INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update April 2016: UK

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1. New Policy Initiatives on Hydrogen and Fuel Cell

UK Secretary of State for Energy and Climate Change, Amber Rudd, announced a new direction for UK energy policy in her speech of 18th November 2015. This recognised hydrogen as a technology which has great potential to decarbonise heat, but that it was not yet clear whether this would work at scale. The UK's approach to meet its carbon budgets will be set out this year including what will be done to test options for hydrogen for heat. Planning for future calls for innovation research funding is advancing but no announcements have been made to date.

2. Hydrogen and Fuel Cell R&D Update

Three important hydrogen for heat projects are due for completion in early summer 2016:

1. Converting a town to low carbon heating – comparing costs of different options, including hydrogen, for meeting the heating needs of a UK town;
2. Leeds H21 CityGate project – looking at feasibility of converting a UK city to switch from natural gas to hydrogen; and,
3. Hydrogen Appliances – looking at costs of developing hydrogen appliances for cooking and heating to replace natural gas products.

3. Demonstration and Deployments Update

Award of a €5M EU grant for the BIG HIT (Building Innovative Green Hydrogen systems in an Isolated Territory) project funded by the Fuel Cells and Hydrogen Joint Undertaking to demonstrate use of constrained wind power to generate hydrogen for vehicle and heating in the Scottish Orkney Islands.

4. Events and Solicitations

No update since last meeting

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

No update since last meeting

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Summary Country Update April 2016: UK

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	As of 24/02/16, 37 cars and vans	• Initially OEMs are focussing their vehicle launches primarily in the South East of England. Specialist manufacturers offering vehicles wherever suitable refuelling infrastructure exists	• £2m funding competition for fleets to become early adopters of FCEV cars and vans to launch in May 2016 • FCEVs are eligible to apply for Plug-in Car and Van Grants https://www.gov.uk/plug-in-car-van-grants
FC Bus	No target	As of 28/04/16, 20	• Local authorities in London, Birmingham, Cardiff, Dundee, Inverness, Aberdeen, Stirling, Glasgow, Perth & Kinross working together as part of a "100 bus project"	• FCEV buses are eligible to bid for funding under the Low Emission Bus Scheme (successful bids to be announced soon) https://www.gov.uk/government/publications/low-emission-bus-scheme
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	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	As of 28/04/16, 1	• 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
70 MPa Delivered		As of 28/04/16, None		
35 MPa On-Site Production	No target	As of 28/04/16, 3	• Stations generally developed and operated by private developers with a proportion of EU funding. Aberdeen HRS owned by local authority, operated by BOC.	• None
35 MPa Delivered		As of 28/04/16, 3		

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			

[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)

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			

[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)