



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update November 2022: United Kingdom

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Covered Period	April – November 2022

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

In July 2022, the UK Government published a number of documents which covered new initiatives on hydrogen. These were summarised in the [Hydrogen Strategy Update to the Market \(July 2022\)](#) and include:

- Further details on the UK's **hydrogen production strategy**.
- The appointment of Jane Toogood (JM) as the UK Government's **Hydrogen Champion**. In this role, Jane is engaging with stakeholders across the UK hydrogen economy to develop an understanding of the key challenges for the deployment of hydrogen projects and scaling up of the UK hydrogen economy, and the economic opportunities hydrogen presents.
- Expanding the scope of the **Renewable Transport Fuel Obligation (RTFO)** to include the option of using grid transmitted renewable energy in hydrogen production for use in transport. Since the start of 2022 the scheme was also expanded to support the use of hydrogen supplied into the maritime and rail sectors.
- Launching the [first joint electrolytic hydrogen allocation round under the Hydrogen Production Business Model and Net Zero Hydrogen Fund](#).

In July 2022, the UK Government also launched the [Review of Electricity Market Arrangements \(REMA\) programme](#) which is assessing options for delivering an enduring market framework that works for our businesses, industry, and households. This assessment will also consider how electricity markets can support hydrogen in the power system.

In August 2022 the UK Government published a [consultation on hydrogen Transport and Storage \(T&S\) infrastructure](#), which set out the UK's expectations around how T&S infrastructure will develop from the mid-2020s onwards. The consultation sought the views of stakeholders on **high-level design options for business models aimed at supporting investment in hydrogen T&S infrastructure** which will be designed by 2025.

2. Hydrogen and Fuel Cell R&D Update

In July 2022, the UK Government published its [Hydrogen Sector Development Action Plan](#) which outlines what the UK has learned about key areas of sector development since publication of the Hydrogen Strategy and actions that government and industry are taking to maximise economic opportunities in UK hydrogen.

In August 2022 the UK Government published an [external analysis commissioned from AFRY](#) to understand the **role that long-duration electricity storage, primarily large-scale hydrogen storage, could play in the energy system**, how much may be required over periods of time, and the benefits of different technologies.



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

In April 2022, BEIS and the Natural Environment Research Council announced in intention to **co-fund three projects under the £2.5 million [Environmental Response to Hydrogen Emissions programme](#)**, relating to soil sink response, climate atmospheres, air quality. A [Knowledge Exchange Fellow call](#) is also in review.

Innovate UK has **awarded £6 million to Hydrogen Innovation Initiative's Seed programme**, which spans the end-to-end hydrogen system and will pilot innovation support for businesses, generate enabling knowledge and capability and demonstrate and prioritise where future investments are required.

[Ofgem's Strategic Innovation Fund](#), delivered by Innovate UK, had approved 18 out of 40 projects to be taken forward to its Alpha phase as of July 2022. These projects began in August 2022, with **eight out of 18 projects (c. £3.5 million) being hydrogen related**.

3. Demonstration, Deployments, and Workforce Developments Update

In August 2022, the UK Government announced a [shortlist including four CCUS-enabled hydrogen projects](#) that will proceed to the due diligence stage of the Phase-2 **CCUS Cluster Sequencing Process** (Track-1) in August 2022.

Progress was also made in trialling out the option of hydrogen for heat. In May 2022, BEIS and Ofgem announced that they will be progressing two applications for a potential **hydrogen Village Trial** location to the detailed design stage (until Spring 2023), after which a final location will be selected. In October 2022, BEIS published an Open Letter, inviting Gas Distribution Networks to submit outline proposals for a possible **pilot hydrogen town** and other early deployment of hydrogen heating.

4. Events and Solicitations

Following the launch at COP26, **the Breakthrough Agenda Report was published in September 2022** by the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and the UN Climate Change High-Level Champions (UN HLAC). The overall report is focused on supporting stronger international collaboration to drive faster reductions in global greenhouse gas emissions, and it sets out key recommendations for global cooperation on clean hydrogen, including on standards, certification, demand creation, research and innovation (R&I), and finance and investments.

Progress on these actions in 2023 will be tracked through the next Breakthrough Agenda report from the IEA, IRENA and UN HLAC, and discussed through the Hydrogen Breakthrough dialogues co-led by the UK and USA (with further co-convenors likely to be agreed). Progress will be reviewed at the Clean Energy Ministerial (CEM) and Mission Innovation (MI) Ministerial and reported on at COP28 alongside an updated set of Priority International Actions for Hydrogen in 2024.

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

Support for hydrogen production & supply

- In May 2022, BEIS launched [strands 1 and 2 of the Net Zero Hydrogen Fund](#), and is reviewing applications.
- In July 2022, BEIS launched the [first joint Hydrogen Production Business Model / NZHF electrolytic hydrogen allocation round](#) which closed in October. Applications are being reviewed with the aim of publishing a shortlist of projects in early 2023.



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

- In May 2022, BEIS awarded contracts for 23 feasibility studies and 5 demonstration projects under the £60 million Net Zero Innovation Portfolio (NZIP) [Low Carbon Hydrogen Supply 2 programme](#), which funds innovative projects relating to the supply of hydrogen.
- In August 2022, BEIS announced [22 successful applicants](#) to the NZIP [Hydrogen BECCS Innovation Programme](#)

Support for hydrogen use

- In October 2022, launched [a sixth competition round of the Industrial Energy Transformation Fund](#), supporting industry to invest in energy efficiency and decarbonisation measures, including investments in hydrogen fuel switches.
- In October 2022, published [details](#) of the £26m Net Zero Innovation Portfolio (NZIP) [Industrial Hydrogen Accelerator competition](#). Nine feasibility projects will generate evidence on end-to-end industrial fuel switching to hydrogen.
- The £55m NZIP [Industrial Fuel Switching 2 competition](#) progressed 21 feasibility phase 1 projects, many using hydrogen or derivatives, and invited tenders by 25 November for demo projects.
- The £10m NZIP [Green Distilleries Competition](#) is progressing [3 demonstration](#) projects.
- The £40m NZIP [Red Diesel Replacement](#) competition is progressing [17 phase 1](#) projects, and several involve hydrogen use in construction, mining & quarrying equipment and dispensing of hydrogen at remote sites.
- In August 2022, the first funding competitions were launched as part of the [Zero Emission Road Freight Demonstrators \(ZERFD\)](#) programme to demonstrate zero emission HGV technologies, including hydrogen fuel cell, at-scale, on UK roads.
- In September, the Department for Transport and Innovate UK launched the [third round of Clean Maritime Demonstration Competition \(CMDC\)](#), funded by UK SHORE, allocating £60m for large technology and system demonstrations which includes hydrogen and hydrogen related fuels in scope.
- In October 2022, the Department for Transport launched a £20 million collaborative R&D competition in the [Tees Valley Hydrogen Transport Hub](#).

6. Regulations, Codes & Standards, and Safety Update

In July 2022, the UK Government published a final version of the [Low Carbon Hydrogen Standard](#), which is being implemented by projects applying to government funding schemes. BEIS has committed to ongoing reviews of the LCHS, the first of which will be published early in 2023.



Summary Country Update November 2022: United Kingdom

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles ¹		453		
FC Bus		68		
Fuel Cell Trucks ²		2		
Forklifts				•
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
70 MPa On-Site Production		10	•	•
70 MPa Delivered				•
35 MPa On-Site Production				•
35 MPa Delivered				
Stationary	Target Number ³	Current Status	Partnerships, Strategic Approach	Support Mechanism

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

² As above

³ Targets can be units installed and/or total installed capacity in the size range indicated



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

Small ⁴				•
Medium ⁵				
Large ⁶				
District Grid ⁷				•
Regional Grid ⁸				
Telecom backup				
H₂ Production	Target⁹	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fossil Fuels ¹⁰				
Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)				
By-product H ₂				

⁴ <5 kW (e.g., Residential Use)

⁵ 5kW – 400 kW (e.g., Distributed Residential Use)

⁶ 0.3MW – 10 MW (e.g., Industrial Use)

⁷ 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)

⁸ 30MW plus (e.g., Grid Storage and Systems Management)

⁹ Target can be by quantity (Nm³, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target

¹⁰ Hydrogen produced by reforming processes

¹¹ Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

Energy Storage from Renewables	Target ¹²	Current Status	Partnership, Strategic Approach	Support Mechanism
Installed Electrolyser Capacity				
Power to Power ¹³ Capacity				
Power to Gas ¹⁴ Capacity				

¹² Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity

¹³ Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity

¹⁴ Operator has the opportunity to provide the stored energy in the form of hydrogen back to the energy system through multiple channels (e.g., merchant product, enriched natural gas, synthetic methane for transportation, heating, electricity)