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ASSESSING THE ROLE OF GREEN HYDROGEN FOR ECONOMIC SECTOR COUPLING – THE CASE OF ROMANIA WITHIN THE EUROPEAN GREEN DEAL

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Summary (English)

This doctoral thesis assesses the role of green hydrogen for economic sector coupling by framing Romania as a case study within the European Green Deal, contributing empirically and theoretically, as follows: Firstly, the author proposes a simplified, scientifically anchored hydrogen colour code using a carbon dioxide (CO_2) emissions scale (e.g. green, grey and black), instead of the present hydrogen "rainbow". Secondly, the data analysis using IEA data (N = 1997) showed that there is both a business/policy discourse versus reality gap, but also a significant gap between the Romanian reality and the global trends in terms of green hydrogen projects under development. Romania is lagging European and global peers mainly due to self-reported fewer financial and technical capabilities but also caused by regulatory misalignment. Thirdly, the survey-based statistical data analysis (N = 303) showed that there are significant divergences when it comes to which end-use sectors hold the highest potential for coupling, with Romanian stakeholders preferring business-to-consumer (B2C) applications, while international actors prefer business-to-business (B2B) applications of green hydrogen. Policy drivers and collaboration preferences (B2G vs. B2B) among experts surveyed also resulted into statistically significant differences. Last, but not least, this research endeavour is the first comprehensive empirical application of the Multi-Level Perspective on sociotechnical transitions in Romania, offering a pioneering comparative analysis between Romanian and international actors across the nascent green hydrogen value chain including both public and private actor perspectives.

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