European Commission

INNOVATION FUND

Driving clean innovative technologies towards the market

C2B – Carbon2Business

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The Innovation Fund is 100% funded by the EU Emissions Trading System

Project summary

The Carbon2Business project will deploy an innovative carbon capture technology at Holcim Germany's cement plant in Lägerdorf, Germany, and provide the captured CO_2 as a raw material to different industries in the region. Holcim will build a new kiln line, using an innovative second generation oxyfuel process and a downstream Compression and Purification Unit (CPU). By implementing this highly innovative technology, Carbon2Business will reduce the greenhouse gas (GHG) emissions of its cement production by 128% compared to the reference scenario, calculated over the first ten years of operation.

COORDINATOR
Holcim (Deutschland) GmbH

BENEFICIARIES
Holcim (Deutschland) GmbH,
Holcim Technology Ltd

LOCATION
Lägerdorf, Germany

SECTOR
Cement and lime

GHG EMISSION AVOIDANCE
13 Mt CO_2 eq

AMOUNT OF THE INNOVATION FUND GRANT
EUR 109 816 528

TOTAL PROJECT COSTS
EUR 5 999 790 448

ESTIMATED CAPEX
EUR 410 000 000

STARTING DATE
1 January 2023

PLANNED DATE OF ENTRY INTO OPERATION
30 April 2028

Large-scale second generation oxyfuel cement plant and downstream Carbon Processing Unit (CPU)

Carbon2Business will significantly advance the current state-of-the-art with its first-time demonstration of a large-scale second generation oxyfuel cement kiln and downstream CPU. This represents a very strong innovation with regard to low carbon technologies, especially for the cement sector, but also for other sectors in which a second generation oxyfuel process is applicable, such as the steel sector.

Oxyfuel technology allows for the capture of hard-to-abate process emissions from sintering (approximately 65% of emissions of clinker production, compared to 35% emissions from burning fuel to reach high sintering temperatures). Almost all process emissions from the cement clinker production can be used as a resource. For example, the captured CO_2 will be made available for further processing into methanol and as a ready-to-use raw material in the chemicals industry.

The project is expected to contribute to the development of a hydrogen hub in the North of Germany by integrating the captured CO_2 into a wider regional value chain for green synthetic fuel production.

On the way to climate neutrality

With Carbon2Business, Holcim will contribute notably to several EU policy objectives within the overall framework of the European Green Deal, such as the transition to a climate-neutral economy by 2050. The project is aligned with the goals of the Paris Climate Agreement, and contributes directly to a significant greenhouse gas emission reduction in Germany. Carbon2Business contributes to EU objectives for a climate-neutral economy by being energy efficient and adopting a circular economy approach. By introducing this new second generation oxyfuel technology, Carbon2Business will have an important effect on actively shaping the market for sustainable building materials, paving the way for a future net-zero economy.

Hydrogen Economy of Scale and Regional Hydrogen Hub in Northern Germany

Carbon2Business will have a positive impact on the development of the region, as well as on the development and scale-up of innovative technologies. Holcim will collaborate with several partners from different sectors, such as energy, chemicals, heat generation, as well as academia. It will promote wide knowledge-sharing and will likely lead to spill-over effects based on the experience gained.

Carbon2Business will be integrated with other projects in the region to form a critical mass to kick-start an innovative, cross-sectoral hydrogen value chain. Moreover, the project will sustainably secure up to 350 jobs at the plant site, additional jobs in the region will be fostered, and know-how in the field of carbon capture technologies will be further developed.