Union Française de l'Électricité

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UFE's input to the EU Strategy on Hydrogen

UFE welcomes the European Commission's will to present "A EU hydrogen strategy" and acknowledges the need to define how hydrogen can be best used to decarbonise the EU economy.

In the first place, UFE believes that to contribute to the EU decarbonisation path, **clean hydrogen means hydrogen produced from decarbonised electricity (RES, nuclear, hydro).** The EC must consider both the renewable characteristic and the level of emissions in a life cycle perspective. Categories based on colours or specific technologies should be avoided and replaced by a clear CO2 based criteria.

UFE agrees with the EC that it is urgent to move away from fossil fuels in end-use sectors such as transport, industry and buildings. However, the role that hydrogen will play in decarbonising these sectors must be carefully assessed and prove to be economically and climatically sound.

UFE recalls that to achieve carbon neutrality by 2050 the EU must first prioritise energy efficiency and direct electrification. Where direct electrification is not technically feasible or affordable, hydrogen can be used as decarbonisation carrier.

The current consumption of hydrogen in Europe represents more than 9Mt per year and emits around 90MtCO2 each year. UFE stresses the need to **use clean hydrogen in the sectors that already consume it.** For other sectors such as transport or buildings, hydrogen must be used it where it makes most sense. **It should only be used as a decarbonisation energy carrier when it is the most efficient option from a CBA perspective.**

In the **mobility sector**, alternative and decarbonised fuels should be used depending on their competitiveness against electrification. Battery electric vehicles already exist for passenger cars, light vehicles and in some cases, for heavy vehicles (buses or specific industrial vehicles) and are cheaper than hydrogen vehicles. A full electric vehicle can be up to 3 to 4 times more efficient than a hydrogen-powered vehicle in a well-to-wheel approach. Hydrogen should only be favoured in heavy transport segments (long-haul trucks, maritime transport, aviation or railway).

In **the building sector**, UFE sees a very limited role for hydrogen. The decarbonisation of the sector will be done thanks to energy efficiency and by transferring the use of fossil fuels to low-

carbon solutions, including renewable sources, such as urban heating networks or the installation of electric heat pumps in individual and collective housing.

For the **European industry**, an incentive to renewable and low carbon hydrogen could be useful to replace the current volumes of emitting hydrogen consumed. This will require massive investments and support will be needed both on the production side and on the consumption side as clean hydrogen is currently 4 to 5 times more expensive than emitting hydrogen. Given the projected costs, UFE recommends to first prioritise direct electrification. Indeed, a Eurelectric study[1] shows that a range of industrial processes can be electrified (up to 50% in 2050) in an economic and environmentally sustainable way. As EU industry faces international competition, the relative competitiveness of electricity compared to other carbon neutral fuels will be the driving force to this change.

With regard to the **power system**, the regulatory framework should ensure a fair competition between the different types of energy carriers, considering their impact on climate. It should also enable a level-playing field for flexibility sources in order to meet the needs of the system at the best cost for consumers. Directly encouraging the use of hydrogen as a source of flexibility would impede fair competition (with, for example, demand-side response) in the electricity sector. The EU should act as a catalyst while remaining agnostic in determining what is the best source of flexibility for the electricity system (be it hydrogen or any other source). In this regulatory framework, clean hydrogen, i.e. produced from decarbonised electricity, must be able to reveal its true added value of flexibility on the power system, including at local level where the decentralised renewable energy sources are. This means that electrolysers should be connected to the electricity grid to enable the potential flexibility, which will in turn facilitate the integration of more intermittent RES in the energy system. In the long term (2050), hydrogen could meet some flexibility needs of the electricity network in the scenarios of massive integration of intermittent renewable energies. It could indeed be useful to set up in the medium term large-scale seasonal storage solutions to contribute to the balance of the power system in mixes including a significant share of variable renewables energies according to a study carried out by RTE[2].

UFE believes the EU should spend funds on R&D and other demonstrators to define whether a given technology offers an economically viable flexibility solution.

[1] https://cdn.eurelectric.org/media/3172/decarbonisation-pathways-electrificatino-part-study-results-h-AD171CCC.pdf

[2] https://media.rte-france.com/rapport-hydrogene/