International Partnership for Hydrogen and Fuel Cells in the Economy

Country Update – United Kingdom

Policy framework

- Funding schemes – there are a number of public funding bodies in the UK which support energy research. The Low Carbon Innovation Coordination Group (LCICG) coordinates these efforts. A Strategic Framework was published in February 2014 and is available on the website - www.lowcarboninnovation.co.uk
- Funding volumes: A total of £13.5m of public funding was allocated to hydrogen and fuel cells R&D in the UK in the financial year 2012/13. The percentage level of funding depends on the funding programme and the nature of the recipient organisation (and is subject to EU State Aid rules).
- Road maps – with support from the Technology Strategy Board, work is underway to prepare a UK Hydrogen and Fuel Cells Roadmap. An initial workshop was held on 24th April 2014.

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Activities contributing to the development of policy

- UKH_2 Mobility – A public private partnership which is developing a plan for the roll-out of hydrogen refueling infrastructure and fuel cell electric vehicles in the UK from 2015.
- A report from the Energy Technologies Institute (ETI) *An affordable transition to sustainable and secure energy for light vehicles in the UK,* published in 2013.
- A Hydrogen Technology Innovation Needs Assessment (TINA), to be published by the Low Carbon Innovation Coordination Group (LCICG).
- A "White Paper" on the potential role for hydrogen in low carbon heating, produced for the H2FC SUPERGEN consortium by a team led by Professor Paul Ekins of UCL. To be launched on Monday 19th May 2014.

Country Update – United Kingdom

ETI report - An affordable transition to sustainable and secure energy for light vehicles in the UK

www.eti.co.uk

Key points

- Decarbonising transport will be particularly challenging. It would be more cost-effective to deploy biomass with CCS for power generation to create negative emissions to allow for a continuing role for fossil fuels in transport in 2050.
- The least cost, lowest risk path to low-carbon transport would be higher efficiency conventional vehicles using fossil fuel and biofuel, together with plug-in hybrid vehicles using home recharging points.
- Hydrogen is needed as an insurance policy, needed if CCS with biomass is not successful and if there is insufficient sustainable biofuel available.

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H2FC SUPERGEN White Paper on the potential role of hydrogen in low carbon heating

Key points

- Exiting UK Government policies do not appear to have taken full account of the potential role for hydrogen and fuel cells in low carbon heating. Some policies appear to discriminate against these technologies, whether or not that is their intention.
- Hydrogen could be injected into the UK natural gas grid, initially in small quantities but potentially as a low carbon replacement for natural gas.
- The UK Government needs to take a long view on the future of the UK natural gas grid, and engage industry and consumer organisations in the preparation of a roadmap showing how a large-scale conversion to hydrogen heating could be brought about.

Country Update – United Kingdom

Market preparation

Transport

- Work continues on UKH2 Mobility to prepare a business plan for the roll-out of hydrogen fueling infrastructure and fuel cell electric vehicles in the UK from 2015. A report on the results of Phase 1 was published in April 2013 and is available on the UKH_2 Mobility website http://www.ukh2mobility.co.uk/news-media/
- The Government announced that £500m will be available to support the adoption of ultra low emission vehicles (ulevs) in the period 2015-2020. This potentially includes fuel cell electric vehicles. Further details will be announced by Autumn 2014.
  (Investing in ultra low emission vehicles in the UK, 2015- 2020. Office of Low Emission Vehicles, April 2014)

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Power-to-Gas

- Power to gas is attracting growing interest in the UK and elsewhere.
- ITM Power, alongside a consortium of companies including National Grid, Shell, Scotia Gas Networks and SSE, was funded by the Technology Strategy Board to deliver a feasibility study on the injection into the gas grid of hydrogen produced by electrolysis using renewable energy. The report made a number of recommendations to Government (DECC and HSE).
- DECC considered the recommendations, and has decided to proceed with one of them – to agree a definition of "green hydrogen". It was decided not to proceed with the other recommendations at this time. This will be kept under review as more information becomes available.

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Recommendations to DECC

- Form a Power to Gas working group of stakeholders
- Review the inclusion of hydrogen from electrolysis in the Renewable Heat Incentive (RHI)
- Initiate a consultation/call for evidence on injection of hydrogen into the gas grid
- Ditto on power to gas energy storage in the UK
- Include Power to Gas in the 2050 Pathways Analysis
- Agree a definition of "green hydrogen", e.g that recommended by TUV ($50gCO_{/2}$/kWh)

Recommendations to HSE

- Review the current hydrogen limit of 0.1%
- Standardise the procedure for exemption under the current rules
- Form a standards working group specifically looking at hydrogen in the gas grid
- Identify the requirements for adopting a much higher concentration of hydrogen in the 2020s