Insight No 6

SH Hydrogen Quarterly Insight – July 2023

Welcome to Stephenson Harwood's sixth hydrogen quarterly insight which is aimed at bringing you up to speed on all new legal updates in the UK hydrogen sector and some of the most exciting hydrogen developments across the world.

Given the number of developments across the board, sit back, grab a cup of coffee and let us bring you up to speed on the most important issues you should be aware of in the sector.

From a legal perspective, our hydrogen-related work over the last number of years has been relatively straight forward. We worked primarily on collaboration and framework agreements, corporate transactions and demonstrator project agreements. There has however been a notable shift over the last 6-9 months as parties across the UK have started meaningfully progressing their projects. The production, transportation and sale of hydrogen is becoming more frequent and we are now involved in negotiating offtake agreements, undertaking project regulatory reviews, finalising FEED contracts and purchasing project equipment. The corporate transactions are as active as ever and the values of those deals are only increasing. For our team at Stephenson Harwood, it finally feels like the sector we have been talking about and supporting for several years is now really materialising. There has never been a more exciting time to be involved in this sector.

As hoped (and needed), the UK Government has also been progressing a number of different avenues. In particular, DESNZ issued several important hydrogen publications and announced the shortlisted projects for the hydrogen business model/net zero hydrogen fund allocation round 1. A massive congratulations to our clients and contacts who were successful and, of course, commiserations to the applicants who were not on this occasion.

The UK government published a revised version of the Heads of Terms ("**HoTs**") for the Low Carbon Hydrogen Production Business Model on 16 December 2022. We published our thoughts on the draft here[1] and also set out some further thoughts on the draft below.

The design of the second hydrogen business model/net zero hydrogen fund allocation round consultation closed on 30 June 2023 so we look forward to learning the changes being introduced in due course.

Most recently, DESNZ issued their draft UK Low Carbon Hydrogen Standard (LCHS) Version 3 for comment. The deadline for commenting on this draft is 31 July 2023.

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[1] Low carbon hydrogen production business model heads of terms update – useful but still much to do (shlegal.com)

Last month, DESNZ also published its private wire CfD guidance[2] and its CfD co-location guidance[3].

From the industry side of things, there are too many announcements to cover in this update but we have tried to cover as many as we could. As always, there is good news and some bad news to digest. The announcement that UK ministers scrapped plans to use the town of Whitby as a testing ground for hydrogen in domestic heating following objections from residents is another example of how difficult it is to decarbonise homes. Whereas in the transport sector, Toyota Motor confirmed that it will focus on selling hydrogen-powered trucks and cars in Europe and China and that it aims to sell 200,000 hydrogen vehicles by 2030.

I think it is important to conclude this introduction by flagging that the Climate Change Committee ("CCC") recently published their 2023 progress report to Parliament. It is ultimately a timely reminder to us all that while there is progress in the hydrogen sector, much more is needed. The CCC report sets out the steps other countries are taking in the global hydrogen race and ultimately demonstrates how the UK is failing to match the ambition of its peers. The CCC concludes (by once again echoing calls that have been made for several years by many) that the UK Government must ensure that timely policy development and investor clarity in hydrogen is prioritised to avoid being left behind.

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[2] Private Network Agreement - Generator Guidance | Low Carbon Contracts Company
[3] CfD Co-Location Generator Guidance | Low Carbon Contracts Company

Projects

As introduced above, the UK Government recently shortlisted 20 projects across England, Scotland and Wales totalling 250MW of capacity under the Hydrogen Business Model (HBM)/Net Zero Hydrogen Fund process. We will touch on two of them:

- ERM, a sustainability consultancy, is working on the Dolphyn Project, an innovative initiative to combine offshore wind power generation with offshore green hydrogen production. The pioneering 10MW commercial demonstrator project will be implemented at the existing Kincardine Floating Offshore Wind Farm, 15km off the coast of Aberdeen. The first phase of the project involves establishing a hydrogen production facility and a vehicle re-fueling station, along with a solar farm to be located on the nearby former landfill site. ERM's target is to have a 2MW prototype operational by 2024, with the full-scale 10MW facility going online by 2026. The government's backing under the HBM will initially create 400 job opportunities for the local economy, with the potential for more as the project expands.

- UK energy infrastructure developer, Carlton Power, has partnered with renewables investor, Schroders Greencoat, to develop green hydrogen production projects. The two firms have formed the Green Hydrogen Energy Company ("GHECO"), a green hydrogen production company backed with an initial £200m (€226m) commitment from Schroders Greencoat funds, with a plan to build a 500MW project portfolio in the UK by 2030. GHECO's initial projects are expected to be in Trafford in Greater Manchester, Barrow-in-Furness (Cumbria) and Langage, near Plymouth (Devon). Carlton Power has blue-chip industry off-takers such as Kimberly-Clark lined up so this funding provides another key stepping stone towards hydrogen production. Subject to final agreements with the government and investment decisions for each project, Carlton Power is aiming to start construction of each site before the end of the year.

Further to our April 2022 edition where we reported on Equinor's formal submission of plans for its Hydrogen to Humber Saltend project, we note that German contractor Linde Engineering has won the front-end engineering and design contract. Meanwhile BOC (part of Linde) has been awarded an operation and maintenance services contract for the project. This is further evidence that progress continues apace on this heavily backed project.

Elsewhere in the Humberside area, Wood PLC has partnered with Centrica Storage to evaluate the feasibility of transforming its Easington gas processing terminal to a low-carbon production hub. This is another exciting development for Humberside, identified as a key industrial hub in delivering the UK's net-zero ambitions.

Marine

There have been a number of exciting recent developments to combine offshore wind with clean hydrogen production. Elsewhere, the marine industry continues to develop hydrogen solutions as an alternative to traditionally high-carbon bunkers.

Hydrogen production

- A Chinese offshore wind farm has tested a direct seawater electrolysis (i.e. without desalination) means of hydrogen production. The test was conducted using Dongfu No. 1, a floating offshore platform for hydrogen production developed by the Chinese Academy of Engineering and Dongfang Electric Corporation on the Xinghua Bay offshore wind farm. It is the world's first test of this type of production.
- Subsea 7 and offshore hydrogen contractor OneSea secured GBP 150,000 of funding from the Scottish government to investigate the commercial and technical feasibility of linking a floating hydrogen production system with a floating offshore wind farm.
- A Shell and Eneco joint venture, CrossWind, has ordered a fuel cell system from Canadian power company Ballard Power Systems. The system will be integrated into the Hollandse Kust Noord offshore wind farm and will use water electrolysis to convert wind power into green hydrogen for energy storage. Ballard's containerized fuel cell power solution will have a peak power capacity of 1 MW, and delivery is expected in 2024.

Bunkering Solutions

- Spanish energy company Cepsa and Norwegian chemical company Yara Clean Ammonia (YCA) have agreed a strategic partnership to launch the first clean hydrogen maritime corridor between the ports of Algeciras and Rotterdam. The partnership will mean that YCA will supply Cepsa with clean ammonia volumes, and Cepsa will deliver clean hydrogen to its customers.

- Shipping consortium Ship-AH2oy has secured EUR 15 million funding under Horizon Europe to develop and demonstrate a hydrogen power and heat solution for shipping. The solution will introduce high-temperature solid oxide fuel cells (or "SOFC") and liquid organic hydrogen carrier (or "LOHC") technology for marine use. This will result in a scalable and sustainable power and heat generation system on board ships with a total energy efficiency of 85%. The concept will be demonstrated onboard Edda Wind's Commissioning Service Operation Vessels, Østensjø Rederi. Horizon Europe is a funding programme run by the European Climate Infrastructure and Environment Executive Agency.

Rail

Hydrogen continues to be a key component of decarbonisation and innovation in the rail sector. Progress continues to be made internationally, with new hydrogen-powered rolling stock being manufactured in multiple different regions. The largest rolling stock companies are teaming up with governments who both clearly see the potential of hydrogen in the rail industry in the medium to long term.

Key updates in the rail sector include:

- Following the COP26 Summit in November 2021, Scotland has been developing its own fleet of hydrogen trains with the hope that these will be deployed between 2026 and 2027. This project is seen as a cornerstone of the Scottish government's pledge to ensure the passenger rail industry is decarbonised by 2035. The project is now in its second phase (out of five). The subsequent phases will be planning the operation of the trains on Scotland's railway, pilot service operations and finally deployment.
- The FCH2Rail consortium, which includes Spanish rolling stock manufacturer CAF, begun main line testing on a retrofitted commuter train in June. The hybrid train can be powered by both overhead electrification and hydrogen fuel cells. The main line track through the Pyrenees was selected as the test location due to its steep gradients so that the new power generation systems are fully challenged.
- In May, China Railway Rolling Stock Corporation (CRRC) announced "the world's first hydrogen-powered urban train". Using a combination of hydrogen fuel cells and supercapacitors, the train can travel up to 373 miles on a single charge and reach speeds of 99 miles per hour. The trains have additional safety features to monitor, diagnose and protect the hydrogen storage and fuel cell systems. More recently, CRRC has unveiled what it describes as being the "world's most powerful" hydrogen-powered locomotive, which has been converted from diesel power. CRRC claims the locomotive can run for up to 190 hours without refuelling.
- The Polish Office of Rail Transport has approved the use of a hydrogen-powered shunting locomotive. This is the first time that a hydrogen-powered vehicle has been approved to operate in Poland. The locomotive has two hydrogen fuel cells, with a capacity of up to 175kg of hydrogen. It is hoped that this will allow the locomotive to operate for 24 hours before refuelling is required.

Following the signing of a Memorandum of Understanding with Saudi Railway Company last year, Alstom is planning to trial a hydrogen train in Saudi Arabia later this year, with the goal of the first train arriving before the end of 2023. Alstom has already demonstrated that a hydrogen train can travel over 1000 kilometres without refuelling, claiming that this allows hydrogen to be a sustainable option for long distance travel. With multiple projects in the region, specifically NEOM and the GCC Railway project, there could be a considerable market for hydrogen trains.

Finance

Ohmium International

One notable example of recent equity investment in hydrogen sector was Ohmium International's $250 million equity raise which highlights how the growth in the Hydrogen sector is attracting interest not just at project level but also with engineering and manufacturing businesses. The US electrolyser manufacturer's fundraising was led by private equity firm TPG's Rise Climate fund, follows a $45m Series B funding round last year and will be used be expand its annual manufacturing capacity, deploy projects in the U.S., Europe, India and the Middle East, and boost its research and development programs.

NEOM

The viability of non or limited recourse financing has been given a significant boost by the announcement of the US$ 6.1 billion non-recourse financing for the NEOM green hydrogen and ammonia project in Saudi Arabia. The NEOM project sponsors, US industrial gases firm Air Products, Saudi state-owned Neom Green Hydrogen Company and Saudi renewables developer ACWA Power, have announced they have signed financing documents with a consortium of regional and international lenders to partially finance the US$ 8.4 billion project and that EPC arrangements for the project have also been agreed with Air Products.

The project, due to be operational in 2026, is targeting producing up to 600 tonnes per day of hydrogen from 4GW of solar and wind energy. A key component of the project however appears to be that the hydrogen will be used for green ammonia production and that the cornerstone offtake agreement will be a 30-year exclusive offtake agreement with Air Products for that ammonia.

Incentive Schemes

The last few months have seen developments with both the UK's Hydrogen Business Model and the EU's European Hydrogen Bank's allocations. The Hydrogen Business Model projects shortlisted will benefit from both upfront CAPEX support and revenue support during operation, but the allocation and general level of government support has not been without criticism. Whilst CfD style support for hydrogen offtake will provide significant boosts to revenue certainty for potential Lenders, the specific details of the Hydrogen Business Model have still not been finalised and there is significant doubt in the hydrogen community that the proposed timelines can be adhered to.

The European Commission recently released the draft terms and conditions for the European Hydrogen Bank's pilot €800m auction due to launch next year. Interesting elements of the proposed terms, which are likely to be attractive to Lenders, include a proposed ceiling price of €/kg ($4.4/kg) (higher than the $3/kg used under the US Inflation Reduction Act) and a requirement for all bids to be supported with memoranda of understanding or letters of intent in respect of hydrogen purchase Agreements from offtakes. The latter, in particular, should go some way to ensuring auction winners will have the certainty of revenues required for non or limited recourse debt financing.

Aviation

A report by the World Economic Forum has suggested that the aviation industry will need to invest between $700 billion and $1.7 trillion to provide sufficient infrastructure for hydrogen and electric aircraft by 2050. According to the report, around 90% of this spend will be required for off-airport infrastructure to generate sufficient power and hydrogen liquefaction needed to support hydrogen and electric aircraft. The report underlines the sheer scale of the challenge involved in supporting the green transition across the industry beyond the technological advances required in aircraft types.

Cranfield Aerospace Solutions, a company focussed on aerospace design improvements and certification, has announced its intention to merge with Britten-Norman, a UK commuter plane manufacturer, with the stated ambition of becoming a leading manufacturer of zero-emission aircraft. The first project will see the company convert for hydrogen propulsion the 9 seat B-N Islander aircraft with planned certification for passenger-carrying service in 2026.

The leading names in hydrogen aircraft development, ZeroAvia and Universal Hydrogen, have both undertaken tests on larger scale hydrogen powertrain prototypes. ZeroAvia has been testing its prototype on a 19 seat Dornier 228 and has just taken delivery of a decommissioned 76 seat Q400 for hydrogen powertrain conversion. Universal Hydrogen has started test flights on a Q300 aircraft.

In Australia, partners from the aviation industry and academia have come together to form The Hydrogen Flight Alliance. The HFA is looking to convert a 19 seat Beech 1900D commuter aircraft for hydrogen-electric flight by 2026.

Automotives

As discussed in previous updates, the Government's zero-emission vehicle mandate will require concerted and consistent buy in from public and private concerns alike in order to be met. The zero emissions mandate, which sets targets for a percentage of manufacturers' new car and van sales to be zero-emission each year from 2024 and pledges to end the sale of all new, non-zero emission road vehicles by 2040, will catalyse continued technological and financial development in the UK's hydrogen and automotive sectors.

Light Commercial Vehicles

- BMW has started deploying a fleet of 100 iX5 Hydrogen test vehicles for international demonstrations and trials. Impressively, the BMW Group has produced the fuel cell systems for the pilot fleet at its in-house competence

centre for hydrogen in Germany, using Toyota-supplied cells assembled into a full stack. This technology is one of the core elements in the BMW iX5 Hydrogen and generates a high continuous output of 125kW.

- Green automotive company First Hydrogen has announced that SSE plc will be the first UK utility to trial use of its hydrogen-powered vehicle. This is the first time the vehicle has been used for real-life fleet operations and enables First Hydrogen to gather data on fuel consumption, usage, and efficiency. The information will be used to calculate total cost of ownership, a key consideration for fleet operators when purchasing vehicles.
- The hydrogen-powered light commercial vehicle (LCV) will be based at the SSE site at Aberdeen, which neighbours a hydrogen fuel station. This will enable refuelling within 5-7 minutes, compared with battery electric vehicles (BEV), which typically take hours to recharge.
- The fleet operator road trials have been co-ordinated through the Aggregated Hydrogen Freight Consortium (AHFC), which is working with large UK fleet operators to accelerate the adoption of hydrogen transport through vehicle deployment and refuelling infrastructure development.

Refuelling

- The development of plans by British start-up Element 2 means that the UK will have a nationwide network of hydrogen refuelling stations operational at the end of this year.
- Element 2 has been building its business plan since 2019 and in the next few months will move to the operational phase with five sites open, followed by 30 further locations "*operational or under construction*" by the end of the year.
- "*Then we should be able to say to fleet operators that we have a national network with about 100 miles between stops, which in a vehicle with a range of between 300 and 400 miles isn't a problem logistically*," said Brendan Bilton, chief technology officer at Element 2.
- The network was created with HGVs and LCVs in mind, but private cars will also be able to use the network.

Government Funding

- More than £77 million in joint Government and industry funding to develop zero-emission vehicles including fire engines and ambulances.
- The HYER POWER project, to develop a hydrogen fuel-cell range extender for specialist electric vehicles in demanding roles like fire engines and ambulances, is just one of seven pieces of work across the UK that are getting joint Government and industry backing. Other winning projects include HEIDI, for the development of a novel fuel cell/battery hybrid powertrain on a double-decker bus and FCVGEN2.0, which is a project to develop a hydrogen powered version of the Ford Transit van.
- The schemes will support more than 4,400 jobs across the UK over the next decade.

Regulation

Offshore hydrogen projects are increasing in number and scale. The potential benefits of using electricity derived from offshore wind resources, with the hydrogen produced offshore and then transported onshore via pipeline, are becoming clearer and more obtainable. There are of course however regulatory barriers regarding the ins-and-outs of planning and licensing, safety, storage, transport and access to end markets and customers. The UK Government has acknowledged the lack of regulatory certainty faced by the UK hydrogen market as a whole and is seeking to redress this uncertainty "*in the early 2020s*".

The DESNZ Consultation

The regulation of first-of-a-kind offshore hydrogen projects was the subject of a Department for Energy Security and Net Zero ("**DESNZ**") public consultation which closed in May (the "**Consultation**").

The Consultation is not proposing an entirely new and distinct regulatory system for offshore hydrogen. Instead, the rationale for the Consultation is that, while the established regulatory framework for offshore oil and gas does not specifically cover offshore hydrogen, certain amendments achieved through secondary legislation could bring offshore hydrogen within scope of this regime.

In summary, the Consultation's proposals focus on the following areas:

(i) Approval regime for offshore hydrogen pipeline construction and use

Offshore oil and gas is governed by the Petroleum Act 1998 (the "**Petroleum Act**"). Part 3 of the Petroleum Act requires developers planning to construct and use subsea offshore pipelines for oil, gas or carbon dioxide

to apply to the North Sea Transition Authority ("**NSTA**") for a Pipeline Works Authorisation ("**PWA**").

DESNZ proposes extending the current Part 3 PWA regime to provide a regulatory regime for offshore hydrogen pipelines by making an order using the powers conferred under sections 24 and 25 of the Petroleum Act. Consequently, a developer of an offshore hydrogen pipeline would need to apply for a PWA.

By extension, if offshore hydrogen pipelines fall within the Part 3 PWA regime, the existing decommissioning provisions in Part 4 of the Petroleum Act would apply to hydrogen pipelines as well under the purview of the Offshore Petroleum Regulator for Environment & Decommissioning ("**OPRED**").

(ii) Licensing of offshore hydrogen storage

Section 2(3) of the Energy Act 2008 (the "**Energy Act**") prohibits certain offshore activities in relation to "gas", including importation and storage activities, without a licence from the NSTA. Section 2(4) of Energy Act defines gas by reference to a few listed substances (like methane), mixtures of such substances or under section 2(4)(e) any further substance designated as an in-scope gas by way of a statutory order. In the absence of the latter, hydrogen does not fall within this definition and is therefore outside of the licensing regime referred to in the Energy Act and which is further set out in the Offshore Gas Storage and Unloading (Licensing) Regulations 2009 (the "**Offshore Storage Regs**").

DESNZ proposes bringing the storage of offshore hydrogen within the scope of the Energy Act and Offshore Storage Regs licensing regime by designating hydrogen as a gas under section 2(4)(e) of the Energy Act, meaning that the NSTA would be responsible for issuing licences for offshore hydrogen storage installations.

Expanding the Energy Act's definition of gas would also mean that offshore hydrogen storage would fall with the definition of an "offshore installation" under section 44 of the Petroleum Act, with the effect that the Part 4 decommissioning provisions regulated by OPRED, referred to above in relation to offshore hydrogen pipelines, would also apply to offshore hydrogen storage installations.

(iii) Environmental regulations

Unsurprisingly, in addition to a range of health and safety regulations under the broad umbrella of the Health and Safety at Work Act 1974, offshore oil and gas activities are subject to a variety of environmental impact assessments, which empower the government to intervene in the consent and licensing process for such offshore projects, including:

a) The Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020 ("**the 2020 Offshore EIA Regulations**"), which allows the government to consider the environmental impact of "offshore projects" (including oil and gas exploration, production and storage activities) when considering granting consents to such projects; and
b) The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 ("**the Habitats Regulations**"), which requires the government to undertake an assessment of proposed activities on a protected site before granting any licence, consent, authorisation or approval where that activity is likely to have a significant effect on the site.

The Consultation does not propose amendments to these regulations, however:

1. Extending the Petroleum Act's Part 3 PWA regime to the construction and use of offshore hydrogen pipelines would require the government to undertake a Habitats Regulations assessment before the NSTA grants any PWA; and
2. Expanding the Energy Act's definition of gas to include hydrogen would bring:
    a. offshore hydrogen pipeline activities; and
    b. licensable offshore hydrogen activities listed in section 2(3) of the Energy Act, including offshore hydrogen storage activities under the Offshore Storage Regs,

within the scope of the 2020 Offshore EIA Regulations.

Next steps

A summary of stakeholder's feedback to the Consultation and DESNZ's conclusions is expected to be published in Q3 of this year.

The results of the Consultation will be welcomed but the broader hydrogen market still faces regulatory uncertainty in a variety of areas. For example, the Consultation does not cover offshore hydrogen

production and manufacturing, or any onshore hydrogen regulation.

Policy

The Low Carbon Hydrogen Agreement has recently been published by the Department for Energy Security and Net Zero – as anticipated, it has come in at a healthy 500+ pages and so stamina is important!

Here are some of the key points that have occurred to us in our initial review:

Qualifying volumes

By way of reminder, support from the LCCC will only be given to Qualifying Volumes of hydrogen. Qualifying Volumes are volumes of hydrogen that:

- have been purchased by a Qualifying Offtaker; and
- comply with the Low Carbon Hydrogen Standard ("LCHS"),

while Non-Qualifying Volumes are those that:

- have been purchased by a Non-Qualifying Offtaker;
- do not meet the LCHS; or
- are volumes where a Renewable Transport Fuel ("RTF") Certificate has already been claimed.

Further detail/confirmations have been included on Non-Qualifying Offtaker volumes:

- sales to Risk-taking intermediaries do not qualify for a subsidy;
- blending into the gas grid: sales do not currently qualify for a subsidy, but the door has been left open here as DESNZ has stated that it will consider how to support hydrogen blending into the natural gas grid through the LCHA should the government to decide to allow blending; and
- exports of hydrogen: sales of hydrogen exported for use outside UK do not qualify for a subsidy, however the subsidy will not be restricted or adjusted where hydrogen derived products are exported.

Nothing here has changed since the heads of terms (other than a more detailed regime now exists for how an Qualifying Offtaker is certified by the LCCC). We are assuming that the offtakers proposed by the first round of HBM applicants will ultimately be certified as Qualifying Offtakers (it would be surprising if, having taken an applicant this far down the process, a proposed offtaker then didn't make the cut!).

The draft contract does, however, appear to close to door to this subsidy being available for most other types of project in the near future (although the door does appear to be kept open for blending).

Whilst the same offtaker can be a Qualifying and a Non-Qualifying Offtaker, it is perhaps disappointing that offtakers are not permitted to sell on de minimis amounts of hydrogen as qualifying volumes. This would help offtakers deal with short term plant outages when they cannot use the hydrogen being produced (and it would be cost neutral for the government as that hydrogen would still count against the production cap that acts as a cap on the sums that the LCC has to pay to each Producer).

Permitted Annual Sales Cap

The termination right for exceeding the Permitted Annual Sales Cap has been relaxed slightly – from exceeding the cap in any 2 years to exceeding the cap in any 3 years.

Direct Export Volume

If a Producer has sold Hydrogen produced by the Facility to an offtaker who exports such Hydrogen for use outside the UK or who is based outside the UK in a Billing Period, this will be a Direct Export Volume. Direct Export volumes don't necessarily have to comply with the Low Carbon Hydrogen Standard, however we anticipate that Producers will want to flow this through the documents to the offtaker (as a requirement on the offtaker to declare/accept contractual obligations around what it is doing with the hydrogen).

"**Feedstock Purposes**" means the use of Hydrogen produced by the Facility: as an input material to produce or manufacture any product(s) with a different chemical composition to Hydrogen (including ammonia, petrochemicals, and synthetic fuels); or not as a fuel for heat, power, or combustion purposes, in either case as determined by the LCHA Counterparty, acting reasonably.

The floor price for hydrogen as a feedstock is basically 1.2 times the gas reference price (it is the gas reference price when hydrogen is used as a replacement for heat etc).

To put it another way, hydrogen can be used to produce ammonia, but in all likelihood the subsidy received by the Producer will be less than if the hydrogen was used to produce heat.

Change in Law

The definition of Foreseeable Change in Law runs to 3 pages and has the potential to cause a lot of uncertainty. The mechanics do follow those in AR4

(allocation round 4 – the most recent contract for difference for offshore wind), but it is probably fair to say that the legislative landscape around hydrogen is far more fluid than it is in offshore wind. For example, one issue is that Foreseeability runs from the Agreement Date, but no doubt DESNZ will expect that commercials matters such as price will need to be settled prior to this date (perhaps the date of the final HBM tender submission?), which means that developers will need to be live to any changes not just in law but also in white papers and so on right up to the final day of signature.

General complexity of hydrogen projects

The definition of Industry Documents is worth noting because it shows how complex hydrogen is in comparison to offshore wind.

In AR4: "**Industry Documents**" means all agreements, codes, standards and instruments regulating the generation, transmission, distribution, supply or trading of electricity in Great Britain, including the Grid Code, the SOTO Code, the BSC, the Code Subsidiary Documents, the CUSC, the Master Registration Agreement, any Distribution Code, any Distribution Connection and Use of System Agreement and any other connection or use of system agreement with a Transmission Licensee or Licensed Distributor and "**Industry Document**" shall be construed accordingly.

In the LCHA, "**Industry Documents**" means all agreements, codes, standards and instruments other than the LCHS regulating:

c) [the production, transmission, distribution, supply and trading of Hydrogen in the United Kingdom];
d) the distribution, supply and trading of electricity in the United Kingdom, including the Grid Code, the SOTO Code, the CUSC, the Master Registration Agreement, any Electricity Distribution Code, any Distribution Connection and Use of System Agreement and/or any other connection or use of system agreement with an Electricity Transmission Licensee or Licensed Electricity Distributor;
e) the distribution, supply and trading of Gas in the United Kingdom, including the Uniform Network Code, the Independent Gas Transporter Network Codes and/or any other connection or use of system agreement with a Gas Licensed Transporter or Gas Licensed Shipper;
f) the distribution, supply and trading of water in the United Kingdom, including the Water Act, the Water Industry Act, the Market Arrangements Code, the Wholesale Retail Code, and the Water Supply Regulations; and
g) and for CCUS-Enabled Facilities only, the capture, temporary storage, permanent storage, distribution, transportation, and trading of CO2 in the United Kingdom, including any CCS Network Codes,

and "Industry Document" shall be construed accordingly.

That definition gives 3 (or 4 for CCUS projects) additional categories of documents – this just shows just how wide the scope of a hydrogen project really is.

Restricted Share Transfer

The concept of Restricted Share Transfer is interesting as it prevents share transfers to brewers, companies with an interest in 'gaming' (which looks like an outdated term – presumably this is intended to be a proxy for gambling, but it could equally be read as covering computer gaming), and companies that have 'been convicted of a criminal offence relating to the conduct of its business or profession'. This type of restriction on share transfers is fairly common in public private partnerships involving schools and hospitals, for fairly obvious reasons, but the justification looks less obvious here.

Invoicing

The invoicing process is very data heavy – the invoices require lots of supporting data (see definition of "**Payment Calculation Data**"). This will not be a trivial exercise unless most (if not all) of it can be automated.

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Staying in touch

Having already been instructed on a high number of UK and EU-based hydrogen projects over the last 18 months, Stephenson Harwood has a leading team of specialist lawyers with true strength in depth in all aspects of hydrogen production, storage and transportation across a broad range of sectors.

If there is anything arising from our newsletter or if you have any questions about the content covered in our online seminar series, we are very happy to set up a zoom call to discuss or, alternatively, please email us.

STEPHENSON HARWOOD

Our previous hydrogen seminars can be found here.

Episode 1 discussed the terminology, technology and why hydrogen is becoming an essential part of sustainable energy strategies.

Episode 2 explored major UK hydrogen projects with hydrogen developers, who discussed feasibility studies, construction, production, storage, usage and other project considerations.

Episode 3 discussed the use of hydrogen and batteries in the energy transition and what issues must be addressed for the technology to achieve its market potential.

We will shortly be announcing episode 4.

Information contained in these insights and seminars should not be applied to any set of facts without seeking legal advice.

If you would like your technology, company and/or project listed in our next insight, please let us know and we will happily discuss it further.

STEPHENSON HARWOOD