

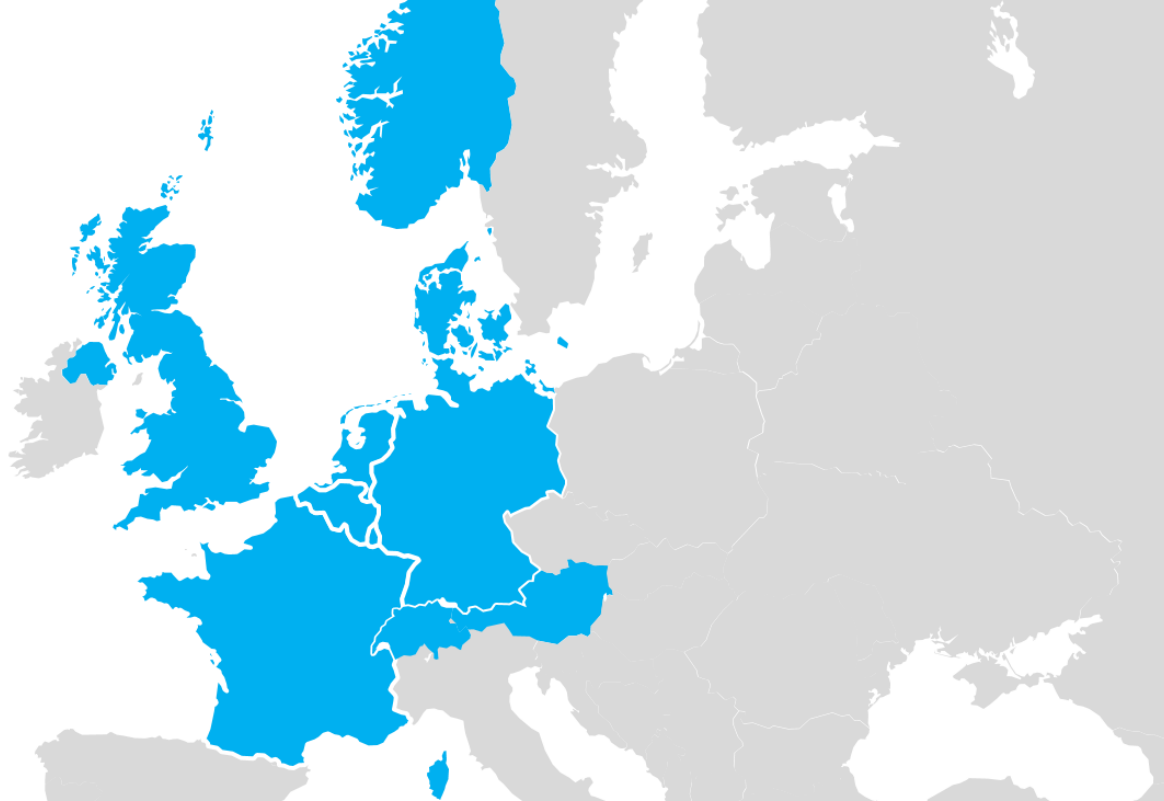


Northwest European Hydrogen Monitor

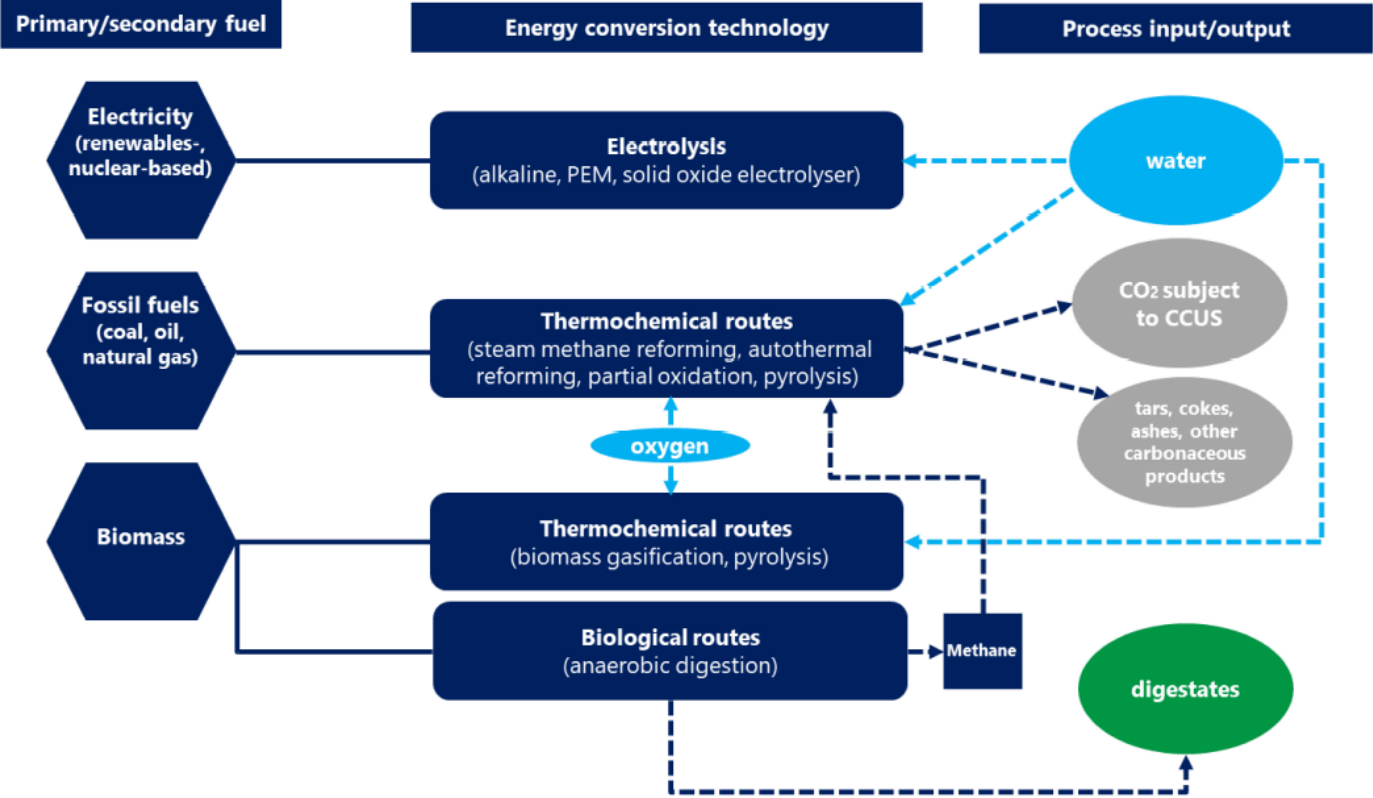
Gergely MOLNAR, Gas Analyst

Clingendael International Energy Programme – Istituto Affari Internazionali, 12 December 2022

Northwest European Hydrogen Monitor: regional coverage



Low-emission hydrogen: defining production routes

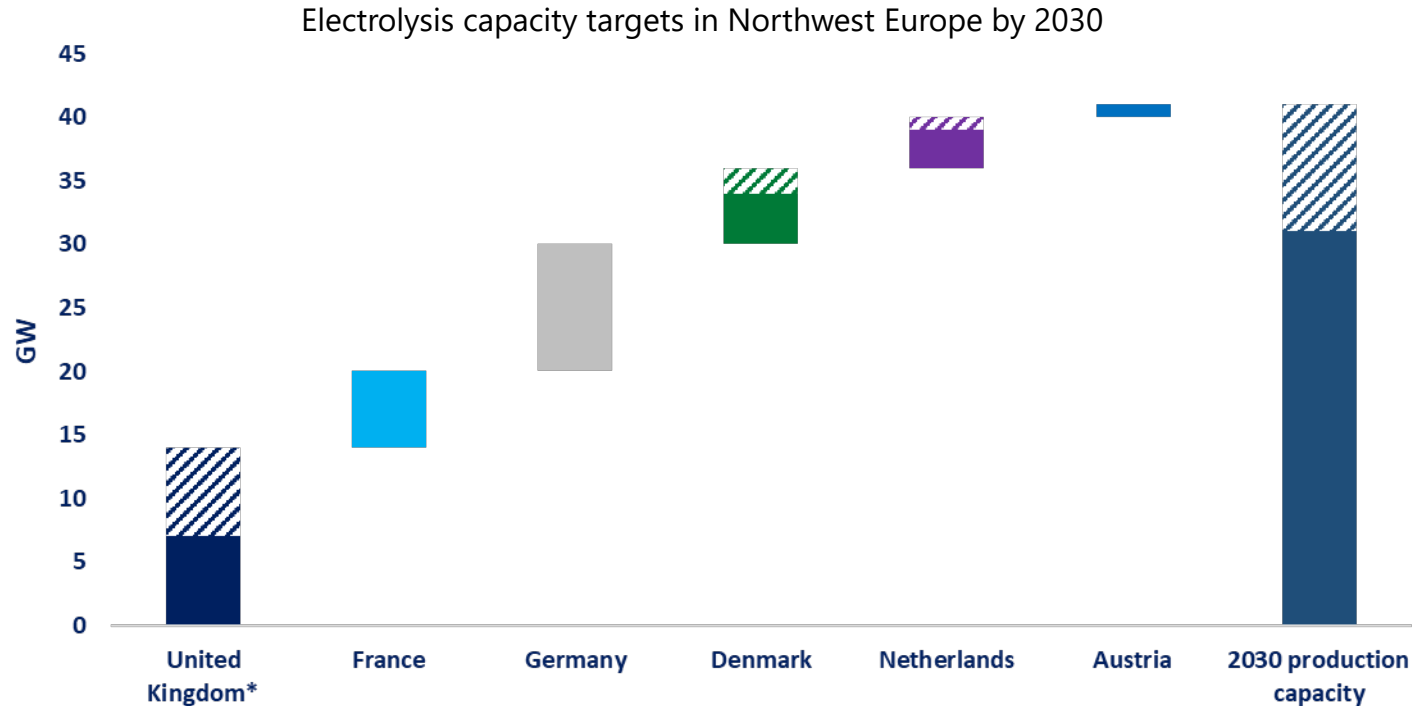


Most of Northwest European countries adopted hydrogen strategies

Hydrogen strategies and roadmaps adopted in Northwest Europe
(2020 – 2023)



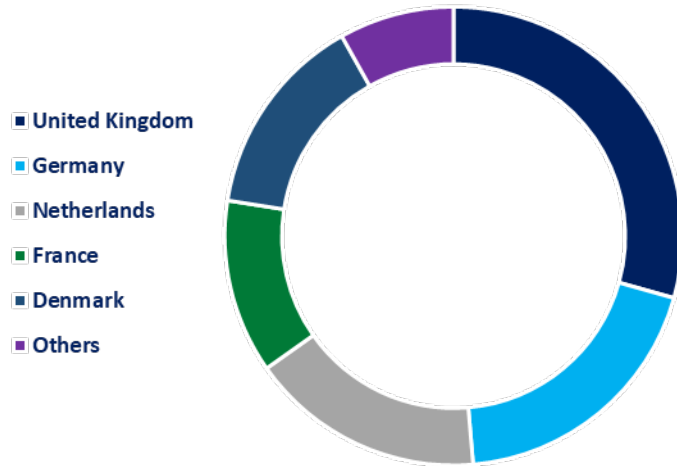
Northwest Europe targets 30-40 GW of installed electrolysis capacity



The majority of the countries adopted production targets for electrolytic hydrogen, while Norway opted for a technology neutral approach.

The pipeline of projects translates into 14 MT/y capacity by 2030

Planned low-emission hydrogen capacity by country (2030)

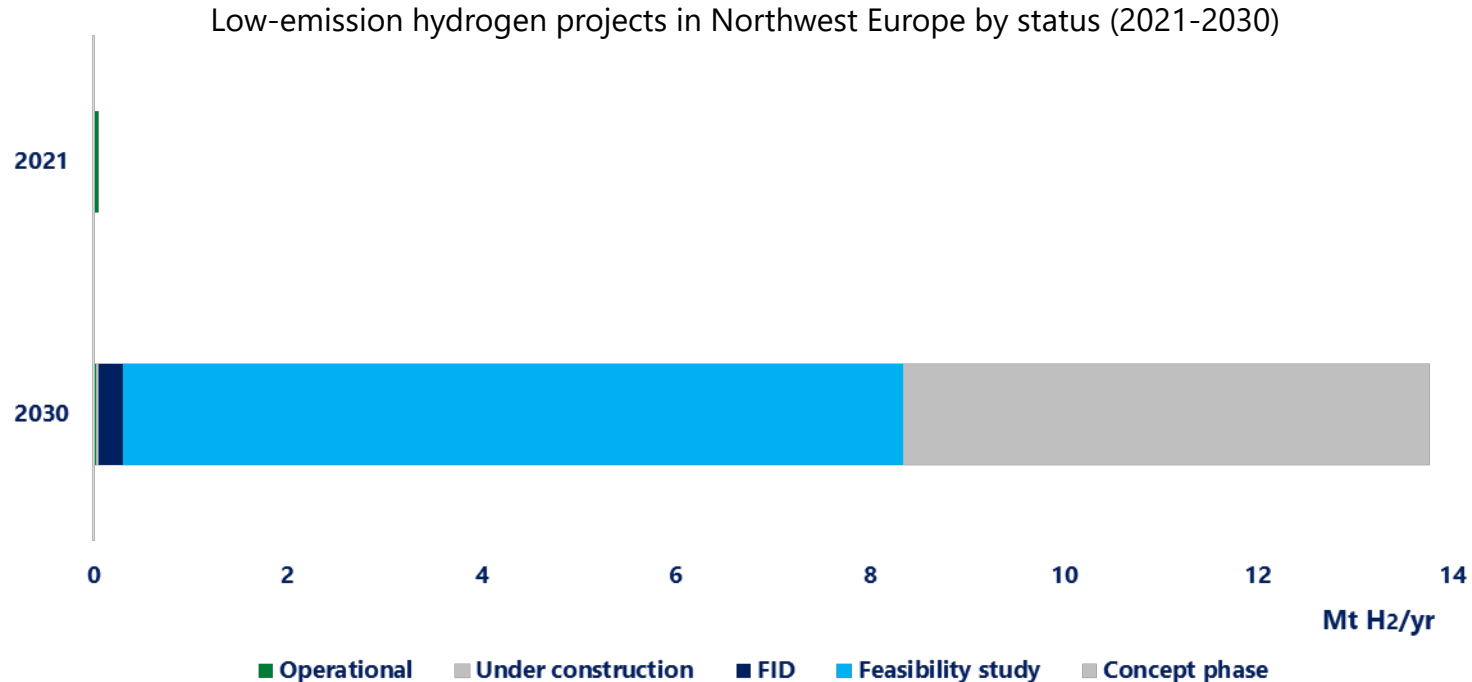


Planned low-emission hydrogen capacity by country (2030)



The United Kingdom, Germany and the Netherlands could account for 70% of total low-emission hydrogen production capacity, with electrolytic hydrogen taking the lead.

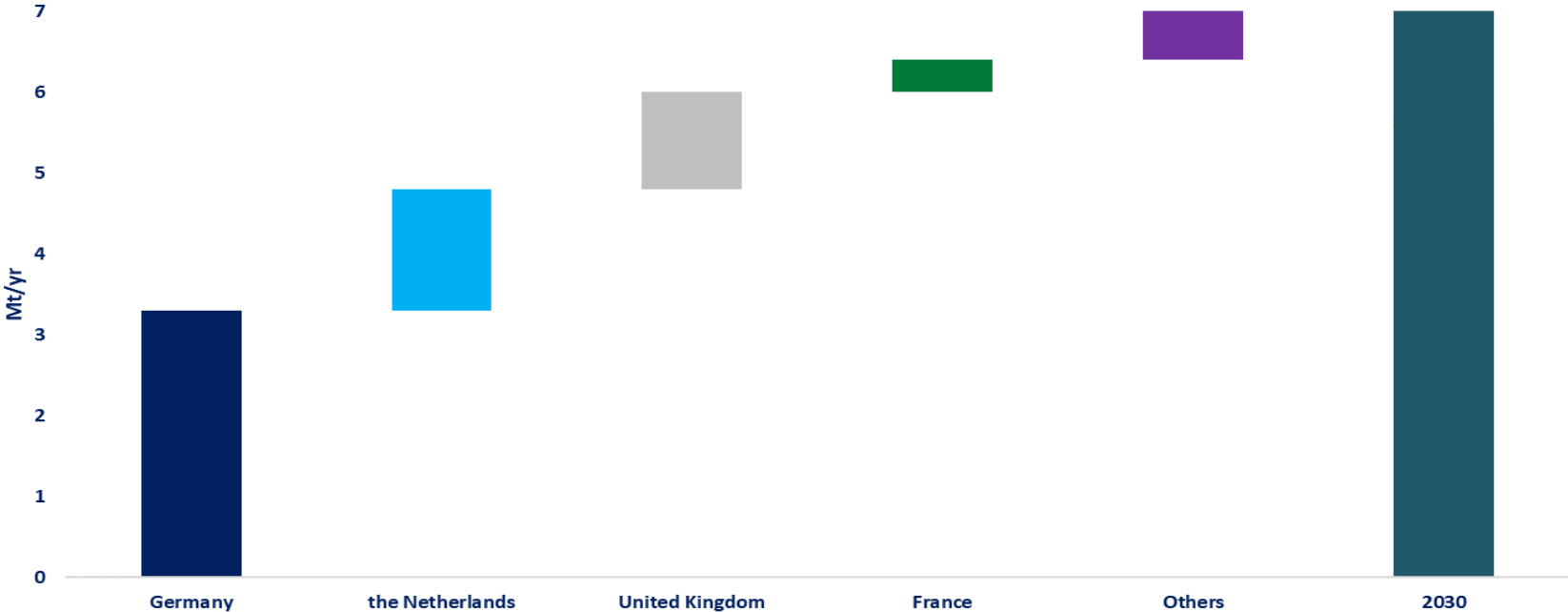
The majority of low-emission hydrogen projects remain tentative



Over 95% of low-emission hydrogen projects are tentative, highlighting the importance of subsidy schemes and support mechanisms.

Demand creation will be crucial to enable market development

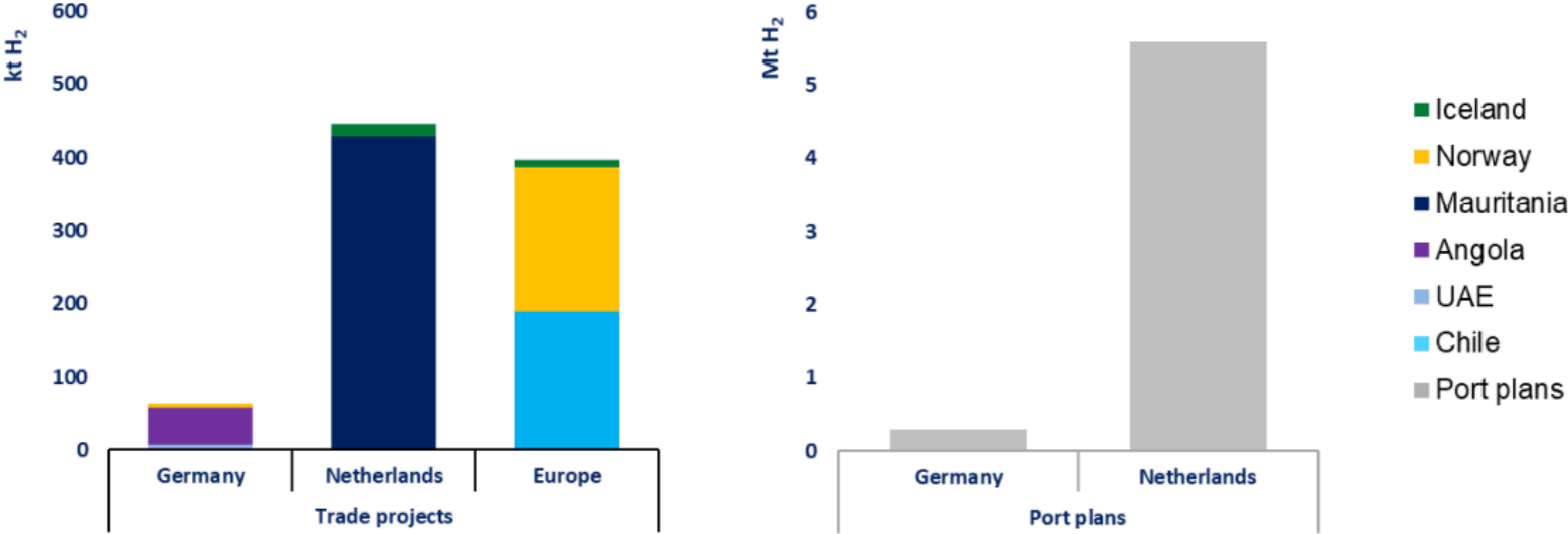
Expected low-emission hydrogen consumption by Northwest European country to 2030



Based on announced targets, Northwest Europe’s low-emission hydrogen consumption could reach close to 7 Mt H₂/y by 2030.

Northwest Europe can play a fundamental role in hydrogen trade

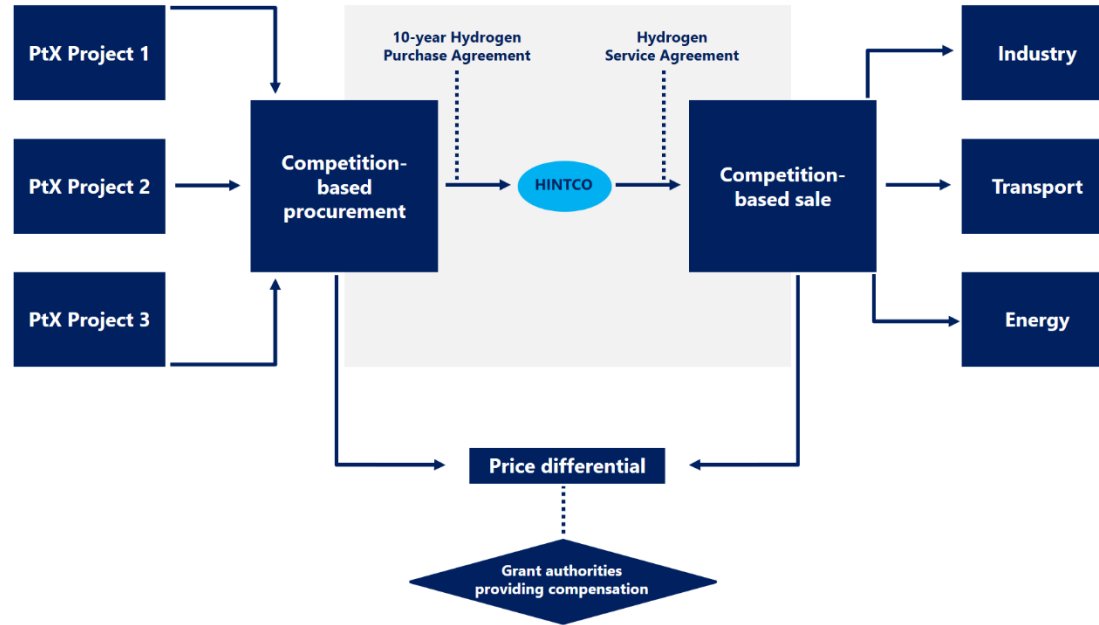
Trade projects and ports plans for hydrogen import to the Northwest European region, by 2030



The Netherlands and Germany lead the import projects development. Major ports in the Netherlands have plans for importing a combined amount of more than 5 Mt H₂ by 2030.

H2Global aims to derisk hydrogen investment via long-term contracts

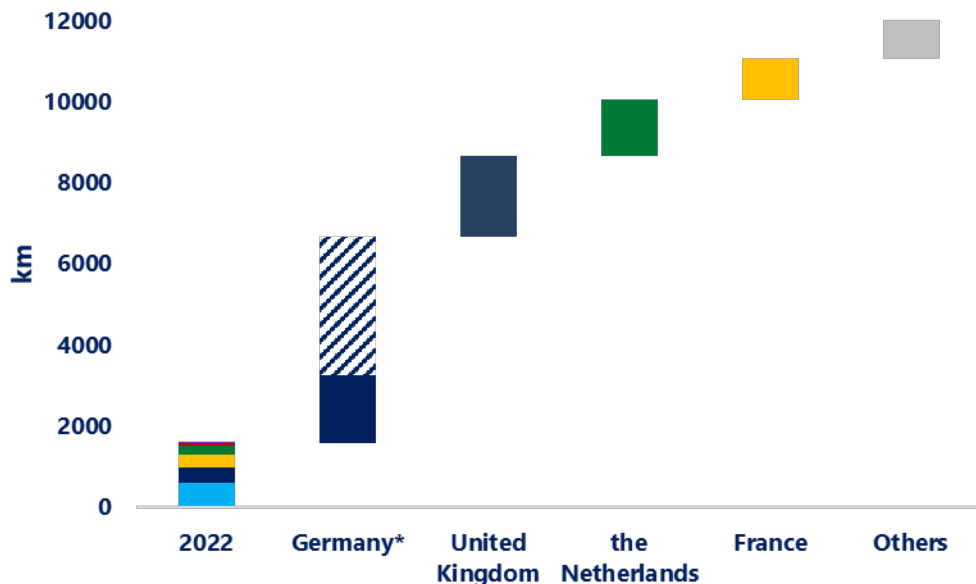
Simplified scheme of the H2Global instrument



H2Global auction-based mechanism will facilitate the conclusion of long-term import contracts for low-emission hydrogen and hydrogen derivatives.

Hydrogen networks could reach over 12 000 km by 2030

Existing and planned hydrogen pipelines in Northwest Europe, 2021 and 2030



Hydrogen pipelines in Northwest Europe in 2030, by origins

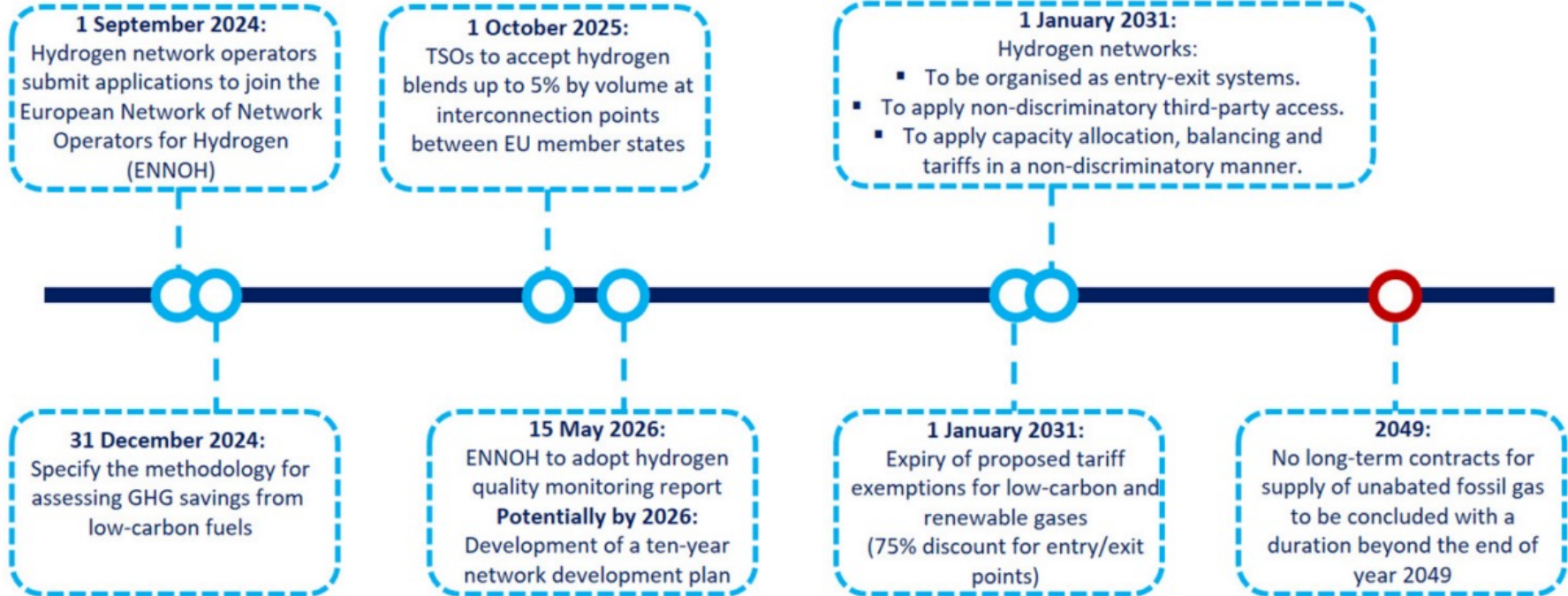


*3 400 km were included as tentative projects based on scenarios developed by TSOs.

Based on the current targets set by northwest European countries, the region's hydrogen network could increase by almost eightfold to over 12 000 km by 2030.

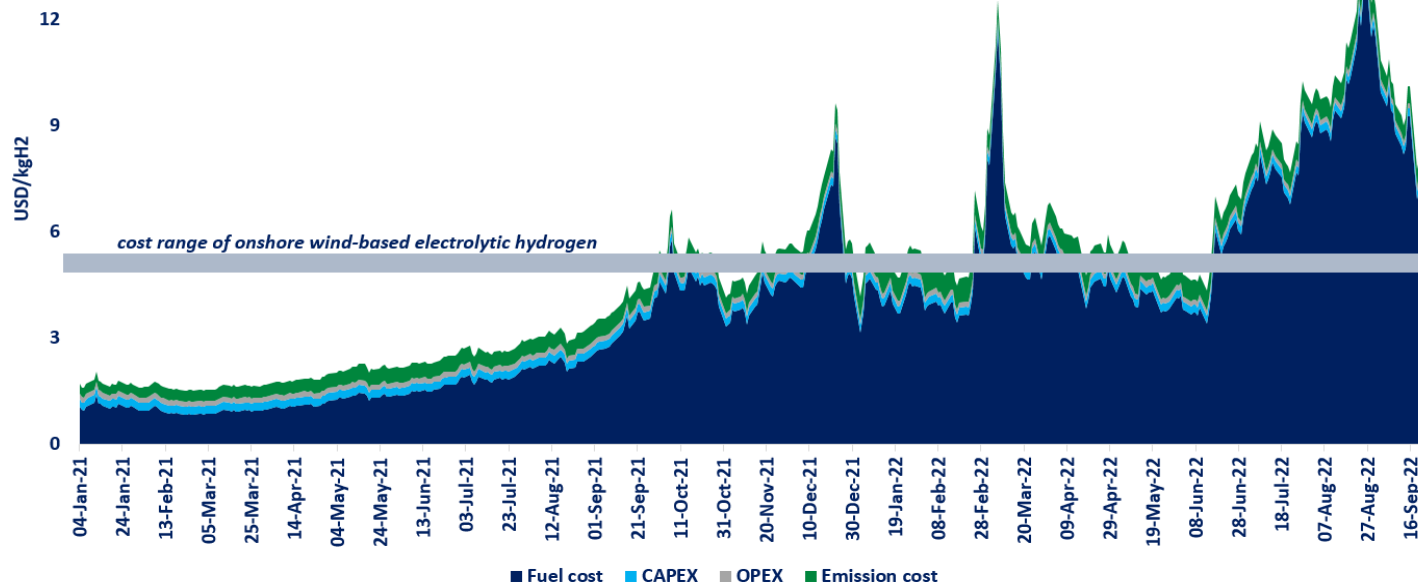
The regulatory framework for hydrogen is still nascent

The European Commission's proposed Hydrogen and Decarbonised Gas Markets Package



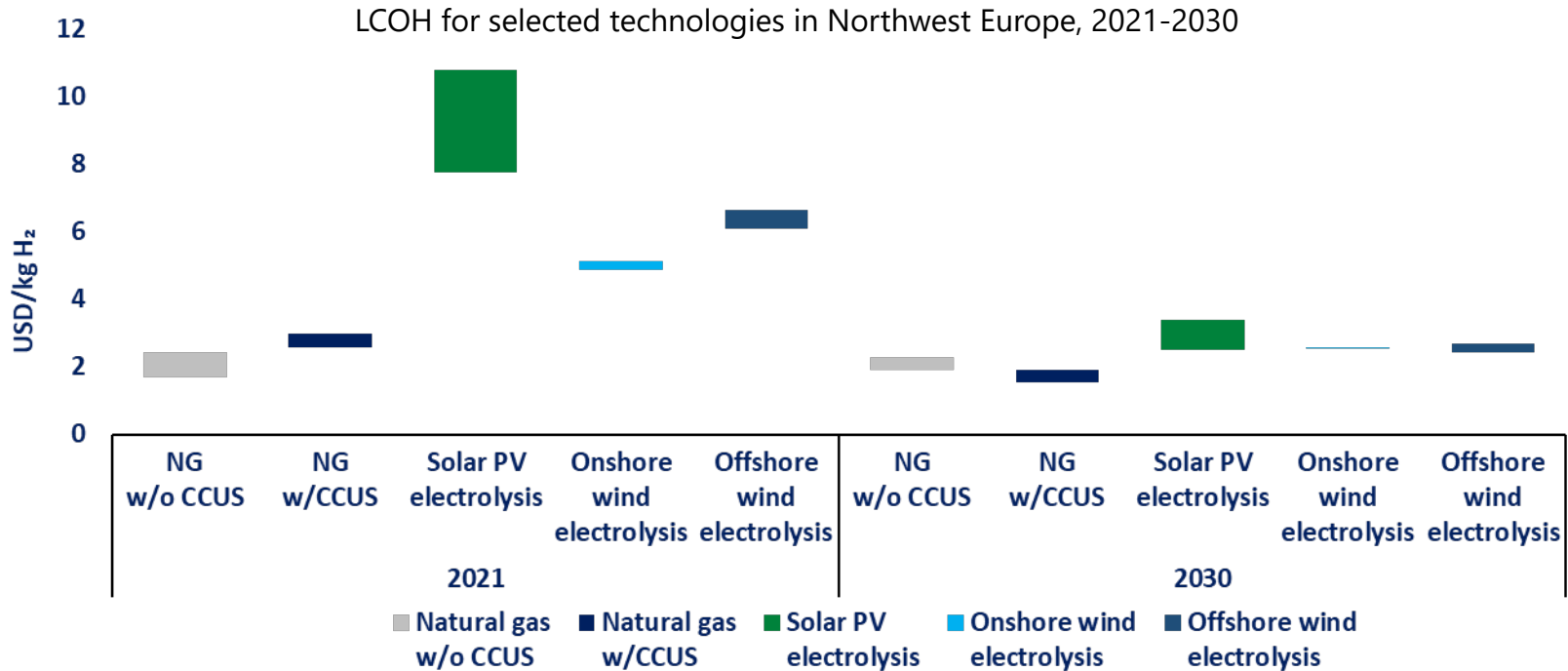
Record high gas prices eroded the cost-competitiveness of gas-based hydrogen in Northwest Europe in 2022

15 Estimated production costs of gas-based hydrogen produced via SMR without CCUS vs wind-based electrolytic hydrogen (2021-22)



The cost of unabated gas-based hydrogen rose above the estimated cost of wind-based electrolytic hydrogen in 2022 amidst the surge in gas prices to record levels.

Low-emissions hydrogen is set to become cost competitive by 2030



Our projections indicate, that renewable electrolytic hydrogen will be competitive with gas-based hydrogen by 2030, even assuming natural gas prices returning to their historic average levels.

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