

An analysis of the MIBEL green hydrogen roadmap using mathematical programming

L.J. Fernández Palomino; L.A. Herrero Rozas; F.A. Campos Fernández;
E. Centeno Hernández

Abstract-

Decreasing greenhouse gas emissions plays a crucial role in the Europe energy transition and the production of hydrogen using electricity from renewable sources (green H₂) contributes significantly to this objective. As the renewable energy production capacity grows, the impact of green H₂ is likely to increase. In the case of the Iberian Electricity Market (MIBEL), no quantitative studies have so far tested the viability of the H₂ growth plans. This paper fills this gap through a novel mathematical programming model, which integrates H₂ generation into the MIBEL. The model reveals a mismatch between the sustainability goals and the expansion plans of renewable and green H₂ for Spain and Portugal.

Index Terms-

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