

Better Carbon Capture for Industrial Emissions

CARBON CAPTURE, TRANSPORT, UTILISATION AND STORAGE

Supporting climate goals

Heavy industry plays a key role in carbon dioxide (CO₂) emissions from the industrial sector. The cement industry alone is responsible for around 27% of direct industrial CO₂ emissions, releasing 2.2 gigatonnes of CO₂ (GtCO₂) globally every year, or 7% of total worldwide CO₂ emissions.

- The iron and steel industry represents the largest energy-consuming manufacturing sector in the world, with average specific emissions being 1.83 tonnes of CO₂ per tonne of steel and global crude steel production reaching 1.8 Gt for the year 2018, up by 4.6% compared to 2017. This enormous CO₂ footprint of steel mills, which accounts for up to 8% of anthropogenic CO₂ emissions, must be substantially reduced.
- The refining sector contributes to around 4% of the total anthropogenic CO₂ emissions globally, close to 1 billion metric tons per year, and ranks third among stationary CO₂ producers.
- Carbon capture, utilisation and storage, or "CCUS", involves capturing CO₂ from industrial plants or installations, transporting it to designated sites, and injecting it into geological formations. The EU recently sets unprecedented goals in terms of reducing emissions (-55% by 2030, climate neutrality by 2050). Solutions such as CCUS will be extremely relevant and will have to be developed and implemented in the next few years.

Demonstrating CCUS technologies

The projects in this group focus on research, development and demonstration of carbon capture, utilisation and storage technologies for industry taking into account transport issues.

The projects offer a range of relevant exploitable results, such as:

Key results



Studies and Analysis of Novel Carbon Capture Technologies



CCUS Implementation Blueprints



Novel Carbon Capture Technology Demonstrators



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Challenges

- ▶ **CLEANER:** Advance the integrated Calcium-looping (CaL) process for CO capture in cement plants.
- ▶ **REALISE CCUS:** Support decarbonisation ambitions by enabling full CCUS chain for specific clusters, which include refineries and other industries.
- ▶ **C4U:** Develop high TRL (technology readiness level), energy efficient and benign capture technologies for the iron and steel industry alongside societal, business and policy considerations to facilitate the implementation into industrial clusters.

Who benefits?



Large industry



Regional and national governments



Policy makers

Projects



CLEANER - CLEAN clinker production by calcium looping process. www.cleaner.eu

Grant Agreement No. 764816



REALISE CCUS - Demonstrating a refinery-adapted cluster-integrated strategy to enable full-chain CCUS implementation. realiseccus.eu

Grant Agreement No. 884266



C4U - Advanced Carbon Capture for steel industries integrated in CCUS Clusters. c4u-project.eu

Grant Agreement No. 884418



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