

Great potential for CCS in the industrial sector

In the industrial group the potential for carbon capture and storage in the industrial sector is being assessed. The first results show that about 50 % of all CO₂ emissions from the industrial part of EU ETS can be captured at a capture cost less than 45 €/tonne CO₂.

First estimate on potential for CCS

As a part of his PhD project, Johan Rootzén assesses the role of CCS in reducing CO₂ emissions from the European industrial sector. He has done a first estimate of the potential for CO₂ capture and a preliminary geospatial analysis to match sources and sinks. This work was recently presented at the conference *Sustainable Development of Energy, Water and Environment Systems* which was held in Croatia this year.



Data base with all industrial installations

As part of the project a database covering all industrial installations included in the European Union Emission Trading Scheme (EU ETS) has been established. Based on facility level, data on CO₂ emission for 270 large point sources (> 0.5 Mtonne/year) in the three industrial sectors (mineral oil refineries, iron and steel, and cement manufacturers) have been singled out as promising candidates for CO₂ capture. These sources are responsible for about 75 % of the industrial EU ETS emissions, see Figure 1.

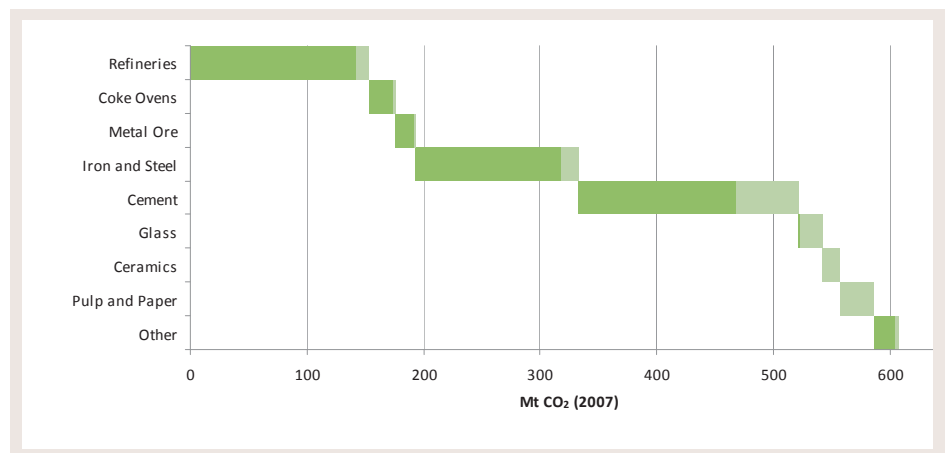


Figure 1: Overview of the share of the different sectors of the overall emissions in the EU ETS. Large emission sources (> 0.5 Mt CO₂/year) share of total emissions are highlighted in dark green. 270 plants in three industrial sectors (refineries, iron and steel, and cement manufacturers) are collectively responsible for about 75 % of the industrial EU ETS emissions.

Considerable emissions reductions

By applying different capture technologies and taking sector specific conditions as well as plant specific conditions into considerations, a first approximation of the capture potential for different capture costs have been made, see Figure 2. Many challenges still remain in all parts of the CCS chain but this assessment show that by introducing CO₂ capture at a relatively few large industry emission sources considerable emissions reductions could be achieved.

The work will now continue by:

- Widening the scope to include also large pulp and paper industries
- Adding more thorough analysis of the different technological options for CO₂ capture in the different branches.
- Including the power and heat sector in the geospatial analysis.
- Analysing the influence from the structure of the existing capital stock age on the timing of the deployment of CCS.

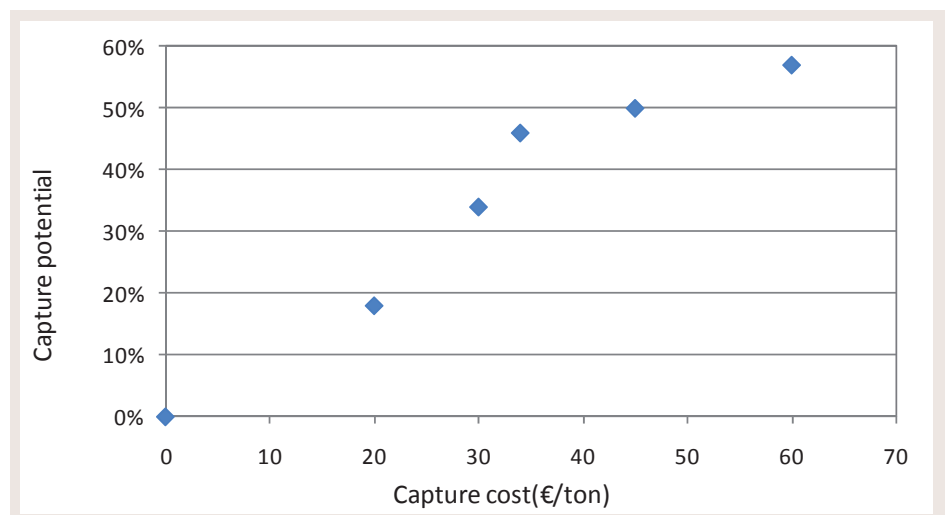


Figure 2: CO₂ capture potential (total part of the ETS industrial emissions) for different capture costs.