INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update February 2024: FRANCE

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1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

- **France opened a consultation to update its decarbonized hydrogen strategy**. The French government opened for one month a public consultation to update the national hydrogen strategy. The following guidelines were put forward by the French government:
    - **production capacity targets**: confirm the 6.5 GW of electrolysis capacity by 2030 and set a target of 10 GW by 2035;
    - **the scale-up of hydrogen transport infrastructure**: priority will be given to the development of a network within hydrogen hubs, in particular the hubs of Fos-sur-Mer, Dunkirk, Havre-Estuaire de la Seine, and Vallée de la Chimie, and their connection to storage infrastructures;
    - **unequivocal public support**: EUR 4 billion support mechanism for the deployment of decarbonized hydrogen production over 10 years;
    - **a strategy open to the world**: providing support to the French hydrogen sector in its international development, and supporting the emergence of a global market for hydrogen and its derivatives;
    - **focus on hydrogen-related technologies**: strengthen the integration of the hydrogen ecosystem around French flagship projects and ensure coverage of all key products and technologies in the value chain;
    - **ensure that hydrogen can contribute to the energy system flexibility** by improving the demand response capacity of electrolysers and developing hydrogen storage;
    - **deployment of a national integrated approach for the use of hydrogen in the mobility sector**: matching the deployment of pertinent vehicles with the refueling infrastructure, hydrogen production, and the corresponding private and public financing**;**
    - **guarantee the framework conditions necessary for the development of the French hydrogen sector**, including the regulatory framework, access to skills, land, connection to the power grid, etc.

  The updated French hydrogen strategy is expected in the upcoming couple of months.

2. Hydrogen and Fuel Cell R&D Update

- **Elogen, CNRS and Paris-Saclay join forces to develop renewable hydrogen production on an industrial scale**. The joint laboratory will be housed at the Orsay Institute of Molecular Chemistry and Materials (ICMMO - CNRS/Université Paris-Saclay). It will bring together the scientific expertise of ICMMO's Electrochemistry for Energy Research and Innovation Team (ERIEE) in PEM water electrolysis, hydrogen storage and purification, and that of Elogen's teams. The creation of the laboratory will also contribute to the training of young researchers.

- **Gen-Hy signs partnership with Saint-Gobain for renewable hydrogen production** to launch a research program aimed at developing and industrializing future generations of AEM membranes, dedicated to the production of renewable hydrogen.

- **IFP School launches a master's program dedicated to hydrogen**. IFP School announced in late January the launch of its new "Hydrogen Project & Engineering" (HyPE) master program. Graduates will be able to take up positions as project managers, H2 business developers, project managers or design office managers in the hydrogen sector. Accredited by the Conférence des Grandes Ecoles for 2 years, the HyPE diploma course aims to train the next generation of high-level specialists in the field of low-carbon hydrogen, with a program covering the entire value chain. The aim is to welcome 25 students for the start of the academic year in September 2024.

3. Demonstration, Deployments, and Workforce Developments Update

- **The Auvergne-Rhône-Alpes region launches the 2nd stage of its hydrogen rocket with the Imaghyne Valley project: a €200m milestone**... First stage of the rocket: seven years ago, in 2017, the Auvergne-Rhône-Alpes region proudly rolled out the first elements of its Zero Emission Valley (ZEV) project: an investment of €70m, including €15m from the region. By 2029, this new project aims to produce 8,000 tons of low-carbon hydrogen per year (half of which will be 100% renewable), and to store over 60 tons of hydrogen initially in a saline subsoil in the Ain county. In fact, this test is a precursor to a much bigger ambition: to store 8,000 tons of hydrogen each in three other saline sub-soils in the region. In addition, Imaghyne aims to finance not 250 heavy-duty vehicles. Thus moving from hydrogen-powered cars to heavy-duty vehicles. A change of scale.

- **Auvergne-Rhône-Alpes, the first region in Europe to deploy a fleet of buses combining retrofit and hydrogen technology**. On February 16, 2024, the Auvergne-Rhône-Alpes region took delivery of 16 retrofitted hydrogen-powered coaches. Dedicated to school and intercity transport, they are the first deliveries under a contract signed with the GCK technology group for 50 "clean" coaches, by offering a hydrogen retrofit solution for thermal coaches, powered by a fuel cell developed by the Symbio joint venture between Michelin and Forvia. Involved in the circular economy of electric and hydrogen retrofitting - two methods capable of reducing CO2 emissions by 87% compared with new vehicles, according to the ADEME's (French Agency for Ecological Transition) calculations

- this region has just received the first 16 hydrogen retrofitted coaches from a much larger order.

- **Stellantis unveils its hydrogen roadmap for commercial vehicles.** Stellantis has lifted the veil on its Pro One strategy for commercial vehicles, and mentioned hydrogen as part of its zero-emission strategy. There will be new models as early as next year. Stellantis mentioned the second generation of electric powertrains. Concerning hydrogen, from 2024 onwards, the Stellantis will be expanding its offer. Its mid-power architecture is able to offer 400 km of range and a fill-up time of less than 5 minutes. Hydrogen will also be available for large commercial vehicles. And with a range of 500 km. Stellantis registers **its first major order with HysetCo** in France. Stellantis and HysetCo specify that the contract covers 150 hydrogen vans, which are due for delivery in the first quarter of 2024 and will be put into service in HysetCo's fleet immediately thereafter.

- **Symbio inaugurates its fuel cell gigafactory**. On December 5, Symbio, the joint venture between Forvia, Michelin and Stellantis inaugurated its fuel cells gigafactory in Saint-Fons, near Lyon. The "SymphonHY" project will enable fuel cells to be scaled up and made more affordable for mobility applications. Symbio's range includes 40, 75, 150 and 300 kW systems. The company, which began producing its first units at the end of the summer, plans to manufacture 10,000 by 2024. And it is aiming to reach the threshold of 50,000 units per year around 2027/28, in order to make the technology more affordable.

- **Toulouse airport gets a renewable hydrogen production station**. The Toulouse-Blagnac airport has an electrolytic hydrogen production station. Called Hyport, it comprises two distribution hubs, one on the city side and the other on the airport side. Its mission is to recharge the shuttles linking the parking lots to the airport, as well as the buses transporting passengers to their aircraft, the aircraft tractors and the generators supplying electricity to the aircraft on the ground.

- **Total Energies and Air Liquide have taken the next step in their hydrogen joint venture project.** Announced in early 2023 by the two French groups, the TEAL Mobility project was officially validated by the European Commission on Monday December 18. TEAL Mobility will invest in, build and operate a network of hydrogen filling stations for heavy-duty vehicles, targeting five major European markets: Germany, Belgium, France, the Netherlands and Luxembourg. The aim is to deploy 100 hydrogen stations over the next few years.

- **Success for Sealhyfe, the world's first offshore hydrogen pilot plant**. On January 26, after 14 months of trials off Saint-Nazaire, France, Lhyfe made public the results of its Sealhyfe project equipped with a 1 MW electrolyzer, the world's first offshore hydrogen production pilot. The offshore pilot facility was tested in real conditions, including the Ciaran storm in October 2023 with winds of over 150 km/h. The system's responsiveness and flexibility, its robustness and the efficiency of its remote control gave satisfaction. Less than a dozen maintenance operations were carried out, and the system was operated for 70% of its operating time.

4. Events and Sollicitations

- Hyvolution Paris from January 30th to February 1st at Paris Expo Porte de Versailles.

5. Regulations, Codes & Standards, and Safety Update

- **Publication of a Ministerial decision on the research permit for native hydrogen mines**. A ministerial decision has been published granting "the exclusive license to prospect for native hydrogen, helium and related substances known as "Sauve Terre H2" in the Pyrénées-Atlantiques County, covering an area of around 225 km²". This five years permit has been granted to TBH2 Aquitaine company. Other permits may follow, as five demands are currently being currently examined by the authorities.

- **Publication of the tax exemption for the use of renewable energy in transport sector decree**. The decree implementing the incentive mechanism for the use of renewable energy in transport sector (TIRUERT) relating to the traceability conditions specific to renewable hydrogen was published on December 31, 2023. The decree set the provisions concerning the proof of sustainability of the renewable hydrogen used in transport sector (including in refineries). The inclusion of low-carbon electrolytic hydrogen in the TIRUERT mechanism will be the subject of a subsequent decree.