

H2 HYDROGEN CRITERIA

Climate Bonds Standard

The Hydrogen Criteria apply to eligible assets, projects, decarbonisation measures, and entities relating to low-carbon hydrogen production and delivery. As the global community strives to transition to a low-carbon economy, the Hydrogen Criteria provide investors, organizations, and policymakers with a framework to channel investments into projects that are not only environmentally sound but also economically viable.

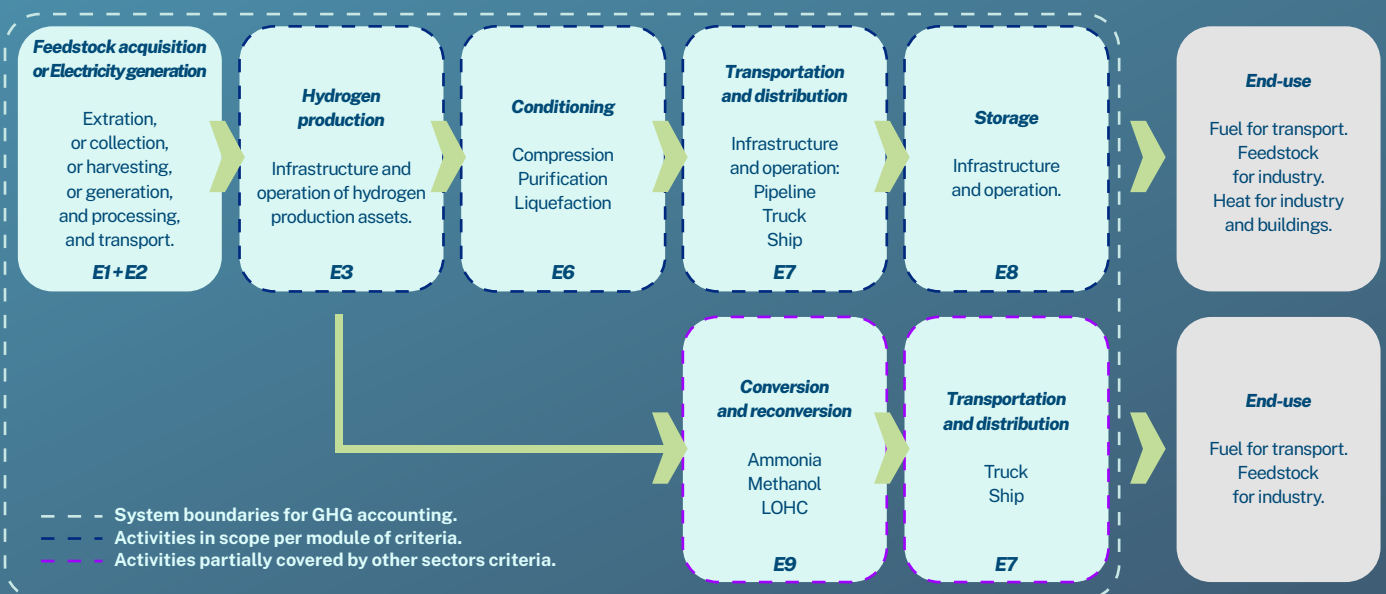
1. WHY HAVE HYDROGEN PRODUCTION AND DELIVERY CRITERIA?

Hydrogen is experiencing unprecedented momentum as a sustainable fuel and feedstock, offering a vast opportunity to contribute to the decarbonisation of some sectors of the economy. It is urgent to promote a low-carbon hydrogen production, accelerating its adoption as an alternative feedstock and fuel. Nevertheless, ensuring a clean delivery pathway is also essential. Overlooking delivery technologies can become a barrier to deploying the hydrogen market and reducing GHG emissions.

2. CRITERIA SCOPE

The Climate Bonds hydrogen criteria cover activities and projects across the hydrogen value chain, including production, conditioning, conversion, transportation, and storage activities. A compatible production and transport emissions benchmark using an LCA approach should be used. The diagram below in figure 1 is a simplified representation of the activities that can be certified per module (within the light blue dotted line), and the system boundaries for the GHG accounting¹ (within the dark blue dotted line). The activities within the purple dotted line are partially covered by other sector's criteria.

¹ The GHG accounting must be presented by the hydrogen producer.



3. WHAT CAN BE CERTIFIED

The following can be certified under these criteria:

Use-of-Proceed (UoP)² bonds financing:

- » Decarbonisation measures within facilities producing hydrogen (e.g., retrofits) - or manufacturing of electrolyzers and membranes.
- » Hydrogen production facilities (i.e., assets).
- » Hydrogen delivery projects (i.e., assets and activities relating to conversion, transportation, and storage of H₂).

The following can be certified following the [Climate Bonds Standard v4.0](#):

- » Assets not linked to any specific financing instrument (hydrogen production facilities or entities).

² Use-of-Proceed (UoP) is used as shorthand throughout this document for a variety of targeted finance instruments, including green loans, repos, and asset-backed securities. Annex 1 of the Standard v3.0 details the full list of instruments that can be certified.



4. MITIGATION COMPONENT

4.1. MITIGATION CRITERIA FOR HYDROGEN PRODUCTION EQUIPMENT, DECARBONISATION MEASURES AND PROJECTS WITHIN FACILITIES PRODUCING HYDROGEN

The criteria include specific requirements for projects grouped in four categories:

- 1 **Feedstock substitution.**
- 2 **Electrolytic production**, using renewable energy.
- 3 **Various**, which includes diverse activities and decarbonisation measures:
 - Manufacture or acquisition of electrolyzers and membranes to produce hydrogen.
 - Carbon capture and storage.
 - Carbon capture and utilisation.
 - Electrification of processes.
- 4 **Research and development projects.**

4.2. MITIGATION CRITERIA FOR FACILITIES PRODUCING HYDROGEN

- » Hydrogen production facilities must meet an emissions intensity of **3.0 kgCO₂e/kgH₂** at the time of certification³.
- » Facilities using fossil resources need to be below the carbon intensity thresholds listed in the following table:

Hydrogen carbon intensity thresholds towards net zero by 2050⁴

ASSET TYPE	CRITERIA			
	2023	2030	2040	2050
PRODUCTION OF HYDROGEN	3.0 kgCO ₂ e/kgH ₂	1.5 kgCO ₂ e/kgH ₂	0.7 kgCO ₂ e/kgH ₂	Close to net zero kgCO ₂ e/kgH ₂

Depending on the production process, facilities must meet specific requirements:

- Electrolytic production: Additionality, temporal and geographic correlation.
- Using fossil gas: MRV⁵ mechanisms.
- Using biogas: MRV mechanisms, only from waste.

³ The 3.0 kgCO₂e/kgH₂ target was adopted from the EU taxonomy.

⁴ The 2030 and 2050 emissions intensity targets are based on the Hydrogen council decarbonisation report. The benchmarks were taken considering the technologies that should not be incentivised in a near zero emissions trajectory. The background document, sections 4.2.2.1 and 4.2.2.2 contains additional details on this. The system boundary is cradle to gate plus delivery emissions.

⁵ Monitoring, reporting and verification.

4.3. MITIGATION CRITERIA FOR HYDROGEN DELIVERY PROJECTS

The criteria can certify projects and activities related to:



CONDITIONING:

- Compression.
- Liquefaction.



TRANSPORT:

- Transmission and distribution networks.
- Using LOHC (liquid organic hydrogen carriers) to store and transport hydrogen.
- Using ammonia / methanol to store and transport hydrogen.
- Transporting hydrogen by truck / shipping.



STORAGE:

- Construction of hydrogen storage facilities.
- Operation of hydrogen storage facilities.
- Conversion of existing underground fossil gas storage facilities.



REQUIREMENTS FOR DELIVERY ACTIVITIES INCLUDE:

- Demonstrating projects are for low-carbon hydrogen purposes.
- Hydrogen leak detection, repair, and mitigation mechanisms.
- Safety considerations.

4.4. CRITERIA FOR ENTITIES AND SUSTAINABILITY LINKED DEBT (SLD)

Criteria include requirements depending on what is being certified:

- A whole entity (in this case, a business segment or part of a company producing, transporting, or storing hydrogen).
- SLD issued by an entity dedicated to the production, transportation, or storage of hydrogen.

5. ADAPTATION AND RESILIENT COMPONENT

All the eligible projects or activities must complete a checklist to:

1. Identify clear boundaries and critical interdependencies between the infrastructure and the system it operates within.
2. Undertake a risk assessment to identify the key physical climate hazards to which the infrastructure will be exposed and vulnerable to over its operating life.
3. Sufficiently mitigate risks identified that the infrastructure is resilient to climate change conditions over its operational life.
4. Assess the resilience benefits of the infrastructure and ensure it does no harm to the resilience of the defined system it operates within.
5. Ongoing monitoring and evaluation.

Climate Bonds INITIATIVE

Find more at: www.climatebonds.net

