



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update April 2018: United Kingdom

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Covered Period	November 2017 to April 2018

1. New Policy Initiatives on Hydrogen and Fuel Cell

None.

2. Hydrogen and Fuel Cell R&D Update

None.

3. Demonstration and Deployments Update

BEIS is undertaking a £25 million project to explore the potential use of hydrogen gas for heating UK homes and businesses. Following a competition, BEIS has appointed Arup+, a team of contractors led by Ove Arup to run this project. This project will run from 2017 to 2021 and will aim to define a hydrogen quality standard, and to explore, develop and test domestic and commercial hydrogen appliances.

In early 2017, Government launched a [competition](#) with up to £9 million available to reduce the cost of energy storage technologies (including electricity storage, thermal storage, and power-to-gas technologies). This included a further £600,000 to support feasibility studies for a potential first-of-a-kind, large-scale future storage demonstrator. The grants awarded for these feasibility studies including funding for two power-to-gas projects, led by ITM Power Trading Ltd and SSE Renewables Developments UK Ltd.

Northern Gas Networks (NGN), on behalf of all the UK gas distributors, has been awarded £9million from Ofgem with an additional £1.3 million of private investment to support its pioneering hydrogen project, H21. The £10.3 million funding will see NGN build upon the work of the 2016 H21 Leeds City Gate project which established hydrogen conversion is technically possible and economically viable.

[HyDeploy](#) is a project that will inject up to 20% Hydrogen into a private gas network in Keele University. The project will demonstrate the safety of running existing gas appliances with a Hydrogen & Natural Gas blend

The Scottish [Hydrogen 100](#) project has been designed to demonstrate the safe, secure and reliable distribution of hydrogen. The H100 project is a feasibility study which will look to build on prior work and develop site specific evidence to support the construction of a physical 100% hydrogen demonstration.



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[Liverpool-Manchester Hydrogen Cluster](#) project is a conceptual study to develop a practical and economic framework to introduce hydrogen into the gas network in the Liverpool-Manchester area. The hydrogen would then be supplied to a core set of major industrial gas users in Liverpool-Manchester and fed into the local gas distribution network as a blend with natural gas.

Funding announced for the winning project to increase uptake of hydrogen fuel cell electric vehicles and expand the number of publically-accessible hydrogen refuelling stations:
<https://www.gov.uk/government/news/new-greener-police-cars-to-run-on-hydrogen>

First integrated forecourt hydrogen refuelling station opens in the UK:
<https://www.smm.co.uk/2018/04/shell-beaconsfield-will-be-first-under-the-canopy-hydrogen-refueling-station/>

4. Events and Solicitations

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

None.



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Transport	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles ¹	No target	80 as of Sept 2017	A further circa 200 vehicles will be deployed over the next year (see above)	Funding via Office for Low Emission Vehicles (OLEV) for vehicles and infrastructure
FC Bus	No target	20 as of Sept 2017	Buses being supported via UK and European funding programmes	Low Emission Bus scheme will deploy a further 42 fuel cell buses in the UK Further circa 50 buses to be deployed under the European JIVE funding programme
Fuel Cell Trucks ²	No target	None	No activity	No support policy
Forklifts	No target	Not known	Some deployment e.g. at Honda UK manufacturing	No support policy

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

² As above



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H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production	No target, but UK H2 Mobility analysis identified an initial national network of 65 stations as sufficient to support national roll-out of FCEV passenger cars	12 publically accessible Hydrogen Refuelling Stations (HRS) as of Apr 2018, includes both 35 and 70 MPa sites	Stations to be built and operated by private developers with support offered via UK and European infrastructure programmes.	Additional 4 new HRS to be built and upgrades to 5 existing stations under recently announced funding (see above)
70 MPa Delivered				
35 MPa On-Site Production	No target		Stations generally developed and operated by private developers with a proportion of EU funding. Aberdeen's 2 HRS owned by local authority, operated by BOC.	None
35 MPa Delivered				



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Stationary	Target Number ³	Current Status	Partnerships, Strategic Approach	Policy Support
Small ⁴	No target	Various demonstrations and commercial installations, however no formal process to track their introduction	Various approaches adopted from pure commercial to funding through innovation support programmes.	Government support provided through existing mechanisms e.g. CHP feed-in-tariffs and more targeted innovation support through UKRI and BEIS
Medium ⁵	No target			
Large ⁶	No target			
District Grid ⁷	No target			
Regional Grid ⁸	No target			
Telecom backup	No target			

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

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)



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H ₂ Production	Target ⁹	Current Status	Partnerships, Strategic Approach	Policy Support
Fossil Fuels ¹⁰	No target			
Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)	No target			
By-product H ₂	No target			
Energy Storage from Renewables	Target ¹²	Current Status	Partnership, Strategic Approach	Policy Support
Power to Power ¹³ Capacity	No target			
Power to Gas ¹⁴ Capacity	No target			

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)

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)