Knowledge stream III
The Political Challenge

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The Executive Training Programme for Tomorrow’s Energy Decision Makers
The Energy Charter Secretariat and Kazenergy
Astana 10-13 June 2014
Degree of Energy Independence in 2035

Source: Based on BP Energy Outlook 2030, January 2014 and own calculations
Energy security

- Supply security - source security
  - transit security
- Demand security
- Financial security
- Economic security
- Environmental security
- Technological Security
- Cyber security
National Oil Companies Control 94 Percent of World’s Reserves

Billion Barrels of Oil Equivalent

Gas
Oil

Source: Credit Suisse First Boston
Production of hydrocarbons per capita
(tonnes of oil equivalent/capita)

Sources: BP, own calculations
Instruments of Energy Policy for Security

- **Prevention**
  - Multilateral cooperation: IEF, IEA, Charter Treaty, foreign policy, economic cooperation, trade policy
  - Cross border: horizontal and vertical integration of companies
  - Diversification
  - R & D

- **Deterence**
  - Security policy: unilateral
  - Economic and political sanctions
  - Security Council
  - Strategic alliances: EU Partnership and cooperation agreements, Early warning mechanism, Energy memorandum of understandings (e.g. PCA and energy MOU with Kazakhstan)

- **Containment**
  - Diversification: energy systems flexibility (sources and transit), stand-by arrangements, storage, energy savings, promotion of domestic energy production (subsidies and taxes)

- **Crisis management**
  - Strategic reserves, demand managements, energy sharing, pricing policy (temporary price caps)
EU Energy Policy: a short history

- 1981: Opposition of the US to the construction of the Urengoi gas pipeline linking Western Siberia to Western Europe
- 1986: Oil price collapse
- 1986: Single European Act
- 1986: UK Gas Act
- Late 80ies: UK dash for Gas
- Oil and gas considered as “normal” commodities
- 1992: Maastricht Treaty (art 3 u): Energy at the same level as tourism and civil protection!
  - "The world is awash with the stuff... which could drive prices from today’s 10 $ to as little as 5 $" - The Economist: March 4 1998.
- 1998
- End 2000: Oil shock. Oil prices head north to $36/bbl
EU Energy Policy : a short history (2)

- **30 Octobre 2000** : Launch of the EU - Russia Energy Dialogue
  - High dependence on energy imports
  - Limited influence of the EU on the supply side
  - Difficulties in reaching Kyoto targets
  - **27 October 2005** : Under British presidency, introduction of the concept of a mandatory and comprehensive European energy policy at the informal European Council of Hampton Court.
- **March 2006** : Second Green Paper on “A European Strategy for Sustainable, Competitive and Secure Energy”. Six priorities: completion of the internal market; sustainable, efficient and diverse energy mix; integrated approach for climate change; a strategic energy technology plan; a common European energy external policy “to speak with one voice”.
- **10 November 2010** : Energy 2020 “A Strategy for Competitive, Sustainable and Secure Energy” – challenges of saving energy, achieving the internal energy market prices and secure supplies, boosting technological leadership and effectively negotiate with our external partners.
- **7 September 2011** : Communication on “security of energy supply and international cooperation”
- **19 October 2011** : Proposal for a regulation on Guidelines for trans-European energy infrastructure, proposes a regime of common interest for projects.
- **25 October 2012** : Decision on an information exchange mechanism with regard to agreements between Member States and third countries in the field of energy.
- **27 March 2013** : Green Paper : “A 2030 framework for Climate and Energy policies”
- **22 January 2014** : Communication on “EU 2030 framework for Climate and Energy Policies”
- **28 May 2014** : Communication on a “European Energy Security Strategy”
The **Energy Community** (also referred in the past as **Energy Community of South East Europe** (ECSEE)) is a community established between the European Union and a number of third countries in order to extend the internal market to Southeast Europe and beyond. With their signatures, the Contracting Parties commit themselves to implement the relevant EU **acquis communautaire**, to develop an adequate regulatory framework and to liberalise their energy markets in line with the **acquis** under the Treaty. The Treaty establishing the Energy Community was signed in Athens, Greece, on 25 October 2005, and entered into force on 1 July 2006. Latest members, Moldova (implementation 3rd energy package 2020) and Ukraine (longer than deadline of 1st June 2016 for its implementation). Setting up of an expert group for these two countries.
Energy Charter Treaty

• The roots of the Energy Charter date back to a political initiative launched in Europe in the early 1990s, at a time when the end of the Cold War offered an unprecedented opportunity to overcome previous economic divisions. Nowhere were the prospects for mutually beneficial cooperation clearer than in the energy sector, and there was a recognised need to ensure that a commonly accepted foundation was established for developing energy cooperation among the states of Eurasia. On the basis of these considerations, the Energy Charter process was born.

• Development process
  - June 1991 - Dutch Prime Minister Ruud Lubbers launches the proposal for a European Energy Community at a European Council meeting in Dublin
  - December 1991 - The Energy Charter political declaration is signed in The Hague
  - December 1994 - The Energy Charter Treaty (ECT) and the Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA) are signed in Lisbon
  - April 1998 - The Energy Charter Treaty and the PEEREA enter into force, following the completion of ratification by the first thirty members. The Trade Amendment to the Treaty’s trade provisions is adopted, bringing them in line with the WTO rules
  - December 2004 - Conclusion of the Review of the Energy Charter Process

• 2010 Establishment of Strategy Group with mandate to promote modernisation

Key Provisions
- Sovereignty over natural resources (Art 29)
- Trade (Art 5, 29)
- Transit (Art 7) But not 3rd party access
- Investment (Art 10 – 15)
- Environment and energy efficiency (Art 19)
- Dispute settlement (Art 26-28)
- Technology Transfer (Art 8)
Treaty on the Functioning of the European Union
The building of an energy policy

**Secondary Law contributing directly to security of energy supply**
  - Regulation 994/2010 of 20 October 2010 concerning measures to safeguard security of gas supply.
- Energy infrastructure package.
- Oil stocks directive (coordinated with IEA)
EU Energy Infrastructure

- **In the electricity sector four EU priority corridors are identified:**

  - **An offshore grid in the Northern Seas and connection to Northern and Central Europe** to transport power produced by offshore wind parks to consumers in big cities and to store power in the hydro electric power plants in the Alps and the Nordic countries.
  - **Interconnections in South Western Europe** to transport power generated from wind, solar, hydro to the rest of the continent.
  - **Connections in Central Eastern und South Eastern Europe**, strengthening the regional network.
  - **Integration of the Baltic Energy Market into the European market.**

- **In the gas sector, three EU priority corridors are identified:**

  - **Southern Corridor** to deliver gas directly from the Caspian sea to Europe to diversify gas sources.
  - **Baltic Energy Market Integration and connection to Central and South East Europe**
  - **North-South corridor in Western Europe** to remove internal bottlenecks and enable best use of possible external supplies.

The Connecting Europe Energy Facility should have invested €9.1 billion in trans-european infrastructures, helping to meet the EU 2020 energy and climate objectives. The European Council of 7 – 8 February 2013 brought it down to €5.85 billion.
The Third Energy Package consists of:

- Regulation on conditions for access to the natural gas transmission networks (Gas Regulation)
- Regulation on conditions for access to the network for cross-border exchanges in electricity (Electricity Regulation)
- Regulation establishing an Agency for the Cooperation of Energy Regulators (ACER Regulation)
- Directive concerning common rules for the internal market in natural gas (Gas Directive)
- Directive concerning common rules for the internal market in electricity (Electricity Directive)
The Third Energy Package

The basic elements of the third package:

• A high standard of public service obligations and customer protection

• Structural separation between transmission activities and production/supply activities of vertically integrated companies (unbundling)
  - FU: full unbundling - strict ownership separation of energy production, supply and transmission activities
  - ISO: independent system operator - oblige companies to handover the operation of their transmission network to a designated ISO, network assets continue to be owned by the company.
  - ITO: independent transmission operator - allow vertically integrated companies to retain ownership and control but requires them to put in place arrangements to ensure that any network operation activities are carried out independently, subject to the oversight of a supervisory body made up of relevant stakeholders, compliance program to avoid discriminatory conduct, a compliance officer, pre- and after cooling-off periods for management staff

• Stronger powers and independence of national energy regulators

• New tools to harmonize market and network operation rules at pan-European level

• A new institutional framework: ACER and the ENTSOs (Entso-G, Entso-E)

• Art 11: "third country clause": provisions to prevent control of transmission systems or their owners by companies from non-EU countries until they fulfill certain conditions, i.e. a national regulator will have the right to refuse certification of a transmission system operator controlled by "a person or persons from a third country", if:
  - this company does not comply with the unbundling requirements, and
  - its market entry would jeopardise the Member State's or the EU's security of supply

• Art 36: Major new gas infrastructure may upon request and under conditions be exempted for a defined period of time from the provisions of art 9, 32, 33, 34 and art 41 (6), (8), (10)
Communication of the EU Commission on a European Energy Security Strategy
(May 28, 2014)

• Capacity to overcome a major disruption during the winter 2014/2015
• Strengthening emergency/solidarity mechanisms
• Moderating energy demand
• Fully integrated energy market
• Increasing energy production
• Further developing energy technologies
• Diversifying external supplies and related infrastructures
• Improving coordination of national policies and speaking with one voice in external energy policies
EU Degree of energy dependence from imports

EU Imports of fossil fuels

Source: Eurostat 2013
Share of Russian natural gas (2012 - %)

<table>
<thead>
<tr>
<th>Country</th>
<th>Share in total gas consumption</th>
<th>Share in total energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU 28</td>
<td>24</td>
<td>5.5</td>
</tr>
<tr>
<td>Finland</td>
<td>100</td>
<td>9</td>
</tr>
<tr>
<td>Latvia</td>
<td>100</td>
<td>26</td>
</tr>
<tr>
<td>Lithuania</td>
<td>100</td>
<td>36</td>
</tr>
<tr>
<td>Estonia</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>89</td>
<td>12</td>
</tr>
<tr>
<td>Slovakia</td>
<td>84</td>
<td>21</td>
</tr>
<tr>
<td>Hungary</td>
<td>80</td>
<td>26</td>
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<tr>
<td>Austria</td>
<td>60</td>
<td>13</td>
</tr>
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<td>Slovenia</td>
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<td>6</td>
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<td>Poland</td>
<td>58</td>
<td>8</td>
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<td>Czech Republic</td>
<td>57</td>
<td>9</td>
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<td>Greece</td>
<td>55</td>
<td>8</td>
</tr>
<tr>
<td>Germany</td>
<td>37</td>
<td>8</td>
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<tr>
<td>Italy</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Romania</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>France</td>
<td>16</td>
<td>2</td>
</tr>
</tbody>
</table>

Sources: Industry, own calculations
EU Natural gas import scenarios

Sources: European Commission 2013, 2014
EU Oil imports scenarios

Sources: European Commission 2013, 2014
Evolution of imports from Russia
More international competition leads to higher import volumes

Source: Eurostat 2011
The Ukraine – Russia natural Gas Dispute (January 2009)

% of missing gas supply – 300 mcm/d for 14 days (3 % of annual Russian deliveries, 0.5 % of EU total yearly energy consumption)
Ukraine – Russia 2009 Gas Crisis

Supply Crisis or Infrastructure Crisis?
EU Response
- Promote diversity (sources, routes, fuels)
- Standards for interconnections
- Financial support

Russia answer
- Diversify transit routes

Source: European Commission, Eurogas, AIE, Gasunie
Russian Gas Pipelines supplying Europe - including Turkey (bcm/year)

<table>
<thead>
<tr>
<th>Pipeline Description</th>
<th>Current capacity</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beltransgas (Wysokoje)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Yamal Europe 1 (Kondratki)</td>
<td>33</td>
<td>33 YE 2(+ 15 bcm)</td>
</tr>
<tr>
<td>Ukraine - Poland (Drozdwicze)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Ukraine - Slovakia (Velke Kapusany)</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>Ukraine – Hungary (Beregdaroc)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Ukraine- Romania (Mediesu Aurit)</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Ukraine – Romania (Orlovka – Isaccea)</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Finland</td>
<td>RU-Fin</td>
<td>20</td>
</tr>
<tr>
<td>Blue Stream</td>
<td>RU-TR</td>
<td>16</td>
</tr>
<tr>
<td>Nord Stream (1 – 2)</td>
<td>RU-D</td>
<td>55 (+27.5 bcm)</td>
</tr>
<tr>
<td>South Stream</td>
<td>RU-Balkan-W. Europe</td>
<td>63</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>312</strong></td>
<td><strong>375 (418 bcm)</strong></td>
</tr>
</tbody>
</table>

2013 Russian gas exports to the EU : 137 bcm
Southern natural gas corridor: How it started

Source: Wingas
Where we are

South Stream : 3 600 km
Capacity : 63 bcm
Commissioning : 2015 – 2018
Cost : €20 – 25 bn

Tanap : 2 000 km
Capacity : 16 bcm scalable to 60 bcm
Commissioning : 2017
Cost : €5 – 6 bn

cancelled

Nabucco West : 1 300 km
Capacity : 10 bcm scalable to 23 bcm
Commissioning : 2017
Cost : not communicated but various expert estimates.

12 September 2011 : “Today the European Union has adopted a mandate to negotiate a legally binding treaty between the EU, Azerbaijan and Turkmenistan to build a Trans Caspian Pipeline System. This is the first time that the European Union has proposed a treaty in support of an infrastructure project. The treaty will be concluded by the EU after decision by all 27 Member States that the European Commission should lead the negotiations on behalf of them all.”
## Russian Gas Pipelines supplying Europe - including Turkey – February 2014 mcm/day

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Current capacity</th>
<th>Flow 2/2014</th>
<th>Spare Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beltransgas (Wysokoje)</td>
<td>15.84</td>
<td>6.62</td>
<td></td>
</tr>
<tr>
<td>Yamal Europe 1 (Kondratki)</td>
<td>97.44</td>
<td>96.2</td>
<td></td>
</tr>
<tr>
<td>Nord Stream</td>
<td>150.68</td>
<td>99.4</td>
<td></td>
</tr>
<tr>
<td>Blue Stream (Samsun)</td>
<td>43.8</td>
<td>41.25</td>
<td></td>
</tr>
<tr>
<td><strong>Total Non Ukraine</strong></td>
<td><strong>307.76</strong></td>
<td><strong>243.47</strong></td>
<td><strong>64.29</strong></td>
</tr>
<tr>
<td>Ukraine - Poland (Drozdwicze)</td>
<td>16.56</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>Ukraine - Slovakia (Velke Kapusany)</td>
<td>323.04</td>
<td>95.65</td>
<td></td>
</tr>
<tr>
<td>Ukraine – Hungary (Beregdaroc)</td>
<td>56.4</td>
<td>14.40</td>
<td></td>
</tr>
<tr>
<td>Ukraine- Romania (Mediesu Aurit)</td>
<td>9.12</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Ukraine – Romania (Orlovka – Isaccea)</td>
<td>96</td>
<td>60.5</td>
<td></td>
</tr>
<tr>
<td><strong>Total Ukraine</strong></td>
<td><strong>501.12</strong></td>
<td><strong>180.35</strong></td>
<td><strong>320.77</strong></td>
</tr>
</tbody>
</table>

About 15% of European gas consumption flows from Russia through Ukraine.
If shut down of Ukraine: deficit of 180.35 – 64.29 = 116 mcm/day or +/- equivalent to 42 bcm/year

< 9% EU 2003 Natural gas consumption or < 2.3 % of EU energy consumption

Source: Own calculations and IEA Gas Trade Flows: www.iea.org/gtf/index.asp
### Natural Gas Storage (13/04/2014)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Storage (mcm)</th>
<th>% of max capacity</th>
<th>Total maximum withdrawal (mcm/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1489,7</td>
<td>41,08</td>
<td>44,16</td>
</tr>
<tr>
<td>Belgium</td>
<td>423,39</td>
<td>60,06</td>
<td>16</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>236,72</td>
<td>43,04</td>
<td>3,5</td>
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<tr>
<td>Czech Republic</td>
<td>1398,48</td>
<td>42,74</td>
<td>36,27</td>
</tr>
<tr>
<td>Denmark</td>
<td>554</td>
<td>54,85</td>
<td>16,2</td>
</tr>
<tr>
<td>France</td>
<td>3288</td>
<td>26,39</td>
<td>217</td>
</tr>
<tr>
<td>Germany</td>
<td>13327,55</td>
<td>59,07</td>
<td>486,48</td>
</tr>
<tr>
<td>Hungary</td>
<td>1289,55</td>
<td>20,9</td>
<td>79,58</td>
</tr>
<tr>
<td>Italy</td>
<td>7982,05</td>
<td>48,21</td>
<td>230,4</td>
</tr>
<tr>
<td>Netherlands</td>
<td>410,76</td>
<td>80,54</td>
<td>48</td>
</tr>
<tr>
<td>Poland</td>
<td>1274,6</td>
<td>70,11</td>
<td>33,85</td>
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<tr>
<td>Portugal</td>
<td>165,37</td>
<td>69,31</td>
<td>7,14</td>
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<tr>
<td>Slovakia</td>
<td>1233,88</td>
<td>43,02</td>
<td>41,15</td>
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<tr>
<td>Spain</td>
<td>2347,36</td>
<td>112,85</td>
<td>27,5</td>
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<tr>
<td>UK</td>
<td>2649</td>
<td>55,7</td>
<td>134,64</td>
</tr>
<tr>
<td>Total</td>
<td>38070,41</td>
<td>48,08</td>
<td>1421,87</td>
</tr>
</tbody>
</table>

Source: Gas Infrastructure Europe, https://transparency.gie.eu

Total Capacity: 79 181 mcm – represents 86 % of EU technical storage capacity. (overall total +/- 93 bcm)
# Natural Gas Storage (08/06/2014)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Storage (mcm)</th>
<th>% of max capacity</th>
<th>Total maximum withdrawal (mcm/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>2639</td>
<td>58.58</td>
<td>52.96</td>
</tr>
<tr>
<td>Belgium</td>
<td>495.65</td>
<td>70.30</td>
<td>16</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>331.77</td>
<td>60.32</td>
<td>3.5</td>
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<tr>
<td>Czech Republic</td>
<td>2247.14</td>
<td>68.68</td>
<td>48.78</td>
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<tr>
<td>Denmark</td>
<td>742.88</td>
<td>74.63</td>
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<tr>
<td>France</td>
<td>5380</td>
<td>42.42</td>
<td>225</td>
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<td>Germany</td>
<td>15795.48</td>
<td>73.13</td>
<td>484.94</td>
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<td>Hungary</td>
<td>1583.55</td>
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<tr>
<td>Italy</td>
<td>11196.49</td>
<td>48,21</td>
<td>230,4</td>
</tr>
<tr>
<td>Netherlands</td>
<td>404.59</td>
<td>79.33</td>
<td>48</td>
</tr>
<tr>
<td>Poland</td>
<td>1625.40</td>
<td>65.73</td>
<td>38.65</td>
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<tr>
<td>Portugal</td>
<td>171.87</td>
<td>72.03</td>
<td>7,14</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1882.77</td>
<td>62.22</td>
<td>43.12</td>
</tr>
<tr>
<td>Spain</td>
<td>1886.68</td>
<td>90.71</td>
<td>27,5</td>
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<tr>
<td>UK</td>
<td>3564</td>
<td>74.95</td>
<td>134,64</td>
</tr>
<tr>
<td>Croatia</td>
<td>261.34</td>
<td>47.26</td>
<td>5.76</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>50210</strong></td>
<td><strong>62.24</strong></td>
<td><strong>1462</strong></td>
</tr>
<tr>
<td>Ukraine</td>
<td>12614.40</td>
<td>39.48</td>
<td>269.20</td>
</tr>
</tbody>
</table>

Source: Gas Infrastructure Europe, https://transparency.gie.eu
World Proved Gas Reserves (% - 2012)

187.3 trillion Cm

BP Statistical Review of World Energy, June 2013
World Proved Oil Reserves (% - 2012)

1688.9 thousand million barrels

Source: BP Statistical Review of World Energy, June 2013
Russian Production and Reserves

Source: BP Statistical Review of World Energy [June 2013]
EU 27 Imports of Natural Gas (%)

2012 : 360 Bcm
EU Uranium Availability

2011: 17,832 tU

World production: 53,000 tU
Providers of Enrichment Services (tSW)
2011

Source: Euratom Supply Agency
Russia: Export Revenue from Hydrocarbons is dominated by oil (bn US$)

Sources: Bank of Russia 2013, own estimations for 2013
Structure of EU oil imports (%) 2012

Source: European Commission
The EU at the forefront of energy geopolitics?

Oil imports: Mio B/d