

Hydrogen: sectors of application and development perspectives of technologies for production, transport and final use

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Although in the last few decades hydrogen passed through cyclical waves of great enthusiasm and profound scepticism, the R&D activities have never stopped. Now that hydrogen is indisputably affirmed as key factor to foster the energy transition, the research, the innovation, the experimentation, the technology transfer and industrial development are assuming a key role both at National, European and International level. Numerous Member States have already launched their own Hydrogen Strategy and have implemented initiatives to foster the growth and development of the hydrogen economy. Italy also published the national Hydrogen Strategy Guidelines the last December and included the issue of hydrogen among the priorities of the PNRR.

In the medium to long term, the aim is to produce renewable - green hydrogen (from sun, wind, biomass); this is the option most compatible with the objectives of climate neutrality set by the EU by 2050 and zero pollution in the long term. But, in order to enable hydrogen as an energy vector in a decarbonised economy, it is essential to ensure the contribution to innovation and industrial competitiveness along all the H2 value chain and in all the sectors of application: production, transport and distribution, final use; for industrial, mobility, residential and energy sectors.

Alongside market-ready technologies, R&D is an important enabler and accelerator for the diffusion of hydrogen, supporting the reduction of costs, thorough experimentation and validation, and through the creation of prototypes aimed at filling the gap toward the industrialization phase of innovative processes. Then the implementation and demonstration in real scale application, of the different technologies of H2 value chain, will facilitate the achievement of the de-carbonisation challenge.