



## INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

### IPHE Country Update September 2023: United Kingdom

|                            |   |
|----------------------------|---|
| <b>Name</b>                | Alexandra Jenkins                       |
| <b>Contact Information</b> | Alexandra.Jenkins@energysecurity.gov.uk |
| <b>Covered Period</b>      | April to October 2023                   |

#### 1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

Between April and August 2023, the UK Government published a number of hydrogen policy documents. These were summarised in the [August 2023 Hydrogen Strategy Update to the Market](#) including:

- Publishing the [Government's response to the consultation on hydrogen T&S infrastructure](#) in August, setting out high-level design options for hydrogen transport and storage business models and developing an approach to strategic planning for hydrogen T&S infrastructure.
- Publishing an [offshore hydrogen regulation consultation](#), setting out initial regulatory proposals for offshore hydrogen pipelines and storage. This consultation closed in May 2023 and we published a response on 6 September 2023.
- Publishing an updated [UK Hydrogen Net Zero Investment Roadmap](#), showcasing the UK's hydrogen offer and spotlighting investment opportunities across the hydrogen value chain.
- Publishing an updated version of the [UK's Low Carbon Hydrogen Standard](#).
- Publishing a [call for evidence on price-based competitive allocation for low carbon hydrogen production](#) to gather evidence to inform the transition and design of the future competitive allocation policy.

In addition to the documents above, the UK Government:

- Introduced legislative measures in the [Energy Bill](#), which is currently going through Parliament, intended to support the design of the new hydrogen transport and storage business models by 2025.
- Published in August 2023 the [draft terms of the UK's Low Carbon Hydrogen Agreement](#), the contract underpinning the hydrogen production business model.
- Invited [17 electrolytic hydrogen production projects to negotiations](#) as part of the first electrolytic hydrogen allocation round, alongside continued due diligence. The 17 projects total 262MW and are located across England, Scotland and Wales.
- Published on 15 September a [consultation on hydrogen blending](#), to help inform a strategic policy decision on whether to support hydrogen blending of up to 20% by volume into GB gas distribution networks.
- Signed a Joint Declaration of Intent, launching the **UK-Germany Hydrogen Partnership** on 26 September. The partnership will accelerate the



## INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

deployment of hydrogen projects in the UK and Germany, promote the development of regional and global hydrogen markets and advance bilateral and multilateral research and innovation efforts.

### 2. Hydrogen and Fuel Cell R&D Update

The UK has a £1bn Net Zero Innovation Portfolio (NZIP) which funds R&D projects across a wide range of areas relating to Net Zero. A few developments on the hydrogen side to highlight are as follows:

- The **Low Carbon Hydrogen Supply 2** competition published **feasibility studies from 22 Phase 1 projects** in March 2023, showcasing the breadth of work taking place across the UK and the new insights those projects have generated.
- The **Hydrogen BECCS innovation programme competition** Phase 1 scoping projects concluded in January 2023, with 22 summary reports published in June 2023.
- The **Industrial Fuel Switching 2 competition** phase 1 reports published in June 2023, with a range of sectors and varying uses of hydrogen featured across the 21 studies.

### 3. Demonstration, Deployments, and Workforce Developments Update

#### Demonstration

- The five winners of follow-on funding in the NZIP **Low Carbon Hydrogen Supply 2** competition were announced in March 2023. They have been allocated a combined total of £19.4 million to demonstrate novel technologies and move them closer to commercial deployment. There are presently 10 demonstration projects ongoing.
- The NZIP [Industrial Hydrogen Accelerator](#) programme awarded Stream 2B funding for innovation projects that can demonstrate end-to-end industrial fuel switching to hydrogen in September 2023. This supports an EON-led project on steel and an EDF-led project supporting decarbonisation of the asphalt and cement production industry and developing nuclear derived hydrogen production at Heysham 2 power station. The programme also [awarded £3.1m in funding to H2GO Power Ltd](#) to demonstrate a full system including electrolysis, low pressure storage and industrial heat generation using hydrogen.
- The NZIP **Hydrogen BECCS innovation programme competition** announced details of the 5 demonstration projects being supported in Phase 2 of the programme in June 2023. 5 project winners have been awarded a total of £21.2 million to turn biomass and waste, such as sewage, into hydrogen with carbon capture.
- The £10m NZIP [Green Distilleries Competition](#) is progressing [3 demonstration](#) projects.
- In September, the **Red Diesel Replacement programme** awarded phase 2 demonstration support to 6 projects that will demonstrate an end-to-end low-carbon solution to replace red diesel-using technologies on construction and mining or quarrying sites.



## INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

- The **Industrial Fuel Switching 2 competition** in June 2023 announced that £49.7 million funding was awarded to **13 Phase 2 projects**, these projects will support the physical demonstration of fuel switching or fuel switch enabling solutions. While some projects use other fuels, Phase 2 provides a total of £19.7 million funding across 6 hydrogen projects to demonstrate fuel switching solutions within industry.

### Workforce

- In July 2023, we established a **Jobs, Skills, and Supply Chains Working Group** under the UK Hydrogen Delivery Council which is developing a strategic approach to the development of skills to ensure UK near and long-term needs are addressed.
- We have undertaken a **hydrogen workforce assessment** (September 2023) which looks at projected labour demand across occupations, drivers of gaps (recruitment & retention challenges, competition for skills), the effectiveness of current government/industry actions (further education, apprenticeships etc), and additional actions to address these issues.
- The UK's **Green Jobs Delivery Group**, which brings together government, industry and academia, is driving the delivery of the UK 'Green Skills' agenda and ensuring a cross-sectoral view of the common and specific workforce challenges, skills gaps, and potential interventions. It will be publishing a Net Zero and Nature Workforce Action Plan in 2024, to include recommendations on what actions government and industry can take to support hydrogen skills.
- We have joined **the IPHE Skills Task Force** as an observer (July 2023).

### 4. Events and Solicitations

- **UK-Germany Hydrogen Partnership Conference**, 26 September – attended by Lord Callanan, Minister for Energy Efficiency and Green Finance (UK Department for Energy Security and Net Zero)

### 5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

#### **UK Department for Energy and Net Zero:**

- Through the UK government's **£1bn Net Zero Innovation Portfolio (NZIP)**. 2021-2025, we continue to invest in innovation to **accelerate the commercialisation of innovative, low-carbon technologies**, systems and business models. Some examples of recent projects are provided above in the R&D section.

#### **UK Department for Transport:**

- Launched in 2020, the UK's first (and only) [Hydrogen Transport Hub](#) is collocating the supply of hydrogen with demand from road vehicles, aviation and maritime. The most recent projects (sharing £8m of public funding) will use hydrogen via fuel cells for use in vans and supermarket delivery trucks, as well as through hydrogen combustion engines for airside specialist vehicles and handling equipment. Government is also supporting the development of



## INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

new skills in the area, with £300k funding for Tees Valley Combined Authority to upskill the local workforce.

- [Zero Emission Road Freight Demonstrator \(ZERFD\) programme](#) will demonstrate multiple zero emission HGV technologies, including hydrogen fuel cell, at-scale on UK roads over the coming years. The programme will build an evidence base on which technology, or technology mix is best suited for specific HGV use cases, deploying hundreds of zero emission HGVs alongside their refuelling and recharging infrastructure. Winning bids will be announced shortly.
- The **£80m [Zero Emission Vessels and Infrastructure \(ZEVI\) competition](#)** announced winning bids [on 11 September](#) at the start of London International Shipping Week 2023. Winners included one hydrogen and one methanol project, worth a combined £8.6m. The ZEVI competition will provide funding until March 2025 to cover construction of infrastructure and vessels, ahead of an unfunded demonstration period of three years in a fully operational environment to March 2028.
- The [Clean Maritime Research Hub competition](#) was launched on 6 February to support early research in clean maritime. UK SHORE and the Engineering and Physical Sciences Research Council (EPSRC) will jointly allocate £7.4m funding for a competition to establish the flagship Hub. The winning Hub, made up of a consortia of research organisations, [was announced on 14 September at London International Shipping Week](#) and will run from September 2023 to March 2027 with the purpose of addressing early research challenges in clean maritime, including low and zero-emissions fuels, energy sources and vessel technologies.
- The winners of the third round of the [Clean Maritime Demonstration Competition \(CMDC3\)](#) were announced on 15 February. Over £60m has been allocated to 19 projects to conduct technology and system demonstrations in clean maritime solutions between April 2023 and March 2025, with six projects exploring the use of hydrogen and/or hydrogen derived fuels.
- The fourth round of the [Clean Maritime Demonstration Competition \(CMDC4\)](#) opened for applications on 2 August and will close on 27 September. CMDC4 will allocate £34m to real-world demonstrations, pre-deployment trials, and feasibility studies of innovative clean maritime solutions. CMDC4 winners will deliver from April 2024 to March 2025.
- On 8 September 2023, the [Zero Emission Bus Regional Areas \(ZEBRA\) 2 scheme](#) was announced. It will provide up to £129m funding for LTAs in England (outside of London) to support the introduction of hundreds of ZEBs (either battery electric or hydrogen fuel cell) and associated infrastructure. Funding will be awarded to winning applications in March 2024.

### 6. Regulations, Codes & Standards, and Safety Update

As mentioned above, in April 2023, the UK's Department for Energy and Net Zero published the [Offshore Hydrogen Regulation Consultation](#) to seek views on legislative proposals for offshore hydrogen pipelines and storage, which closed for responses on 22 May 2023.

- The Government response to this consultation was published on 6 September 2023. Recognising the significant stakeholder support for the consultation



## INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

proposals for offshore hydrogen pipelines and storage, the government proceeded with the proposed secondary legislation changes by laying a single statutory instrument on 6 September 2023.

- The legislative changes will grant the North Sea Transition Authority (NSTA) powers to issue Pipeline Work Authorisations for the construction and use of offshore hydrogen pipelines and issue licences for offshore hydrogen storage. The changes will also enable the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to be responsible for relevant offshore environmental impact assessments, habitats assessments and regulating the decommissioning of relevant infrastructure.

Following the publication of Version 2 of the guidance on the UK's **Low Carbon Hydrogen Standard** in April 2023, the UK government will be publishing Version 3 of the [Low Carbon Hydrogen Standard](#) later in the year.

The [Consultation on a Low Carbon Hydrogen Certification Scheme](#) closed in April, and the UK government will be publishing its response later in the year.