The role of the European grids in seeking energy independence

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EU Energy consumption: the 3rd worldwide market

Evolution of Final Energy Consumption by Main Region (Mtoe)

- China
- Middle East
- Russia
- US
- Asia*
- EU-27

*Excluding China – Source: IEA, May 2012
Importance of oil, gas and coal
## Significant market differences

<table>
<thead>
<tr>
<th></th>
<th>Crude Oil</th>
<th>Electricity</th>
<th>Natural gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worldwide</td>
<td>Worldwide market</td>
<td>National / European market</td>
<td>European market / LNG linking markets in the world</td>
</tr>
<tr>
<td>market</td>
<td>Imports: mainly via oil tankers</td>
<td>Domestic production</td>
<td>Imports: mainly via gas pipelines</td>
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<tr>
<td></td>
<td>Low transportation costs</td>
<td>Limited interconnection capacities</td>
<td>key importance of cross border flows</td>
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<td></td>
<td>Large crude oil storages</td>
<td>High transportation costs</td>
<td>Structural dependence of central Europe on Russian gas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No storage</td>
<td>Large natural gas storages</td>
</tr>
</tbody>
</table>
EU-27 energy import dependence

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>Oil</th>
<th>Gas</th>
</tr>
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<tbody>
<tr>
<td>1995</td>
<td>90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>80%</td>
<td></td>
<td></td>
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<tr>
<td>2005</td>
<td>70%</td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>60%</td>
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</tbody>
</table>
Russia & Norway: the 2 main oil exporters

EU imports of crude oil - 2010 (%)

- Russia: 34%
- Norway: 14%
- Libya: 13%
- Sauda Arabia: 6%
- Iran: 6%
- Kazakhstan: 6%
- Nigeria: 6%
- Azerbaijan: 6%
- Iraq: 4%
- Others: 4%

EU imports of crude oil - 2010 (%)

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- Libya: 13%
- Sauda Arabia: 6%
- Iran: 6%
- Kazakhstan: 6%
- Nigeria: 6%
- Azerbaijan: 6%
- Iraq: 4%
- Others: 4%
Russia & Norway: the 2 main gas exporters

EU imports of gas - 2010 (%)

- Russia: 32%
- Norway: 28%
- Algeria: 14%
- Qatar: 9%
- Nigeria: 4%
- Libya: 3%
- Others: 10%

EU imports of gas - 2010 (%)

- Russia
- Norway
- Algeria
- Qatar
- Nigeria
- Libya
- Others
European energy grids

Key contribution to:

- Imports and security of energy supply
- Competition on the wholesale market
- EU Market integration
- Transition to a new European Energy mix
Priority corridors in Europe
European energy roadmap

Graph 1: EU decarbonisation scenarios — 2030 and 2050 range of fuel shares in primary energy consumption compared with 2005 outcome (%)
Challenges for the European gas grid

- Increasing gas imports
- Connection of new supply sources to Europe
- Security of supply

Competition between gas sources
Market integration
Electricity & gas markets interactions
Impact of the future gas pipelines
Gas pipelines and new projects in France
Smart grids for a global efficient energy system

Gas grid: imports, storage, natural gas, biogas

Power grid: production by energy mix
Key advantages of the gas transmission system

- Limited costs compared to gas prices
- A major contribution to security of gas supply
- A major contribution to competition on the wholesale market benefiting to final consumers
- A key role for promoting indigenous energy production and preparing the future European energy mix
Thank you for your attention

For more information: www.grtgaz.com

Shaping the future of gas transmission