



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update Nov 2017: European Commission

Name	Katarzyna Drabicka
Contact Information	katarzyna.drabicka@ec.europa.eu +32 2 29 63999
Covered Period	April – November 2017

1. New Policy Initiatives on Hydrogen and Fuel Cells

- In November 2017 the European Commission adopted a package of proposals, called **the Clean Mobility Package**, aimed at cutting the emissions of the road transport. It includes the following elements of interest for FCH:
 - New CO₂ targets (fleet average) for new passenger cars and vans to spur transition towards low-and zero-emission vehicles: the average CO₂ emissions should be cut by 30% between 2021 and 2030;
 - The revised **Clean Vehicles Directive** to promote clean mobility solutions in public procurement and drive demand for clean mobility;
 - An action plan for trans-European deployment of alternative fuels infrastructure, including hydrogen, to increase the level of ambition of the national plans;
 - The **"Battery Initiative"** – to improve Europe's competitive edge in the battery technology.

As the next step the proposals will now be discussed with the co-legislators: The European Parliament and the Council.

All relevant documents are available here:

https://ec.europa.eu/transport/modes/road/news/2017-11-08-driving-clean-mobility_en

- The package of legislative proposals called Clean Energy for All Europeans (including **New Renewable Energy Directive** and **New Electricity Market Design Directive and Regulation**) that implements the EU energy and climate policy post 2020 is currently in discussion with the European Parliament and the Council. Adoption should take place in the course of 2018.

All relevant documents are available here:

<https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition>

- **Integrated Strategic Energy Technology Plan (SET-Plan)**

Work continues on the 10 focus areas with emphasis on elaboration of the implementation plans while the plan for Action 6 (Energy Efficiency in Industry) was adopted in September 2017. It includes activities on CO₂ avoidance through hydrogen direct reduced iron in the steel industry.

More information available here: <https://setis.ec.europa.eu/>



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

- **Emissions Trading Scheme (ETS) reform**

On November 9, the European Parliament and Council of the European Union came to a compromise agreement in the ongoing EU ETS Phase IV reform process. The agreement should substantially increase the price of carbon allowances by 2030. The draft agreement will now have to go back for approval from the Parliament and the Council, but no major changes are expected. The reform proposes the creation of an Innovation Fund to support large-scale demonstration of activities across various technology areas, including "green hydrogen".

More information on the Innovation Fund available here:

https://ec.europa.eu/clima/sites/clima/files/events/docs/0115/20170612_report_en.pdf

- The **Interim evaluation of the FCH 2 JU** (2014-2016) operating under Horizon 2020 & the **Final evaluation of the FCH (1) JU (2008-2014)** operating under FP7 have been finalised and published

The 2 reports carried out by independent external experts concluded that FCH 2 JU continues to demonstrate the strengths commended in previous reports and that the instrument remains relevant. They found that Europe's competitive position would be less favorable without the activities of the FCH 2 JU.

<https://publications.europa.eu/en/publication-detail/-/publication/8c99f6c7-ac9e-11e7-837e-01aa75ed71a1/language-en/format-PDF/source-42981397>

<https://publications.europa.eu/en/publication-detail/-/publication/c40898b4-ac9d-11e7-837e-01aa75ed71a1/language-en/format-PDF/source-42981397>

2. Hydrogen and Fuel Cell R&D Update

- The FCH 2 JU's Call 2017 has been finalised. 24 proposals have been selected for funding for a total amount of ~114 M€. It is expected that the first grant agreements will be signed by December. More information available here:
<http://www.fch.europa.eu/page/call-2017>
- Study on "Early Business Cases for Power-to-Hydrogen in Europe" procured by the FCH 2 JU has been finalised and is available here:
<http://www.fch.europa.eu/publications/study-early-business-cases-h2-energy-storage-and-more-broadly-power-h2-applications>

3. Demonstration and Deployments Update

- Ca. 640 FCEVs (including range extenders, i.e. Symbio) deployed in Europe, out of which roughly half through FCH JU
- 42 FC buses in operation, another 160 contracted
- 130 HRS in operation, out of which 25 deployed via FCH JU
- 3200 mCHPs contracted via FCH JU, out of which 1100 deployed



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

4. Events and Solicitations

- The FCH 2 JU's Call 2018 is currently under preparation and should be launched mid-January 2018. The indicative budget is ~€70M. International collaboration with IPHE countries will be encouraged for all topics of the call, and in some cases specifically recommended.
- The FCH 2 JU has launched the **European Hydrogen Safety Panel** initiative with the mission to assist the FCH 2 JU at the programme and project level in assuring adequate management of hydrogen safety issues. The FCH JU is looking for experts for 2019. IPHE delegates are invited to circulate this information among their constituencies.

More info here: <http://www.fch.europa.eu/page/european-hydrogen-safety-panel>

- The FCH 2 JU's Stakeholder Forum - 10th edition – takes place in Brussels on 22nd November: <http://www.fch.europa.eu/page/stakeholder-forum-2017> . Programme Review Days take place on 23-24th November: <http://www.fch.europa.eu/page/programme-review-2017>

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

The total budget of the FCH 2 JU for the period 2014-2020 is EUR 665 M, or on average EUR 95 M/year, covering a broad range of R&I activities.

Beyond FCH 2 JU, other EU instruments such as TEN-T/CEF or H2020 (Energy Challenge, SME instrument etc.) do provide some ancillary financing. However, this financing is on a competitive basis (where FCH have to compete with other technologies). As a result, we estimate the EU level funding for FCH technologies at approximately €100M/year on average in the 2014-2020 timeframe.



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

Summary Country Update November 2017: European Commission

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell light duty Vehicles ¹	No target	Ca.640 deployed in Europe (EU28+ CH + NO) of which ca. 350 through FCHJU	<ul style="list-style-type: none"> Addressed through FCH 2 JU Demo projects 	<ul style="list-style-type: none"> Subsidy per vehicle in demo projects
FC Bus	No target	206 planned (through FCH JU) of which 47 deployed (of which 5 discontinued)	<ul style="list-style-type: none"> Addressed through FCH 2 JU Demo projects 	<ul style="list-style-type: none"> Subsidy per vehicle in demo projects
Fuel Cell Trucks ²	No target	3 planned	<ul style="list-style-type: none"> Addressed through FCH 2 JU Demo projects. As of today marginal activity in this area 	<ul style="list-style-type: none"> Subsidy per vehicle in demo projects
Forklifts	No target	Ca. 170 deployed in Europe (of which 115 via FCH JU)	<ul style="list-style-type: none"> Addressed through FCH 2 JU Demo projects 	<ul style="list-style-type: none"> Subsidy per vehicle in demo projects
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

² As above



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

70 MPa On-Site Production	No target	In total 130 HRSs for road transport (buses + cars) deployed of which 25 via FCH JU of which: <ul style="list-style-type: none"> • 5 x 350 Delivered • 5 x 350 onsite prod. • 4 x 700 delivered • 7 x 700 onsite prod. • 3 x 350/700 delivered • 1 x 350/700 onsite 	• 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
Small ⁴	No target	3200 planned via FCH JU, of	• Medium-scale deployment through FCH 2 JU demo project	• Fixed amount of subsidy per unit

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

⁴ <5 kW (e.g., Residential Use)



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

		which 1100 deployed		
Medium ⁵	No target	14 of which 12 deployed incl. uninterrupted power	<ul style="list-style-type: none"> • Small-scale demo projects via FCH 2 JU 	<ul style="list-style-type: none"> • Funding dependent on power level
Large ⁶	No target	2 planned of which one deployed (in China)	<ul style="list-style-type: none"> • Small-scale demo projects via FCH 2 JU 	<ul style="list-style-type: none"> • Funding dependent on power level
District Grid ⁷	No target			
Regional Grid ⁸	No target			
Telecom backup	No target	9 deployed via FCH JU		
H₂ Production	Target⁹	Current Status	Partnerships, Strategic Approach	Policy Support
Fossil Fuels ¹⁰	No target	Out of scope of the FCH 2 JU		

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)

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



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)	No target	22 deployed with FCH JU (incl. 15 at HRSs, 4 at Telecom, 2 for grid autonomy and 1 for grid services), 5 more planned (excl. HRSs: 4 for grid services, 1 for HRS/fuel cell for harbour)		
By-product H ₂	No target			
Energy Storage from Renewables	Target¹²	Current Status	Partnership, Strategic Approach	Policy Support
Power to Power ¹³ Capacity	No target			

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



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

Power to Gas ¹⁴ Capacity	No target			
--	-----------	--	--	--

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)