

# Purcell, Wong, Rousell and Al-Qaimi in Global Hydrogen Review: The Evolving Landscape of Hydrogen in the UK

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Haynes Boone attorneys [Conrad Purcell](#), [Shu Shu Wong](#), [Kayley Rousell](#) and [Zainab Al-Qaimi](#) debate the hydrogen landscape in the UK and discuss the steps being taken to increase its development in an article for the *Global Hydrogen Review*.

Read an excerpt below.

Hydrogen, and in particular low carbon hydrogen, is seen as a key solution for decarbonising various sectors of the UK economy, especially those that are hard to electrify (such as chemical production). However, the hydrogen market is still emerging and faces several challenges, such as high costs, low demand, delays, uncertainty surrounding government hydrogen policy and deployment targets, and infrastructure gaps (particularly relating to transportation and storage). To overcome these barriers and to achieve its ambition of having up to 10 GW of low carbon hydrogen production capacity by 2030, the UK government has developed a range of policies and support mechanisms, such as the UK Hydrogen Strategy, the Hydrogen Production Business Model and Hydrogen Allocation Rounds, the Low Carbon Hydrogen Standard, and the Low Carbon Hydrogen Agreement. This article explores the current UK policy and regulatory framework for hydrogen and what it means for the evolving landscape of hydrogen in the UK.

## **The Hydrogen Market – as it currently stands**

The UK has adopted a dual-ended strategy with respect to hydrogen production, supporting both electrolytic and CCS-enabled (green and blue) hydrogen. Electrolytic (green) hydrogen splits water into hydrogen and oxygen using renewably generated electricity; both of which are considered low carbon if they meet the emission intensity threshold of 20g CO<sub>2</sub>e/MJLHV. CCS-enabled (blue) hydrogen is produced when natural gas (methane) is split into hydrogen and carbon dioxide, with the majority of the carbon dioxide produced through the process being captured and stored permanently underground. In pursuit of the government's goal of establishing a total low-carbon hydrogen capacity of up to 10 GW by 2030, it is anticipated that approximately 6 GW will be sourced from electrolytic hydrogen technologies, and the remaining 4 GW generated by CCS-enabled hydrogen production. As things currently stand, the UK is well on its way to surpassing this ambition, as there is a diverse pipeline of over 100 hydrogen projects, and an aggregate potential capacity of over 15 GW by 2030. These projects span different production methods, end uses, and regions, which demonstrates the adaptability and potential of hydrogen as an energy carrier. The UK has the world's second largest pipeline of CCS-enabled hydrogen projects, having pledged to invest almost £22 billion in projects in the sector over the next 25 years. The UK also has a strong offshore wind resource, which can provide low-cost renewable electricity for electrolytic hydrogen production, especially in regions with excess generation that otherwise have to resort to curtailment.

There is a need for prioritisation of sectors where hydrogen can have the most impact and competitiveness, such as industrial decarbonisation, heavy transport and dispatchable low carbon

power generation, instead of viewing hydrogen as a single, universal solution. In recognition of this need, the government has developed various policy initiatives and financial support schemes to boost the sector, which include the Hydrogen Strategy 2021, the Industrial Energy Transformation Fund, the Industrial Fuel Switching Competition, the Sustainable Aviation Fuel Mandate, the Clean Power 2030 Plan, the Hydrogen Production Business Model, the Hydrogen Transport Business Model and the Hydrogen Storage Business Model, some of which are mentioned in greater detail below. However, the demand for hydrogen is still limited, partly due to the lack of a coherent and consistent policy framework across the value chain both domestically within the UK and as between the UK and Europe, a lack of commitment to deployment targets, the absence of business models for transportation and storage, and the high costs of switching to hydrogen compared to conventional fuels coupled with a lack of diverse funding options.

## **Government Support**

### **Hydrogen Production Business Model**

With a view to mitigating the commercial, technological and regulatory uncertainties that the emerging UK hydrogen economy is currently faced with, and to foster the deployment of private capital, the government has launched the Hydrogen Production Business Model (HPBM). This is structured as a contract for difference under which qualifying producers of low-carbon hydrogen are afforded a guaranteed fixed strike price based on their production costs and expected returns.

The HPBM is supported by the Low Carbon Hydrogen Agreement (LCHA), which is a contract between the producers and the Low Carbon Contracts Company, a private limited company owned by the Secretary of State for Energy Security and Net Zero. The HPBM provides revenue support to eligible hydrogen production projects which is critical for them to become financially viable. LCHAs are typically structured as a long term (15 years) contract using a “strike price” mechanism which enables producers to receive a stable revenue stream. This contractual framework is underpinned by the Contract for Difference (CfD) regime used in the UK renewables sector. CfDs for LCHAs are however different from those used for renewables, given that the hydrogen market is less mature compared to the wider renewables market, which in turn has consequential impacts on the risk profile of projects in the sector.

[Read the full article in \*Global Hydrogen Review\* here.](#)