STEPHENSON HARWOOD

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The roadmap for hydrogen in the UK is now clear – next up is the detail!

On 17 August 2021, the UK Government published its long-awaited Hydrogen Strategy. The Department of Business, Energy and Industrial Strategy ("BEIS") took far longer than originally expected in publishing it, however, when you assess the number of issues addressed within it (and importantly not addressed in it), the Strategy brings home just how difficult a job BEIS is dealing with.

While there has been a considerable amount of press, debate and discussion since the Strategy's release, we believe that overall, its publication will give a major boost of confidence to the UK market. There is an outline of a Roadmap and the UK Government once again confirmed that hydrogen will play a vital role in the transition to the green economy. However, the lack of specific detail on nearly all of the major issues means the Strategy could be argued to have created more questions than it answers.

BEIS's twin-track approach detailed in the Strategy has caused considerable debate. Promoting green hydrogen, Chris Jackson, CEO of Protium Green Solutions, who stepped down as chair of the UK Hydrogen & Fuel Cell Association prior to the Strategy's release stated, *"I believe passionately that I would be betraying future generations by remaining silent on that fact that blue hydrogen is at best an expensive distraction, and at worst a lock-in for continued fossil fuel use that guarantees we will fail to meet our decarbonisation goals"*. Renewable UK's CEO Dan McGrail added that "*…the strategy doesn't focus on developing UK's world-leading green hydrogen industry".* BP's Louise Jacobson Plutt stated that "*…[t]he UK government's new hydrogen strategy will enable the country to reach the UK's ambition to decarbonize. We look forward to working with all stakeholders to play our part in making this ambition a reality".*

For the optimists amongst us who were expecting a clear and absolute strategy, you will of course unfortunately be disappointed. But there is nevertheless plenty to digest.

The major takeaway points from the Strategy are:

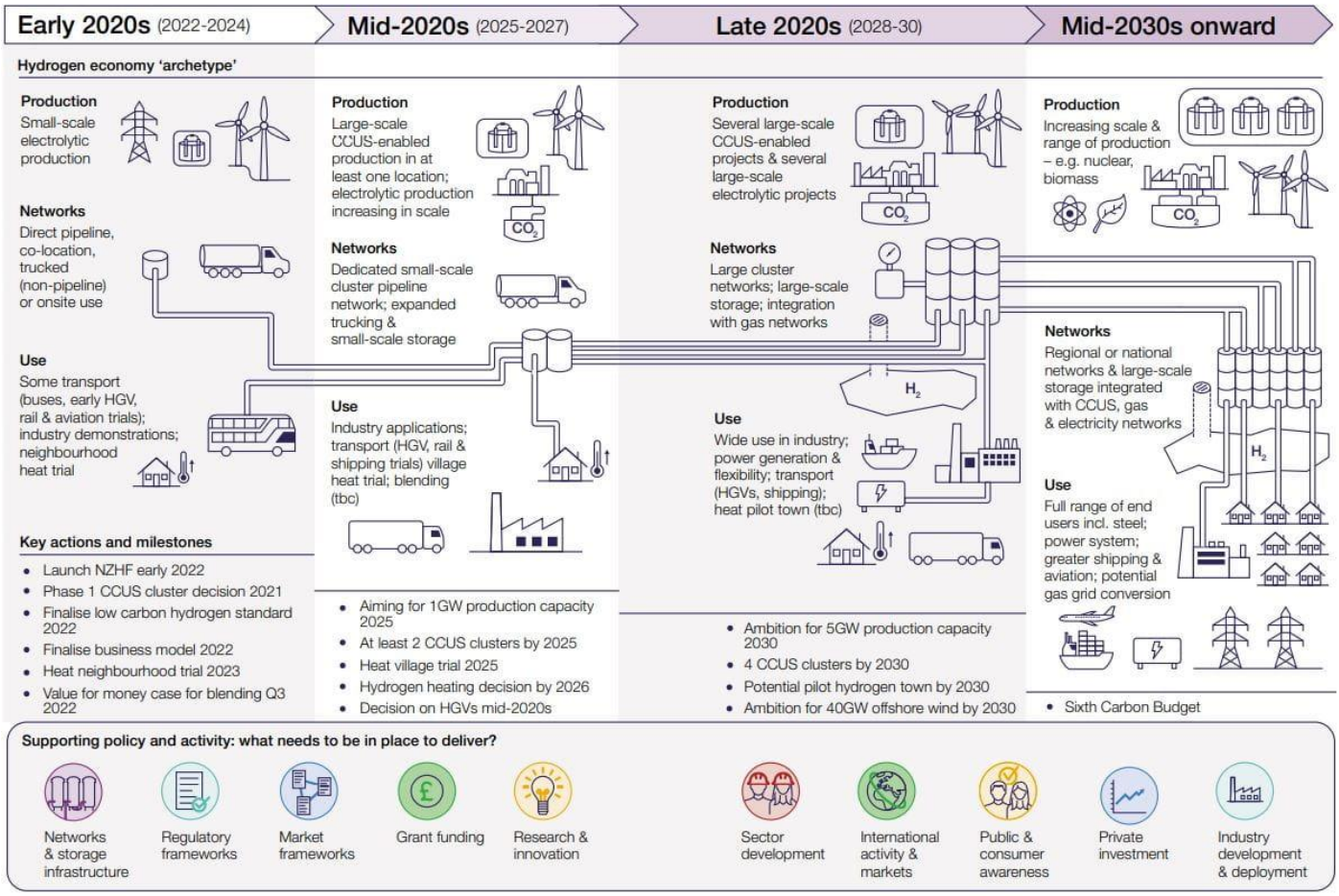
1) The Roadmap

The Strategy sets out the UK Government's vision for how the hydrogen economy will develop and scale up over the course of the next decade. The Strategy confirms, however, that this is not a critical path but aims to set out a "clear guide".

The Roadmap shows how the UK Government plans to grow low-carbon hydrogen production and use from practically zero to between 20%-35% of energy consumption by 2050.

This is no mean feat but entirely possible.

Figure 2.1: Hydrogen economy 2020s Roadmap



2) The UK Hydrogen Market

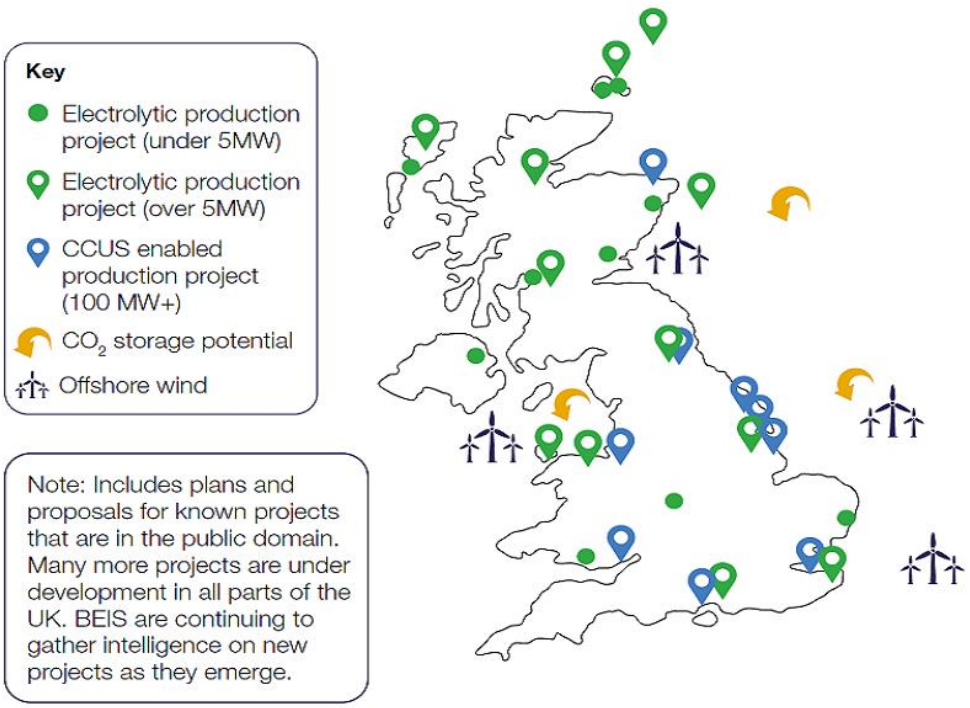
The Government has confirmed its ambition to be a global leader of hydrogen and have 5GW of low carbon hydrogen production capacity by 2030 for use across the country.

While some commentators were hoping for higher target capacity, it is important to note that there is however, almost no low carbon production of hydrogen currently in the UK. Current UK hydrogen production and use is nearly entirely in chemicals and refineries. Furthermore, the hydrogen produced is primarily reliant on natural gas and does not currently use any carbon capture technology.

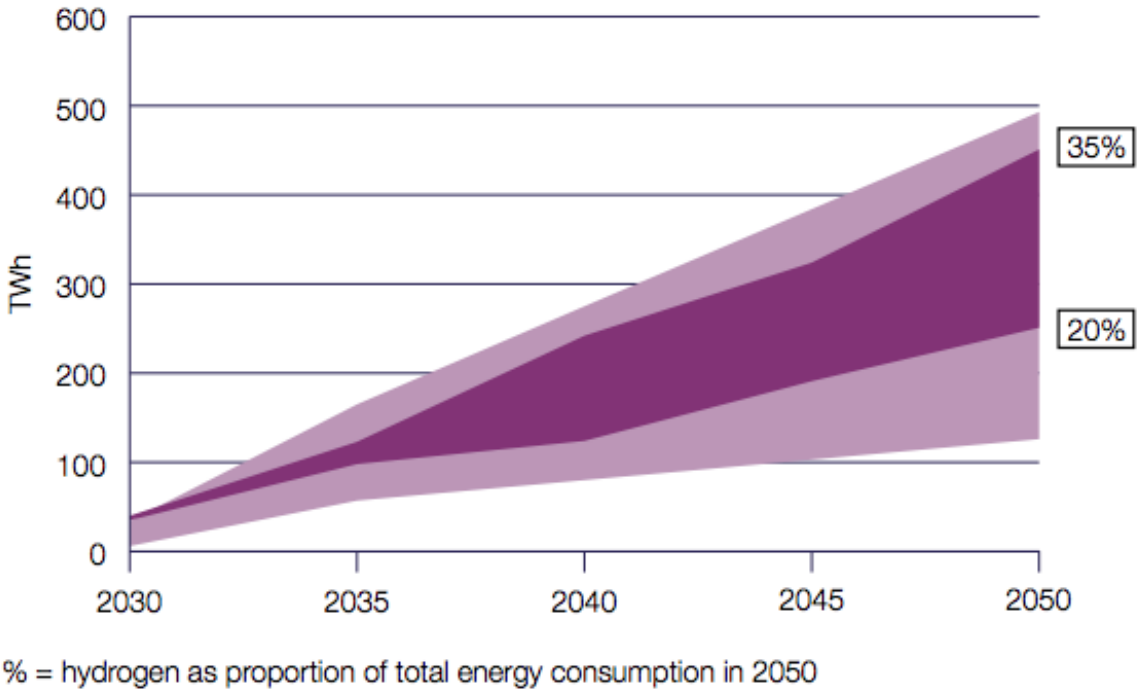
While we completely agree aspirational targets are good news for all involved, we support the Government setting out an achievable and realistic target which hopefully will ultimately be exceeded.

The Strategy takes a holistic approach to developing the UK hydrogen sector and stresses that hydrogen can support the decarbonisation of "hard to electrify" sectors. Encouragingly, the Strategy states that the Government is "*aware of a potential pipeline of over 15GW of projects".*

To give an indication of the current landscape, Figure 1.3 in the Strategy helpfully highlights all the publicly announced electrolytic and CCUS enabled hydrogen projects in the UK.



In terms of what the increase in hydrogen consumption would look like in order to meet the Government's goal by 2050, Figure 1.2 in the Strategy sets out the magnitude of the potential for hydrogen stakeholders (and the short-term and long-term challenges for BEIS managing the expansion).

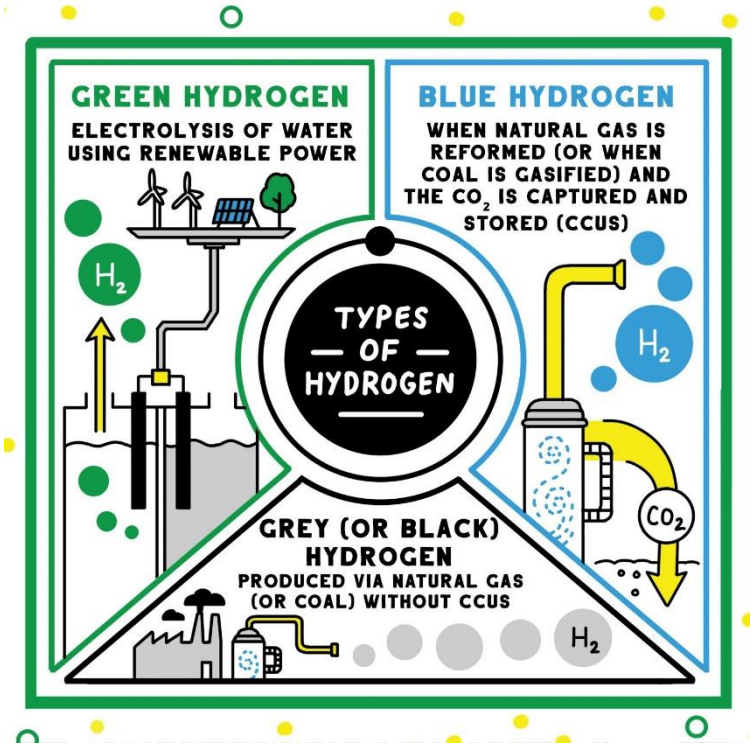


Hydrogen demand (pink area) and proportion of final energy consumption in 2050 (%). The central range is based on illustrative net-zero consistent scenarios in the sixth carbon budget impact assessment and the full range is based on the whole range from hydrogen strategy analytical annex. Source: UK hydrogen strategy.

3) Twin-track approach & Business Models

The Government confirmed that a twin-track approach capitalises on the UK's potential to produce large quantities of both electrolytic "green" and CCUS enabled "blue" hydrogen. As expected, this approach has immediately led to a resurfacing of tensions between supporters of green and blue hydrogen.

The colour associated with hydrogen ultimately is based upon its production method. Green hydrogen is made using electrolysers powered by renewable electricity, while blue hydrogen is made using natural gas, with the resulting emissions captured and stored.



Source: BP's CEO's LinkedIn 7 September 2021

The Strategy somewhat surprisingly focuses on blue hydrogen and the development of industrial clusters deploying CCUS technology. Information about early-stage green hydrogen in particular, is relatively light throughout the Strategy.

While the Strategy states that further detail on the production strategy will be published in 2021, to support the UK's technology know-how and storage potential and to scale up CCUS across the country, the Government will deploy £1billion to support CCUS technology and infrastructure up to 2025.

Interested parties will of course have a close eye on the carbon capture track 1 cluster announcement due in October 2021. Five projects across the UK have reached the required standard which was premised on the project being able to demonstrate credibly that (1) they could be operational by 2030, (2) be located within the UK, and (3) meet the definition criteria of a CCUS cluster.

The Strategy also confirmed that it will set out details of a revenue mechanism to bring through early-stage private investment in industrial carbon capture and hydrogen projects. The majority of stakeholders considered that the Government would follow its success in offshore wind and select Contract for Difference (CFD) as its preferred business model. The consultation detailed further in

Section 4 below proposed several different options. The ultimate aim, of course, being to develop a business model which incentives the production and use of low carbon hydrogen in the UK.

This is a major part of the puzzle. While the debate will no doubt rage on about whether the UK should have followed Germany's approach of promoting green hydrogen, the UK has backed both colours and it is critical that it sets out mechanisms for both that promotes and enables investment as quickly as possible.

In May 2021, S&P Global Platts reported that Rita Wadey who is BEIS's hydrogen economy deputy director said that, rather than "blue" or "green", the UK would *"consider carbon intensity as the primary factor in market development".*

Encouragingly, the twin track approach and Strategy are due to be updated in early 2022.

4) Consultations

On the same day that the Strategy was released, the UK Government also published the following consultations which close in October 2021:

1) Hydrogen Business Model

a. Provide longer terms revenue support to hydrogen producers to overcome the cost gap between low carbon hydrogen and higher carbon fuels.

b. Consultation is open to all, but the Government is keen to hear from project developers, financial investors and trade associations.

c. Closing date: 25 October 2021

Design of a business model for low carbon hydrogen - GOV.UK (www.gov.uk)

2) Design of the Net Zero Hydrogen Fund

a. Aimed at designing the Fund to maximise its benefits, while ensuring value for money.

b. The ultimate aim is de-risking private sector investment and reducing the lifetime costs of low carbon hydrogen project.

c. Closing date: 25 October 2021

Designing the Net Zero Hydrogen Fund - GOV.UK (www.gov.uk)

3) UK Low Carbon Hydrogen Standard

a. There is no definition of what "low carbon" hydrogen is. The definition however, is critically important when considering hydrogen production methods such as nuclear, DDC and CCUS.

b. The Government seeks input on a methodology for calculating GHG emissions associated with hydrogen production and a subsequent greenhouse gas emissions threshold against which different low carbon hydrogen production pathways would be measured.

c. Closing date: 25 October 2021

Designing a UK low carbon hydrogen standard - GOV.UK (www.gov.uk)

While it is extremely encouraging that Government is engaging with industry, we are keen to see the findings of such consultations be collated and implemented where possible as quickly as possible.

5) Competitions

While most of the competitions had already been announced by the UK Government, the Strategy confirmed the following competitions;

- A £240m for government co-investment in production capacity through the Net Zero Hydrogen Fund;
  Designing the Net Zero Hydrogen Fund - GOV.UK (www.gov.uk)
- A £1billion fund to accelerate commercialisation of low-carbon technologies and systems for net zero;
  Net Zero Innovation Portfolio - GOV.UK (www.gov.uk)

  A £315m Industrial Energy Transformation Fund;
  Industrial Energy Transformation Fund - GOV.UK (www.gov.uk)

- £20m Industrial Fuel Switching Competition (which is now closed); and
- £60m Low Carbon Hydrogen Supply 2 Competition.
  Low Carbon Hydrogen Supply 2 Competition (Closed) - GOV.UK (www.gov.uk)

These competitions are critical to the continued technological development in the sector and welcome news to all involved.

6) Policy and Regulatory Uncertainty

In May 2021 in anticipation of the Strategy, we published the *"Regulation & Licence Highway - Key milestones in UK hydrogen projects"* article which gave our readers an overview of the relevant regulations and policies to be complied with when undertaking a hydrogen project in the UK. In that article, we stressed that an increasing number of hydrogen projects were already progressing towards final investment decisions, with some already having commenced construction.

At that time, there was no comprehensive regulatory framework for production, transportation and/or storage of hydrogen, leaving stakeholders facing a patchwork of rules and policies.

Unfortunately, the Strategy has done nothing to resolve this issue or more importantly, abate the need for early adopters to come up with imaginative solutions to navigate the regulatory and policy frameworks that were enacted before the emergence of hydrogen as a realistic fuel source.

As lawyers, we of course give this issue considerable consideration and given the importance of this issue to stakeholders across the country, we will shortly publish an article specifically analysing the Strategy from a regulatory and policy perspective.

7) Scotland & Wales

Having an aligned approach across the country will only promote hydrogen development in the short and long term. The Strategy recognises this and outlines the plans for Scotland and Wales.

Scotland is already home to a number of world-leading hydrogen demonstration and commercial hydrogen projects.

The Scottish Government published a Hydrogen Policy Statement in December 2020. This will be followed up in March 2021 by the UK and Scottish Governments outlining plans to each invest £50m as part of the Heads of Terms for the Island Growth Deal to support the future economic prosperity of Orkney, Shetland and the Outer Hebrides. This Deal includes several projects providing support for hydrogen.

The Strategy confirmed that the Scottish Government will publish a Hydrogen Action Plan later this year supported by a £100m programme of investment from 2021 to 2026.

Wales is home to several pioneering hydrogen companies, projects and research clusters and is becoming of increasing importance in the development of the hydrogen economy in the UK.

The Welsh Government published a hydrogen pathway report in December 2020 and is now finalising its strategic position on hydrogen. It is hoped that this publication will be issued in early Autumn 2021.

A Welsh Hydrogen Business Research and Innovation for Decarbonisation (H2BRID) initiative is also being developed for launch around the same time to support the challenges set by the Welsh hydrogen pathway and invest in innovative hydrogen projects across Wales.

Conclusion

Overall, the Strategy is a huge step forward for all involved. While it is not a definitive strategy, the timetable and frameworks are important steps in the right direction. One must also remember that the Strategy should not be read in isolation. This Strategy will ultimately develop alongside policy, heating, industrial and transport.

The Government does however need to build on this Strategy with a high number of detailed updates throughout 2021 and 2022. The timelines are critical and hopefully the dates proposed in the Strategy are the worst-case scenarios.

Contact us

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