



International H2 cooperation

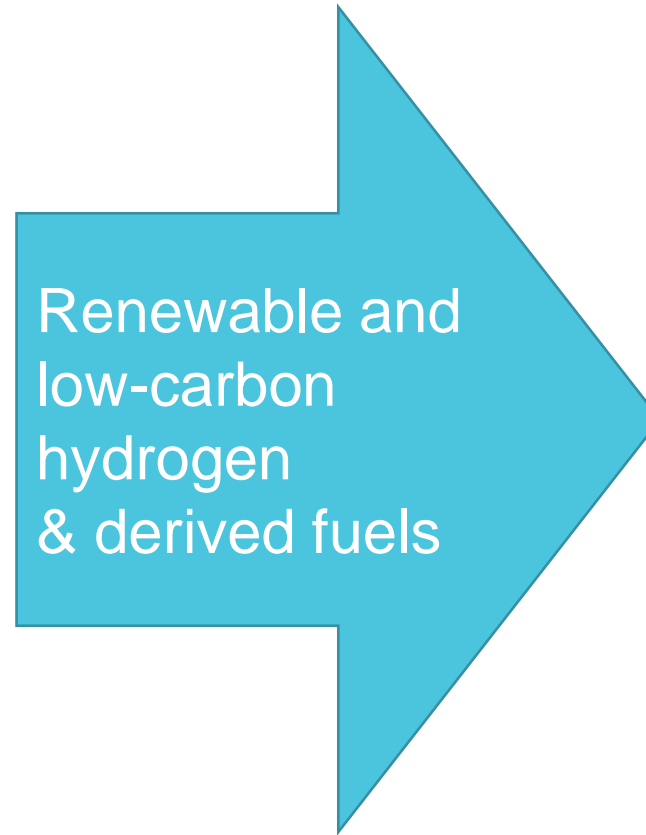
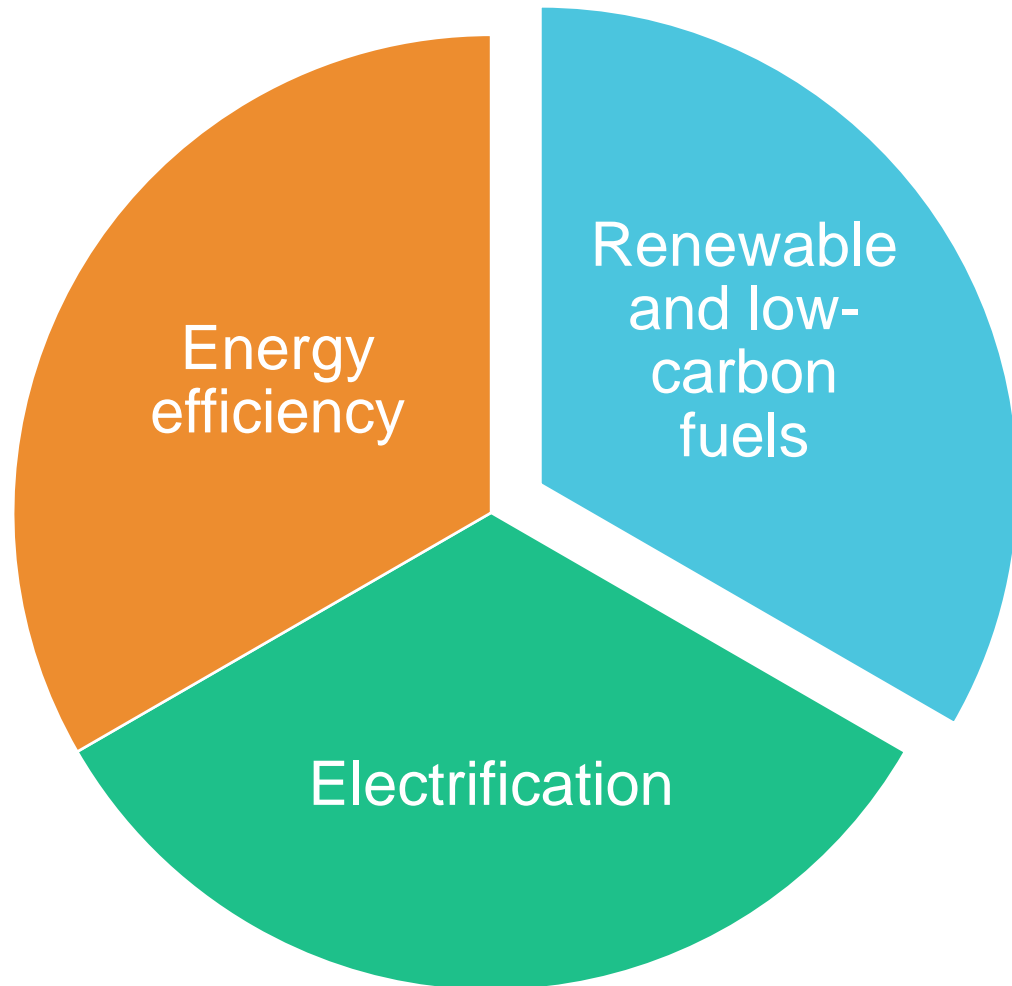
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Decarbonisation and Sustainability of Energy Sources

Directorate-General for Energy

European Commission

Towards a climate-neutral energy system



- Investments
- Supply and demand
- Markets & infrastructure
- Research and innovation
- International cooperation

The European hydrogen strategy (July 2020)

2025

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

2030

- **40 GW** of electrolyzers powered by renewable electricity
- New applications in **steel and heavy duty, long distance and aviation and maritime 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

Proposed sub-targets for renewable hydrogen by 2030*

Industry

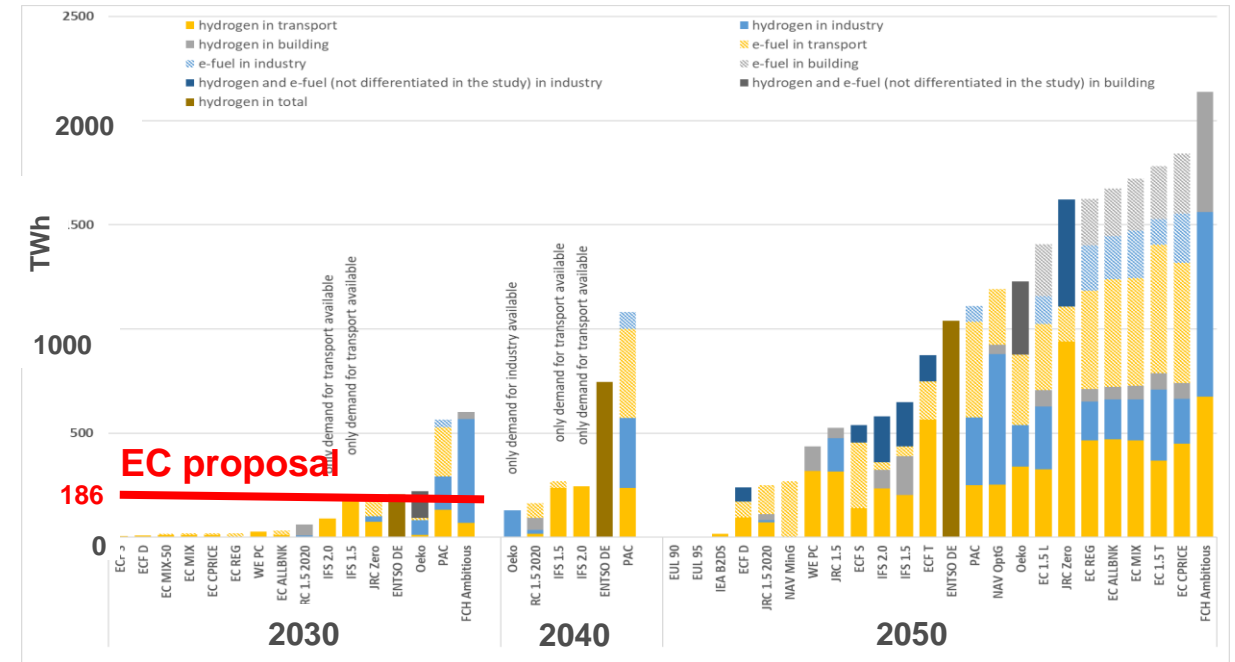
- 50% of hydrogen consumption

Transport

- 2.6% of energy consumption

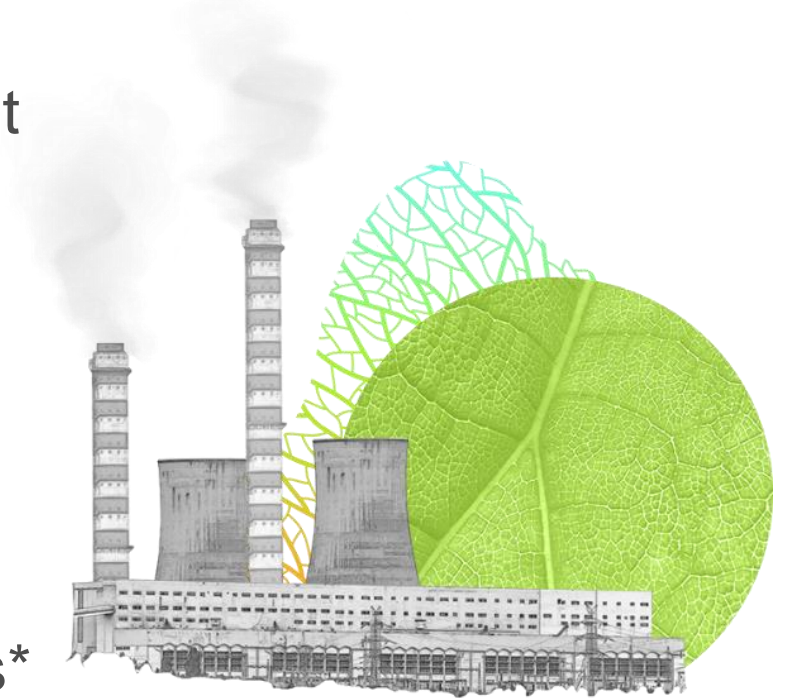
Aviation

- 0.7% of energy consumption



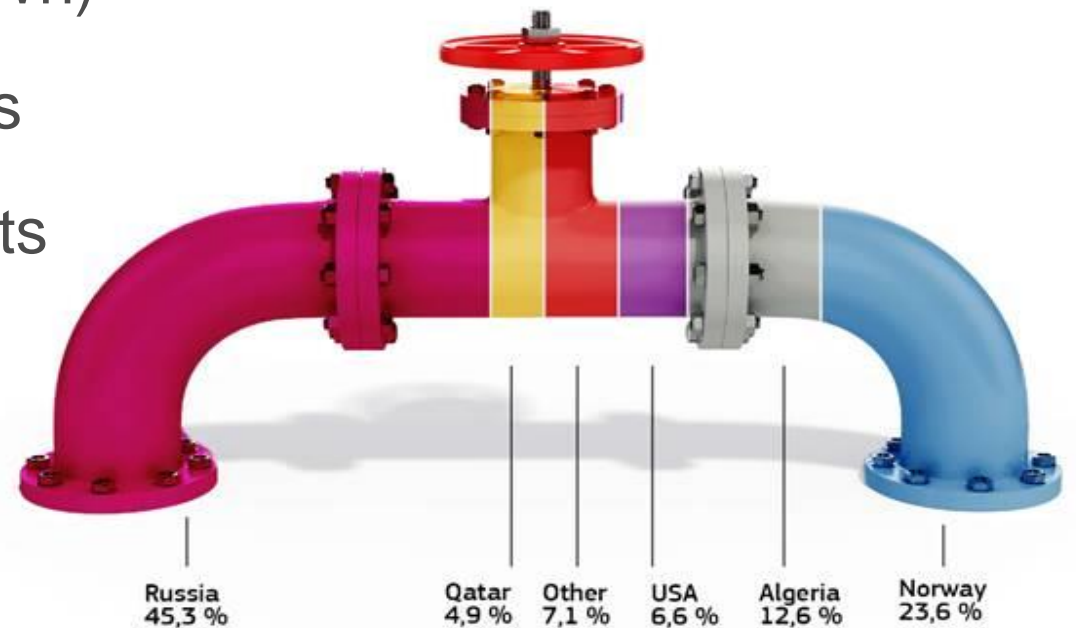
Enabling hydrogen markets and infrastructure

- Harmonised certification system for renewable and low-carbon hydrogen*
- Hydrogen network operators have to be independent and allow for third-party access*
- The creation of a European Network of System Operators for Hydrogen to support integrated planning*
- The creation of a dedicated hydrogen infrastructure, with rules on hydrogen blending in existing networks*
- Requirements for the roll-out of European network of hydrogen refuelling stations and support for cross-border hydrogen infrastructure*



REPower EU: The Hydrogen Accelerator

- **EU production:** 10 million tonnes (333 TWh)
- Infrastructure, storage, terminals and ports
- Prioritisation state aid for hydrogen projects
- **Imports:** 10 million tonnes
- Green Hydrogen Partnerships
- Global European Hydrogen Facility



Priorities for international cooperation

Support decarbonisation
and
transition of energy
systems

*Focus on
renewable
Hydrogen /
derivatives*

Set up framework
for functioning
global hydrogen market

Explore renewable hydrogen export
potential to EU

Creating a global hydrogen market

- Facilitate emergence of rules-based **hydrogen market**, common standards, and euro denominated transactions*
- Sharing of best practices in technologies, standards and policies in **multilateral fora**
- **Bilateral and regional cooperation**
- Ensure fair and sustainable trade



Imports to EU

- **Case for imports to support development of EU H2 market and create business opportunities both within the EU and abroad**
 - **Degree of imports** will depend on demand, level of EU production, costs, and availability of transportation infrastructure
 - Security of supply considerations
 - Look at pipeline transportation potential notably from North Africa / (Ukraine)
 - Liquid derivatives cheaper to transport and easier to store
- Key: Cooperation with partners on standards / certification

Criteria for renewable hydrogen (RFNBOs)

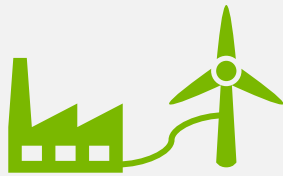
Renewable Energy Directive 2018/2001



Case 1 Partial renewable hydrogen

- Renewable share of grid

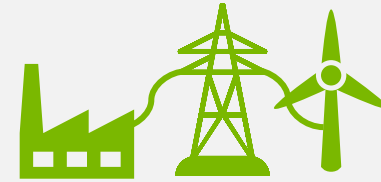
- < 3,4 kg CO_{2eq}/kg H₂
consumed



Case 2 100% renewable hydrogen

- New renewable installation

- < 3,4 kg CO_{2eq}/kg H₂
consumed



Case 3 100% renewable hydrogen

- Additionality
- Temporal correlation
- Geographical correlation

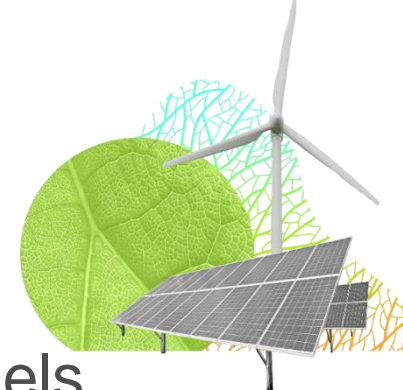
- < 3,4 kg CO_{2eq}/kg H₂
consumed

Delegated Act (DA)

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Criteria for certification

Renewable Energy Directive 2018/2001



- Certification via voluntary schemes, similar to certification of biofuels
- Voluntary schemes may apply for recognition by the EC
 - Reliability
 - Transparency
 - Independent auditing
- EU recognition of voluntary schemes valid in EU internal market. 13 voluntary schemes are expected for formal adoption by end of Q1 2022, further VS will follow.
- EU Members are free to accept evidence from voluntary or national certification schemes

Ongoing initiatives / contacts

- EU-US Energy Council
- Mediterranean Green Hydrogen Partnership
- Bilateral contacts / discussions (examples):
 - Neighbourhood: Algeria, Ukraine
 - Gulf countries
 - Namibia
- Global European Hydrogen Facility / External cooperation projects



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