

## PATHWAYS FOR INDUSTRIAL DECARBONIZATION TECHNOLOGIES: AN OUTLINE OVERVIEW

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*Abstract:* Climate change has influenced the sustainable development of industries over the past two decades. Global warming may mainly correlate to human-induced causes like greenhouse gases (GHG) emission. Therefore, low carbon technologies and policy are becoming a priority in several countries, including strategies as (i) using CO<sub>2</sub> and combustion processes more efficiently; (ii) fossil fuels replacement for clean and renewable alternatives, such as wind, biomass, hydroelectric and geothermal energy; and (iii) develop carbon capture and storage (CCS). To evaluate vital aspects of emerging trends in decarbonization technologies and its uncovered knowledge may be critical for guiding scholars, practitioners, big companies, and policymakers. This study uses a bibliometric approach to review, assess, and map the evolution of decarbonization technologies and policy. The bibliometric research was conducted from August 2019 to June 2020, through the platform Science Direct, using the keywords: “industrial” or “industry sector” accompanied by “low carbon” or “decarbonization” and “technology”. We analyzed 103 articles, mostly published in journals focused on energetic issues. We have found an increase in articles published from 1980 up to June 2020, with a peak of publications in 2019 (31.1%). The sectors covered by the articles were energy (20.4%), hydrogen (7.1%), and construction (5.1%), focusing on application viability (39%), creation of new technologies (20%), and environmental impact assessment (14.3%). Research and development of low-carbon technologies have been considering both economic and environmental constraints, to accelerate more cost-effective and less harmful alternatives, such as renewable hydrogen for electricity, mineral and chemical admixtures for cement production, and CCS. The decarbonization process is challenging and the results may show how important is for the industrial sector to approach sustainability associating new technologies with environmental impact assessment, highlighting important pathways for academia and industry to map these technologies.

*Keywords:* Industry decarbonization; Energy sustainability, Carbon reduction.

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