

Global Hydrogen Compass 2025

Industry progress and lessons learned from the first wave of mature clean hydrogen projects



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The Hydrogen Council's inaugural Global Hydrogen Compass report builds on five years of detailed reporting in collaboration with McKinsey & Company via the "Hydrogen Insights" series and examines where the hydrogen industry stands today, unpacks lessons learned from the first wave of mature clean hydrogen projects, and explores the impact clean hydrogen can have across the energy sector as the industry navigates the current challenging environment.

Representatives from the Hydrogen Council member companies were instrumental in delivering the report through ensuring project data is fully up to date, sharing insights around how companies are facing challenges and progressing projects, and volunteering to showcase how a representative sample of projects have come to fruition.

Analysis in this report includes unique qualitative and quantitative insights derived from interactions with over 70 Hydrogen Council members gathered through a sentiment survey and direct conversations with CEOs across the value chain. In the Hydrogen Leaders' Perspective that opens the report, insights from these interviews and survey results are distilled down into key emerging themes, bringing to light how leaders in the ecosystem are navigating the industry's opportunities and challenges today. The analytical body of the report that follows examines the state of the project pipeline, the progress of supply projects, the development of firm demand, and lessons learned from the first wave of mature clean hydrogen projects.

Unless otherwise cited, analytical findings in this report are based on the Hydrogen Council & McKinsey Project & Investment Tracker – a comprehensive database on clean hydrogen projects that span the value chain from production to distribution to end use. Additional insights throughout the report are based on research delivered in collaboration with McKinsey & Company.

The authors of the report confirm that:

- There are no recommendations and / or any measures and / or trajectories within the report that could be interpreted as standards or as any other form of (suggested) coordination between the participants of the study referred to within the report that would infringe the EU competition law; and
- It is not their intention that any such form of coordination will be adopted.

The calculations in this analysis were conducted based on regulations as formulated in law and drafts as of August 1, 2025. This analysis does not include calculations or hypo-theoretical ranges based on future regulatory uncertainty or transitory trade measures (e.g., tariffs), nor does it seek to make any specific policy recommendations.

In this report, renewable hydrogen refers to hydrogen produced from renewable energy sources via water electrolysis. Low-carbon hydrogen refers to hydrogen produced with low-emissions technologies with significantly lower greenhouse gas emissions impact than conventional production pathways, based on robust life-cycle analysis-based methodologies for greenhouse gas (GHG) emissions assessment.

This includes i) hydrogen produced using natural gas as a feedstock with steam methane reforming (SMR) or autothermal reforming (ATR) coupled with carbon capture and storage (CCS); ii) hydrogen produced through pyrolysis of natural gas into hydrogen and solid carbon; iii) hydrogen produced through gasification of coal with CCS; iv) hydrogen produced through electrolysis using electricity of non-renewable origin as feedstock. Renewable and low-carbon hydrogen are collectively referred to as "clean hydrogen". Unabated hydrogen refers to hydrogen produced from unabated fossil fuels.

We recognize the varying national and regional approaches to GHG emissions intensity thresholds or bands and the criteria for qualifying hydrogen as 'clean,' 'low-carbon,' 'renewable,' 'sustainable,' 'low-emission' adopted across jurisdictions.

While the contents of the report and its abstract implications for the industry generally can be discussed once they have been prepared, individual strategies remain proprietary, confidential, and the responsibility of each participant. Participants are reminded that, as part of the invariable practice of the Hydrogen Council and the European Union (EU) competition law obligations to which membership activities are subject, such strategic and confidential information must not be shared or coordinated – including as part of this report.

The Hydrogen Council is a global CEO-led initiative with a united vision and long-term ambition for hydrogen to foster the clean energy transition

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