



IPHE Country Update November 2015: European Commission (the Commission)

The IPHE Secretariat requests each IPHE member submit a one-page narrative update on hydrogen and fuel cell (HFC) activities. Please only report actions and developments since the last Country Update and leave Sections blank if there have been no new developments.

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1. New Policy Initiatives on Hydrogen and Fuel Cell

- Publication of Integrated **Strategic Energy Technology Plan** (SET-Plan), which contains initiatives related to both FC and H₂.
- Public Consultation on **Renewable Energy Directive** opened: in preparation for the new Renewable Energy Directive covering the period 2020-2030, EU stakeholders are invited to submit their views via a web-based survey tool, open until 10 February 2016 (<https://ec.europa.eu/energy/en/consultations/preparation-new-renewable-energy-directive-period-after-2020>).
- A dedicated Working Group (WG) has been set up within the frame of the Strategic Forum for Energy Management (SFEM) of CEN-CENELEC to address issues related to **Power-to-Hydrogen (PtH) and the subsequent injection in the natural gas grid**. The WG, composed of 60 experts from industry, research, standardisation bodies and the Commission and co-chaired by EC-JRC, has submitted a final report containing a gap analysis, prioritisation of activities and a roadmap covering pre-normative and standardisation issues that need to be addressed to enable deployment of PtH in the EU. The report is currently being evaluated by the Board of CEN-CENELEC who will decide on the standardisation (scope, contents, structure) follow-up to be given.
- Following the publication of the Alternative Fuel Infrastructure Directive (2014/94/EU), and in line with Regulation 1025/2012, the Commission has issued a mandate (M/533) to the ESOs (CEN-CENELEC) to prepare the **European standards necessary for the interoperability requirements for hydrogen refuelling stations** indicated in the Directive. CEN has replied positively to the mandate and has allocated the work to a dedicated WG under CEN TC 268. This WG monitors and interacts with the work of ISO TC 197 WG24 who targets the publication of an international standard on general requirements for hydrogen refuelling stations by the end of 2016.

2. Hydrogen and Fuel Cell R&D Update

A joint Workshop between the FCH 2 Joint Undertaking and the Clean Sky 2 Joint Undertaking took place on 15-16 September at DLR Lampoldshausen (DE), with the aim of identifying future areas of collaboration between the two initiatives for **aeronautical applications of hydrogen and fuel cells**. The main focus for early applications is on stand-alone modules such as the replacement of the Ram-Air-Turbine by a FC, or powering the



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galley. Auxiliary Power Units are only considered at a later stage, and on-board storage of hydrogen is a key issue. The presentations are available at <http://www.fch.europa.eu/news/joint-cleansky-fch-ju-workshop-aeronautical-applications-fuel-cells-and-hydrogen-technologies>

A **study on Hydrogen from Renewable Resources** in the EU was recently concluded by the FCH 2 Joint Undertaking. The study short-lists the different technologies available to produce H₂ other than electrolysis, based on TRL and TCO considerations, performing a detailed analysis for 6 Green Hydrogen Pathways. The report will be available shortly at <http://www.fch.europa.eu/studies>

(In addition, see Call 2015 information below under section 5)

3. Demonstration and Deployments Update

A joint Workshop on **Innovation Pipeline for Hydrogen and Fuel Cells** took place at the Trans-European Transport Network Days (TEN-T) in Riga on 23 June 2015. The aim of this workshop is to coordinate actions at the EU level between the activities of the FCH 2 JU and the "Connecting Europe" Infrastructure funding facility under TEN-T. During this event, a declaration took place by representatives of 5 national clusters (DE, IT, LV, NL and UK) committing to *operate together several hundred FC buses across 30 cities*. A second declaration highlighted the commitment of industrial players towards commercialisation of FCEVs.

In addition, a study was recently concluded providing an assessment of the **commercialisation pathway for FC Buses** from an operational perspective. It reflects the actual situation in which operators deploy large scale demonstration projects in the next few years from a rather conservative angle and argues why it makes sense to deploy FC buses now. The insights are based on first-hand data and assessments of the coalition members from the hydrogen and fuel cell industry as well as local governments and public transport operators in Europe. The report can be downloaded from <http://www.fch.europa.eu/publications/fuel-cell-electric-buses-%E2%80%93-potential-sustainable-public-transport-europe>

4. Events and Solicitations

The Fuel Cells and Hydrogen 2 Joint Undertaking, which is the implementing arm of the EC's FCH research and innovation activities, will launch its 2016 Call for Proposals on 19 January 2016, deadline 5 May 2016, for an indicative budget of €117.5M. An Info Day associated to this Call will take place in Brussels in the course of January 2016; this will be published on the site <http://www.fch.europa.eu> in due course.

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

On 15 June 2015, the European Investment Bank (EIB) Group and the European Commission launched the **Energy Demo Projects (EDP) financing facility** under the umbrella of the InnovFin initiative. This new facility provides financial support to cutting-edge technology projects in their pre-commercial stage. EDP will in particular provide loans to first-of-a-kind commercial-scale industrial demonstration projects in the fields of renewable energy and hydrogen and fuel cells. Loans will be made available for amounts between €7.5M and €75M, for a tenure up to 15 years.

More information can be found on <http://www.eib.org/innovfin>



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The evaluation of the FCH 2 JU Call 2015 was finalised in October, and the results were adopted by the Governing Board on 18 November. 14 Proposals have been selected for a total value of €80M funding, of which roughly €35M will go to a large demo project contributing to H2 Mobility across Europe.



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Summary Country Update Nov 2015: EC

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles ¹	No target		• Addressed through FCH 2 JU Demo projects	• Subsidy per vehicle in demo projects
FC Bus	No target		• Addressed through FCH 2 JU Demo projects	• Subsidy per vehicle in demo projects
Fuel Cell Trucks ²	No target		No initiatives yet	
Forklift	No target		Not a priority area	• No support policy
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production	No target		• Addressed through FCH 2 JU Demo projects	• Fixed amount of subsidy per HRS installation
70 MPa Delivered	No target		• Addressed through FCH 2 JU Demo projects	• Fixed amount of subsidy per HRS installation
35 MPa On-Site Production	No target		• Addressed through FCH 2 JU Demo projects	• Fixed amount of subsidy per HRS installation
35 MPa Delivered	No target		• Addressed through FCH 2 JU Demo projects	• Fixed amount of subsidy per HRS installation
Stationary	Target Number ³	Current Status	Partnerships, Strategic Approach	Policy Support

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

² As above



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Small ⁴	No target		• Medium-scale deployment through FCH 2 JU demo project	• Fixed amount of subsidy per unit
Medium ⁵	No target		• Small-scale demo projects via FCH 2 JU	• Funding dependent on power level
Large ⁶	No target		• Small-scale demo projects via FCH 2 JU	• Funding dependent on power level
District Grid ⁷	No target			•
Regional Grid ⁸	No target			
Telecom backup	No target			
H₂ Production	Target⁹	Current Status	Partnerships, Strategic Approach	Policy Support
Fossil Fuels ¹⁰	No target		•	
Alkaline Electrolysis	No target			
PEM Electrolysis	No target			

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

⁴ 0.3 kW – 4.9 kW (e.g., Residential Use)

⁵ 5kW – 299kW (e.g., Distributed Residential Use)

⁶ 0.3MW – 0.9MW (e.g., Industrial Use)

⁷ 1MW – 29MW (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), by percentage of total production, efficiency capabilities ***

¹⁰ Hydrogen produced by reforming processes



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By-product H ₂	No target			
Energy Storage from Renewables	Target¹¹	Current Status	Partnership, Strategic Approach	Policy Support
Power to Power ¹² Capacity	No target			
Power to Gas ¹³ Capacity	No target			

¹¹ Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation and MWh of stored energy equivalence ***

¹² Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity ***

¹³ Operator has the opportunity to provide the stored energy in the form of hydrogen to back to the energy system through multiple channels (e.g., merchant product, transportation, heating, electricity) ***