INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update Nov. 2016: United Kingdom

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Covered Period	June – October 2016

1. New Policy Initiatives on Hydrogen and Fuel Cell

None.

2. Hydrogen and Fuel Cell R&D Update

None.

3. Demonstration and Deployments Update

- 10 vans are imminently to be deployed under the Levenmouth Community Energy project (funded by the Scottish Government). See: http://brightgreenhydrogen.org.uk/home/levenmouth-community-energy-project-2/levenmouth-community-energy-project/
- The Office of Low Emission Vehicles (OLEV) is currently evaluating bids for funding to deploy further cars and vans and expect to support the deployment of at least a further 50 vehicles by April 2017.
  See: https://www.gov.uk/government/publications/hydrogen-fuel-cell-vehicles-funding-fleets-to-be-early-adopters
- OLEV have also announced winners of the Low Emission Bus scheme which will deploy a further 42 FC buses in the UK. See: https://www.gov.uk/government/news/government-awards-30-million-funding-for-cleaner-greener-bus-journeys

4. Events and Solicitations

The H21 Leeds City Gate project is a feasibility study developed by Northern Gas Networks (NGN). The project, released on 11 July 2016, suggests it is technically and economically possible to convert the existing natural gas supply in one of the largest UK cities (Leeds) to hydrogen. It has addressed where and how to produce the hydrogen, how to manage supply and demand, and what would be the overall costs for the conversion. The project also presents a vision of how the UK could incrementally convert to hydrogen over the coming decades. This would decarbonise heat with the added benefits of supporting decarbonisation of transportation and electric generation. The project film and report can be found at the links below.

- H21 film (17 minutes): http://www.northerngasnetworks.co.uk/2016/07/watch-our-h21-leeds-city-gate-film/

- Executive summary: http://www.northerngasnetworks.co.uk/wp-content/uploads/2016/07/H21-Executive-Summary-Interactive-PDF-July-2016-V2.pdf
- Full report: http://www.northerngasnetworks.co.uk/wp-content/uploads/2016/07/H21-Report-Interactive-PDF-July-2016.pdf

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

None.

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Summary Country Update Nov. 2016: United Kingdom

Transport	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles[1]	No target but expect to support deployment of an additional 40-100 cars & vans in 16/17	42 as of July 2016	• A further 10 vans are imminently to be deployed under the Levenmouth Community Energy project (funded by the Scottish Government) (See note above)	• OLEV are currently evaluating bids for funding to deploy further cars and vans and expect to support the deployment of at least a further 50 vehicles by April 2017. (See note above)
FC Bus	No target	18 as of July 2016	• Local authorities in London, Birmingham, Cardiff, Dundee, Inverness, Aberdeen, Stirling, Glasgow, Perth & Kinross working together as part of a "100 bus project"	• OLEV have also just announced winners of the Low Emission Bus scheme which will deploy a further 42 fuel cell buses in the UK
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

H_2 Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production 70 MPa Delivered	No target, but UK H2 Mobility programme identified an initial national network of 65 stations as sufficient to support national roll-out of FCEV passenger cars	14 HRS in total as of Oct 2016, includes both 35 and 70 MPa sites	• Stations to be built and operated by private developers. Developers of 12 HRS Infrastructure Grant Scheme stations are Air Products, BOC, Fuel Cell Systems, ITM Power and University of South Wales	• HRS Infrastructure Grant Scheme providing capital grants (up to 60% for new stations, 100% for upgrades) for an initial 12 public access, 700 bar refuelling stations commissioning by the end of 2016 http://ee.ricardo.com/cms/hydrogen-refuelling-station-grants/ • No Subsidy for operation • Options for supporting next wave of HRSs in development by the Office for Low Emission Vehicles
35 MPa On-Site Production 35 MPa Delivered	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

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 Research Councils, Innovate UK and Department of Energy and Climate Change
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)

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 (Nm^3, 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, Alkiline, 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)