INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update October 2017: France

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1. New Policy Initiatives on Hydrogen and Fuel Cell

- Publication of the Climat plan with the announcement of reaching Carbon neutrality by the horizon 2050 and the end of sales of GHG emitting cars by 2040 (July 2017) https://www.actu-environnement.com/media/pdf/news-27930-ineris-stockage-energie-sol.pdf
- The French Government will update the Multiannual Energy Program and there will be a section on energy storage.
- The electro-mobility development objective is to have 2.4M electric and plug-in hybrid passenger cars and utility vehicles of at least 1 ton by 2023.
- The Minister of Ecological and Inclusive Transition, Nicolas Hulot, with the support of the government, has decided to launch a national plan to deploy hydrogen technology and to exploit its potential regarding the energy transition, clean mobility, and industrial development. Minister Hulot asked the CEA to define the modalities of this plan, making sure to consider and take advantage of the industrial strengths of France.
- Minister Hulot tabled the first decisions of the climate solidarity package. Of note is the continuation of the ecological bonus for electrical vehicles of €6,000 and the decrease of the maximum level of emissions (malus level) from 127 to 120 gCO_2/km *https://www.ecologique-solidaire.gouv.fr/sites/default/files/DP_MTES_PLF2018_PaquetSolidariteClimatique.pdf*
- Prime Minister Edouard PHILIPPE tabled the Grand Plan of Investment with €57B of investment over the next 5 years, of which €20B is for the ecological transition. This plan integrates 4 priorities and 25 initiatives including:
    - *Initiative 3: Accompany the replacement of 500 000 polluting vehicles;*
    - *Initiative 4: Sustain the development of innovative transport solutions and answering to territory's needs;*
    - *Initiative 6: Increase the French production of renewable energies;*
    - *Initiative 9: Accelerate the development of a sustainable transport model*

  http://www.gouvernement.fr/sites/default/files/document/document/2017/09/dossier_de_presse_-_le_grand_plan_dinvestissement_2018-2022.pdf
- The objective of the National conference on mobility (19/09/17 to December 2017)is to define the main lines for the orientation law to be discussed during the first semester 2018 with two main themes: provide a sustainable model for the traditional mobilities; and, ensure the development of new solutions of mobility. www.assisesdelamobilite.gouv.fr
- Ile-de-France region has established a subsidy for the purchase of clean vehicles (e.g., Battery Electric Vehicles, Natural Gas Vehicles, or Fuel Cell Electric Vehicles) by companies of the region with more than 50 employees: €6,000 for light duty vehicles (<3.5 tons) and €9,000 for duty vehicles (3.5 to 12 tons).

2. Hydrogen and Fuel Cell R&D Update

- The French-German Ministers Council (July 2017)has set up a French-German research program in the domains of climate, energy and ground systems within the framework of the initiative "Make our Planet Great Again". The French-German dialogue on hydrogen will be strengthened. By 2018, France will accelerate the bringing together of key organizations involved in the hydrogen sector within the framework of the consortium HYFI – this includes the CEA, the National Centre for Scientific Research (CNRS), and industrial organizations.
- There are recent developments in electricity production from a fuel cell using enzymes rather than a platinum catalyst.
  http://www2.cnrs.fr/presse/communique/5157.htm

3. Demonstration and Deployments 2017 Update

'Zero Emission Valley' project in Auvergne-Rhône-Alpes region (€70M)

The region Auvergne-Rhône-Alpes seeks to become a "spearhead" of hydrogen mobility in Europe and aims, through this project, to boost awareness and use of hydrogen mobility. The plan is to deploy 20 hydrogen stations, 15 electrolysers and a fleet of 1,000 vehicles in Auvergne-Rhône-Alpes between now and 2020.
https://www.auvergnerhonealpes.fr/278-pour-une-filiere-hydrogene-d-excellence.htm

'HyPort' project in Occitanie region

Following the call for proposal for Hydrogen in the territories, Occitanie region signed a convention with ENGIE Cofely (29/09) for the deployment by 2019 for a fleet of hydrogen electrical vehicles (50 light vehicles and 5 buses) in the airports of Toulouse-Blagnac and Tarbes-Lourdes-Pyrénées.https://www.engie-cofely.fr/wp-content/uploads/publications/pdf/communique-de-presse-hyport.pdf

First hydrogen bus route in France in Pau

Fueled by hydrogen from renewable sources, eight buses from the Bus Rapid Transit service line (BHNS) will be operating on the streets of Pau within two years, as part of a contract between SMTU-PPP, ENGIE, Van Hool and ITM Power. The buses will form an artery of the new transportation network designed by the City within its urban redevelopment project aimed at improving the perception and use of public spaces in a sustainable way.
http://www.itm-power.com/news-item/first-hydrogen-bus-route-in-france

ENGIE is accelerating its development in downstream gas activities and becomes Total's preferred green gases supplier

On November 8, ENGIE announces the creation of a new entity responsible for the development of renewable hydrogen, which is set to become increasingly important for the energy revolution. This entity, with a global reach, will coordinate ENGIE's efforts in the hydrogen space, will develop major hydrogen production, transport and sales projects, and will therefore foster the development of this emerging source of energy. In this context, ENGIE has also reached an agreement with Total in the green gases space. This agreement foresees, for an initial 10-year partnership period, that ENGIE will become Total's preferred supplier for all new projects of renewable hydrogen and biogas supply. This agreement will also facilitate the promotion of green gases as an affordable, clean and competitive source of energy for mobility use.
https://www.engie.com/en/journalists/press-releases/major-step-transformation-plan/

Hydrogen Ship "ENERGY OBSERVER", start of Tour de France

Energy Observer is a ship that aims at energy autonomy without greenhouse gas emission, thanks to an embedded hydrogen production/storage/conversion. Energy Observer and CEA developed the ship in Saint-Malo with the support of Accor Group and Thelem Insurance. The Tour de France started this summer: after Paris and Boulogne-Sur-Mer, Energy Observer follows its Odyssey for the future, from the coasts of France and crossed the Strait of Gibraltar and will arrive at Monaco at end of December. After visiting the ship on August 25, 2017, the French Prime Minister said "*It was a very good way to discover the rather incredible perspectives of the hydrogen sector. We see the considerable potential which it can have regarding the (...) transformation of transport and use of sources of energy adding the question is the way it is produced*".

http://www.energy-observer.org/

4. Events and Solicitations

- **11-14 December 2017,** Vehicular Power Propulsion Conference, Belfort
- **12-14 December 2017,** World Efficiency Solutions, Paris
- **4-5 April 2018**, Hyvolution, Paris

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

- PIA ADEME : funding of several projects*:*
  - SEP-PAC / high power propulsion for ships with ECA EN, Naval group and University of Nantes
  - CATHYOPE / 44t truck demonstration with Green GT, Carrefour and Transports Chabas
  - In the context of "Hyport" mentioned above: 3 R&D projects: Pipaa Hyport, Hydrone and Modélisation H2and 2 deployment projects: SPV Hyport and SEM Hyport.

- Minister Hulot announced a fund "Air Mobility", €20M / year, managed by the ADEME at the Mobility Conference.

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Summary of Country Update November 2017: France

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles[1]	1,000 by 2020	200	• 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 projects 3E Motion + Jive 2 with a total of 20 Buses by 2019	• Subsidy for purchase (European project + regional funds)
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	100 by 2019	2	• National Implementation Plan based on a cluster model approach	• Subsidy for installation and operation
35 MPa Delivered		16	• National Implementation Plan based on a cluster model approach • 1 HRS with green electrolysis on site and 8 public/semi-public	• Subsidy for installation and operation (European and national projects)

[1] Includes Fuel Cell Electric Vehicles with Range Extenders. Objective fixed by the Energy Storage Plan from the "New French Industry"

[2] As above

[3] Public and semi-public (private HRS: 9)

Stationary	Target Number[4]	Current Status	Partnerships, Strategic Approach	Policy Support
Small[5]	No target	53	• European (Ene.field and soon PACE) and national funded projects for residential and small tertiary	• Subsidy for purchase (European and national projects), C16 feed in tariff
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 • GHRYD: 20% hydrogen in a local gas distribution network	

[4] Targets can be units installed and/or total installed capacity in the size range indicated

[5] <5 kW (e.g., Residential Use)

[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)

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