Hydrogen:

Public sector support driving private investment

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PMSI Insights

- With the UK committing to decarbonising the electricity system by 2035 and reach net zero emissions across the economy by 2050, low-carbon hydrogen will play an important role in facilitating this transition, particularly within the industrial sector
- In the short-term, private sector investment in low-carbon hydrogen will benefit greatly from government financial and regulatory support to de-risk investments, particularly given the uncertainties in the timing and scale of future low-carbon hydrogen demand
- Public sector funding has already encouraged significant private sector interest in low-carbon hydrogen, which is only set to grow as it establishes a foothold in the UK's energy system, opening up further opportunities for traditional private equity investors as the market matures

Net Zero and the Hydrogen Opportunity

The UK government has set a target of reaching net zero greenhouse gas emissions by 2050 across the whole of the UK economy, whilst also committing to decarbonising the electricity system by 2035. To achieve these targets, there will need to be a transformation of the UK's energy system to replace fossil fuels with green alternatives.

Analysis from the UK Climate Change Committee (CCC) estimated that this will require upwards of £40bn of capital expenditure per annum from 2026, requiring substantial investment from both the public and private sectors.

In 2021, the UK government published its hydrogen (H_2) strategy, highlighting the pathways through which low-carbon H_2 will support the UK in meeting its net zero targets.

With ESG investment mandates and the risk of legacy fossil-fuel assets becoming 'stranded', low-carbon H_2 investments are becoming increasingly attractive to a range of investors, from infrastructure funds through to private equity, particularly with the availability of government subsidies to de-risk investment.

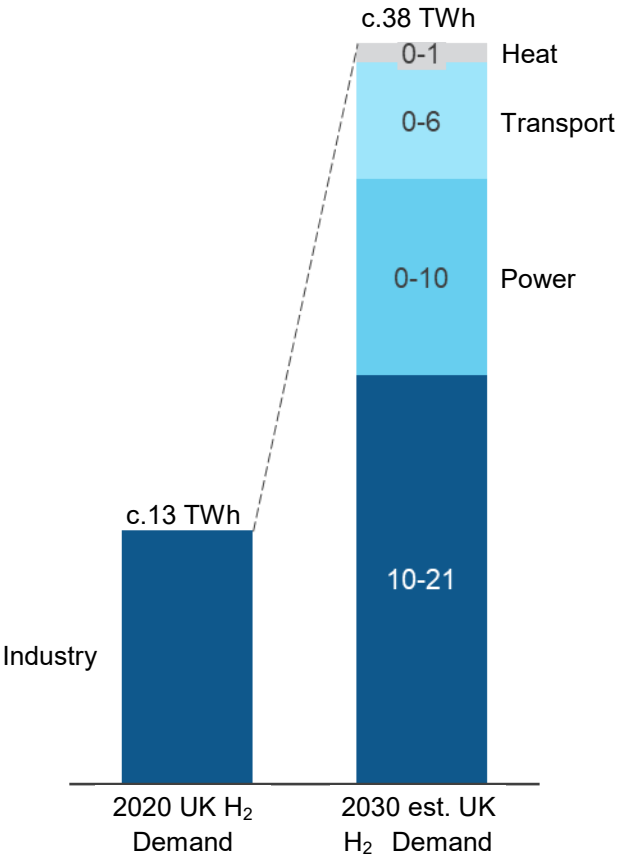
The Evolution of Hydrogen Demand

The UK is currently estimated to use c.13 TWh of H_2 p.a., almost exclusively for industrial purposes (largely for ammonia production and oil refining). Most of this demand is matched through a carbon intensive hydrogen production process known as steam methane reforming.

However, as the UK strives to meet its net zero targets, the existing hydrogen supply will need to be de-carbonised. In addition, the UK's hydrogen strategy anticipates that demand could increase three-fold by 2030, resulting in additional need for supplies of low-carbon hydrogen.

This rise is expected to be driven largely by increased industrial H_2 demand (through clean hydrogen fuel switching from fossil fuels) and from power generation, where low-carbon H_2 could be used to provide zero-emission electricity generation back-up where renewable power output is low. The availability of low-cost, low-carbon H_2 will be essential in allowing this expansion to take place.

UK H_2 demand by sector, 2020 and 2030 (TWh)

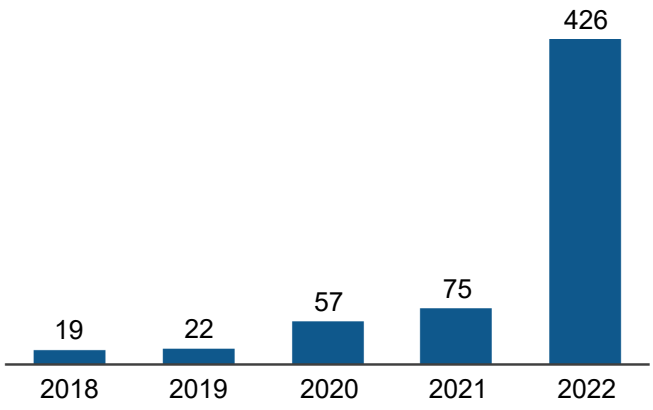


UK Government Backing for Hydrogen

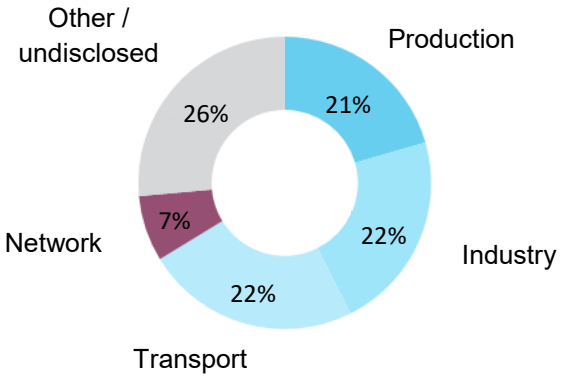
To facilitate this expansion in demand for clean hydrogen, the UK government has set an updated target of bringing 10GW of low-carbon hydrogen production capacity online by 2030. The combined capacity of low-carbon H_2 projects in the pipeline is currently over 14GW, highlighting the significant appetite from developers. However, each project will be highly contingent on financial support from the UK government to de-risk the investment given uncertainty in future hydrogen demand.

To date, the UK government has been the largest financial backer of low-carbon H_2 projects in the UK, with the intention of incentivising private sector investment. PMSI analysis of public sector funding allocations has shown that over £500m has been made available for low-carbon H_2 projects through to 2022. This funding has been made available to projects across the value chain, from production through to end-use cases.

UK Govt. H_2 funding allocations, 2018-22 (£m)



UK Govt. H_2 funding allocation by segment (%)



Selected hydrogen sector businesses which have received private investment

Initial funding pots made available were targeted towards demonstrating the feasibility of H_2 across various applications, whilst simultaneously developing the technology readiness level (TRL) to prepare for eventual full-scale commercial roll-out.

As the investment case has matured and the need to make further tangible decarbonisation gains intensifies, government support for hydrogen will need to change accordingly. PMSI analysis shows that there has been a step change in the level of funding which has opened up to low-carbon H_2 projects, with over £400m being made available in 2022. Key to achieving the government's targets will be targeted support for low-carbon H_2 production via its proposed subsidy scheme, lowering the cost of low-carbon H_2 and allowing end-use at commercial scale.

With these government funding pots aimed at de-risking investment for the private sector, the government hopes to bring in over £4 billion of private sector funds by 2030.

Unlocking Private Sector Investment

As public sector funding and support has ramped up for low-carbon H_2 solutions, so has interest from private sector investors, due to the greater certainty on the future of hydrogen in the UK economy. As a result, there are a number of low-carbon H_2 sector companies which have received substantial private sector backing, having previously received public sector funding, including:

- Bramble Energy, a H_2 fuel cell manufacturer which in 2022 raised £35m from investors including HydrogenOne Capital and BGF
- Protium, a zero-carbon 'green' H_2 production company, that has raised an additional £40m in 2022 from a number of backers including SWEN Capital Partners and Barclays

Given the UK government has signalled continued strong support for hydrogen, new investment opportunities will continue to arise as low-carbon H_2 is established as a core part of the UK's future energy system.

Key Drivers

1. The UK government has committed to reaching **net zero by 2050**
2. UK government low-carbon hydrogen **subsidies** and **key policy decisions**
3. Private sector **ESG** investment mandates
4. Increasing **maturity** of low-carbon hydrogen technologies
5. Low-carbon **hydrogen** provides system resilience and **energy security**

A Hydrogen Future

Outside of existing, well established use cases, the hydrogen value chain still represents a relatively nascent opportunity, particularly for private equity and other institutional investors.

However, as the net zero transition gathers pace with governments across Europe committing billions of Euros to clean hydrogen technologies, this is likely to change very quickly. Interest from private sector investors in hydrogen opportunities is accelerating, highlighted most recently with Ardian-backed Hy24 raising over €2bn for hydrogen sector investment, surpassing the original fundraising target by approximately 30%.

The timing and extent of low-carbon H_2 adoption within the UK's future energy system is still evolving, with government policy, funding and technological development all likely to significantly impact the sector's growth over the coming years.

PMSI has been helping its clients navigate these challenges and opportunities across the energy sector, most recently supporting NVM in assessing the hydrogen opportunity for Thyson Technology, analysing the key market drivers and how best to leverage UK government support. At PMSI, we believe that hydrogen and other net zero investment opportunities will continue to gather momentum, offering high growth opportunities for early adopters.

PMSI Recent Transactional Experience

Energy Sector Transactions

THYSON TECHNOLOGY

CDD on the hydrogen market opportunity for NVM-backed Thyson Technology, a leading provider of gas analyser systems for the process industries ***(read more)***

LOC

VCDD to support BDC's sale of international marine and engineering consulting firm LOC Group to AqualisBraemar ***(read more)***

Freedom

CDD for NG Bailey on their acquisition of Freedom, an FM business with a strong focus on the electricity distribution network operator (DNO) sector

Wider energy experience

Beond · Energy & Carbon Management · inprova ENERGY · steamaco · nationalgrid

For more information or to discuss potential opportunities, please contact our Built Environment sector lead:

Will is an Associate Director at PMSI. He has worked on numerous CDD, VCDD and strategy projects across a range of industry verticals, with particular experience in the Built Environment sector.

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