

HYVOLUTION and the Hydrogen Industry



2/12/24

The 2024 edition of HYVOLUTION - the expert event dedicated to hydrogen - took place on January 30th, 31st, and February 1st in Paris where stakeholders involved in this sector were present during these 3 days to contribute to the acceleration of global exchanges around hydrogen and confirm the operational reality of ongoing projects.

The event continued its ascent by bringing together 11,503 visitors (+46% compared to the 2023 edition) and 572 exhibitors and brands, including the main industry leaders (+45% compared to the 2023 edition).

EVENT KEY FIGURES

11,503 visitors in attendance (+**46%** compared to 2023 edition)

8,848 French (77%) and **2,655** international visitors (23% compared to 10% in 2023)

TOP 10 VISITORS COUNTRIES:

Germany - Italy - United Kingdom - Netherlands - Belgium - Spain - Switzerland - Canada - United States - Poland

10,500 participants in conferences and workshops over 3 days

Nearly **400 participants** in the Summit

25 INTERNATIONAL PAVILIONS AND DELEGATIONS FROM:

Germany - Belgium - Brazil - Canada - Chile - China - South Korea - Denmark - Scotland - Egypt - United States - Finland - Hungary - Italy - Japan - Morocco - Norway - Netherlands - Poland - Portugal - Quebec - United Kingdom - Slovakia - Switzerland - Ukraine

TOP 10 ACTIVITIES OF VISITORS

**Consulting / Engineering - Energy project development - Hydrogen production -
Electrical and electronic equipment - Research & development - Energy production /
distribution - Hydrogen distribution equipment - Energy services - Metallurgy / Plastics -
Construction, Civil Engineering**

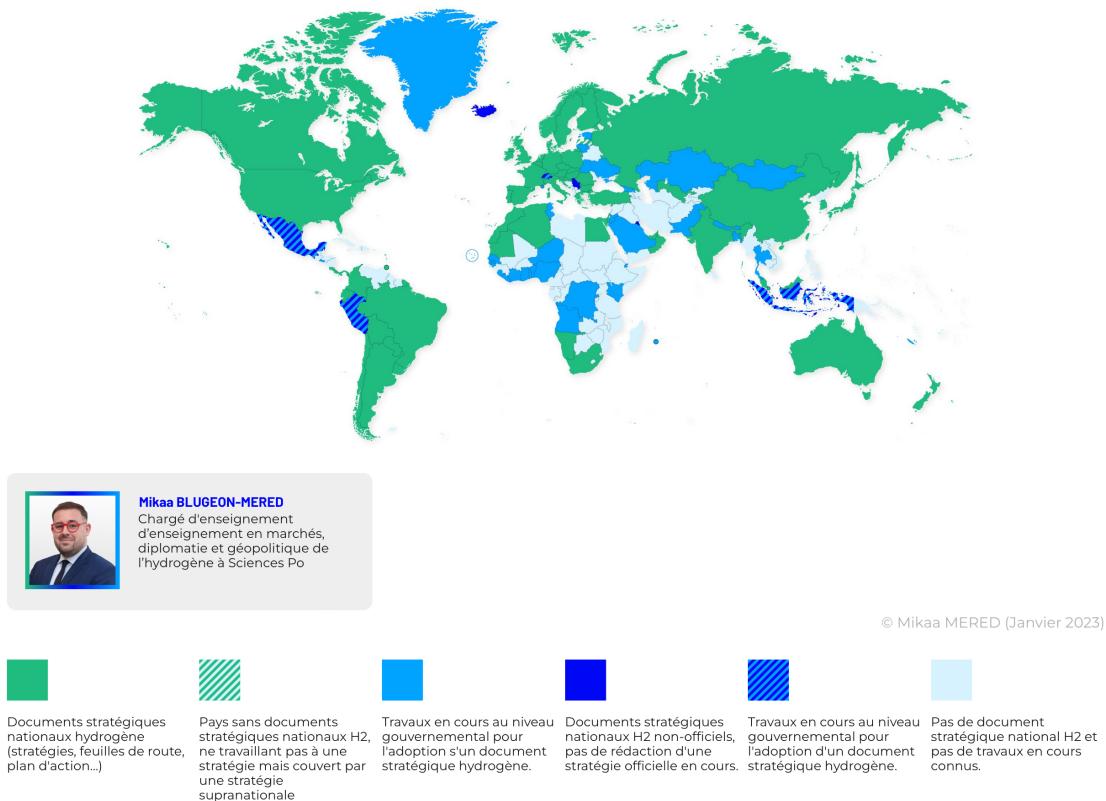
KEY TAKEAWAYS FROM THE EVENT

- 1. Hydrogen and the public sector**
- 2. Solutions all across the value chain**
- 3. Hydrogen in Aerospace**

1. Hydrogen and the public sector

Task Force Hydrogène, a french private initiative dedicated to help french hydrogen players develop their international markets, presented a world map (fig.1 below) showing hydrogen public policies progress by country. Colors vary from light blue for governments with no hydrogen related strategy whatsoever, to green for governments with clear national hydrogen related strategies, roadmaps and action plans.

fig1



Zooming in on Paris region where H2 is already a reality, the Ile-De-France administration presented more than a dozen (fig2) of delivered projects / solutions related to renewable energy production / infrastructure and urban mobility with probably the HYPE taxi fleet (image1) and public bus (image2) as the star projects.

fig2

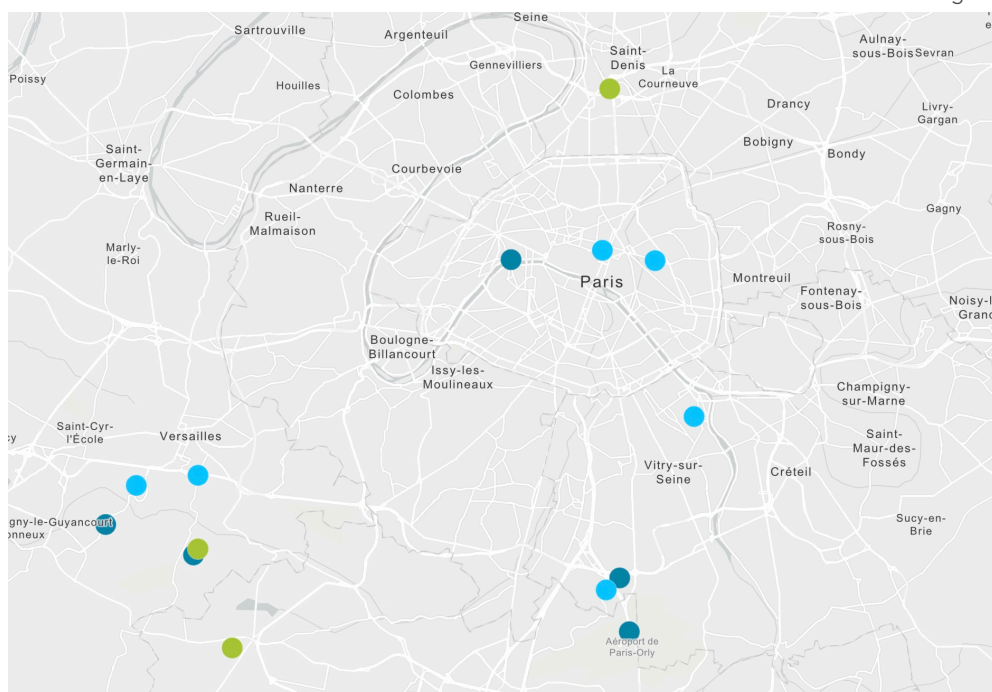


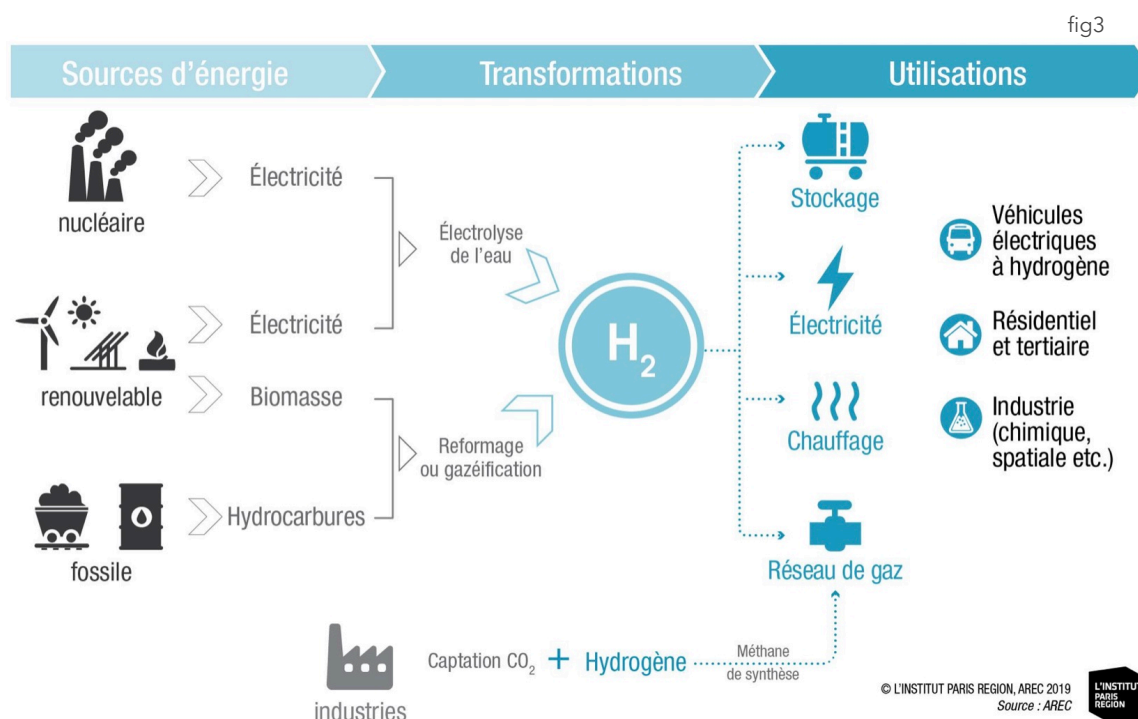
image1



image2



2. Solutions all across the value chain



As summarized in fig3 above the hydrogen value chain starts with the energy source (that can be electricity, biomass or fossil fuel) used for the transformation into H₂ before it is stored (in tanks or trucks...) or directly delivered to users (industries, mobility companies and residences) via pipelines.

Industry players are already implementing and delivering solutions all across the value chain from H₂ creation, storage and transportation solutions adapted to existing infrastructure (like modules transportable via standard intermodal freight and handled using existing cargo equipment for the aviation industry) to end users' equipments (hydrogen powered vehicles for the mobility sector).

3. Hydrogen in Aerospace

Around the world, commercial air travel accounts for over 2% of energy related CO₂ emissions, according to the International Energy Agency. That number is set to soar in the coming years as more oil-burning planes and more passengers hit the skies.

In the near term, airlines and plane manufacturers are working to curb emissions by designing more fuel-efficient engines, electrifying ground operations and increasing their use of sustainable aviation fuel.

Hydrogen, especially of the “green” variety, costs more to make and buy than conventional kerosene. However, because fuel-cell systems are far more energy-efficient than engines, aircraft don’t need to use as much fuel to fly.

Since the start of 2023, small planes equipped with hydrogen fuel cells have made their first test flights (image3)



image3

Besides commercial flights, hydrogen-powered drones like the french mermoz (image4) have also succeeded their first flights. Hydrogen-powered luxury private jets startup BEYOND AERO (image5) order book surpassed the \$600 million, while Royal Air Mobility (RAM) is expecting to start manufacturing & flight testing next year.

image5



image4



Building and unifying an airport ecosystem - airports are forging strategic partnerships through agreements with hydrogen suppliers, engineering partners, and airport stakeholders. Conducting comprehensive studies to define industry best practices and standards.

The group Aéroports de Paris (ADP) is working with partners on the hydrogen distribution infrastructure to be deployed at Le Bourget airport, Europe's leading business aviation airport.