

Social Life Cycle Assessment of Innovative Products from Solar Evaporation Iberian Saltworks: A Descriptive Approach to the Implementation of Halotolerant Crops and Microorganisms

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Abstract-

Soil salinization and land abandonment pose significant socio-economic and environmental challenges, particularly in the Iberian Peninsula, where traditional saltworks and agricultural lands have been increasingly degraded. Innovative approaches, such as the implementation of halotolerant crops and microorganisms, offer a promising strategy to revitalize these underutilized areas. This study applies the Social Life Cycle Assessment (S-LCA) methodology to evaluate the socio-economic benefits of halotolerant agriculture in abandoned saltworks and salinized lands. Data were collected through interviews with key stakeholders, literature reviews, and case studies of four enterprises actively engaged in sustainable salina restoration. Key social indicators, including employment creation, community participation, and cultural heritage conservation, were assessed using an expert-based weighting system. The findings indicate that enterprises involved in these initiatives demonstrated strong contributions to local economic resilience and cultural heritage preservation. However, challenges related to scalability and external economic influences remain key considerations. These results highlight the potential of biosaline agriculture as a viable solution to address land abandonment and food security challenges, while also contributing to rural socio-economic development.

Index Terms- social life cycle assessment (S-LCA); halotolerant crops; microorganisms; salinized lands; sustainable agriculture; Iberian Peninsula saltworks; environmental sustainability; cultural heritage conservation; land degradation; food security

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Citation:

Cledera-Castro, M.M.; Gómez Lorenzo, S.; Hueso-Kortekaas, K.; Romero, J.C. "Social Life Cycle Assessment of Innovative Products from Solar Evaporation Iberian Saltworks: A Descriptive Approach to the Implementation of Halotolerant Crops and Microorganisms", World, vol.6, no.2, pp.38-1-38-21, June, 2025.