Cement industry
Inclusion of Consumption

Rob van der Meer
11th October 2016
Challenges for energy intensive industries

- Competitiveness of EU industry

- Predictability of legislation

- Economic incentives to unlock mitigation (Climate Strategies, 2014)

Carbon prices

Carbon price for consumers!
## CO₂ Emissions reductions in cement industry

### Direct

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<tr>
<td><strong>Cement production</strong></td>
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<td>6. Energy efficiency of slag dryer</td>
<td>7. Clinker substitution</td>
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<td><strong>Concrete production</strong></td>
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### Indirect

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<tr>
<td><strong>Cement production</strong></td>
<td>13. Grinding efficiency</td>
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<td><strong>Concrete production</strong></td>
<td>14. Recarbonisation of concrete products</td>
<td>18. Absorption by concrete waste: recarbonation</td>
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Rob van der Meer – 11/10/2016
HeidelbergCement’s performance 2015

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<tbody>
<tr>
<td>Clinker production (Mtons)</td>
<td>58.6</td>
<td>50.9</td>
<td>52.9</td>
<td>54.5</td>
<td>59.8</td>
<td>60.9</td>
<td>60.8</td>
<td>62.7</td>
<td>62.3</td>
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<tr>
<td>Cementitious products (Mtons)</td>
<td>69.0</td>
<td>62.7</td>
<td>67.7</td>
<td>71.5</td>
<td>78.9</td>
<td>80.7</td>
<td>80.5</td>
<td>84.0</td>
<td>83.7</td>
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<td>Gross CO2 (Mtons)</td>
<td>53.9</td>
<td>45.2</td>
<td>45.9</td>
<td>47.0</td>
<td>51.9</td>
<td>52.2</td>
<td>52.0</td>
<td>53.9</td>
<td>53.2</td>
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<tr>
<td>Net CO2 (Mtons)</td>
<td>53.3</td>
<td>44.0</td>
<td>44.1</td>
<td>45.0</td>
<td>49.7</td>
<td>49.9</td>
<td>49.7</td>
<td>51.5</td>
<td>50.8</td>
</tr>
<tr>
<td>Kg net CO2/t cementitious</td>
<td>773</td>
<td>702</td>
<td>652</td>
<td>629</td>
<td>630</td>
<td>618</td>
<td>617</td>
<td>613</td>
<td>606</td>
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<td>Improvement rate (%)</td>
<td>0.0%</td>
<td>-9.2%</td>
<td>-15.7%</td>
<td>-18.7%</td>
<td>-18.6%</td>
<td>-20.0%</td>
<td>-20.2%</td>
<td>-20.7%</td>
<td>-21.6%</td>
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<tr>
<td>Clinker to Cementitious ratio (%)</td>
<td>84.8%</td>
<td>81.4%</td>
<td>78.8%</td>
<td>76.5%</td>
<td>76.3%</td>
<td>76.1%</td>
<td>76.2%</td>
<td>75.7%</td>
<td>75.0%</td>
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<tr>
<td>AF ratio (biomass + fossil) (%)</td>
<td>2.9%</td>
<td>8.8%</td>
<td>14.4%</td>
<td>18.8%</td>
<td>18.3%</td>
<td>18.7%</td>
<td>19.5%</td>
<td>19.4%</td>
<td>19.3%</td>
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**EU target 2030**

43% gross emissions compared to 2005

**HC 2015 performance EU28**

38% / 8% gross emissions compared to 1990 / 2005

45% / 13% net emissions compared to 1990 / 2005

29% / 9% net emissions/ton cementitious to ’90 / ’05

- **Voluntary targets HeidelbergCement** (global, exc.Italcementi)
  - Target year: 2010 15%
  - 2015 23%
  - 2030 20 Mtons/a
HeidelbergCement’s activities

1. **Innovation:** 50% of R&D budget for low carbon solutions
   1. Development low carbon cements
   2. Development of new clinkers: BCT, others
   3. Active participation in ECRA projects on oxyfuel clinker production
   4. Etc.

2. **Clinker substitution**
   Global strategy, differentiated approach based on availability

3. **Alternative fuels including biomass**

4. **Carbon capture:** CCS and CCU projects
   1. Feasibility study of Norcem CCS project (Norway) finalized
   2. EU funded projects in Belgium, Italy, Germany, and more
   3. 10 – 15 CCU projects in different phases of development: algaes, microbes, biofuels, mechanization, bio-ethanol, etc.
Conclusions

1. **Predictability of legislation is key for investment decisions**
   - Current “trend” of every half a year a (major) change does not support
   - Different approaches over the world: EU28, USA, China, etc.

2. **Key for mitigation measures are**
   1. Competitiveness for EU industry
   2. Carbon price for consumers
   3. Economical and technical feasibility

3. **Cement is used in constructions:** C⁴
   - Clinker = 1ˢᵗ intermediate product
   - Cement = 2ⁿᵈ intermediate product
   - Concrete = basic construction material
   - Construction with concrete (final)

To be based on whole lifecycle

High CO₂ emissions
Lower CO₂ emissions
Nearly no CO₂ emissions
Zero emissions ??????
Thank you for your attention!

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