

THE RUBISCO-ALGARDEN PROJECT: ASSAY AND EVALUATION OF THE PRODUCTION OF NATIVE SEaweEDS FOR CARBON SEQUESTRATION IN THE PORT OF LA LUZ - LAS PALMAS

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Abstract: In the actual scenario of Global Change, there is an increased interest in seaweeds as an efficient sink of anthropogenic carbon. The CO₂ fixation and O₂ emission through photosynthesis by algae growing in coastal ecosystems and cultivation systems, both in-land or at the open-sea, represent a significant carbon reduction of CO₂ emissions, particularly generated by industrial and port areas activities. Primary marine producers (microalgae, macroalgae and seagrasses) contribute roughly at 50% of the world's carbon fixation and can account for 71% of all carbon storage. In addition, the use of the final biomass obtained from the cultured species in the production of biofuels, biomaterials, food and/or other products, preventing the use of fossil fuels, further contribute to the carbon sink potential of these aquaculture practices.

The Canarian Strategy of Blue Economy 2021-2030 highlights the maritime port sector, which is immersed in a transformation phase marked by the reduction of greenhouse gas emissions. This requires the adoption of energy-efficient actions, the development of alternative green tech solutions such as the Cold Ironing, and the compensation of the Carbon Footprint through innovative projects acting as "carbon sinks". In this framework, the Spanish Bank of Algae (BEA) of the University of Las Palmas de Gran Canaria (ULPGC) and the Las Palmas Port Authority (APLP) are developing the RuBisCO-Algarden Project: a 15-month study to evaluate the reduction of the carbon footprint within the port area by assessing a pilot production unit of the native green seaweed *Ulva rigida* in a classical ropes cultivation system that is situated at the sea.

The RuBisCO-Algarden Project is a novel experience in the Macaronesian Region that aims to evaluate the possibilities of seaweed culture methodologies, the quantification of carbon sequestration based on the accumulation of carbon stocks in the produced biomass, and its valorisation for biofuels and agriculture applications.

Key words: Carbon sequestration, Biological productivity, Open-sea cultivation, Seaweed

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