The future of coal in Europe - new look at indigenous resources
Overview

- Why we need coal in the European energy mix
- Coal production and potential (reserves and resources)
- Advantages of indigenous coal
- What can we do at EU level?
- What can we do at Member State level?
Why we need coal (I)

Projected EU energy import dependence

The use of coal reduces import dependence

Source: European Commission, EU Trends to 2030, update 2007
Why we need coal (II)

The gas crisis – Power generation 5 - 11 January 2009 - Example Germany

Coal generation helped in the crisis, renewables did not
## European hard coal potential (Mt)

<table>
<thead>
<tr>
<th>Country</th>
<th>Production 2008</th>
<th>Reserves</th>
<th>Resources</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>13</td>
<td>3,112</td>
<td>21,106</td>
<td>24,219</td>
</tr>
<tr>
<td>Germany</td>
<td>19</td>
<td>118</td>
<td>82,947</td>
<td>83,065</td>
</tr>
<tr>
<td>Hungary</td>
<td>0</td>
<td>276</td>
<td>5,075</td>
<td>5,351</td>
</tr>
<tr>
<td><strong>Poland</strong></td>
<td><strong>83</strong></td>
<td><strong>12,459</strong></td>
<td><strong>167,000</strong></td>
<td><strong>179,459</strong></td>
</tr>
<tr>
<td>Romania</td>
<td>3</td>
<td>14</td>
<td>2,373</td>
<td>2,387</td>
</tr>
<tr>
<td>Spain</td>
<td>10</td>
<td>868</td>
<td>3,363</td>
<td>4,231</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>18</td>
<td>432</td>
<td>186,700</td>
<td>187,132</td>
</tr>
<tr>
<td>Other EU</td>
<td>3</td>
<td>770</td>
<td>7,468</td>
<td>8,231</td>
</tr>
<tr>
<td><strong>TOTAL EU</strong></td>
<td><strong>149</strong></td>
<td><strong>18,049</strong></td>
<td><strong>476,032</strong></td>
<td><strong>494,081</strong></td>
</tr>
<tr>
<td>Turkey</td>
<td>3</td>
<td>413</td>
<td>793</td>
<td>1,206</td>
</tr>
<tr>
<td>Ukraine</td>
<td>63</td>
<td>32,039</td>
<td>49,006</td>
<td>81,045</td>
</tr>
</tbody>
</table>

Source: BGR
## European lignite potential (Mt)

<table>
<thead>
<tr>
<th>Country</th>
<th>Production 2008</th>
<th>Reserves</th>
<th>Resources</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>26</td>
<td>1,928</td>
<td>4,194</td>
<td>6,122</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>48</td>
<td>185</td>
<td>772</td>
<td>956</td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td>175</td>
<td>40,818</td>
<td>36,760</td>
<td>77,578</td>
</tr>
<tr>
<td>Hungary</td>
<td>9</td>
<td>2,633</td>
<td>2,704</td>
<td>5,337</td>
</tr>
<tr>
<td>Greece</td>
<td>66</td>
<td>2,876</td>
<td>3,554</td>
<td>6,430</td>
</tr>
<tr>
<td>Poland</td>
<td>59</td>
<td>3,870</td>
<td>41,000</td>
<td>44,870</td>
</tr>
<tr>
<td>Romania</td>
<td>33</td>
<td>408</td>
<td>7,947</td>
<td>8,355</td>
</tr>
<tr>
<td>Slovakia</td>
<td>2</td>
<td>83</td>
<td>525</td>
<td>609</td>
</tr>
<tr>
<td>Slovenia</td>
<td>4</td>
<td>315</td>
<td>341</td>
<td>656</td>
</tr>
<tr>
<td>Other EU</td>
<td>0</td>
<td>359</td>
<td>1,502</td>
<td>1,861</td>
</tr>
<tr>
<td><strong>TOTAL EU</strong></td>
<td>422</td>
<td>53,475</td>
<td>99,299</td>
<td>152,774</td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>2</td>
<td>2,369</td>
<td>1,814</td>
<td>4,182</td>
</tr>
<tr>
<td>Serbia</td>
<td>36</td>
<td>7,523</td>
<td>3,750</td>
<td>11,273</td>
</tr>
<tr>
<td>Turkey</td>
<td>80</td>
<td>1,814</td>
<td>7,176</td>
<td>8,990</td>
</tr>
</tbody>
</table>

Source: BGR
Major advantages of indigenous coal (I)

- Balances the EU energy mix and helps avoiding security of supply and price risks – solid fuels represent **80 % of EU 27 domestic fossil fuel reserves**

- Hard coal and lignite **available in most EU Member States**

- **Coal mining and value chain create wealth** in the EU, particularly in a number of disadvantaged regions
Major advantages of indigenous coal (II)
Export of best practice in mining ...

Healthy and safe workplaces are a priority and legal obligation for the European mining industry

European mining technology dominates the world market

The EU coal and lignite industries have created models for environmentally-friendly coal mining
What can we do - EU level? (I)

- All relevant impact assessments (e.g. climate protection, clean air, water, waste and other environmental policies):
  - Security of energy supply, particularly the role of indigenous fossil fuel resources, and
  - access to resources (- fossil fuels extraction is bound to the location where they are found -)

are a part of sustainable development and must be treated equally with environmental considerations.

DG TREN’s role here is and remains essential.

- An inventory of strategic EU fossil fuel resources may be helpful.
What can we do - EU level? (II)

- **Investments in power plants are crucial for investments in mining**; therefore policy makers and authorities should promote both
  - continuous modernisation of power generation and
  - CCS demonstration and – as soon as possible - deployment

- **Promote R&D related to unconventional uses of coal** such as underground coal gasification (UCG) and coal to gas / liquids (CtG/CtL), all in connection with CCS
Modernisation and increased efficiencies

The right base: continuous power plant modernisation/renewal

CCS power plant
Unconventional uses of coal

Extending the range of coal applications via

- **Surface conversion**
  - Liquefaction: Coal to Liquids, CtL, for synthetic fuels
  - Gasification: Coal to Gas, CtG, for a wide range of products/energy carriers (additional benefit: enables very effective CO₂ capture)

- **Underground conversion**
  - Underground Coal Gasification, UCG, a combined extraction and conversion process, delivering synthesis gas for a range of products
  - combined UCG/CO₂ storage
What can we do – Member State level?

- **Increase acceptance for new power plants, CO₂ pipelines and storage sites by emphasizing**
  - the important contribution of coal to the security of energy supply
  - top efficient plants’ contribution to resource protection
  - the role of mining for regional added value

- **Secure access to resources**
  - The legal system must ensure that access to resources (opencast and underground) remains possible also in practice – this refers mainly to regional planning as well as environmental approval procedures
  - No hasty closing down of mines on the basis of short-term considerations

- **Guarantee a reliable framework for the long term investments needed**
Conclusions

- European societies will need hard coal and lignite in their energy mix for decades – coal can contribute to the energy mix due to its vast resources in many EU Member States

- Indigenous coal production demonstrates global best practice for mining, environmental protection and safety at work

- Security of fossil fuel supply and access to resources to be a part of Commission impact assessments – as formal as possible

- New capture-ready power generation capacity helps achieving the climate protection goals and security of supply objectives at the same time - we should repeatedly explain this to the public

Coal is a part of the solution to Europe's energy policy issues
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