

## HYDROGEN IN THE UK

3 MARCH 2021 • ARTICLE



### WHERE ARE WE NOW?

A lot of investment, both public and private, has been undertaken in the United Kingdom (UK) on hydrogen projects, from the sublime (the HySpirits gin distillery in Orkney<sup>1</sup>) to the ridiculously ambitious (ZeroAvia's hydrogen fuelled plane<sup>2</sup>) and everything in between. The hype and excitement are mounting across industries and sectors.

But something is still missing – a UK hydrogen strategy.

"The development of hydrogen policy in the UK increased by leaps and bounds in the second half of 2020."

### HYDROGEN POLICY TO DATE

The development of hydrogen policy in the UK increased by leaps and bounds in the second half of 2020. In September, the House of Lords online library published an article entitled "Does the UK need a hydrogen strategy?" which noted the "calls from a variety of individuals and organisations for the Government and the newly formed Hydrogen Advisory Council to publish a hydrogen strategy"<sup>3</sup>. This was followed a few days later by a discussion in the House of Lords on the same subject.

References to hydrogen peppered the UK Government's long-awaited Energy White Paper, which was finally published in December 2020<sup>4</sup>. The Scottish Government published its Hydrogen Policy Statement<sup>5</sup> on 21 December 2020. Both the White Paper and the Hydrogen Policy Statement confirm that a UK hydrogen strategy is coming in 2021, but we have not seen it yet.

---

*"We will publish a dedicated Hydrogen Strategy in early 2021 which positions the UK as a world leader in the production and use of clean hydrogen".*

**Page 127, Energy White Paper, December 2020**

*"The UK Government will publish their Hydrogen Strategy in 2021 and have set a target of 5 GW of low-carbon hydrogen by 2030".*

**Page 6, Hydrogen Policy Statement, December 2020**

---

Even so, there are many hints as to what might be included in a hydrogen strategy. Hydrogen was the second point in the Prime Minister's Ten Point Plan for a Green Industrial Revolution, which set out the Government's ambitions:

*Working with industry the UK is aiming for 5 GW of low-carbon hydrogen production capacity by 2030. We are also pioneering hydrogen heating trials, starting with a Hydrogen Neighbourhood and scaling up to a potential Hydrogen Town before the end of this decade<sup>6</sup>.*

Chapter 2 on Power includes a pledge to invest “£1bn in UK's energy innovation programme to develop the technologies of the future such as advanced nuclear and clean hydrogen”.

Chapter 3 on the energy system and transport promises further investments:

- £20m in 2021 for “freight trials to pioneer hydrogen and other zero emission truck technologies to support industry to develop cost-effective, zero emission HGVs in the UK”;
- £120m in 2021/22 to “start the delivery of the 4,000 zero emission buses announced by the Prime Minister”, with support for “both battery electric buses and hydrogen buses where the market favours their use”;
- £20m Clean Maritime Demonstration Competition to be launched to “support the UK design and development of clean maritime technology, including hydrogen, and will lay the foundation for a network of real-world projects”; and
- Chapter 5 on Industrial Energy pledges to “[e]stablish the UK as a world leader in the deployment of CCUS and clean hydrogen, supporting up to 60,000 jobs by 2030”.

**"Working with industry the UK is aiming for 5 GW of low-carbon hydrogen production capacity by 2030. We are also pioneering hydrogen heating trials, starting with a Hydrogen Neighbourhood and scaling up to a potential Hydrogen Town before the end of this decade."**

**The Ten Point Plan for a Green Industrial Revolution**

Separately, the Scottish Hydrogen Policy Statement confirms the Scottish Government's commitment to “providing a supportive policy and regulatory environment to support hydrogen production and use and to enable Scotland to take a pioneering role in a growing global industry”. They set out an outline of anticipated developments as follows:

- In the 2020s – Demonstration, accelerating market demand and getting the policy framework right (supporting R&D and demonstration; building capability and partnerships with organisations and governments; establishing hydrogen demand in transport and industrial applications with supportive actions and investment, including access to public and private finance);
- In the 2030s – Production at Scale (scaling up and bringing down costs; developing competitive, large scale, low-cost hydrogen for domestic use; developing floating hydrogen production and an export industry for hydrogen and its derivatives); and
- By 2045 – Scaling up and global expansion (production of lowest cost green hydrogen for domestic use and for export; international transportation of hydrogen, including shipping and North Sea hydrogen pipeline infrastructure connecting Scotland to continental Europe).

## HOPES OF INDUSTRY

As mentioned above, Government papers recognised calls for a strategy from various quarters. These calls are perhaps most clearly stated by the Hydrogen Strategy Now campaign<sup>7</sup>, which features an open letter to the Chancellor from private businesses who “stand ready to invest £3bn into hydrogen projects in the UK today”. Campaign partners include a whole host of businesses from, AngloAmerican, EDF and Equinor to Ørsted, Petrofac, Siemens, Storengy and Vattenfall.

The UK Hydrogen & Fuel Cell Association (UKHFCA) announced the launch of a new Position Paper setting out a UK timeline for green hydrogen development to 2050. It is branded as “a clear route for developing a significant green hydrogen industrial base in the UK, which is necessary to ensure the country’s leadership in hydrogen innovation”<sup>8</sup>. While it has not yet been launched (it is due 3 March 2021), inspiratia’s 23 February 2021 story on the report<sup>9</sup> has given us early sight of some of the key content.



THE PATHFINDER PROJECTS ARE JUST A FEW EXAMPLES OF WHAT IS HAPPENING TODAY IN THE UK'S TRANSPORT, ENERGY AND REAL ESTATE SECTORS.

Some of the stated hopes and ambitions of the Hydrogen Strategy Now campaign and the UKHFCA Position Paper are:

- to create and sustain hundreds of thousands of high-skilled, green jobs, in all parts of the country;
- to secure private investment into the UK, and unlock export opportunities for our products and skills;
- deployment of 10 GW of green hydrogen by 2030, reaching 80 GW of capacity by 2050 if the government is supportive and there is enough cooperation between the public and private sectors;
- a targeted policy implemented to support small-scale and on-site distributed green hydrogen production in order to have 5 GW of hydrogen capacity in place by 2025;
- support for the sector in the form of capital grants, tariffs, and even a CfD-style model for hydrogen projects; and
- a rollout of hydrogen fuelling infrastructure along major transportation routes.

## WHAT DOES THIS MEAN FOR THE ENERGY, TRANSPORT AND REAL ESTATE SECTORS?

There are clear opportunities across the energy, real estate and transport sectors:

"The Hydrogen Strategy Now campaign features an open letter to the Chancellor from private businesses who "stand ready to invest £3bn into hydrogen projects in the UK today"."

- Energy – there is a great opportunity for the oil and gas sector to expand their remit to the hydrogen economy, particularly making use of existing infrastructure to the extent possible (rigs, pipelines, storage facilities) and skills. Equally, offshore wind generators have an opportunity to make use of hydrogen to smooth out the intermittency of wind power, to store excess power and to mitigate balancing costs;
- Real Estate – with the phase out of gas boilers in new buildings on the horizon, the real estate industry will need to find alternatives. It makes sense to use hydrogen in boilers and in district heating schemes, which can be combined with renewable power generation to fast forward to net zero; and
- Transport – the opportunities here are many and varied, from more industrial applications of marine transport (of hydrogen and fuelled by hydrogen), rail and fuelling heavy goods vehicles, to commercial transportation and aviation applications.

Many of these opportunities have already been highlighted by pathfinder projects that are bringing together expertise from across sectors. A clear way forward via a UK hydrogen strategy would certainly accelerate this process.

## PATHFINDER PROJECTS

The projects below are just a few examples of what is happening in the UK today in the three sectors mentioned previously.

In the energy and transport sectors:

- **Zero Carbon Humber<sup>10</sup>**: This project aims to develop one of the world's first net zero industrial clusters based in the Humber region, described on the project's website as "*the most carbon intensive industrial cluster in the country, emitting 12.4 million tonnes [of carbon dioxide emissions] a year*". It is being carried out by a consortium of twelve industry stakeholders including international energy producers, major regional industries, leading infrastructure and logistics operators, global engineering firms and academic institutions. The vision is to develop "*shared trans-regional pipelines, for low-carbon hydrogen and captured carbon emissions*" via several sub-projects (see H2H Saltend below).
- **HyNet North West<sup>11</sup>**: This project aims to do for the North West what Zero Carbon Humber aims to do for the North East. The project will produce hydrogen from natural gas, includes the development of a new hydrogen pipeline, and aims to create the UK's first carbon capture, and storage (CCS) infrastructure. The consortium partners, Progressive Energy and Cadent, will each lead a different part of the project: a hydrogen production plant and CO2 pipeline, and a hydrogen pipeline, respectively.
- **Hydrogen to Humber (H2H) Saltend<sup>12</sup>**: This Equinor-led project will establish the world's largest hydrogen from natural gas production plant with carbon capture and storage. The initial phase will include a 600 MW auto thermal reformer with carbon capture ("*the largest plant of its kind in the world*") and will enable industrial customers at the business park "*to fully switch over to hydrogen*", with the power plant moving to "*a 30% hydrogen to natural gas blend*".

In the real estate sector:

- **HyDeploy @ Keele<sup>13</sup>**: This project is the first live demonstration of hydrogen use in homes, where up to 20% hydrogen is blended with natural gas into the private gas grid on site. The next phases of the project will see a larger demonstration on a public gas grid.
- **BIG HIT<sup>14</sup>**: This project, Building Innovative Green Hydrogen Systems in Isolated Territories, aims to *“demonstrate the Orkney Islands of Scotland as a replicable Hydrogen Territory, using curtailed renewable energy generated locally to produce hydrogen ... to store and use valuable energy for local applications”*. Produced on some of the smaller islands, the hydrogen is then transported to mainland Orkney, to be used in various applications including auxiliary power and heat for ferries in Kirkwall harbour, fuelling a fleet of hydrogen range-extended light vehicles, and heating for buildings. The twelve project partners from Denmark, France, Italy, Malta, Spain and the UK include a non-profit private organisation, a university, manufacturers, government bodies and a residents trust

**"The HyNet North West project will produce hydrogen from natural gas, includes the development of a new hydrogen pipeline, and aims to create the UK's first carbon capture, and storage (CCS) infrastructure."**

As demonstrated by the examples above, there are many exciting projects in the UK, some backed by Government funding, which are either in the research and development phase, or in the demonstration phase. The examples included here just scrape the surface, but the question will be how these projects can be commercialised and rolled out into our daily lives. The UK's Hydrogen Strategy will have a big role to play in enabling this and in overcoming barriers and challenges.

## CURRENT CHALLENGES

The current challenges faced by the hydrogen industry include:

- A lack of regulatory certainty, and whether participating in the production, transportation and storage of hydrogen will require the same type of licensing currently required for natural gas under the Gas Act 1986;
- A lack of coherent and common technical standards, which would make skills and manufactured parts transferrable from one project to the next. Interoperability would unlock efficiencies and further development potential;
- A skills gap in the work force, which cannot be filled until there is some certainty that the skills will be required – both in terms of investing in and developing training programmes, but also in terms of uptake of any programmes offered. There is potential here to also re-train workers from the oil and gas industry, which has recently seen significant job cuts with more expected over the coming years; and
- A lack of developed supply chains – both because much of the technology is new and rapidly evolving, but also because without interoperability standards, it is nearly impossible to guess which design or technology will be a “winner”.

Certainty in these areas, or at the very least a direction of travel and some transitional provisions for projects already in planning or development, will be key to giving investors and industry the certainty they need to make financial investment decisions on specific projects, and to invest in the development of supply chains and skills that will be required to deliver a robust hydrogen economy.

## NEXT STEPS

"The question will be how these projects can be commercialised and rolled out into our daily lives. The UK's Hydrogen Strategy will have a big role to play in enabling this and in overcoming barriers and challenges."

We hope to see the promised UK hydrogen strategy soon, but in the meantime, we have separately commented on the EU hydrogen strategy and the German hydrogen strategy which might give us a flavour of what to expect. We would hope that the following key areas would be covered:

- A clear path to decarbonisation of existing hydrogen production;
- Clarity over acceptance of hydrogen onto the gas grid, both in terms of technical requirements and legislative or regulatory requirements, as set out in licences and codes;
- Clarity on licensing requirements and roles, for example, whether hydrogen production, storage and transportation will require a licence, and whether National Grid's role as the gas transmission operator will be extended to encompass hydrogen, or whether a new regulated entity will be created;
- Planning routes for hydrogen projects to ensure that these are not tied up in local processes for years, delaying vital deployment; and

- Support schemes, particularly whether hydrogen projects will be able to bid for CFDs, or whether new subsidy schemes will be set up.

We note that on the date of publication, 3 March 2021, the UKHfCA's Position Paper is being launched, as mentioned above. We hope that this will be a useful stepping stone in getting closer to a clear UK hydrogen vision and strategy.

If you have any questions or comments on the issues raised in this article please do get in touch – we would love to hear from you!

**This is the fourth article in our 'Hydrogen – What is the hype about?' series, which provides an overview of the hydrogen sector and the strategy for its development in multiple jurisdictions. To read other articles in the series please [click here](#).**

To Opt In to WFW mailings and register for alerts on our forthcoming articles as soon as they are published, please email us [here](#).

[1] [HySpirits – Logan Energy](#).

[2] [Hydrogen-electric passenger aircraft flies for eight minutes in 'momentous' world first \(imeche.org\)](#).

[3] [Does the UK need a hydrogen strategy? – House of Lords Library \(parliament.uk\)](#).

[4] [Energy White Paper \(publishing.service.gov.uk\)](#).

[5] [Scottish Government Hydrogen Policy Statement – gov.scot \(www.gov.scot\)](#).

[6] Page 12, *ibid*; and [The Ten Point Plan for a Green Industrial Revolution \(publishing.service.gov.uk\)](#).



# WATSON FARLEY & WILLIAMS

[7] [Home – UK Hydrogen Strategy Now](#)

[8] [UK HFCA Webinar ‘The Case for Green Hydrogen’ on Wednesday 3rd March 2021](#)

[9] The Case for Green Hydrogen, as reported by [inspiratia > Renewables > EU Europe > UK > News > Hydrogen Association releases roadmap to reach 80GW of UK capacity by 2050](#)

[10] [Home | Zero Carbon Humber](#)

[11] [HyNet – Hydrogen Energy and Carbon Capture, Usage and Storage](#)

[12] [Plan for world-leading clean hydrogen plant in the UK – equinor.com](#)

[13] [Hydrogen is vital to tackling climate change – HyDeploy](#)

[14] BIG HIT

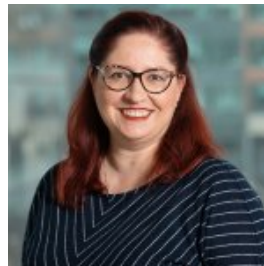
## KEY CONTACTS



**HEIKE TRISCHMANN**  
PARTNER • LONDON

T: +44 20 7863 8973

[htrischmann@wfw.com](mailto:htrischmann@wfw.com)



**MARIANNE ANTON**  
COUNSEL • LONDON

T: +44 20 3314 6330

[manton@wfw.com](mailto:manton@wfw.com)

### DISCLAIMER

Watson Farley & Williams is a sector specialist international law firm with a focus on the energy, infrastructure and transport sectors. With offices in Athens, Bangkok, Dubai, Dusseldorf, Frankfurt, Hamburg, Hanoi, Hong Kong, London, Madrid, Milan, Munich, New York, Paris, Rome, Seoul, Singapore, Sydney and Tokyo our 700+ lawyers work as integrated teams to provide practical, commercially focussed advice to our clients around the world.

All references to ‘Watson Farley & Williams’, ‘WFW’ and ‘the firm’ in this document mean Watson Farley & Williams LLP and/or its affiliated entities. Any reference to a ‘partner’ means a member of Watson Farley & Williams LLP, or a member, partner, employee or consultant with equivalent standing and qualification in WFW Affiliated Entities. A list of members of Watson Farley & Williams LLP and their professional qualifications is open to inspection on request.

Watson Farley & Williams LLP is a limited liability partnership registered in England and Wales with registered number OC312252. It is authorised and regulated by the Solicitors Regulation Authority and its members are solicitors or registered foreign lawyers.

The information provided in this publication (the “Information”) is for general and illustrative purposes only and it is not intended to provide advice whether that advice is financial, legal, accounting, tax or any other type of advice, and should not be relied upon in that regard. While every reasonable effort is made to ensure that the Information provided is accurate at the time of publication, no representation or warranty, express or implied, is made as to the accuracy, timeliness, completeness, validity or currency of the Information and WFW assume no responsibility to you or any third party for the consequences of any errors or omissions. To the maximum extent permitted by law, WFW shall not be liable for indirect or consequential loss or damage, including without limitation any loss or damage whatsoever arising from any use of this publication or the Information.

This publication constitutes attorney advertising.