The Perspective of a Sector - Chemicals

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Output of the chemical industry by customer segment for EU-27 based on Eurostat data Input-Output 2000 (Cefic, 2012a)

Percentage of output consumed by customer sector:

- Other business activities 7.4%
- Furniture 2.1%
- Electrical machinery and apparatus 2.2%
- Publishing and printing 2.3%
- Wood 2.6%
- Food and beverages 2.6%
- Machinery and equipment 2.8%
- Fabricated metal products 3.1%
- Other non-metallic mineral products 3.1%
- Textiles 3.2%
- Basic metals 4.3%
- Automotive 4.3%
- Pulp and paper 4.6%
- Service 4.9%
- Wholesales & retail trade 5.1%
- Other manufacturing 5.4%
- Agriculture 7.0%
- Construction 7.9%
- Health and social work 11.2%
- Rubber and plastics 13.9%
EU chemical trade surplus by subsector (Cefic, 2012a)
Coverage of the Chemical Sector in the EU ETS

- Production of nitric acid - CO$_2$ and N$_2$O
- Production of adipic acid - CO$_2$ and N$_2$O
- Production of glyoxal and glyoxylic acid - CO$_2$ and N$_2$O
- Production of ammonia - CO$_2$
- Production of bulk organic chemicals by cracking, reforming, partial or full oxidation or by similar processes, with a production capacity exceeding 100 tonnes per day - CO$_2$ and N$_2$O
- Production of hydrogen (H$_2$) and synthesis gas by reforming or partial oxidation with a production capacity exceeding 25 tonnes per day - CO$_2$
- Production of soda ash (Na$_2$CO$_3$) and sodium bicarbonate (NaHCO$_3$) - CO$_2$
- Production of carbon black involving the carbonisation of organic substances, such as oils, tars, cracker and distillation residues, where combustion units with a total rated thermal input exceeding 20 MW are operated - CO$_2$
### Chemical Sector – number of installations and free allocation – ref. *l’actualité chimique 2013*

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Installations</th>
<th>Allocation (Mt CO2eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>21</td>
<td>87.6</td>
</tr>
<tr>
<td>France</td>
<td>62</td>
<td>82.6</td>
</tr>
<tr>
<td>Germany</td>
<td>90</td>
<td>55.4</td>
</tr>
<tr>
<td>Spain</td>
<td>62</td>
<td>48.7</td>
</tr>
<tr>
<td>UK</td>
<td>42</td>
<td>42.1</td>
</tr>
<tr>
<td>Romania</td>
<td>6</td>
<td>22.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>14</td>
<td>11.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>16</td>
<td>7.4</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5</td>
<td>3.6</td>
</tr>
<tr>
<td>Finland</td>
<td>4</td>
<td>1.6</td>
</tr>
<tr>
<td>Denmark</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Portugal</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Greece</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Poland</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>336</strong></td>
<td><strong>366.9</strong></td>
</tr>
</tbody>
</table>
What did industrial emitters expect from the EU ETS?

- Flexibility to meet commitments *(at lowest cost)*
- Decrease of uncertainty
- Visibility / predictability
- Confidence
- Effectiveness: Resistance to carbon leakage
- Fully harmonized governance

*BUT, what are we finding….*
Back to fundamentals: What is ETS for the industrial compliant emitters?

- It is not a market opportunity, but an operating cost of being in Europe!
  - CO₂ cost is included in the manufacturing cost:
  - Not as a fixed cost, but as a variable cost, in a double dimension:
    - Proportionate to CO₂ volume emitted
    - Changing according to market value (primary & secondary markets)
  - CO₂ cost is also included in electricity price
Back to fundamentals: What is ETS for the industrial compliance emitters?

- **Do not add costs to costs**
  - Industry is already left with considerable extra-costs for EUAs acquisition / capital expenditures
  - High risks of carbon leakage (fertilizers, petrochemicals…)
  - Negative impact on investment for new projects within EU
  - Lots of implementing regulations: Carbon leakage list, benchmarking, backloading, correction factor
But, how have we responded to this challenge....?
Development of chemical production (production index based on value in constant prices), energy consumption and energy intensity (indexed, 1990 = 100, Cefic, 2012a)
Development of chemicals production (production index based on value in constant prices) and GHG emissions (indexed, 1990 = 100, Cefic, 2012a)
But, what can we do....?
CEFIC Roadmap 2050 - Key findings in a nutshell

- Chemical industry products enable significant improvements in energy efficiency and GHG emission reductions in all sectors.
  - Production in 2010 is estimated to contribute to 1,500 Mt CO$_2$ of avoided emissions during use, equivalent to ~40% of Europe’s annual emissions

- Competitiveness of entire European chemical industry value chain threatened due to diverging energy and policy costs.
  - In case of unilateral action to reduce GHG emissions, Europe would become a net importer of chemicals before 2030

- In a global playing field scenario, energy efficiency, N2O abatement and changes in the fuel-for-heat mix could result in 15% absolute reduction of GHG emissions in 2030 vs. 2010 (e.g. 30% decrease in GHG emission relative intensity). All options rely on innovation.
  - GHG emissions reductions of 49% achieved in 2009 vs. 1990

- Deeper reductions technically possible by power sector decarbonisation, CCS
  - Both options costly, face several barriers that are largely outside chemical industry control
Options in more detail

• Evolution of the feedstock towards a lower use of fossil feedstock, such as the use of bio-based resources, recycled materials and CO$_2$ as feedstock

• Further process energy efficiency improvements and improvements to auxiliary processes on chemical sites represent the second group of options

• Heat sources and on-site energy generation options, such as lower carbon fuels and the use of Combined Heat and Power

• Abatement of N$_2$O emissions, for example, from nitric acid production and capturing and storage of CO$_2$ from process streams and flue gases
And, what do we need....?
A Thought-Through - Structural Reform of the Climate and Energy Package

- An international climate change regime!
- Gear the climate package to competitiveness
  - Optimise/Remove overlaps between ETS, Renewables and Energy Efficiency Directives
  - Align package with 2015 international agreement (and actions)
- (Re-) evaluate the following:
  - Ex-post allocation
  - Non-harmonised compensation for electricity use
  - The ‘top-10%’ benchmark
  - CSF (cross-sectoral correction factor) for incumbents and LRF (Linear Reduction Factor) for new entrants
  - Consider using New Entrants’ Reserve (NER) is used to balance the market
  - Give certainty on carbon leakage status
THANK YOU