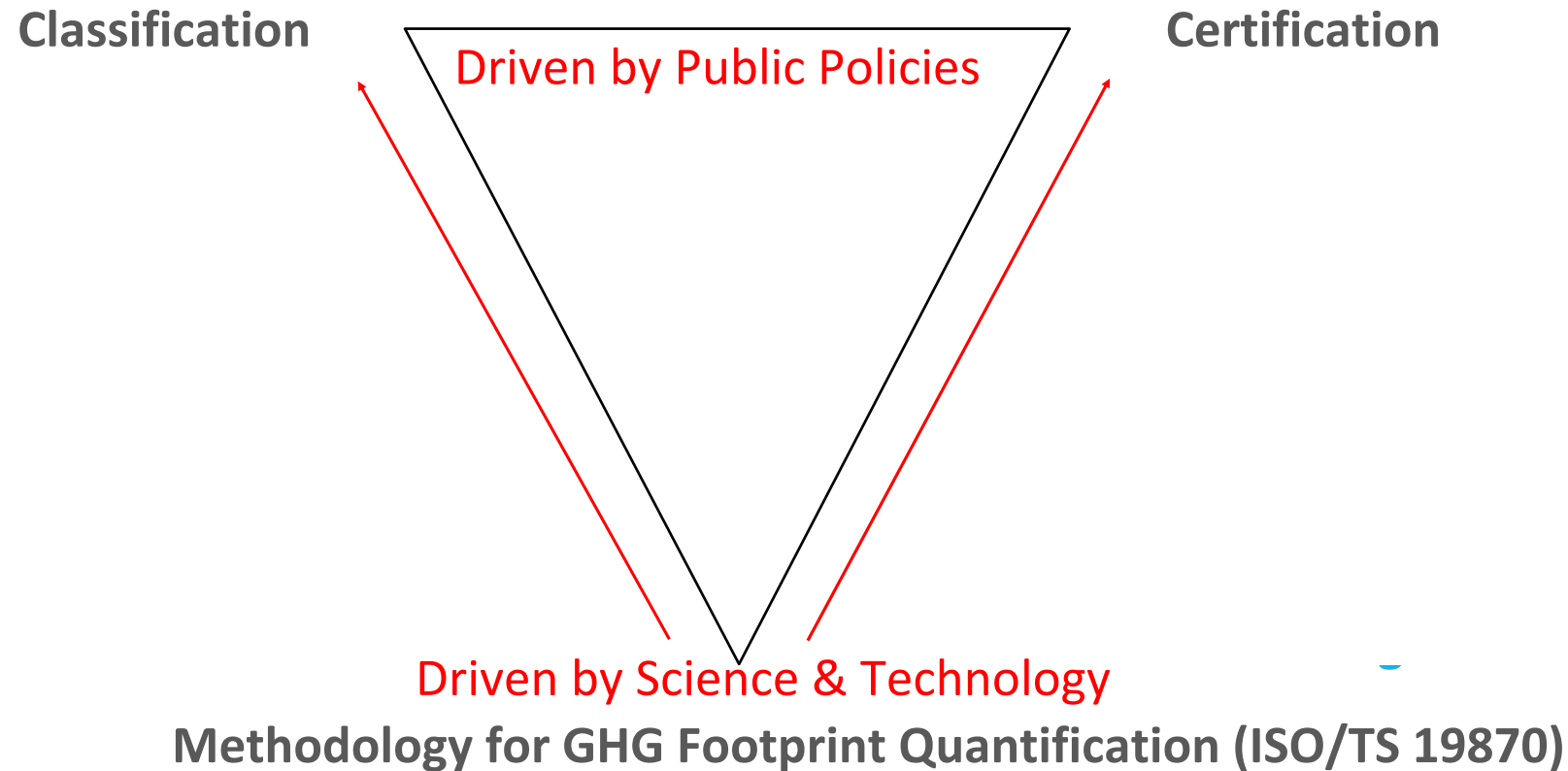


# **Global Clean Hydrogen Market – Harmonization of Measuring, Reporting, Verification and Accreditation**

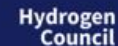
*12 December 2023*

# Classification, Certification and Global Standards developed by SDOs





IPHE and IEA H2 TCP with support from IRENA and contributions from the Hydrogen Council and the International Power-to-X Hub, release the Hydrogen Certification 101 paper developed under the Breakthrough Agenda's Hydrogen Breakthrough priority action H.1 Standards and Certification.



# COP28 Hydrogen Outcomes

## Lead Outcomes



1

Launch of ISO Methodology for GHG emissions assessment for Hydrogen

Assess

2

Declaration of Intent on mutual recognition of certification schemes for hydrogen and derivatives

Evidence

3

Public-Private Action Statement on unlocking trade corridors

Deploy

## Platform Outcomes



A

SDG Compass for the Hydrogen Economy

Steward

B

Diversity, Equality and Inclusion Platform for Hydrogen

Empower

# Scope of Methodology ISO/TS 19870



Premise: In order to develop an international hydrogen market, it is paramount first to agree on a uniform Methodology for determining the greenhouse gas (GHG) emissions associated with the Production, Conditioning and Transport of Hydrogen to Consumption Gate.

**ISO 14044** requires the goal and scope of an LCA to be clearly defined and be consistent with the intended application.

ISO/TS 19870 specifies methodologies that can be applied to determine the carbon footprint of a product (CFP) or partial CFP of a hydrogen product in line with **ISO 14067**. The goals and scopes of the methodologies correspond to either approach a) or b), given below, that **ISO 14040:2006**, A.2 gives as two possible approaches to LCA.

- a) An approach that assigns elementary flows and potential environmental impacts to a specific product system typically as an *account of the history of the product*.
- b) An approach that studies the *environmental consequences* of possible (future) changes between alternative product systems.

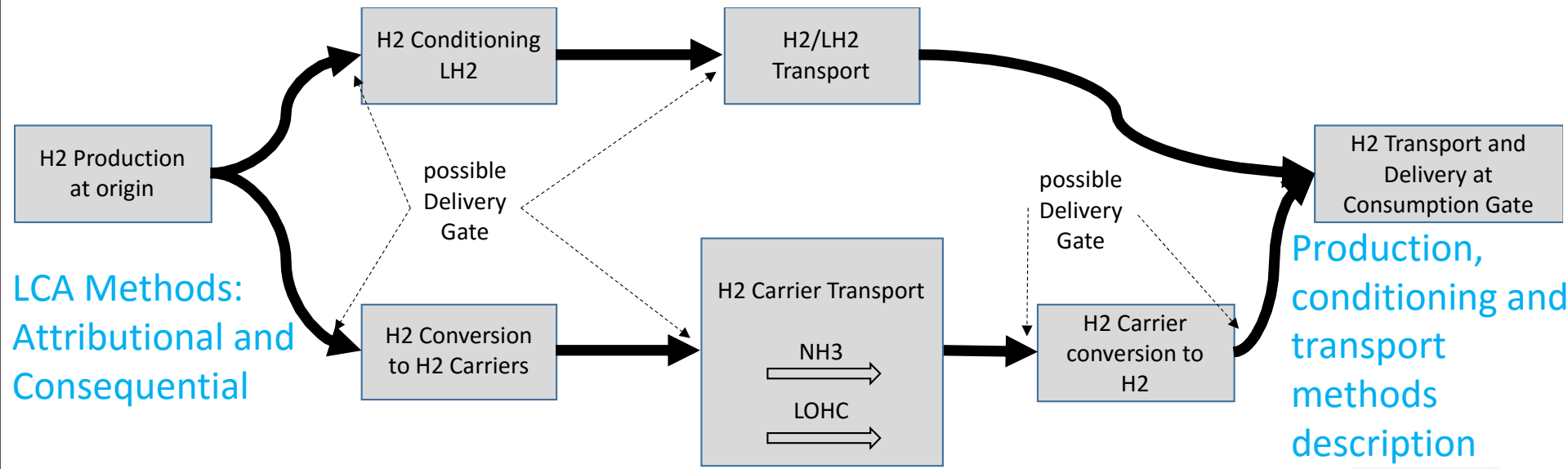
Approaches a) and b) have become known as ***attributional*** and ***consequential***, respectively.

# Scope of ISO Methodology – Schematic



ISO/TS 19870 aims at increasing the methodologies that should be applied, in line with ISO 14067, to the specific case of the hydrogen value chain, covering different *production processes* and other parts of the value chain, such as *conditioning* hydrogen in different physical states, *conversion* of hydrogen into different hydrogen carriers and the subsequent *transport* up to the consumption gate.

## Considered hydrogen supply chain



LCA Methods:  
Attributional and  
Consequential

ISO/TS 19870 Pub. Dec 2023  
ISO 19870-1, -2, -3, -4: 2024-26

Hydrogen  
Council

FINAL  
DRAFT

TECHNICAL  
SPECIFICATION

ISO/DTS  
19870

ISO/TC 197/SC 1  
Secretariat: SCC  
Voting begins on:  
2023-08-31  
Voting terminates on:  
2023-10-26

Methodology for Determining the  
Greenhouse Gas Emissions Associated  
with the Production, Conditioning  
and Transport of Hydrogen to  
Consumption Gate

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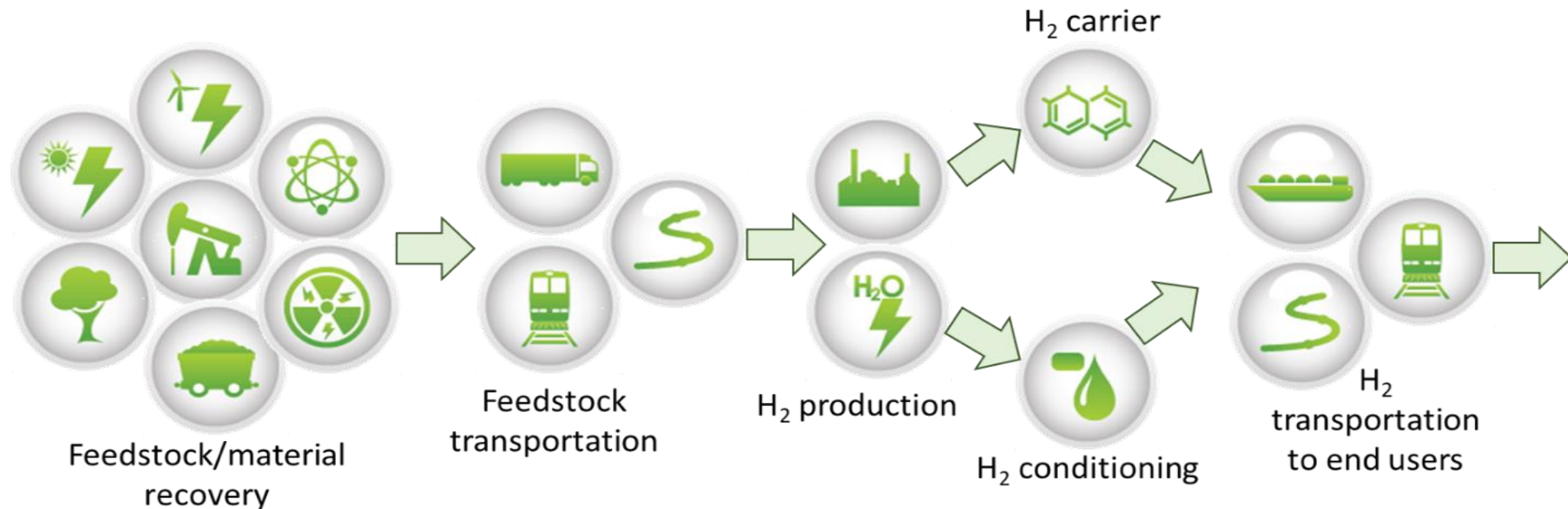
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# Methodology System Boundary Schematic



ISO/TS 19870 also considers indirect emissions including those associated with the upstream activities in the raw material acquisition phase, raw material transport phase, etc. GHG emissions contributions are defined in terms of carbon dioxide equivalent (CO<sub>2</sub>e) .



Schematic of “well-to-consumption gate” system boundary adopted for ISO/TS 19870