INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update October 2016: FRANCE

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Covered Period	December 2015, October 2016

1. New Policy Initiatives on Hydrogen and Fuel Cell

- **French Government multiannual energy program** – "The objective of the electro-mobility development for passenger cars and utility vehicles of at least 1 ton is to have 2,400,000 electrical and plug-in hybrid vehicles by 2023". http://www.consultations-publiques.developpement-durable.gouv.fr/IMG/pdf/7_-_Strategie_de_developpement_de_la_mobilite_propre.pdf Several incentives in the domain of sustainable mobility have been developed.

- **Launch of a French-German initiative for the electric and digital mobility:** Both Countries agree to cooperate on the integration of the renewable energies in transport, and the promotion of electrical vehicles. They will also work on the emergence of a corridor of interoperable recharging points connecting Germany, France and the Iberia peninsula. http://www.developpement-durable.gouv.fr/IMG/pdf/Declaration_coinjointe_-_mobilite_electrique_et_numerique_-_29-09-16.pdf

2. Hydrogen and Fuel Cell R&D Update

- "PEMFC lifetime prediction by a full multi-scale modelling approach", Mathias Gérard (CEA) et al. PRIME 2016 ECS PEFC16, October 2-7, 2016.
- "Oxygen Reduction Reaction at Binary and Ternary Nanocatalysts Based on Pt, Ni and Au", S. Lankiang, S. Baranton, C. Coutanceau (Université de Poitiers, IC2MP, UMR CNRS 7285), J. Berndt, A. Caillard, P. Brault (Université d'Orléans, GREMI, UMR CNRS 7344), PRIME 2016 ECS PEFC16, October 2-7, 2016.
- "Up-Scaling the Pt Hollow Nanoparticle Materials: From the Laboratory Synthesis up to Large PEMFC Cell Integration", F. Micoud, M. Heitzmann, C. Nayoze-Coynel, T. Gutel, L. Guetaz (CEA), R. Chattot, T. Asset, L. Dubau, F. Maillard (Grenoble Alpes University ; CNRS ; LEPMI). PRIME 2016 ECS PEFC16, October 2-7, 2016.

3. Demonstration and Deployments 2016 Update

The first Toyota Mirai in France was delivered on September 9, 2016 to Air Liquide

AREVA H2Gen

Inauguration of the first manufacturing factory of PEM electrolysers in France, in Les Ulis (Ile de France). http://www.arevah2gen.com/en/products-services/hydrogen-generators

ENGIE joins Michelin and Symbio FCell

ENGIE joins Michelin in investing in Symbio FCell to accelerate the development of hydrogen mobility solutions.
http://www.engie.com/journalistes/communiques-de-presse/engie-rejoint-michelin-au-capital-de-symbio-fcell/

Forklifts in Carrefour Group new distribution centre

Carrefour Group, the second-largest retailer in the world, will purchase more than 150 fuel cell units (GenDrive), to be deployed in STILL-brand class-2 and class-3 electric lift trucks at Carrefour's brand new distribution center located in Vendin-lès-Béthune, France.
http://www.fch.europa.eu/news/carrefour-group-new-customer-fuel-cell-forklifts

HYPE Taxi Fleet

Eight FCEV's taxis are driving in Paris which is expected increase to 70 taxis during 2016-2017. More than 230,000 kms have been driven as of the end of September.

HYWAY

A world record has been established by CETUP during the Electromobility Days in Grenoble September 23 for the longest drive with a Kangoo ZE H2 equipped with 22 kWh of batteries and 1.8 kg of H2: 367 km.

Clean hydrogen bicycles for urban areas

55 new bicycles with electric assistance, propelled by fuel cells, and 6 Hydrogen filling stations have been sold since April by Atawey and Pragma Industries.

Hydrogen Ship "ENERGY OBSERVER", presented to the public before a world tour of 6 years

Energy Observer is a ship that aims at energy autonomy without greenhouse gas emission, thanks to an embedded hydrogen production/storage/conversion. The boat is developed in Saint-Malo by Energy Observer and CEA with the support of Accor Group and Thelem Insurance.

4. Events and Solicitations

- Energy storage technologies by power to fuels and chemicals event, December 5-6, 2016, Grenoble
- AFHYPAC General Assembly, Paris, December 14, 2016
- European Fuel Cell Car Workshop 2017 (EFCW2017, https://efcw2017.sciencesconf.org/), Orléans, March 1-3, 2017

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

- Call for proposal IPME (Initiative for SMEs) on energy storage and conversion including hydrogen and fuel cells http://www.ademe.fr/actualites/appels-a-projets Closure February 20, 2017. 174 projects have been funded since 2015, all sectors together for 32 M€ of grants.
- Call for proposal on "hydrogen in the territories" launched May 4, 2016 and ended September 30, 2016. 30 territories have sent proposals for about 100 projects. Selection process is ongoing. (http://www.developpement-durable.gouv.fr/IMG/pdf/AAP-territoires-hydrogene.pdf)

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Summary France Update as of September 16

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles[1]	1,000 by 2020	~140	• National Implementation Plan based on a cluster model approach	• Subsidy for purchase (national government initiative on electrical vehicle, European projects)
FC Bus	No target	0	• European project 3E Motion with 5 Buses in Cherbourg by 2017	• Subsidy for purchase (European project)
Fuel Cell Trucks[2]	No target	1	• Partnership La Poste, Renault Trucks and Symbio FCell	
Forklifts	No target	~100	• Within FCH JU project HAWL, 36 new hydrogen fuel cell-powered forklifts have been deployed at the FM Logistic warehouse in Neuville-aux-Bois.	• Subsidy for purchase (European project)
H_2 Refueling Stations[3]	**Target Number**	**Current Status**	**Partnerships, Strategic Approach**	**Policy Support**
70 MPa Delivered		2		•
35 MPa Delivered		5	• National Implementation Plan based on a cluster model approach	• Subsidy for installation and operation
Stationary	**Target Number[4]**	**Current Status**	**Partnerships, Strategic Approach**	**Policy Support**
Small[5]	No target	8		

[1] Includes Fuel Cell Electric Vehicles with Range Extenders
[2] As above
[3] Public and semi-public (private HRS: 5)
[4] Targets can be units installed and/or total installed capacity in the size range indicated
[5] <5 kW (e.g., Residential Use)

Medium[6]	No target	1	•	•
H_2 Production	**Target[7]**	**Current Status**	**Partnerships, Strategic Approach**	**Policy Support**
Energy Storage from Renewables	**Target[8]**	**Current Status**	**Partnership, Strategic Approach**	**Policy Support**
Power to Power[9] Capacity	No target	100 kWe	• Myrte platform in Corsica connected to the grid	
Power to Gas[10] Capacity	No target		• Jupiter 1000 project aiming at 1 MWe by 2018	

[6] 5kW – 400 kW (e.g., Distributed Residential Use)
[7] Target can be by quantity (Nm^3, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target
[8] Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity
[9] Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity
[10] 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)