

Support mechanisms for low-carbon hydrogen: The risks of segmenting a commodity market

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Abstract-

Although the actual scope of the hydrogen sector is subject to great uncertainty, a global wave of support mechanisms for low-carbon hydrogen is being registered. In many cases, these schemes aim to bridge the gap between the current cost of producing clean hydrogen and the price that existing and potential end users are willing to pay for it. In doing so, they tend to introduce a regulatory segmentation into the hydrogen market, preventing supported hydrogen from being supplied to certain end uses, or providing support to production/end use pairs. This approach would require a burdensome monitoring, which is prone to fraud, and could lead to inefficient outcomes from a system-wide perspective. In contrast to these approaches, we argue for centralised hydrogen support mechanisms that bring together producers and end users in the same bidding process. This approach, whose high-level design is discussed in the article, would allow the most competitive production projects to be selected and this initial low-carbon hydrogen generation to be secured by those end uses that are willing to pay the highest price for it and could therefore be more efficiently decarbonised with hydrogen.

Index Terms- Hydrogen; Decarbonisation; Support mechanism; Auction; Market design; Risk-hedging

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