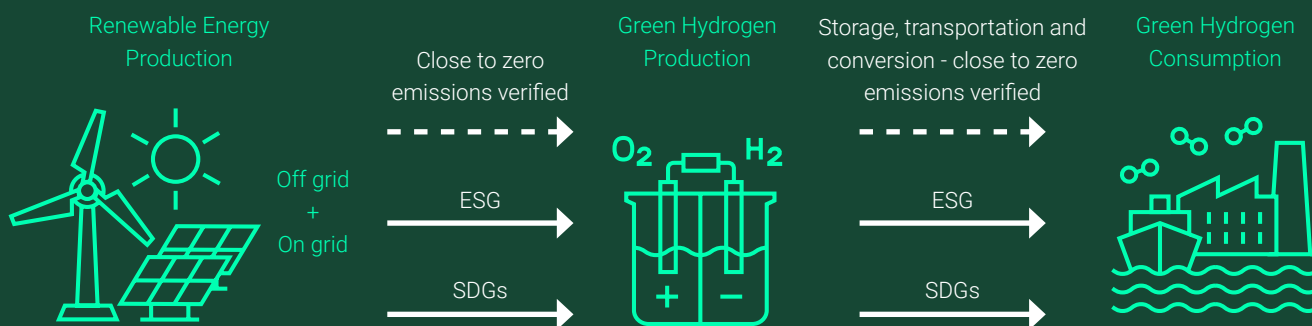


The GH2 Green Hydrogen Standard

The Green Hydrogen Organisation (GH2) has established a global definition of green hydrogen. It safeguards that there are no or close to zero greenhouse gas emissions from green hydrogen production to use. It requires that the environmental, social and governance consequences are tracked, including the impact on local communities and human rights. In developing economies, the development opportunities and impacts of green hydrogen production and use are fully considered.



GH2’s Green Hydrogen Standard has three criteria:

1. Rigorous accounting of greenhouse gas emissions – guaranteeing close to zero emissions

The GH2 Standard addresses total greenhouse gas emissions, guaranteeing that green hydrogen is based on renewable sources with close to zero emissions. The GH2 Standard is rigorous, yet practical, with carbon accounting procedures and thresholds that can be applied consistently to grid and off grid production.

The boundaries of the carbon accounting system and the thresholds at which hydrogen is considered “green” need to be clearly defined and trusted as credible by all stakeholders. The emissions associated with project construction need to be considered, together with the upstream emissions associated with water, energy and electricity production and the downstream emissions associated with hydrogen transportation and use.

Advocates of fossil fuel-based hydrogen favour a narrow approach to carbon accounting which excludes the upstream emissions associated with oil and gas production and the downstream emissions associated with (largely unproven) carbon capture and storage. These emissions are substantial and, in many cases, exceed the emissions associated with the conventional utilisation of oil and gas.^{1,2} Care must be taken to set meaningful targets, and to avoid lowering the bar in ways that allows fossil fuel-based hydrogen to masquerade as “low carbon”. The GH2 will accredit green hydrogen production facilities that have robust systems to accurately and comprehensively measure the greenhouse gas emissions.

¹ Howarth, R.W., and Jacobson, M.Z. (2021) “How green is blue hydrogen?” Energy Science & Engineering. 2021;00:1–12. First published: 12 August 2021 <https://doi.org/10.1002/ese3.956>.

² Longden T., Beck, F.J., Jotzo F., Andrews, R. and Prasad M. (2021), ‘Clean’ hydrogen? An analysis of the emissions and costs of fossil fuel based versus renewable electricity based hydrogen, CCEP Working Paper 21-03, ZCEAP Working Paper ZCWP02-21, March 2021, The Australian National University. <https://crawford.anu.edu.au/publication/ccep-working-paper/18648/clean-hydrogen-analysis-emissions-and-costs-fossil-fuel-based>

2. Environmental, social and governance performance

In addition to the greenhouse gas emissions, the GH2 Standard tracks the overall social, environmental and governance impact of GH2 certified hydrogen.

Accelerating the production and utilisation of green hydrogen requires a large increase in the production and utilisation of renewable energy, particularly wind, solar and hydroelectricity. These projects need to be developed and operated responsibly and sustainably. The GH2 is collaborating with the International Hydropower Association (IHA) and takes the *Hydropower Sustainability Guidelines on Good International Industry Practice*³ as the foundation for ensuring that green hydrogen is sourced from renewable energy sources that meet best practice sustainability performance standards. Key questions include: Are the social and environmental impacts of new projects fully considered? Can free, prior and informed consent be verified? Are human rights respected and promoted where the energy is produced?

Green hydrogen production facilities also need to be developed and operated responsibly and sustainably. GH2 is working to incorporate best practice sustainability assessments into policy work, investment analysis and project decision-making processes. The GH2 Standard addresses the impact on affected communities, labour and working conditions, and the prohibition of all forms of slavery, child and forced labour. The use and management of water resources requires close attention, together with adherence to best practice health and safety standards in green hydrogen production, storage and transportation.

3. The development impact – SDG performance

The GH2 Standard requires that the development impact of any GH2 Standard certified green hydrogen is assessed, from power generation to use of the hydrogen. The extent to which projects, transportation and use has an impact on the Sustainable Development Goals (SDGs) is addressed. Green hydrogen development can provide developing countries with zero-carbon energy to support energy sector development, increase energy security and create export opportunities. Fuel cells can be used to provide decentralized solutions for critical services and infrastructure, increasing energy access in remote areas and in emergency situations.

Green hydrogen is defined as hydrogen produced by splitting water into hydrogen and oxygen using renewable electricity through a process called electrolysis. This results in very low or zero carbon emissions. The mission of the Green Hydrogen Organisation (GH2) is to dramatically accelerate the production and use of green hydrogen across a range of sectors globally. We push to rapidly decarbonise industries like steel, cement, fertilisers, shipping and aviation that have so far made limited progress reducing their emissions.

Globally, hydrogen strategies and policies differ widely on the definition of renewable energy, the boundaries of the carbon accounting system, the emission thresholds at which hydrogen is considered green, and the feedstocks and production technologies deployed.⁴ There are no global standards or certification schemes to support the trade in green hydrogen, no coordinated international effort to support the industry, and green hydrogen is a low priority amongst development finance institutions, despite green hydrogen's enormous potential to stimulate development while reducing carbon emissions. This is not given sufficient priority within many development finance institutions. This is undermining efforts to accelerate the production and use of green hydrogen and meet our climate change goals.

The objective of the GH2 Green Hydrogen Standard is to establish a global standard for the production and use of green hydrogen. The emissions associated with hydrogen production are an important consideration. The GH2 takes a holistic approach – from production to final use - which considers the sustainability of the industry and its contribution to achieving the UN's sustainable development goals (SDGs).

The GH2 Standard is essential to promote confidence, raise and leverage investment, and unlock green hydrogen's vast potential.

³ International Hydropower Association (2020) "Hydropower Sustainability Guidelines on Good International Industry Practice". <https://www.hydr sustainability.org/hydropower-sustainability-guidelines>

⁴ Abad & Dodds (2020) "Green hydrogen characterisation initiatives: Definitions, standards, guarantees of origin, and challenges". *Energy Policy*. Volume 138. <https://www.sciencedirect.com/science/article/pii/S0301421520300586>.