3rd World Conference on Sustainability, Energy and Environment

Berlin, Germany 08 Dec - 09 Dec 2023

Comparative Analysis of Natural Geological Mineralization and Artificial Sequestration Using Algae: A Review

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Abstract

Cutting carbon emissions and reduction in global warming, world is relying on the carbon capture approach. To see the world with Net Zero Emissions by 2050, researchers strongly believing in the carbon capturing and storage to be combat technique for climate change. Various studies have been conducted to evaluate the techniques from simple direct absorption to novel membrane adsorption and biological methods. In achieving the impossible, this review paper mainly focused on the comparison of two carbon capturing methods; Natural Mineralization and Artificial Algal System Sequestration. Among the other terrestrial organisms, algae are found to have forty times higher photosynthesis rate which gives more weightage to the algae to be the part of bio-circular economy by diversifying the feed stock and raw material. Overview on the potential of carbon capture and storage technologies, the review articles further elaborate findings of the comparative study of both approaches and their benefits in terms of carbon cutting and climate action. Key parameters considered in the comparison were capturing and storage efficiency of both techniques, capacity and socioeconomic constraints involved in both approaches. The objective of article also includes the future roadmap for research and development for such approaches and give the idea on merger of various subjects to furnish the algae as commercial feedstock to cut carbon emissions.

Keywords: Algae, Carbon capture, Climate action, Emission reduction, Sustainability