ROLE OF ELECTRICITY in EU ENERGY POLICY

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Agenda

• What does the industry think of recent EU energy policy initiatives?

• Looking into the future: what role for electricity in Europe’s energy policy?
EC Energy Package of 10 January

- Energy Policy for Europe
- Climate change 2020 and beyond
- IEM report + DG COMP report
- Renewables Roadmap
- Priority Interconnection Plan
- Illustrative Nuclear Programme
- Sustainable Fossil Fuels
- Strategic Energy Technology Plan
- Energy Efficiency Action Plan
Energy Policy for Europe
- climate change as main driver

• 30% reduction in GHGs by industrialised nations by 2020

• Unilateral EU target 20% reductions by 2020

• Binding target for renewables: 20% of total EU energy consumption by 2020
  – 10% binding biofuels target

• Energy efficiency target of 20% by 2020
Energy Policy for Europe
- competition aspects

- **Further network separation**
  - Ownership unbundling as a preferred option, or
  - ISO system

- **Improved regulation**
  - Harmonising powers of national regulators
  - Task to promote development of internal market
  - ERGEG+ as a “minimum approach”
Energy Policy for Europe
- other aspects

• Supply security: various actions
• Strategic e-technology plan
• New coal plant to be fitted with CCS after 2020
• International energy policy: “Speaking with one voice”
Energy policy for Europe: views by Member States

- Energy Council 15 February
- Environment Council 20 February

- Broad agreement with Commission proposals

- Open question: binding or indicative targets for renewable energy?
Energy Policy for Europe – views by the industry: pros (1)

- Recognition of need for investments and stable frameworks
- Mention of keeping all options open and promoting diversity
- Seeking int’l GHG reduction agreement as priority
- Removing price regulation
- Speeding up authorisation for grid investment
- Comprehensive energy efficiency programmes
Energy Policy for Europe – views by the industry: pros (2)

- Emphasis on R&D across the board and the Strategic Energy Technology Plan
- Commitment to EU-ETS
- More positive attitude towards nuclear
- Support for CCS demo plant and removal of regulatory obstacles
Energy Policy for Europe – views by the industry: **cons (1)**

- Market or targets?
- Mandatory RES not compatible with internal market
- Too much emphasis on electricity to deliver GHG abatement
- Proposal for generation efficiency standards: market should take care of this
- Proposal to restrict new coal capacity too ‘command-and-control’
Energy Policy for Europe – views by the industry: **cons (2)**

- Ownership unbundling is not the answer to all market problems; will not solve market integration and TSO cooperation issue!
- IEM section not European enough; lacks on market integration
- Slow decision making of regulators not fully remedied?
Agenda

• What does the industry think of recent EU energy policy initiatives?

• Looking into the future: what role for electricity in Europe’s energy policy?
Electricity:

- is polluting
- is expensive
- MUST BE REDUCED

REALLY?
OBJECTIVE

To analyse and understand the contribution that electricity can / should make to the three key energy drivers:

• Climate change  (hypothesis -30% 2030 -50% 2050)
• Security of supply
• Competitiveness

- Horizon 2030 – 2050
- Launched: September 2005
- Final results: 22 March 2007
CONTRIBUTION OF ELECTRICITY

SUPPLY SIDE:

EU electricity is already 45% CO2 free and largely oil-independent

THE FUTURE:

Impact of portfolio of RES, clean fossil fuel with CCS, nuclear?
CONTRIBUTION OF ELECTRICITY

DEMAND SIDE:

• LESS ELECTRICITY WHERE POSSIBLE
  (electricity savings)

• MORE ELECTRICITY WHERE NECESSARY
  - Substitution of less efficient processes
  - New developments?
    > Heating and cooling?
    > Transport?
Alternative Scenarios

Three Goals
1. Cap on CO₂ emissions (from 1990: -30% in 2030, -50% in 2050)
2. Alleviate security of supply vulnerability
3. Optimise effects on energy costs and prices

Means
1. Accelerated Energy Efficiency
2. Higher Development of Renewables
3. Demand-side electro-technologies
4. Nuclear policy: no phase-out, extension of life time, new technology
5. Carbon capture and storage technology
## Alternative Scenarios

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Role of Electricity</th>
<th>Supply Scenario</th>
<th>Efficiency &amp; RES</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Energy Efficiency</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Electro-technologies</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>High Renewables</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>New Nuclear Policy</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Carbon Capture and Storage</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

*E³M - Lab*
Performance in three goals

<table>
<thead>
<tr>
<th>Scenario results for 2030 (2005=100)</th>
<th>Baseline</th>
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<th>Role of Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ Emissions</td>
<td>110</td>
<td>70</td>
<td>70</td>
<td>70</td>
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<tr>
<td>Total Cost of Energy</td>
<td>146</td>
<td>161</td>
<td>156</td>
<td>147</td>
</tr>
<tr>
<td>Oil &amp; Gas Import Dependence</td>
<td>126</td>
<td>115</td>
<td>128</td>
<td>105</td>
</tr>
</tbody>
</table>

- For equal emission mitigation, “Role of Electricity” performs better
- Advantage of a “portfolio” approach
### Overview of Scenario Results

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Final Energy Demand (2005=100)</td>
<td>125</td>
<td>121</td>
<td>109</td>
<td>113</td>
</tr>
<tr>
<td>Electricity Consumption (2005=100)</td>
<td>145</td>
<td>143</td>
<td>127</td>
<td>172</td>
</tr>
<tr>
<td>Electricity Price (2005=100)</td>
<td>111</td>
<td>133</td>
<td>123</td>
<td>121</td>
</tr>
<tr>
<td>Electricity from Nuclear (TWh)</td>
<td>654</td>
<td>1535</td>
<td>852</td>
<td>1643</td>
</tr>
<tr>
<td>Electricity from Renewables (TWh)</td>
<td>1092</td>
<td>1267</td>
<td>1675</td>
<td>1359</td>
</tr>
<tr>
<td>CO₂ Stored (cum. Mt)</td>
<td>0</td>
<td>5315</td>
<td>0</td>
<td>3797</td>
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<tr>
<td>Power Investment (cum. GW)</td>
<td>928</td>
<td>950</td>
<td>984</td>
<td>1090</td>
</tr>
</tbody>
</table>
Scenarios up to 2050 confirm results

**CO2 Emissions (2005=100)**

- Baseline
- Efficiency & RES
- Role Electricity
- Supply Scenario

**Total Cost of Energy (2005=100)**

- Baseline
- Efficiency & RES
- Role Electricity
- Supply Scenario

**Dependence Oil & Gas Imports (2005=100)**

- Baseline
- Efficiency & RES
- Role Electricity
- Supply Scenario

**Electricity Consumption (2005=100)**

- Baseline
- Efficiency & RES
- Role Electricity
- Supply Scenario

_E3M - Lab_
MAIN FINDING:

IT IS POSSIBLE TO:

- substantially reduce GHG emissions
- do it without unreasonable costs
- reduce oil & gas dependency

BY:
Fully exploiting the potential of energy efficiency

+ Using all options to develop a low carbon electricity supply

+ Developing synergy between low-carbon supply and energy efficient electro-technologies in
  heating & cooling
  transport

+ Ensuring long-term visibility of carbon price to drive investments / strategies
Electricity:

- can help to combat climate change
- can help to preserve Europe’s competitiveness
- HAS A CENTRAL ROLE IN EUROPE’S ENERGY SYSTEM

REALLY.