

UNECE Group of Experts on Gas

11th Session

Thursday March 21, 2024

Hydrogen
Council |

Panel discussion: Activities of H2 Task Force Safety, Sustainability and Classification

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Global Issues require International Solutions

Participation within Established partnerships – *The Effective vehicle*

Global SDOs & Regulators



- WP.6
- H2 Task Force Sustainable Energy Division



Key Strategic Partners

Hydrogen Council



International Partnership for Hydrogen and Fuel Cells in the Economy



Hydrogen TCP



IRENA
International Renewable Energy Agency

Community + Stakeholders



International Approach ensures **Safety**, Performance + **Sustainability** are fully addressed *for the Global Community*

Single International Approach instils **Regulatory + Market Confidence**

Use of **Existing International Standards (and others coming) + International Certification/Verification** and working with existing International Organizations, for any additional needs, prevents wasteful duplication, thereby

- **Saves time,**
- **Keeps costs down**
- **Facilitates Global Trade + Innovation**

ISO/TS 19870:2023 Published!

TECHNICAL
SPECIFICATION

ISO/TS
19870

First edition
2023-11

**Hydrogen technologies —
Methodology for determining the
greenhouse gas emissions associated
with the production, conditioning and
transport of hydrogen to consumption
gate**

*Technologies de l'hydrogène — Méthodologie pour déterminer
les émissions de gaz à effet de serre associées à la production, au
conditionnement et au transport de l'hydrogène jusqu'au point de
consommation*



Reference number
ISO/TS 19870:2023(E)

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New ISO standard on hydrogen unveiled at COP28

During COP28 in Dubai, the International Organization for Standardization (ISO) unveiled a new technical specification (ISO/TS 19870) as a foundation for harmonisation, safety, interoperability and sustainability across the hydrogen value chain.



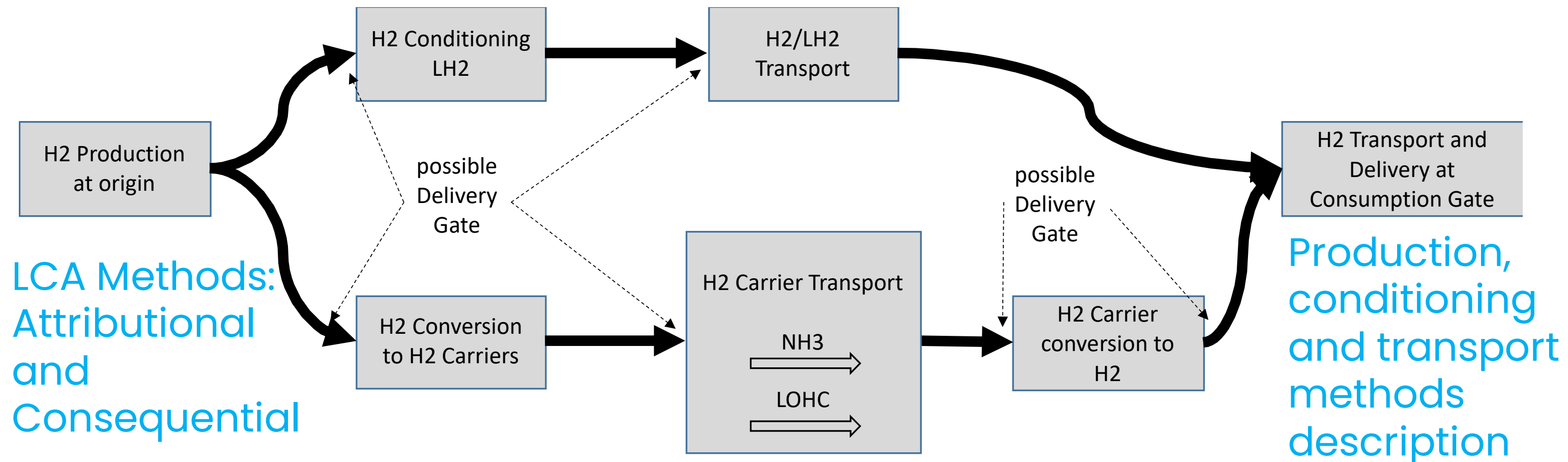
Scope of ISO Methodology ISO/TS 19870:2023



To establish CFP (Carbon Footprint of Product) of Hydrogen along its supply chain: from Well to any Delivery gate up to Consumption gate.

Key ISO standards: 14044 (on LCA) and 14067 (on CFP)

Considered hydrogen supply chain



ISO/TS 19870 Pub. Nov 30, 2023
ISO 19870-1, -2, -3, -4: 2024-26
Started, DIS Nov 2024

NOT in the Scope of the ISO Methodology



ISO/TS 19870:2023 is **NOT** defining what is acceptable in a given jurisdiction or for the purpose of a specific public policy!

Thresholds, Labels (Colors) are defined by public policies or by the market

Harmonizing labels and thresholds should only be done through negotiations between governments

Standards:
How to measure

Public authorities:
Thresholds and labels.
What is acceptable



Hydrogen Product Carbon Intensity Triangle

Decarbonization Attributes Beyond Colours

Classification

Generic Grade or Label to reflect GHG footprint value and / or range of H2 products. For marketing and stakeholder information purposes.

Driven by Public Policies

Certification

Quantified GHG footprint per Methodology of H2 or carrier products issued by a Certification Body and verified by a Verification Body. Contains GO. Part of legal conditions of a supply contract. Compliance or disclosure scheme. Subject to mutual recognition.

Driven by Science & Technology

Methodology for GHG Footprint Quantification (ISO/TS 19870:2023)



Basic Principles of H2 Carbon Intensity Classification

No	Basic Principles	Rationale Explanatory Notes
1	<u>Subject of Classification:</u> GHG footprint of the hydrogen product along its full supply chain	<u>Carbon Intensity</u> of hydrogen production, conversion / conditioning and transport to consumption gate (including reporting indirect emissions) determined per ISO Methodology (now ISO/TS 19870:2023)
2	<u>Inclusive of all decarbonization pathways</u> (technology agnostic)	<u>One goal, multiple pathways</u> (G20 approach)
3	<u>Beyond colours</u> - colour neutral	<u>Colours are misleading</u> and can only identify the origin of energy sources and feedstock, e.g. renewable or non-renewable. However, they do not communicate carbon intensity and create an illusion of zero carbon production pathways
4	<u>No prescribed thresholds</u>	<u>Sovereign nations set their own thresholds</u> per their public policies and climate agendas
5	<u>Simple & practical</u> - easy to understand	Key information needs be presented in an <u>unambiguous</u> way precluding double interpretation

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H2 Product Classification Examples

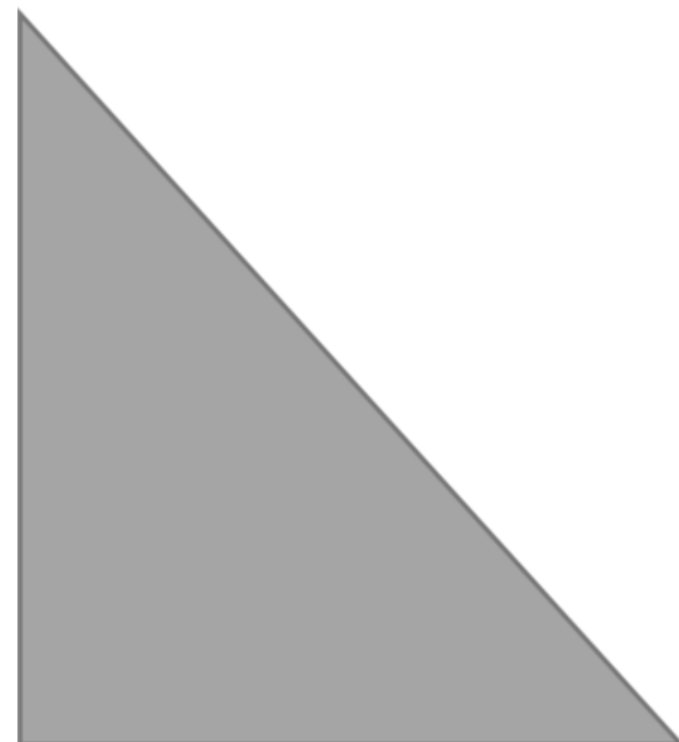
IEA-IPHE

Initial and Enhanced Approach (2023)

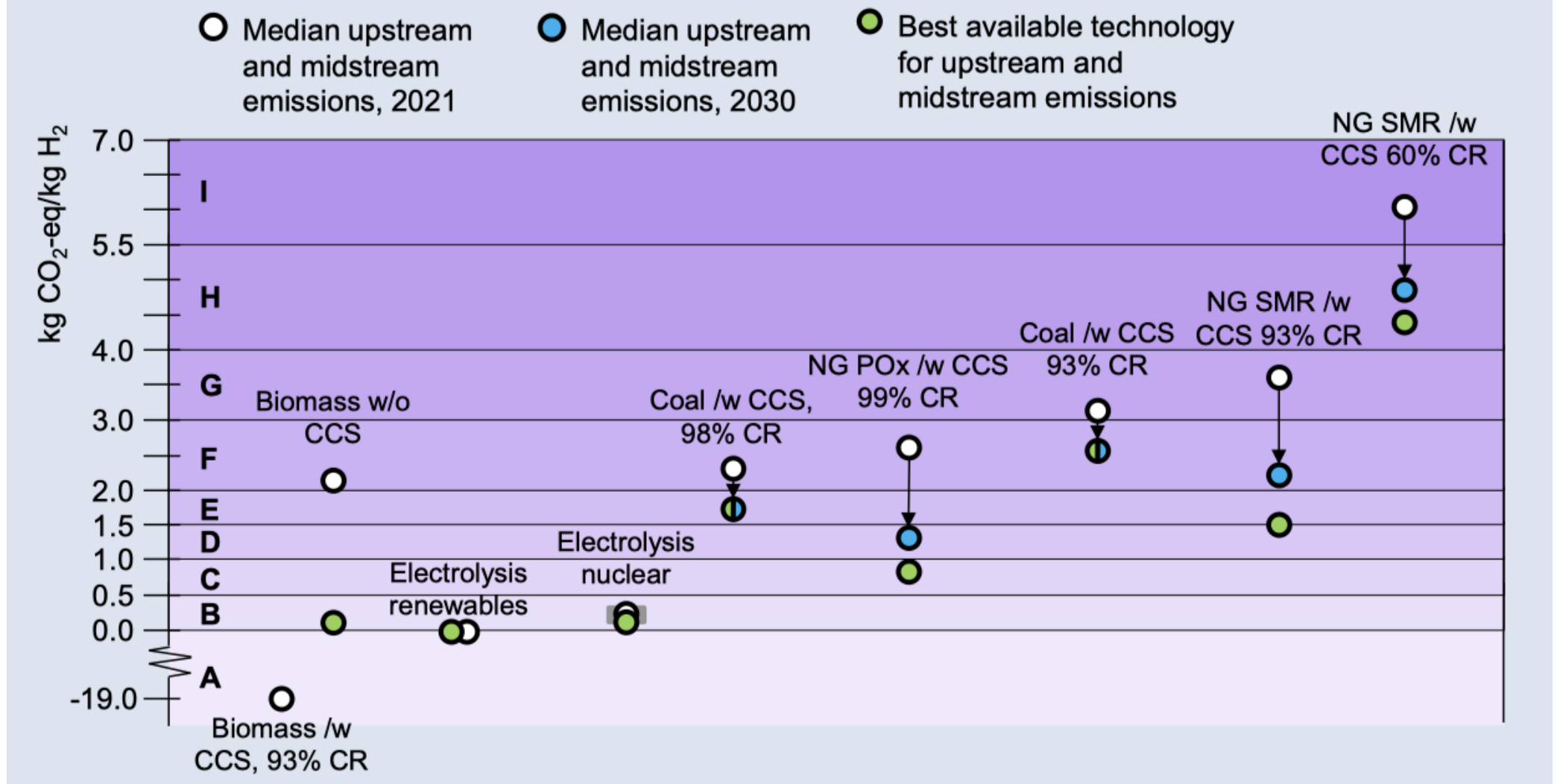
Hydrogen production label



Production carbon intensity



Example of a potential quantitative system for emissions intensity levels of hydrogen production



H2 Product Classification Examples

Graphical representation of the possible content of a product passport for a traded hydrogen cargo

HYDROGEN PASSPORT

This passport certifies each 1 (one) kilogramme unit of hydrogen in consignment: **AU358/1**

H₂

PRODUCTION: 1.32 kg CO₂-eq/kg H₂
CONDITIONING: 0 kg CO₂-eq/kg H₂
TRANSPORT: 0.41 kg CO₂-eq/kg H₂

PRODUCTION GHG EMISSIONS: **D**
RENEWABLE ORIGIN: **RENEWABLE**

WATER CONSUMPTION: COMPLIANCE WITH WORLD **WATER** STANDARD
LAND USE: COMPLIANCE WITH WORLD **LAND USE** STANDARD
WASTE MANAGEMENT: **ISO 14001**
RENEWABLES ADDITIONALITY
SOCIO-ECONOMIC IMPACT
MINERAL INPUTS

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Towards hydrogen definitions based on their emissions intensity, IEA, 2023