

A POSSIBLE STEP FORWARD TO GREEN HYDROGEN USE EXPANSION

V. D'Ascanio, CEO Tiemes srl, +39024983104, vincenzo.dascanio@tiemes.it

Overview

In order to limit average Earth temperature change in 2050 to 1.5°C with respect to pre-industrial times, as per Paris Agreement 2015, electrification by renewable energy of carbon emitting activities plays a major role.

However, electrification is difficult in some processes of the so-called “Hard-to-Abate” (HtA) sectors and hydrogen is a suitable energy carrier for many applications and is expected to provide 12% contribution to the decarbonization needed, which seems today very hard to achieve. Although various initiatives have been taken and many projects have been announced, their execution may be in doubt, also because there are several alternatives and many links among them

Methods

This paper evaluate with various tools, mainly technical (eg. fossil fuel replacement rates), economical (eg. diffusion and learning curve), environmental (eg. GHG impact), some alternatives and analyze in detail the one(s) likely to start before 2030.

Results

The analysis shows that green hydrogen production near HtA industries is an opportunity to do something which has to be done in any case, it allows some synergies, with affordable incentives, as for other sectors in the early stages of development and generates a large enough market to initiate a positive learning curve.

Conclusions

Replacement of fossil fuels in HtA industrial plants with locally produced hydrogen is a possible next step to extend the use of hydrogen, to facilitate technical improvements and economies of scale to make hydrogen less expensive and, therefore, to extend its use to other sectors.