Green Hydrogen in Mexico: Challenges and Opportunities Through a SWOT Analysis

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Abstract:

Green hydrogen presents a transformative opportunity for Mexico in its transition to a sustainable energy economy. The country boasts several regions with exceptional potential for harnessing solar and wind energy, particularly in Campeche, Sonora, Sinaloa, and Oaxaca. These areas are home to advanced-stage projects focusing on green ammonia production, a chemical medium for hydrogen storage. Together, these initiatives aim to produce over 2,300,000 tons of green ammonia annually, marking a significant milestone in the renewable energy sector.

Despite these promising developments, challenges persist. The availability of water poses a critical issue, as it may compete with water resources intended for human consumption. Additionally, the carbon footprint associated with the production of solar panels and wind turbines, along with the potential gentrification of the targeted regions, represent key concerns.

Conversely, the opportunities are substantial: a net reduction in greenhouse gas emissions, the economic development of the regions hosting these projects, and the promotion of cleaner maritime mobility stand out as transformative benefits. In this paper, these challenges and opportunities are analyzed using the simple yet effective SWOT method (Strengths, Weaknesses, Opportunities, and Threats)