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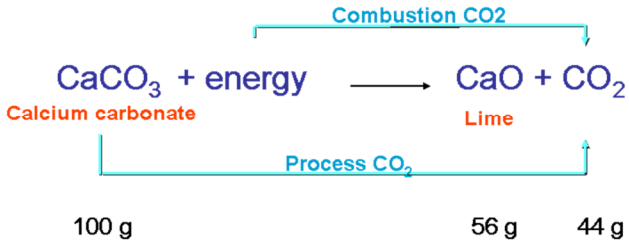
Future of Carbon Capture and Storage (CCS) in Europe

1. CCS may be a solution for fossil fuel emissions, but it is also relevant for industrial installations with a significant share of chemically determined process emissions.

The European Council has confirmed at several occasions that the EU is aiming at a reduction of Greenhouse Gas emissions of 80-95% by 2050 compared to 1990.
In the lime industry around 70% of the total CO2 emissions are so-called "process emissions": they originate from the decarbonisation of the limestone when it is transformed into lime, which is illustrated in the picture below. These GHG emissions are inherent to the lime production process and cannot be avoided without changing the quality of the final lime product. Process emissions are significant and seriously impede the potential of the lime industry to further reduce its GHG emissions.



In theory CCS could be a solution for coping with "process emissions" – but only under certain conditions which are further elaborated below. EuLA regrets that the Commission's Communication on the Future of Capture and Storage in Europe mainly sees CCS as "*one of the key ways to reconcile the rising demand for fossil fuels, with the need to reduce greenhouse gas emissions".* CCS should however not only be stimulated in order to compensate for fossil fuel emissions. In several industries – amongst which lime – CCS could be a solution for these process emissions.

2. The current costs of capturing CO2 emitted by a lime plant are far beyond what is economically reasonable. This makes not only CCS, but also "Carbon Capture and Usage" far too expensive at the moment.

In 2012 TNO calculated for EuLA the costs (opex+capex) of capturing CO2 at different kinds of lime kilns. TNO concluded that the cost of CO2 capturing would be between 61 and 100 euro per tonne of

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CO2 avoided (depending on the electricity price, kiln size, and solvent used). The cost for capturing CO2 would nearly double the total production cost of a lime product, which would, of course, have a serious impact on the sector's competitiveness. (local production compared to imports)
EuLA therefore recommends that further research is undertaken to lower the costs of capturing CO2 emissions from small to medium-sized installations.

3. Need for investments in the right infrastructure for transporting and storing CO2

As the Commission rightfully states in its Communication, a "*good cross border transport infrastructure is necessary to efficiently connect CO2 sources to sinks"*. These investments would come in addition to national investments in "local" capture points. Indeed, both Member States and the Commission have a shared responsibility. However, the Commission has to define its GHG emission reduction target in view of the Member States commitment to actually invest in CCS.

Given the already high price for capturing CO2, EuLA questions the economic feasibility of completely passing on the costs of CCS infrastructure to its users. CCS transport and storage should be offered in the first place as a public service.

4. Recognize the potential of products that capture CO2 and permanently store it

Several lime-based products absorb CO2 during their lifetime. This reaction has been quite well examined in the case of lime-based mortars. EuLA estimates that around 70% to 90% of the CO2 emitted during the calcination of the limestone is sequestrated again by the lime-based mortar in the short term. This gives a total potential CO2 reduction of around 416.500 tCO2/year in the EU-27. Some further research would be required however to exactly characterize this process.
EuLA recommends that the Commission recognizes the capacity of products (like lime-based mortars) to *permanently* capture and store CO2 emissions.