



Renewable energies

Hydrogen

Carnot IFPEN Ressources Energétiques

Carnot IFPEN Transports Energie



## HYDROGEN

### OVERVIEW AND CHALLENGES

Hydrogen is an **energy vector** that can act as a bridge between primary energy sources and end uses. It is considered to be an “energy transition vector” due to its potential to bring about a cleaner, more sustainable energy system across its entire value chain.

Currently primarily produced from hydrocarbons, it is said to be “renewable” when it is **produced via water electrolysis using electricity** generated solely from renewable energy. This electricity may also be generated from nuclear energy, in which case the end-result is “**low-carbon**” hydrogen, a term that is also used to describe hydrogen produced using thermochemical processes with CO<sub>2</sub> capture.

To achieve the 2050 carbon neutrality objective as set out in the 2015 Paris Agreement, France is committed to **producing renewable or decarbonized hydrogen** and extending its use, hitherto reserved for the production of fertilizer or methanol or the refining of crude oils to obtain oil products. The country has thus set itself [three objectives within the framework of its national decarbonized hydrogen development strategy](#): **provide fuel for the transport sector**, currently responsible for **27% of greenhouse gas emissions**; **compensate for the intermittent nature of renewable energies** via electricity storage; and **decarbonize the industrial sector**, another major greenhouse gas emitter.

With its [considerable expertise in the field of new energy technologies](#), as well as its capacity to

mobilize multidisciplinary teams thanks to its partnerships and involvement in [European projects](#), IFPEN is active in **the production, storage, transport and various energy uses of decarbonized hydrogen**, thereby supporting the development of the associated industrial sector.

IFPEN's aim is to develop [economically viable technologies](#) enabling hydrogen to be incorporated in the energy mix, in line with national carbon neutrality objectives set for 2050.

[Our solutions](#)

[Our networks](#)

[Our strengths](#)

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