

The Green Hydrogen Organisation (GH2) invites Green Hydrogen producers to submit their projects for accreditation and certification. GH2 is the only globally recognised system for green hydrogen accreditation and certification. Green Hydrogen projects that meet the Green Hydrogen Standard ("the standard") will be licensed to use the label "GH2 Green Hydrogen" and will be eligible to obtain and trade GH2 certificates of origin for green hydrogen and derivatives such as green ammonia.

This Fact Sheet summarises the Green Hydrogen Standard, which is free to download here: gh2.org/our-initiatives/gh2-green-hydrogen-standard



"The Green Hydrogen Organisation is working to dramatically accelerate the uptake of green hydrogen to rapidly phase out fossil fuels in industries like steel, cement, fertilizers, shipping and aviation. In order to scale up the green hydrogen market, GH2 is today launching the Green Hydrogen Standard. The Standard provides certainty and transparency to investors and other stakeholders that green hydrogen is exactly that: hydrogen made with renewable electricity which conforms to the highest standards on emissions, ESG and the sustainable development goals."

Malcolm Turnbull, GH2 Chair and former Australian Prime Minister

GH2's definition of Green Hydrogen and Green Ammonia

Green hydrogen is hydrogen produced through the electrolysis of water with 100% or near 100% renewable energy with close to zero greenhouse gas emissions (≤ 1 kg CO₂e per kg H₂ taken as an average over a 12-month period).

Green ammonia is ammonia produced using green hydrogen (as defined above) with 100% or near 100% renewable energy with close to zero greenhouse gas emissions (≤ 3 kg CO₂e per kg NH₃ taken as an average over a 12-month period).

GH2's definitions are based on the technologies that are the leading candidates for scaling up green hydrogen production: hydropower, wind, solar, geothermal, tidal, wave and other ocean energy sources.¹ The Standard refers to "near 100% renewable energy". There is some flexibility (e.g., for backup systems) so long as the maximum greenhouse gas emissions threshold is not exceeded.

Project Testing using the GHS Rapid Assessment Tool

The GH2 Standard Rapid Assessment Tool (RAT) is a management tool for early-stage projects. The objective is to explore alignment between global best practice and national regulatory requirements (such as qualification for RFNBO status in the EU, or IRA subsidies in the US). GH2 is currently working with project developers in Australia, Brazil, China, Egypt, India, and the United States to accelerate project development and 'derisk' projects prior to final investment decision.

What are the steps to be certified?

Project operators seeking GH2 accreditation should undertake the necessary preparatory work to demonstrate their project's adherence to the Green Hydrogen Standard.

Project operators then engage an Independent Assurance Provider accredited by GH2 to review the project. The Independent Assurance Provider consults the project operator and other stakeholders and prepares an assessment.

Projects that meet the Standard and have agreements and/or licenses with GH2 will be certified to use the label "GH2 Green Hydrogen" (under license) and will be eligible to obtain and trade GH2 certificates of origin for green hydrogen and derivatives such as green ammonia.

step 1		Green Hydrogen Project Development	The project developer ensures compliance with the GH2 Standard.
step 2		Independent Assurance	The project developer engages an Independent Assurance Provider accredited by GH2.
step 3		Consultation and public comment	The Independent Assurance Provider consults stakeholders and prepares an assessment. A draft report is made available for public comment.
step 4		Green Hydrogen Project Accreditation	The final report is submitted to GH2's Accreditation Body . Projects that meet the Standard are licensed to use the label "GH2 Green Hydrogen" and will be eligible to obtain and trade GH2 certificates of origin.
step 5		Green Hydrogen Production Certification	The GH2 Registry issues, tracks and cancels GH2 Green Hydrogen Guarantee of Origin certificates.
step 6		Review and Renewal	Accreditation is reviewed annually. The Accreditation body undertakes spot checks and may recommend refinements to the Standard.

How does the Standard relate with national standards?

GH2 is working with national governments to encourage alignment with international best practice, including the Standard's definition of green hydrogen. GH2 is applying to become a voluntary scheme under the EU's revised Renewable Energy Directive. To avoid duplication, demonstrating adherence to credible and comprehensive national requirements shall be deemed sufficient to meet GH2's accreditation and certification requirements.

Validating "close to zero" emissions of <1 kg CO₂e per kg H₂

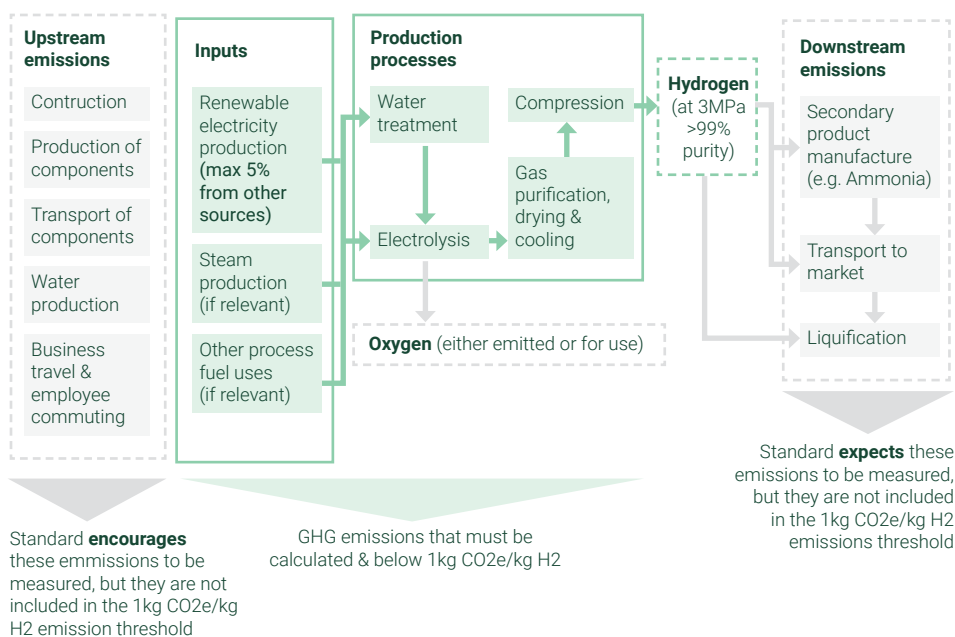
The production of renewable electricity can involve some greenhouse gas emissions. In certain circumstances, there may be some greenhouse gas emissions associated with electrolysis and associated processes (such as water treatment / desalination). Accordingly, GH2 refers to "close to zero greenhouse gas emissions". The Standard requires that projects operate at ≤ 1 kg CO₂e per kg H₂ (taken as an average over a 12-month period).²

The ≤ 1 kg CO₂e per kg H₂ threshold is considerably lower than the thresholds proposed by other so-called "clean hydrogen" or "low carbon hydrogen" standards, which have significantly higher emissions threshold to accommodate hydrogen production based on fossil fuels. Green hydrogen is the only option aligned with a 1.5-degree pathway.³

What GHG emissions are included?

It includes "scope 1" emissions from production, including water treatment and desalination and "scope 2" emissions from on-site or purchased renewable electricity. The Standard builds on the methodology proposed by the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE).

It is expected that project operators report on the emissions associated with the delivery of hydrogen and its derivatives. The standard also encourages project operators to report on the embodied emissions associated with green hydrogen production & below 1kg CO₂e/kg H₂ Standard expects these emissions to be measured, but they production are not included in the 1kg CO₂e/kg H₂ emissions threshold.



What other aspects are covered in the Green Hydrogen Standard?

The Standard requires that the environmental, social and governance consequences of green hydrogen production are addressed and requires that the development opportunities and impacts of green hydrogen production are considered. Key questions include:

- Are the social and environmental impacts of new projects fully considered?
- Does the project comply with international human rights standards and are human rights promoted where the energy is produced?
- Has a good faith effort to engage key stakeholders and communities actively been made?
- Have key stakeholders and communities been provided with the information and potential opportunities to engage that they see as most relevant and needed?

These issues are vital considerations for investors, customers, consumers and the communities that host green hydrogen projects. For more information, contact Sam Bartlett, Director for the Green Hydrogen Standard and CEO Roundtable at sam.bartlett@gh2.org

About GH2

The Green Hydrogen Organisation (GH2) is a not profit foundation under Swiss law. In addition to its office in Geneva it is present in London, Perth, and Sydney. The mission of GH2 is to dramatically accelerate the production and utilisation of green hydrogen across a range of sectors globally. It will push to rapidly decarbonise industries like steel, cement, fertilisers, shipping and aviation that have so far made limited progress reducing their emissions.

Sources:

1. GH2 notes that some countries have determined that there is a role for nuclear energy and biomass to accelerate the shift from more polluting activities, such as coal generation. However, nuclear power and biomass raise some specific environmental and safety related issues which this Standard is not designed to address. GH2 welcomes if the Green Hydrogen Standard inspires further rules and standards also for nuclear and other forms of energy production with close to zero emissions.
2. The GH2 Board will review the performance of GH2 accredited projects on an annual basis, with the expectation that the boundaries of the emissions assessment framework can be widened, and that the emissions thresholds will be lowered in accordance with emerging best practice.
3. <https://racetozero.unfccc.int/un-climate-champions-launch-guiding-principles-for-climate-aligned-hydrogen/>