

Meta-analysis of current scenarios on the future role of CCU

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In a future climate-neutral economy, there will still be industrial sectors such as the chemical industry that will continue to require carbon-containing raw materials to manufacture products. There are numerous studies, such as those by Chemistry4Climate, SCI4climate.NRW and the long-term scenarios (“Langfristszenarien”), which examine the transformation of industrial resources and identify sustainable routes for the production of high-value chemicals (HVC, olefins and aromatics). However, a quantitative comparison of the HVC production routes in the various scenarios has so far been difficult due to different system boundaries and approaches.

As part of a meta-analysis, current scenarios were converted into a comparable form through additional research and evaluated. Supported by dialogue with industrial companies, the following questions were explored:

- How realistic are the assumptions of the studies and what is the impact of the assumptions?
- What role does Carbon Capture and Utilisation (CCU) play alongside plastics recycling and the use of sustainable biomass?
- What raw material and energy requirements does this entail?
- What sources does the CO₂ come from and are these quantities covered domestically or via imports?
- What measures are necessary to enable the realisation of CCU projects and what business models can arise for companies?