

## Building the standards to power Europe's hydrogen economy



**As Europe advances toward a competitive hydrogen economy, regulation and standardisation are becoming just as important as technology. Hydrogen needs to be produced, stored, transported, and used safely and efficiently across a complex value chain. To make this possible, clear, harmonised and hydrogen-specific standards are essential.**

The Clean Hydrogen Partnership is helping to shape these standards through a strategic combination of Pre-Normative Research (PNR), technical cooperation, and policy engagement. As part of these efforts, the Clean Hydrogen Partnership is supporting more than a dozen PNR projects across the hydrogen chain. In turn, these projects are laying the foundation for a regulatory environment that supports innovation, enables investment and drives the safe, scalable rollout of hydrogen technologies.

### From scientific evidence to practical standards

Clean Hydrogen Partnership-supported PNR projects are generating the data and knowledge needed to define or refine hydrogen value chain standards and regulations, with 13 supported projects currently active across key domains. For hydrogen/natural gas (H<sub>2</sub>/NG) blending, THOTH2, CANDHY, PilgrHYm and SHIMMER projects are filling gaps in understanding related to infrastructure compatibility, safety and

measurement. In liquid and cryogenic hydrogen, ELVHYS project is addressing critical aspects of storage and handling, while HyQuality Europe is working on hydrogen quality assurance to increase the reliability of the quality of the hydrogen dispensed in hydrogen refuelling stations (HRS) across the EU and MultHyFuel is developing a common strategy for implementing HRS in multi-fuel contexts. Meanwhile, the e-SHyIPS project is defining new guidelines to introduce hydrogen in maritime passenger transport.

The projects are also leading on sustainability-related standardisation. Projects like SH2E (which looks at life cycle sustainability assessment, LCSA, methodologies), eGHOST (on ecodesign principles), HyPEF, NHYRA and GUESS-WHY are helping to ensure that the hydrogen sector develops in line with sustainable and circular economy principles. All these projects aim to provide robust, traceable, and harmonised inputs for future EU and international regulations.

## Coordinating the bigger picture

Beyond individual outcomes, the 13 pre-normative research projects contribute to a more coherent and aligned regulatory landscape. Their work complements joint initiatives such as those carried out through the Framework Agreement between the Clean Hydrogen Partnership and the European Commission's Joint Research Centre, which has enabled the development of harmonised EU testing protocols for key technologies including automotive fuel cells and electrolyzers, among others. These protocols - based in part on data and methodologies developed within the projects - are now publicly available via on the Clean Hydrogen Partnership's website.

The projects also benefit from the coordination framework provided by the Regulations, Codes and Standards Strategy Coordination Task Force, which helps align research activities with EU regulatory priorities. This ensures that scientific progress made through individual grants feeds into a shared strategy, and that insights from diverse project teams contribute to filling regulatory gaps and shaping new standards.

**The goal** To accelerate the development of hydrogen-specific standards, definitions and regulatory frameworks across the full hydrogen value chain - making the EU hydrogen economy safer, more efficient and ready for scale.

**Key results** Through a combination of pre-normative research projects, strategic coordination, and technical partnerships, Clean Hydrogen Partnership-supported projects are creating the robust, harmonised standards needed to underpin the EU's hydrogen transition.



## KEY ACHIEVEMENTS

### 13 PNR PROJECTS

currently active across production, storage, transport and end-use

### H2/NG BLENDING

investigated by THOTH2, CANDHY, PilgrHYm, SHIMMER

### LIQUID HYDROGEN SAFETY

advanced through ELVHYS

### SUSTAINABILITY STANDARDS

shaped by SH2E, eGHOST, HyPEF, NHYRA and GUESS-WHY

### REFUELLING STATION REQUIREMENTS

refined by HQE and MultHyFuel

### MARTIME PASSENGER TRANSPORT

guidelines defined by the e-SHyIPS

## IMPACTS

### EU STANDARDS

supported by robust experimental evidence from PNR projects

### HARMONISED TESTING

enabled via cooperation with the Joint Research Centre

### SECTOR ALIGNMENT

facilitated by the RCS SC Task Force and Clean Hydrogen Observatory

### INTERNATIONAL RECOGNITION

of EU approaches to safety, sustainability and performance

### POLICY SUPPORT

through project contributions aligned with Horizon Europe and broader EU objectives

FIND  
OUT  
MORE

[www.clean-hydrogen.europa.eu/projects-dashboard](http://www.clean-hydrogen.europa.eu/projects-dashboard)

<https://thoth2.eu/>

<https://candhy.eu/>

<https://pilgrhym.eu/>

<https://shimmerproject.eu/>

<https://elvhys.eu/>

<https://e-shyips.com/>

<https://multihyfuel.eu/>

<https://hyqualityeurope.eu/>

<https://sh2e.eu/>

<https://eghost.eu/>

<https://www.hypef.eu/>

<https://nhyra.eu/>

<https://guesswhy.eu/>



Co-funded by  
the European Union