**THE ROLE OF CCUS AND GREEN HYDROGEN AS KEY ENABLING DECARBONIZATION TECHNOLOGIES FOR THE CEMENT SECTOR**

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**ABSTRACT**

The European cement industry is continuously taking actions and initiatives to improve the CO2 footprint of operations and products, embracing the vision of the European Green Deal to achieve climate neutrality by 2050. TITAN Cement Group has adopted a strategy to mitigate its CO2 emissions across the supply chain, receiving recognition by CDP (Carbon Disclosure Project) as a global climate leader for its transparency and actions to mitigate climate change and transition to a net zero economy [1].

Considering the levers to mitigate CO2 emissions in clinker manufacturing, it is becoming increasingly evident that, in addition to conventional means, breakthrough technologies will need to be implemented in order to reach climate neutrality in the next decades. Such technologies would include use of renewable energy sources wherever possible, hydrogen with low or zero carbon footprint, novel binders, carbon mineralization, as well as carbon capture, utilization and sequestration (CCUS), among others.

Referring on carbon capture, many promising developments are emerging in terms of scaling up and achieving high capture and energy efficiency, redefining the landscape of realistic solutions for industrial deployment. In the same context, hydrogen can have a pivotal role towards decarbonization of cement industry, most likely as green energy source for production of clinker and low-carbon products, including the conversion of captured CO2.

The work presents a synopsis of technical and financial considerations about the implementation of CCUS and green hydrogen technologies towards lowering the carbon fooprint associated with cement clinker production, describing challenges and opportunities in the short- to mid- term. Aiming to emphasize the significance of industrial pilots to promote technological maturity and stakeholder awareness, the experience obtained from the deployment of pilot demonstrations on carbon capture and green hydrogen is also presented.

**KEYWORDS:** decarbonization, carbon capture and utilization, green hydrogen, pilot tests, cement sector

**REFERENCES**

[1] "TITAN Cement Group awarded Leadership Status on climate change by CDP," TITAN Cement Group, 14 December 2021. [Online]. Available: https://www.titan.gr/en/newsroom/news-and-press-releases/new?item=1597.