







## **UNECE Hydrogen Task Force**

F.

**ENERGY** 

ENERGY

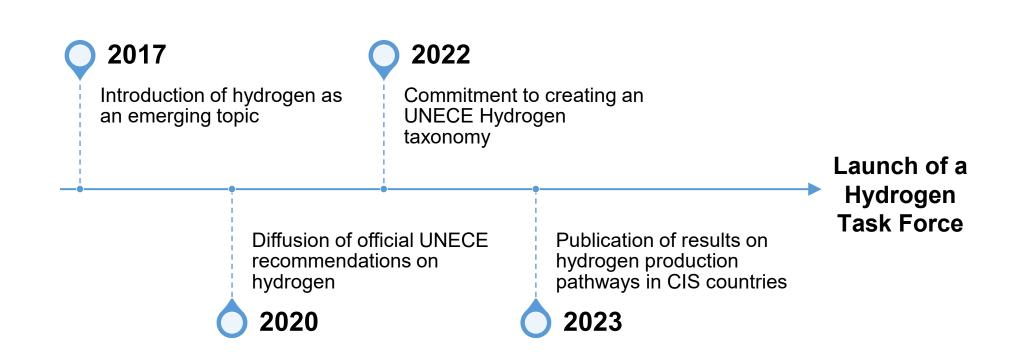


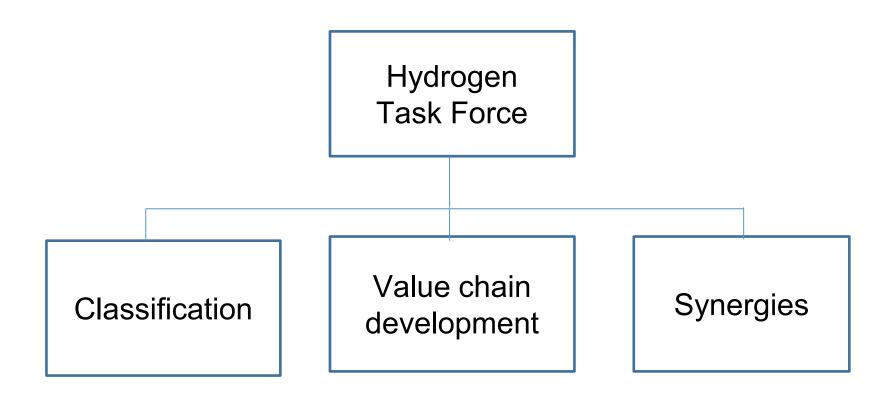






# **Hydrogen at UNECE: Timeline**





## Publication: Towards a Hydrogen Economy in the UNECE Region

UNECE

#### Towards a Hydrogen Economy in the UNECE Region

- Key elements of proposed classification
- International efforts
- Next steps towards certification

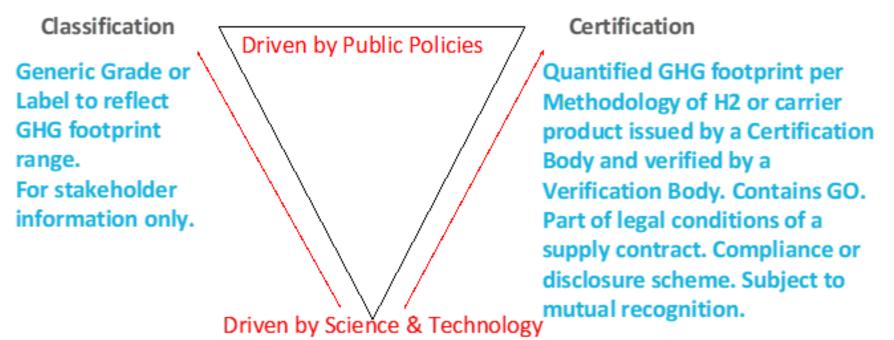




Chapter 1:	Status quo and outlook for the hydrogen industry and pathway towards a global	
hydrogen eo	conomy	1
А.	Hydrogen industry today	1
в.	Towards a global hydrogen market	5
Chapter 2:	Introduction into Global Technical Standards for Hydrogen Safety and Sustainability	7
А.	Hierarchy of elements within a Regulatory Framework – Pyramid of RCS (Regulations, Codes & Standards)	7
в.	Key terms and definitions	8
C.	Role of ISO and IEC	9
Chapter 3:	Sustainability disclosures and reporting standards for investors and financial markets	14
Chapter 4:	Role of Certification Solutions	15
Chapter 5:	Towards a Global Regulatory Framework for a Hydrogen Certification System	17
Chapter 6:	Hydrogen Classification	19
А.	Classification and its purposes	19
в.	Hydrogen Classification Beyond Colours	20
с.	Hydrogen Classification Options	21
D.	Hydrogen Classification vs Certification	22

#### Figure 13 Hydrogen Product Climate Impact Triangle

#### **Classification is NOT Certification, NOT Methodology**



Methodology for GHG Footprint Quantification (ISO/TS 19870)

Source: Hydrogen Council.

Figure 2 Hydrogen deployment growing steadily: status as of January 2023

## H<sub>2</sub> production

0.8 MT total clean H2 production of which 0.7 MT low-carbon H<sub>2</sub>

700 MW (+30% YoY) electrolysis capacity installed

#### Manufacturing capacity

8.8 GW (+150% YoY) installed electrolysis mfg. capacity

> 12 GW (+10% YoY) installed FC mfg. capacity

Source: Hydrogen Council, 2023.



### H<sub>2</sub> end-use

80.000 FCEVs on the road (+30% YoY)

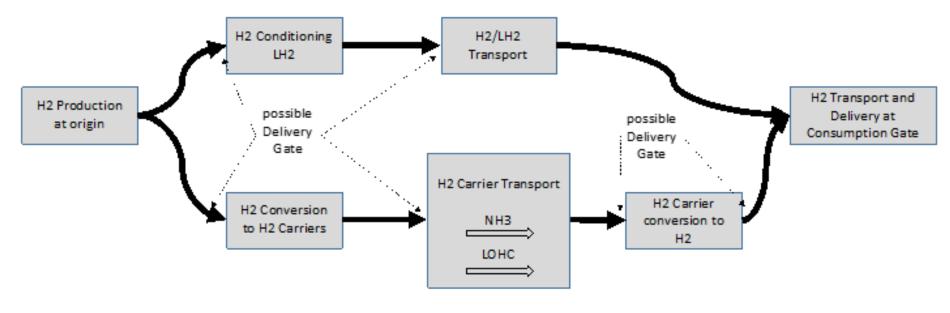
130 (+60% YoY) vehicle models launched by OEMs

H<sub>2</sub> infrastructure

1.070 (+55% YoY) HRS installed globally

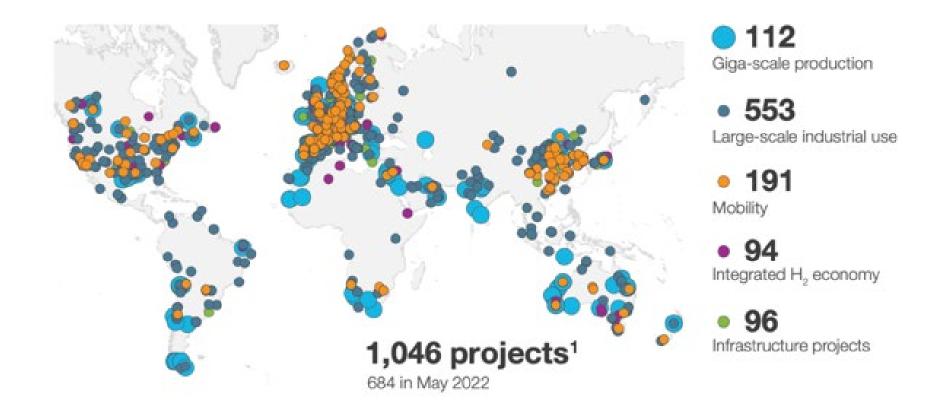
120 ammonia terminals available 38 export and 88 import globally

#### Figure 8 Examples of hydrogen supply chain considered in ISO/TS 19870



Source: Hydrogen Council.

#### Figure 3 Global snapshot: more than 1,040 hydrogen projects announced in <u>2023</u>



#### Figure7 ISO/TC 197 Working Groups and Standards

WG	Title	ISO
WG1	Liquid hydrogen - Land vehicles fuel tanks	13985 revision
WG35	Liquid hydrogen - Land vehicle fueling protocol	13984 revision
WG27	Hydrogen fuel quality	14687 revision
WG29	Basic considerations for the safety of hydrogen systems	TR15916 revision
WG5	Gaseous hydrogen land vehicle refuelling connection devices (up to and above 120 g/s flow)	17268-1, -2 rev.
WG36	Gaseous hydrogen land vehicle refuelling connection devices – Cryo-compressed H2 gas	17268-3
WG19	Gaseous hydrogen fueling station – Dispensers	19880-2
WG21	Gaseous hydrogen fueling station – Compressors	19880-4
WG22	Gaseous hydrogen fueling station – Hoses	19880-5
WG23	Gaseous hydrogen fueling station – Fittings	19880-6
WG31	Gaseous hydrogen fueling station – O-rings	19880-7
WG28	Gaseous hydrogen fueling station – Hydrogen quality control	19880-8
WG33	Gaseous hydrogen fueling station – Sampling for fuel quality analysis	19880-9
WG18	Gaseous hydrogen land vehicle fuel tanks and TPRDs	19881, 19882 rev.
WG15	Cylinders and tubes for stationary storage	19884
WG24	Gaseous hydrogen – Fuelling protocols for hydrogen-fuelled vehicles	19885-1, -2, -3
JWG30	Gaseous hydrogen land vehicle fuel system components	19887
WG34	Hydrogen generators using water electrolysis - Industrial, commercial, and residential applications	22734-1 revision
WG32	Hydrogen generators using water electrolysis – Test protocols for performing electricity grid services → To be moved to SC 1 as WG 2 (expect NWIP from Germany for TS)	TR22734-2 TR → TS

Source: Hydrogen Council.

## Next steps (in collaboration with EGRM)

- Develop specifications for the application of the United Nations Framework Classification for Resources (UNFC) and the United Nations Resource Management System (UNRMS) to hydrogen projects and production technologies
- Establish a taxonomy on hydrogen based on a life cycle analysis (LCA) approach
- Work towards developing a Guarantee of Origin for Hydrogen (GOH)
- Develop pilot hydrogen production projects applying UNRMS principles









# **UNECE Hydrogen Task Force**

ENERG

ENERGY

# Thank you!







