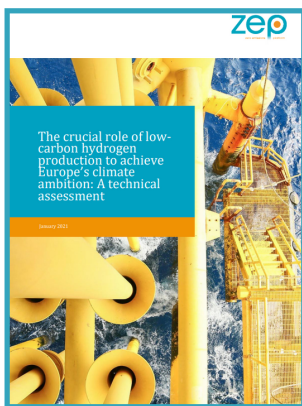


THE CRUCIAL ROLE OF LOW-CARBON HYDROGEN PRODUCTION TO ACHIEVE EUROPE'S CLIMATE AMBITION: A TECHNICAL ASSESSMENT – ZEP REPORT



What is the focus of this report?

This [report](#) focuses on the need for blue hydrogen and considers production techniques, costs, scalability, and emissions reduction potential. The report also features examples of different low-carbon hydrogen production projects ready to deploy in the 2020s to supply a material volume of low-carbon hydrogen for industrial uses, highlighting that many projects – particularly co-located in industrial clusters as anchor projects for CCUS clusters – can move and scale to help achieve 2030 climate targets.

What are the key findings?

- Both renewable hydrogen and low-carbon hydrogen from reformation of methane with CCS have important roles to play in an EU hydrogen economy.
- Development of shared CO₂ infrastructure networks between hydrogen producing industrial regions underpins the future of an effective EU hydrogen economy.
- By fulfilling early hydrogen demand, low-carbon hydrogen will give more time to plan and build the infrastructure required to scale up renewable hydrogen.
- Repurposing existing natural gas infrastructure will be a key enabler for a hydrogen economy.
- Without low-carbon hydrogen, 2030 hydrogen ambitions will not be met.



What are ZEP's policy recommendations?

- Propose consistent, EU-wide hydrogen terminology and subsequent classification and thresholds based on life-cycle greenhouse gas (GHG) emissions savings.
- Under the EU Taxonomy, it is not exactly clear how the current threshold of 2.256 tCO₂eq/t has been designed and whether it will decline over time. Introduce Power Purchase Agreements – with both temporal and geographical correlation – to comply with the electricity threshold.
- Include all CO₂ transport modalities for European CO₂ infrastructure, connecting emitters with storage sites, in the Trans-European Networks for Energy (TEN-E) and EU Emissions Trading System (ETS).
- Include CO₂ and hydrogen storage in TEN-E Regulation – storage is an essential part of the CO₂ and hydrogen infrastructure component of a CCS project.
- CO₂ and hydrogen storage is a key element of delivering real climate change mitigation and it should be eligible to receive funding as part of the Connecting Europe Facility for Energy (CEF-E).

Low-carbon hydrogen production projects in the 2020s

The report showcases an array of different low-carbon hydrogen production projects ready to deploy in the 2020s to supply a material volume of low-carbon hydrogen for industrial uses. This highlights that many projects, particularly co-located in industrial clusters as anchor projects for CCUS clusters, can move and scale to help achieve 2030 climate targets.

Examples include:

- H-vision – Port of Rotterdam, The Netherlands
- Northern Lights – CO2 Storage Network, Norway
- Preem CCS, low-carbon hydrogen, Sweden
- H2morrow, North Rhine Westphalia, Germany
- Magnum Hydrogen Power, The Netherlands
- CCS Ravenna Hub, north-east Italy
- HyNet, north-west England
- Saltend H2H, Humberside, England
- Acorn Hydrogen, Scotland



Shared CO2 storage concept, highlighting coastal projects storing in the Norwegian offshore (Northern Lights project)

From Bellona, Industry in a Changing Climate, 2018

Background and policy landscape

Hydrogen has emerged as a central narrative of the European Green Deal. With a legally-binding objective to reach climate neutrality by 2050 – set by the **European Climate Law** – and an increased 2030 climate target, the EU has identified hydrogen as a way to decarbonise energy-intensive industries, energy and transport sectors.

Published in July 2020, the **EU Hydrogen Strategy** highlights that both renewable and **low-carbon hydrogen with carbon capture and storage (CCS)** are included in the strategy, with a focus on producing renewable hydrogen in the long-term perspective.

Low-carbon hydrogen produced from reformed natural gas with CCS will play a key role in paving the way towards a clean hydrogen economy for Europe, as the only opportunity to deliver early, large-scale quantities of hydrogen to industries – thus kick-starting cost-efficient decarbonisation.

This report was produced by ZEP's Hydrogen Working Group.

Download: [The crucial role of low-carbon hydrogen production to achieve Europe's climate ambition: A technical assessment](#)

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