



International Partnership
for Hydrogen and Fuel Cells
in the Economy

Country Update: FRANCE

Laurent ANTONI
30th IPHE Steering Committee Meeting
Pretoria, South Africa
6 December 2018

New Policy Initiatives

French National Hydrogen strategy



MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE
ET SOLIDAIRE

- Call for projects in 2016 : revealed a strong potential in France
 - 39 «H2 territories » labelled for about 100 projects proposals
 - 12 projects financed in 2017 by the State (+ financing by EU or local)
- In November 2017, the Minister launched a mission (DGEC, CEA) in order to define the French deployment strategy for low-carbon/green H2
- Around 50 stakeholders were interviewed in December – January representing all the value chain and the applications of H2
- A report was submitted to the Minister in April 2018

Objectives :

- Define the role of H2 for the energy transition
- Define the French strategy for the Multiannual energy Plan (2018-2028)



New Policy Initiatives

French National Hydrogen strategy

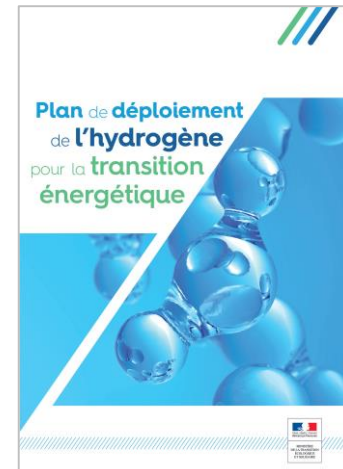


MINISTÈRE
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In June 2018, the Minister presented the French strategy on H2



**Hydrogen deployment plan
announced on June 1, 2018
with 3 main axis (100 M€)**



New Policy Initiatives

French National Hydrogen strategy



The hydrogen plan focuses on the 3 markets :

1

Industrial low-carbon H₂

Aim : Substitution of fossil H₂ by H₂ produced through electrolysis

→ **Main opportunity to create the volume effect needed for scaling up**

Challenges: price, logistics

Quantitative (indicative) objectives:

- **2023 : 10% of low-carbon H₂ in the industry**
- **2028 : 20 to 40%**



2

Clean mobility

Advantages : zero emissions, autonomy, short charging time complementarity with EVs and NGVs, ...

→ **Captive fleets and heavy vehicles are key for the business models of charging stations**

Challenges: distribution infrastructure, broadening of the range of heavy vehicles (trucks, buses, trains...)

Quantitative (indicative) objectives :

- **2023 : 5 000 light commercial vehicles and 200 heavy vehicles (buses, trucks, train, boats) and 100 charging stations**
- **2028 : 20,000 to 50,000 light commercial vehicles, 800 to 2,000 heavy vehicles and 400 to 1,000 HRS**



3

Flexibility for the power grids and decarbonisation of the gas grids (i.e. inter seasonal storage, electricity/gas interactions) :

Main challenges: long term needs, technical and economic conditions, security

Example of actions:

- Determine the conditions for H₂ fed in the gas grids
- Scaling-up power-to-gas demonstrators
- Pilot projects in French Overseas regions providing flexibility to the power grid

Call for projects are being launched in order to help financing the first H₂ deployment projects on the 3 main areas : industry, transport and energy

New Policy Initiatives

Greening of French railways



Rapport final

**Le verdissement des matériels roulants
du transport ferroviaire en France**

Comment répondre aux défis de la sortie du Diesel
et se tenir à la pointe de l'innovation technologique
pour la transition énergétique ?



Établi par Benoit SIMIAN
Député

Avec l'assistance des rapporteurs
Hervé de TREGLOIRE (SGEDD)
Jean-FRANÇOIS (CGE)
Arnaud FREDRONT (DSTAR)
Et Pierre LEAND (SNCF)

Novembre 2018

Report of **Deputy Benoit SIMIAN** on the “greening” of the French rail trains. It is proposed that the State concentrates on hydrogen.

State Secretary for transport Elisabeth BORNE indicated: “the Government carries the conviction that hydrogen energy will be a vector impossible to circumvent to make this energy transition a success”.

7 French regions have already declared an interest in launching a hydrogen train.



Guillaume Pepy, CEO of SNCF

“SNCF will order during summer 2019 the first prototypes of hydrogen trains to start at the beginning of 2022. The aim is the final stopping of diesel powered trains in 2035”

Demonstration and Deployments

Hydrogen infrastructure



Mobilité Hydrogène France



12 In operation (private)



11 In operation (public)



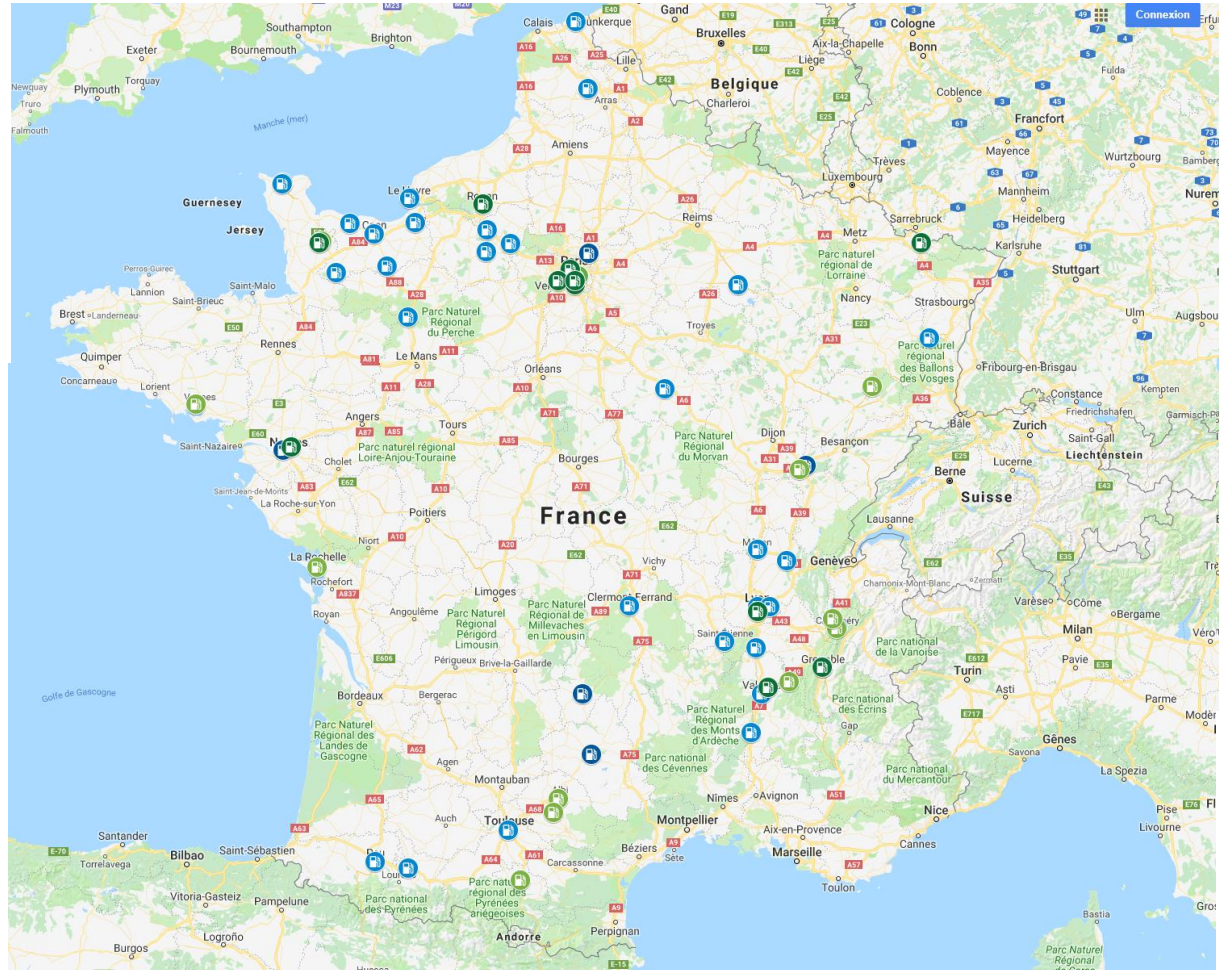
5 In construction



32 Planned/in project



324 FCEVs
in operation @
November 2018



Demonstration and Deployments

Decarbonizing transport

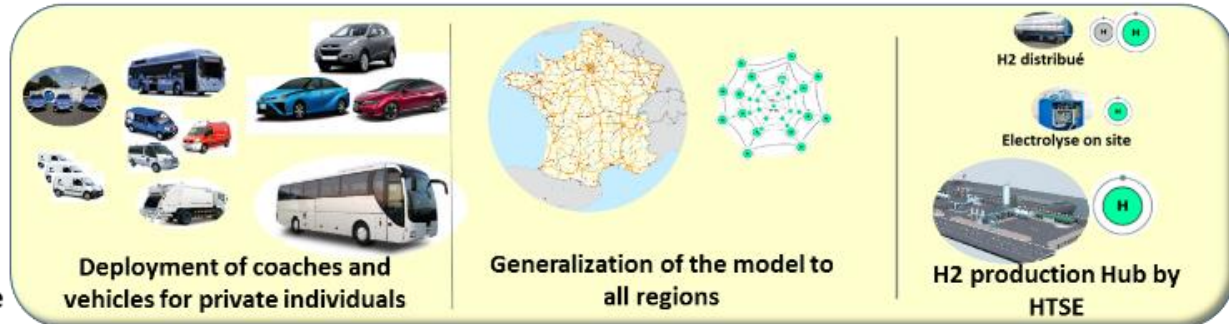


2028

Generalization of the infrastructure

Greening of H2 production

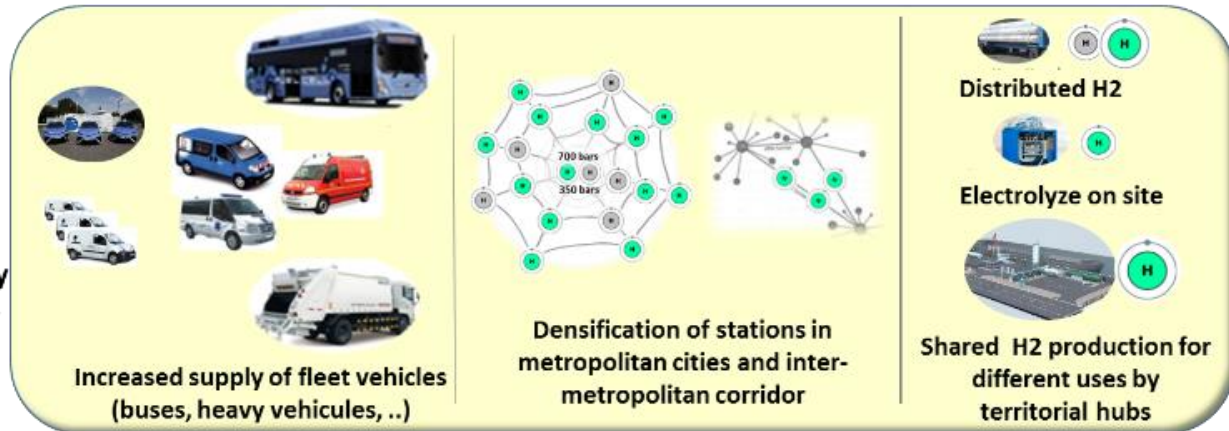
Market for private vehicles started



2023

Air quality in metropolises

Heavy-use mobility in urban and peri-urban areas



2018

Model captive fleets



Demonstration and Deployments

Energy autonomy owing to hydrogen



Le premier navire hydrogène
autour du monde



Chapter 2: Tour of the Mediterranean sea 2018



At date already 10,326 nautical miles covered, 14 countries visited, 33 stopovers and **using hydrogen produced from sea water.**

Principal sponsors: ACCORHOTELS  thelem  DELANCHY  ENGIE

Demonstration and Deployments

Mission H24: 24H Le Mans H₂ race cars



15 June 2018: creation of a **consortium for the introduction of hydrogen race cars at the 24 Hours of Le Mans in 2024: quite a challenge!**



Spa-Francorchamps
September 22, 2018

MissionH24 was launched. Organised by Automobile Club de l'Ouest (ACO), in collaboration with Green GT, the event was attended by Director General at DG MOVE Henrik HOLOLEI and by Pierre FILLON, President of ACO.

Demonstration and Deployments

Mission H24: 24H Le Mans H₂ race cars



MISSION
H24

Spa-Francorcamp September 22, 2018