COAL: the global picture

EEF Dinner Debate
14.11.2012
Coal is the world’s most abundant fossil fuel accounting for over 50% of global resources.

Global Reserves 20132 Gtce

- Hard coal: 72%
- Lignite: 8%
- Uranium: 4%
- Thorium Oil: 8%
- Unconv. Oil: 18%
- Natural gas: 18%
- Unconv. Gas: 5%
- Oil: 13%

Source: BGR, 2012

Global Resources 1344 Gtce

- Oil: 46%
- Lignite: 8%
- Uranium: 4%
- Thorium Oil: 5%
- Natural gas: 18%
- Unconv. Oil: 0%
- Unconv. Gas: 18%
- Hard coal: 0%

Global Production 16,3 Gtce

- Hard coal: 46%
Total world coal production reached a record level of 7.678 Mt in 2011, increasing by 6.6% over 2010.

### Top 10 coal producers, 2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Production (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>3.520</td>
</tr>
<tr>
<td>USA</td>
<td>993</td>
</tr>
<tr>
<td>India</td>
<td>589</td>
</tr>
<tr>
<td>EU</td>
<td>576</td>
</tr>
<tr>
<td>Australia</td>
<td>416</td>
</tr>
<tr>
<td>Russia</td>
<td>334</td>
</tr>
<tr>
<td>Indonesia</td>
<td>325</td>
</tr>
<tr>
<td>South Africa</td>
<td>255</td>
</tr>
<tr>
<td>Germany</td>
<td>189</td>
</tr>
<tr>
<td>Poland</td>
<td>139</td>
</tr>
</tbody>
</table>

Source: British Petroleum, 2012

### Export / Import 2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Export (Mt)</th>
<th>Import (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>309</td>
<td>-190</td>
</tr>
<tr>
<td>Australia</td>
<td>284</td>
<td>-175</td>
</tr>
<tr>
<td>Russia</td>
<td>124</td>
<td>-129</td>
</tr>
<tr>
<td>USA</td>
<td>97</td>
<td>-105</td>
</tr>
<tr>
<td>Colombia</td>
<td>75</td>
<td>-66</td>
</tr>
<tr>
<td>China</td>
<td>-66</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>-105</td>
<td></td>
</tr>
<tr>
<td>South Korea</td>
<td>-129</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>-175</td>
<td></td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>-190</td>
<td></td>
</tr>
</tbody>
</table>

Source: BP, IEA, World Steel Association, 2012
41% of global electricity in 2010 has been generated in coal-fired power stations

Source: World Coal Association, 2012
Coal accounted for nearly half of the increase in global energy use over the past decade.

Coal has won the energy race in the first decade of the 21st century, but what comes next?

Source: World Energy Outlook, 2012 (OECD, IEA)
Coal future and global climate policy – proactive approach for carbon footprint reduction is required

Development of the global electricity production, TWh

Source: IEA, World Energy Outlook, 2011
Coal combustion can become 90% cleaner through efficiency improvement and CCS technology.

Average CO₂ emissions per unit of electricity generated at coal-fired power plant (gCO₂/kWh):
- **Average Worldwide**
  - 2010: 1116 g CO₂/kWh
  - 2020: 669 g CO₂/kWh
- **Average EU**
  - 2010: 881 g CO₂/kWh
  - 2020: 743 g CO₂/kWh
- **State of the art**
  - 2010: 743 g CO₂/kWh
  - 2020: 669 g CO₂/kWh
- **Steam power plant 700°C Technology**
  - 2010: 743 g CO₂/kWh
  - 2020: ~669 g CO₂/kWh
- **CCS Technology Efficiency loss of 7-12%**
  - 2010: ~743 g CO₂/kWh
  - 2020: ~669 g CO₂/kWh

**Source:** VGB, 2012

**EEF Dinner Debate**