



International Partnership
for Hydrogen and Fuel Cells
in the Economy

***FRANCE* Update**

31st IPHE Steering Committee Meeting

10 – 11 April 2019

Vienna, Austria

Announcements and/or New Initiatives

France

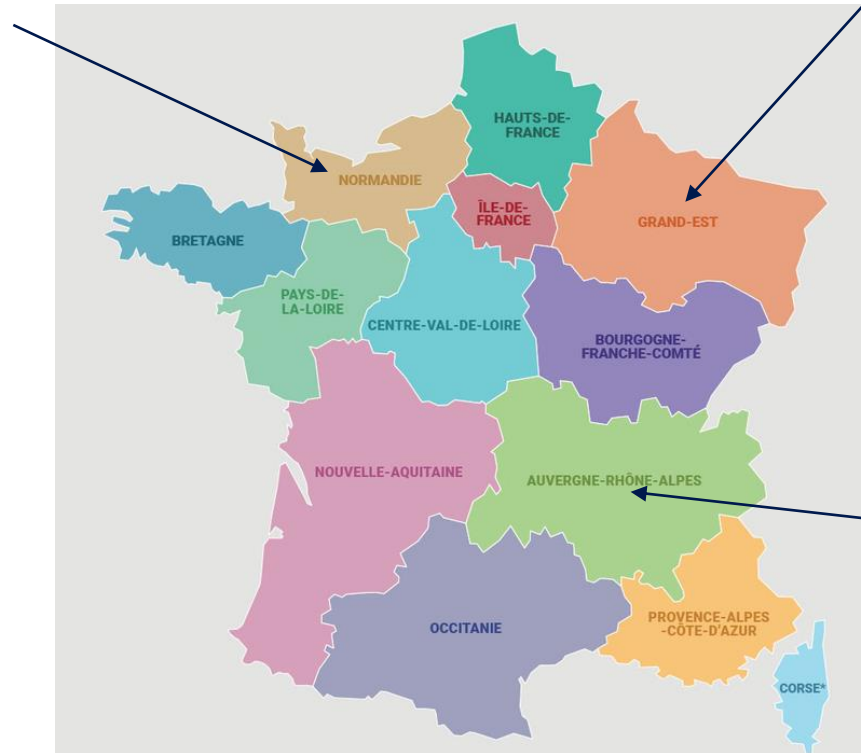


Increasing number of French regions investing in hydrogen technologies

Region Normandie

“Plan Normandie Hydrogène” implementation.

Of the 46 actions to be undertaken on the territory under a timetable between 2 and 5 years, some 20 have already been committed. The Region will devote 15 million € over the next 5 years



Region Grand Est

The DINAMHySE project

Targets:

- 10 HRS with locally produced decarbonized H₂ by 2023, 40 to 100 by 2028.
- 500 light commercial vehicles and 20 heavy-duty vehicles (buses, trucks, boats) by 2023, 2,000 to 5,000 and 80 to 200 by 2028.
- Production of 9 kt of decarbonized hydrogen by 2023, 18 kt to 36 kt by 2028

Region Auvergne Rhône-Alpes

“Zero Emission Valley” Signature of the MoU with the financing bodies for 70 M€ budget.

In 5 years, deploy 1,000 FCEVs, 20 HRS and 15 Electrolyzers



Development of French industry in hydrogen technologies

Faurecia and Michelin to create a global leader in hydrogen mobility

- Michelin and Faurecia announced the signature of a MoU to create a joint venture bringing together all of Michelin's fuel cell related activities - including its subsidiary Symbio – with those of Faurecia. **SYMBIO will be owned equally by Faurecia and Michelin.** This French joint venture, built around a unique ecosystem, will develop, produce and market hydrogen fuel cell systems for light vehicles, utility vehicles, trucks and other applications.

EDF acceleration in hydrogen

- Following its arrival on the H2 market in June 2018 with a 21.7% stake in the French company McPhy, designer, manufacturer and integrator of hydrogen equipment, EDF has announced the launch of its **subsidiary Hynamics** at the Hanover Fair. It will be used for the production and marketing of low-carbon hydrogen. The new branch of the French energy company will focus on customers in industry and mobility.

Announcements and/or New Initiatives

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ENGIE and YARA take green hydrogen into the factory

The two companies are **joining forces in Australia** to prove that the time to apply green hydrogen technology to industry is now. ENGIE and YARA agreed on Feb. 5 to carry out a feasibility study with the goal of designing a green hydrogen plant that would be integrated with YARA's existing ammonia plant in Pilbara, Western Australia. **Ammonia is a key ingredient in fertilizers**. The goal is to transform the plant from one that relies completely on natural gas for hydrogen to one where a significant share of the hydrogen comes from renewable power.

Air Liquide makes a strategic investment in the production of decarbonized hydrogen by electrolysis

Air Liquide announces that it acquired an 18.6% stake in the capital of the Canadian company Hydrogenics Corporation. This strategic transaction, which represents an investment of 20.5 million US dollars (18 million euros), enables the Group to reaffirm its long-term commitment to the hydrogen energy markets and its ambition to be a major player in the supply of carbon-free hydrogen, particularly for industry and mobility markets.

Examples of Lessons Learned and Impact

France



Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
National Hydrogen Plan	<ul style="list-style-type: none">• 3 main axes: 1/ H2 for industrial use 2/ H2 for mobility 3/ H2 for RE storage• Strong industrial and research interest (1 call closed, 1 call opened)• Strong interest of French regions through “H2 valley” approach
H2 Mobility France	<ul style="list-style-type: none">• Structuration of the French ecosystem from H2 production to H2 mobility• Proposition of a coordinated HRS/FC vehicles deployment plan and release of position papers

Applications - Current Status and Goals

France



Application	Status (As of November 2018)	Goal
Fuel cell vehicles	324	5,000 by 2023 20,000 – 50,000 by 2028
Hydrogen stations	24	100 HRS by 2023 400 - 1,000 by 2028
Fuel cell buses and trucks	0	200 by 2023 800 - 2,000 by 2028
Electrolyzers		-
Primary fuel cell power units	111 (CHP)	-
Backup power fuel cell power units		-
Hydrogen for industrial use		10% of decarbonised H2 (ca. 100 000 tonnes) used in the industry by 2023 and 20-40% by 2028

Thank you



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