



# De Europese Waterstof Strategie

*voor een klimaatneutraal Europa*

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# Hydrogen – What and Why?

## Hydrogen:

- Feedstock, fuel, energy carrier / storage, many applications
- Does not emit CO<sub>2</sub>, no air pollution
- Essential to reach our climate ambition (hard-to-abate sectors)
- Europe is highly competitive in clean hydrogen technologies manufacturing

## Which hydrogen:

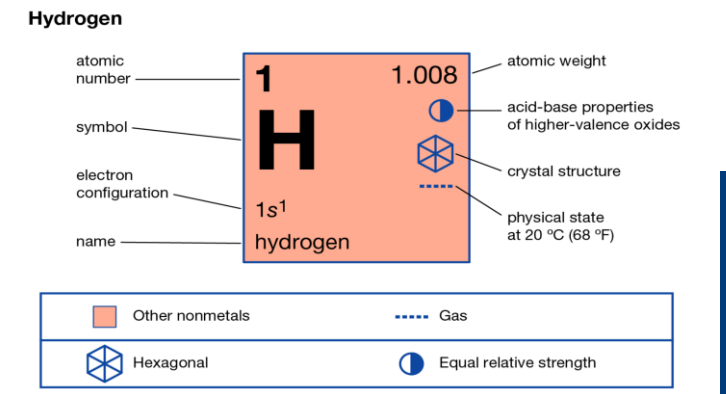
Currently: **fossil-based hydrogen**

Our vision: **Renewable (clean)**, and in a transitional period **low-carbon hydrogen** (fossil-based hydrogen with carbon capture and electricity based) for:

- Replacing existing hydrogen production
- **Industry** (fertilisers and green steel) and transport  
(Local buses, parts of rail, heavy duty road vehicles; in the longer term: maritime and aviation)

## Issues:

- **Cost-competitiveness**
- **Technological maturity (cost-effective electrolyzers)**
- **Renewable energy & scale : 2x40 GW by 2030**



# The Hydrogen Strategy – a roadmap to 2050

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**2024**

- 6 **GW** of renewable hydrogen electrolyzers
- Replace **existing hydrogen production**
- Regulation for liquid hydrogen markets
- Planning of hydrogen infrastructure

**2030**

- **40 GW** of renewable hydrogen electrolyzers
- New applications in **steel and transport**
- Hydrogen for electricity balancing purposes
- Creation of “Hydrogen Valleys”
- Cross-border logistical infrastructure

**2050**

- Scale-up to **all hard-to-decarbonise sectors**
- Expansion of hydrogen-derived **synthetic fuels**
- EU-wide infrastructure network
- An open international market with € as benchmark

# A full value chain approach

- An investment agenda
- Boosting demand and scaling up production
- Develop hydrogen infrastructure and markets
- Research and innovation
- The international dimension

# Hydrogen – an investment agenda

Next Generation EU, Invest EU, Cohesion Policy, CEF-E, CEF-T  
ETS Innovation Fund, Horizon Europe

Renewable electricity  
production

€220-340 BLN

Renewable  
hydrogen

€24-43  
BLN

Hydrogen  
transport,  
distribution,  
and storage

€65 BLN

Transport  
(HDV)  
€13 BLN

Steel  
€8 BLN

European Clean Hydrogen Alliance

# Hydrogen – fostering demand

- Replacing existing hydrogen production (70-100 MT of CO<sub>2</sub>eq/yr)
- Green fertilisers and green steel
- Local buses, commercial fleets, or specific parts of the rail network
- Heavy duty road vehicles
- In the longer term, maritime and aviation

Supporting end-consumers

- EU strategy on clean steel
- Sustainable and Smart Mobility Strategy

Creating markets

Certification of renewable and low-carbon hydrogen  
Specific end-use sectors quotas of renewable hydrogen or its derivatives  
Hydrogen infrastructure access to all consumers  
Open and competitive hydrogen market with sold price signals

# Hydrogen – supply and infrastructure

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Scaling up renewable hydrogen, and in a transitional period low-carbon hydrogen, through:

- Supporting producers through support mechanisms
- Develop a EU-wide hydrogen infrastructure

Producers

- Common low-carbon threshold for hydrogen production facilities
- Certification of renewable and low-carbon hydrogen
- Revision of the Emission Trading Scheme
- Carbon Contract for Differences
- Market-based support schemes for renewable hydrogen
- Liquid markets with commodity-based hydrogen trading

Infrastructure

- Network of refuelling stations through Alternative Fuels Infrastructure Directive
- Revision of the TEN-E and internal gas market legislation to ensure interoperability, common quality standards, and cross-border operational rules
- Revision of TYNDPs to ensure full integration of hydrogen infrastructure

# Hydrogen – the international dimension

Strengthening Europe's global leadership role and putting hydrogen high on its strategic agenda:

Bilateral and regional cooperation

- Clean hydrogen support under Neighbourhood Investment Platform
- Joint hydrogen research and development programmes through Association Agreements
- Hydrogen collaboration under the Africa-Europe Green Initiative
- Mainstream hydrogen in energy, diplomacy, climate, research, trade and international cooperation

Multilateral fora

- Renovation Wave
- Additional measures for electrification of heating and cooling and transport in RED revision
- Electrification of industry through Industrial Emissions Directive review and funding of pilots
- Revise CO2 emission standards for cars

International markets

- Set common GHG emission reduction standards and sustainability criteria
- Benchmark for euro denominated transactions in hydrogen
- Facilitate emergence of rules-based hydrogen market



# Hydrogen – Research and innovation

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Maintain and strengthen EU's global leadership role through support:

- Establish Clean Hydrogen Partnership
- Targeted research and innovation in Horizon Europe
- ETS Innovation Fund
- Interregional Innovation Investment Instrument with pilot action on hydrogen technologies

Scale-up production

- Larger size, more efficient and cost-effective electrolysers
- Mass manufacturing capability and new materials
- Break-through solutions like direct solar hydrogen

Infrastructure

- Distribute, store and dispense hydrogen at large volumes
- Repurposing of existing gas infrastructure
- Adaptation of LNG terminals

End-use applications

- New industrial processes
- Multi MW-fuel cells
- Hydrogen-derived synthetic fuels for the maritime and aviation sector

Cross-cutting areas

- Improved harmonized safety standards
- Reduced environmental impacts and sustainability
- Critical raw materials, re-use and recycling

# The Hydrogen Alliance

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- Boosting demand and scaling up production
- Developing hydrogen infrastructure and markets
- Research and innovation
- The international dimension

## European Clean Hydrogen Alliance

Kick-starting the EU Hydrogen Industry to achieve the EU climate goals

