imports: 48% LNG, 52% Pipeline

**Graph:**
- World LNG Estimated July 2013 Landed Prices
- Data source: Waterborne Energy, Inc.
GRIP South – Supply Needs and forecast

- Decline of EU gas production
- Growth in demand (world, uncertainties on LT for EU)
- Additional Gas Supply (EU)
  - Non conventional gas → EU?
  - Biogas → LT
  - LNG
  - Local (by pipe) conventional reserves
- Infrastructures: “EU Priority corridors”

North-South Corridor to better interconnect Portugal, Spain and supplies from Algeria to the Northern supply Corridor with supplies from Norway and Russia.
78 infrastructure projects (/302 identified by ENTSOG):

→ Updated (2013)
→ breakdown FID and non FID

Projects in the South Region

(*) Spanish core network projects postponed until a new planning document is approved by the government according to Spanish Royal Decree-Law 13/2012. No changes at Cross-border Interconnection Points Capacity
GRIP South – Projects

Updated and comprehensive source of information on Projects:
- Projected commissioning
- Impact on capacities
  → used in the network assessments (simulations)

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<td>Valença do Minho (PT) / Tuy (ES)</td>
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nFID capacity at existing IP
nFID capacity at future IP development

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<td>FR(TIGF)&gt;SP</td>
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<td>Larrau</td>
<td>SP&gt;FR(TIGF)</td>
<td>230</td>
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nFID capacity at future IP development
In-depth analyses of TYNDP Assessments
- Resilience assessment (stress conditions)
- Supply source dependence
- Network adaptability to supply evolution
- Capacity for supply source diversification

Additional studies (sensitivity)
- Resilience to low LNG delivery
- Spread of Algerian/Russian gas through Europe
Additional analyses & information:
- Divergence of prices,
- IP capacity utilization
- PT: Fulfillment of N-1 criterion
- Odourisation issue (/ rest of EU)

Sources: Bloomberg, ICIS Heren; Analyse: CRE
Specific analyses:
- Evolutions: 2012 vs 2011, UGS
- Cold snap February 2012
- IP capacity subscription

**Capacity (GWh/d)**

<table>
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<tr>
<th>Date</th>
<th>Available</th>
<th>Portion reserved for short term</th>
<th>Total Subscription</th>
<th>Technical Capacity</th>
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<td>20 Jan</td>
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<td>30 Jan</td>
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**Average Daily Temperature**

- Averaged values from 01 February 2012 to 10 February 2012
- Deviation:
  - Year of interest: LTA
  - Unit: degrees Celsius

**Larrau IP (FR → SP Flow Direction)**

- Demand comparison between the highest 14-day periods of Winter 2010/11 and Winter 2011/12

**Injection**

- Lower Gas Demand, however the increment of the conventional sector
- Drop of LNG entries to the gas system
- Higher entries at LARRAU and North Africa pipelines

**Withdrawal**

- LNG Terminal (PT)
  - +1 TWh
  - +14 TWh
- LNG Terminals (ES)
  - +2 TWh
  - +28 TWh

**ENTSOE. Winter Supply Outlook 2012/13 and Winter 2011/12 Review**
GRIP South – remedy projects
FID projects: Western axis

Open Season (2009/2010) for developments in 2013 & 2015:
- **Long Term commitments** enabled infrastructure development
- Remaining **Short Term capacities** are marketed jointly at common IPs

Implemented at Larrau and Biriatou IPs

[Larrau: 5,5Gm3/Year (2013)]

[Lariatou: 2Gm3/Year (2015)]
Non FID PROJECTS ANSWERING NEEDS IN THE SOUTH REGION

Corridor to better interconnect:
- Spain - Portugal
- Spain - France
- France North - France South
- Region South - Rest of Europe

3rd Interconnection Point between Portugal and Spain

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>TYNDP 13-22 Code Project*</th>
<th>Length (km)</th>
<th>Diameter (&quot;)</th>
<th>Compressor Power (MW)</th>
<th>Project Status</th>
<th>Commissioning Date</th>
<th>TSO/COUNTRY</th>
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<tbody>
<tr>
<td>① PT-ES Interconnector Cantanhede Compressor Station</td>
<td>TRA-N-284</td>
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<td>Non-FID</td>
<td>2019 Q4</td>
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<tr>
<td>② PT-ES Interconnector Pipeline Cantanhede-Mangualde</td>
<td>TRA-N-285</td>
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<td>28</td>
<td>Non-FID</td>
<td>2021 Q4</td>
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<td>③ PT-ES Interconnector Pipeline Spanish Border-Celorico</td>
<td>TRA-N-283</td>
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<tr>
<td>④ Interconnection ES-PT (3rd IP)</td>
<td>TRA-N-168</td>
<td>86</td>
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<td>Non-FID</td>
<td>2017 Q4</td>
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<td>⑤ CS Zamora power increase</td>
<td>TRA-N-159</td>
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<td>23</td>
<td>Non-FID</td>
<td>2018 Q4</td>
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* for further information about each project, see annex A Ten Year Network Development Plan 2013-2022 Document
North - South Gas Corridor in Western Europe
Gas Projects of Common Interest (PCI) in the South Region

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
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<tbody>
<tr>
<td>4</td>
<td>PCI 3rd interconnection point between Portugal and Spain</td>
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<td>5</td>
<td>PCI Eastern Axis Spain-France—interconnection point between Iberian Peninsula and France at Le Perthus [currently known as Midcat]</td>
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<td>6</td>
<td>PCI Reinforcement of the French network from South to North—Reverse flow from France to Germany at Obergailbach/Medelsheim Interconnection point (France)</td>
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<td>7</td>
<td>PCI Reinforcement of the French network from South to North on the Bourgogne pipeline between Etrez and Voisines (France)</td>
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<td>8</td>
<td>PCI Reinforcement of the French network from South to North on the east Lyonnais pipeline between Saint Avit and Etrez (France)</td>
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<td>9</td>
<td>PCI Reverse flow interconnection between Switzerland and France</td>
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<tr>
<td>13</td>
<td>PCI New interconnection between Pilgám (France) and Maldegem (Belgium)</td>
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<td>14</td>
<td>PCI Reinforcement of the French network from South to North on the Arc de Dierrey pipeline between Cuvilly, Dierrey and Voisines (France)</td>
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<td>17</td>
<td>Interconnection between France and Luxembourg</td>
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<td>20</td>
<td>PCI Gas Pipeline connecting Algeria to Italy (Sardinia) and France (Corsica) [currently known as Galsi &amp; Cyréné pipelines]</td>
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Bidirectional flows between Portugal, Spain, France and Germany
Rest of PCI projects at South Region
South Region TSOs are cooperating to increase market integration (coordinated capacity developments, joint offers and services).

An upper level of market integration needs significant investments.

Due to lack of visibility on gas market trends in EU, market players are less and less keen to commit on long term basis.

The Regulation on “Guidelines for trans-European energy infrastructure” (347/2013 of 17/04/2013) supports these developments through accelerated permit granting, improved Regulatory treatment and Financial support.

Nevertheless, the role of the natural gas has to be affirmed in the energy policies in order to secure the cost-effectiveness of these investments for the market.
Planning

- ENTSOG TYNDP publication: 21st February 2013

- Communication / consultation
  - Continuous and extensive consultation for identifying and updating projects & other datas (national, EU)
  - GRI South meeting(s): IG & SG meetings (5)
  - ENTSOG WS: 26th November → stakeholders consultation

- “Draft GRIP” beginning of December
  - to finalize with last results/verifications
  - + last feedbacks to introduce

- Publication: January/February 2014
  - Feedbacks after publication
Thank you for your attention and Your feedbacks